

Better communication research programme: Language and Literacy Attainment of Pupils during Early Years and through KS2: Does teacher assessment at five provide a valid measure of children's current and future educational attainments?

Margaret J. Snowling¹, Charles Hulme¹, Alison M Bailey^{1,2}, Susan E. Stothard¹, and Geoff Lindsay³

¹ University of York

² City of York Local Authority, Centre for Reading and Language, University of York

³ Centre for Educational Development, Appraisal and Research³, University of Warwick

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Government policy and may make reference to the Department for Children, Schools and Families (DCSF) which has now been replaced by the Department for Education (DFE).

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

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EXECUTIVE SUMMARY

It is well-established that language skills are amongst the best predictors of educational success. Consistent with this, findings from a population-based longitudinal study of parents and children in the UK indicate that language development at the age of two years predicts children's performance on entering primary school. Moreover, children who enter school with poorly developed speech and language are at risk of literacy difficulties and educational underachievement is common in such children. Whatever the origin of children's problems with language and communication, the poor educational attainment of children with language learning difficulties is an important concern for educational policy.

The research to be reported here addressed the question of whether teacher assessment and monitoring could be used to identify children with language difficulties in need of early interventions. The findings have important implications for Government proposals for implementing the recommendations of the Tickell Review¹ of the Early Years Foundation Stage (EYFS), in particular the proposals for a simplified framework and assessment process. The Government undertook a consultation on the Tickell Review which ended 30 September 2011.

Key Findings

- Teachers, when appropriately trained, can make valid judgments of children's development in language and literacy when guided by a well validated, reliable measure.
- Teachers can accurately monitor their pupils' progress in key reading skills without the need for formal tests.
- These findings make it clear that a reduced EYFS Profile (EYFSP) could be used to support monitoring and early identification of difficulties with language and communication.

Aims of the Study

This study is part of the Better Communication Research Programme (BCRP 2009-12). The BCRP is part of the Government's Better Communication Action Plan, its response to the

¹ <http://www.education.gov.uk/tickellreview>

Bercow Review of services for children and young people with speech, language and communication needs. The overarching aim of this study was to investigate whether teacher assessment at the end of the EYFS around 5 years, based on ongoing observation, provides a valid measure of children's current development and their educational attainments in future years. In addition, the study investigated which factors, both within the child and within the environment, place a child at risk of language and literacy difficulties?

Methodology

To address the research questions we used data from three cohorts of children entering all 50 maintained primary schools within one local authority in a 3-year period from September 2006 to July 2009. We followed the progress of all of these children in acquiring literacy skills with data available on pupil progress through the 'Phonic Phases' (validated as good measures of attainment in separate studies²).

Cohort 1 (entering September 2006) was assessed against the Foundation Stage Profile (FSP); longitudinal data including end of National Curriculum levels at the statutory end of KS1 assessment, and language and literacy data from a representative sample followed up in year 3 during March 2011.

Cohorts 2 and 3 (entering 2007 and 2008 respectively) were assessed on the EYFSP instead of the FSP. Data are available for Cohort 2 for two years and Cohort 3 for one year.

The timeline and the data analysed are depicted in Table 1 below:

Table 1. Timeline for data collection and analysis

| Cohort | School Entry Date | Reception EYFSP | Assessment Data Available | | |
|--------|-------------------|-----------------|---------------------------|----------------------|------------|
| | | | Yr 1 ^a | Yr 2 KS1 Attainments | Yr 3 Tests |
| 1 | 2006 | x | (x) | x | x |
| 2 | 2007 | x | (x) | x | |
| 3 | 2008 | x | (x) | | |

Note: ^a Phonic Phase data only

² Snowling et al., (2009); Snowling et al., (2011)

Findings

- Teachers can make valid judgments of children's development in language and literacy and can accurately monitor their pupils' progress in key reading skills.
- Children deemed by their teachers to be developing slowly after one year in school typically perform below national expectations in KS1 assessments.
- Groups most at risk of difficulties are boys, children with EAL and those who are eligible for free school meals. Demographic variables (Gender, Mother Tongue, Eligibility for Free School Meals and deprivation) accounted for differences between children in *Communication, Language and Literacy* as measured by the EYFSP. Each has an independent effect.
- Early identification of children's additional needs is important and key elements of development can be assessed at age five. Children who attained below the nationally expected level in reading at the end of KS1 were already developing slowly at the end of Early Years and their progress in phonics was poor both at the end of reception class and at the end of year 1. Slow developers were typically characterized by delayed development of *Communication, Language and Literacy*.
- Of the EYFSP scales, the best predictors of educational success are measures of communication, language and literacy. Between 45 and 51% of the differences between children in Key Stage 1 attainments can be accounted for by teachers' ratings of their *Communication, Language and Literacy* at the end of Early Years on the EYFSP.
- Of the EYFSP areas of learning, *Communication, Language and Literacy* is the best predictor of later attainment at KS1 and in year 3, not only in literacy but also in mathematics.
- Ratings of progress in phonics were also strong predictors of reading and writing attainments; correlations with mathematics were weaker.
- The current findings are in line with the proposal to reduce the number of items on the EYFSP from 69 to 17, and to split the *Communication, Language and Literacy* scale into '*Language and Communication*' and '*Literacy*'.

Implications for Policy and Practice

- The present study shows that teachers, if appropriately trained, can make valid judgments of children's development in language and literacy when guided by a well

validated, reliable measure, such as the Early Years Foundation Stage Profile (EYFSP). In addition, teachers can accurately monitor their pupils' progress in key reading skills including phonics without the need for formal tests³.

- The EYFSP can be shortened and modified to capture individual differences between children in critical foundation skills, notably language and early literacy.
- These findings make clear that a revised shortened form of the EYFSP could be used to support monitoring and early identification of difficulties with language and communication, in line with proposals for the revised Framework.
- However, it is important to highlight that the present findings suggest a screening tool based on the EYFSP can be expected to account for around 50% of the differences between children. Hence, a substantial number of children will 'fall through the net' if 'one off' screening is used. Rather, a system of monitoring over time, with additional checks on progress made at regular intervals is required.
- It follows that early identification should be built into a system of formative assessment that builds on and extends teachers' understanding of language and communication
- Together the findings underline Government priorities viewing Early Years as providing a critical foundation for learning. They also provide evidence relevant to current proposals for the revision of the Early Years Foundation Stage Framework⁴ about which the Government undertook a consultation which ended 30 September. Thus,
 - early identification of children's additional needs is important;
 - key elements of development can be assessed at age five;
 - assessments at the end of Early Years can be used to identify children who are at risk of educational difficulties;
 - the best predictors of educational success are measures of language, communication and literacy.
- This proposal does not imply that there is a need for large scale record keeping. Rather, the judicious choice of the key behaviours to assess, guided by an evidence-based tool such as the one provided here, could streamline the process and reduce work load.
- This does not preclude the inclusion of items that monitor behaviours which do not predict attainment but may be linked with well-being (such as aspects of physical development).

³ See also Snowling et al (2011)

⁴ <http://www.education.gov.uk/tickellreview>

- School systems need to be aware that social disadvantage has its impact very early in schooling. Children from the most disadvantaged backgrounds may need additional support in Early Years to ensure a secure foundation for language and literacy development. A careful system of formative assessment and monitoring over time supported by a revised EYFSP, could be used to identify children who are at risk.

1. BACKGROUND

It is well-established that language skills are amongst the best predictors of educational success. Consistent with this, findings from a population-based longitudinal study of parents and children in the UK indicate that language development at the age of two years predicts children's performance on entering primary school.⁵ Moreover, children who enter school with poorly developed speech and language are at risk of literacy difficulties⁶ and educational underachievement is common in such children.^{7 8}

The causes of children's language and literacy difficulties are varied; while some children have problems with language acquisition that are constitutional in origin (and may be associated with genetic risk factors), others may be poorly prepared for school because of adverse family or socio-economic circumstances. These different causes are not mutually exclusive and frequently they interact. Whatever their origin, the poor educational attainment of children with language learning difficulties is an important concern for educational policy.

In 2000, the Foundation Stage concerned with children's development from 3 to 5 years was introduced, highlighting the importance of the early/preschool years for educational success, and assessment of children's progress at the end of this period was formally introduced in 2003. In 2008 it became mandatory for all schools and early years providers to deliver a curriculum consistent with the newly named Early Years Foundation Stage (EYFS) for children from birth to 5 years. A review of the EYFS, anticipated at the time of its introduction, has recently been published as the Tickell Review (2011)⁹.

The research to be reported here used data from assessments undertaken by teachers at the end of Early Years within the framework of the EYFS for children entering school between 2006 and 2010 (hereafter the term EYFS will be used). The recent Tickell review makes 46 recommendations for a revised (and simplified) framework. Reference will be made to these where findings of the current study are relevant.

⁵ Roulstone et al., 2011

⁶ Stothard et al., 1998

⁷ Conti-Ramsden et al., 2009

⁸ Dockrell et al., 2011

⁹ <http://www.education.gov.uk/tickellreview>

2. AIMS OF THE STUDY

The overarching aim of this study was to investigate whether teacher assessment at the end of the EYFS around 5 years, based on ongoing observation, provides a valid measure of children's current development and their educational attainments in future years.

Our main research questions were:

- a. Can teacher assessment at age five be used to screen for early language difficulties?
- b. Does a child's language development as measured against the Foundation Stage Profile (FSP)/Early Years Foundation Stage Profile (EYFSP)¹⁰ correlate with performance on objective language tests administered during Early Years?
- c. Do the scales of the Early Years Foundation Stage Profile provide measures of the abilities they purport to assess?
- d. Does the Early Years Foundation Stage Profile predict future progress in language and literacy as measured by school-based assessments? Which scales are the best predictors of educational attainments?
- e. Does the Early Years Foundation Stage Profile predict future progress in language, literacy and numeracy, as measured by objective tests in year 3?
- f. Which factors, within the child and within the environment, place a child at risk of language and literacy difficulties?
- g. In what ways do children making slow progress through Early Years and KS1 differ from typically achieving children on the Early Years Foundation Stage Profile?
- h. What proportion of children from disadvantaged backgrounds score below expected levels on the Early Years Foundation Stage Profile and show slow progress through the Phonic Phases?

¹⁰ The Early Years Foundation Stage (EYFS) replaced the Foundation Stage (FS) in September 2008.

<http://nationalstrategies.standards.dcsf.gov.uk/node/83972>

3. WHAT WE HAVE DONE

To address our research questions we have used data from three cohorts of children entering all 50 maintained primary schools¹¹ within one local authority in a 3-year period from September 2006 to July 2009. We have followed the progress of all of these children in acquiring literacy skills (over varying time periods) with data available on pupil progress through the 'Phonic Phases' (which we have validated as good measures of attainment in separate studies¹²).

Cohort 1 (entering September 2006) was assessed against the FSP; longitudinal data include end of National Curriculum levels at the statutory end of KS1 assessment, and language and literacy data from a representative sample followed up in year 3 during March 2011.

Cohorts 2 and 3 (entering 2007 and 2008 respectively) were assessed on the EYFSP instead of the FSP. Data are available for Cohort 2 for two years and Cohort 3 for one year.

Children from six schools from Cohort 3 were assessed using a commercially available screening test 'Language Link' shortly after school entry. This test battery assesses a broad range of receptive language skills with a view to the early identification of children who have language difficulties. We investigated the relationship between children's scores on this test and their performance on the EYFSP after two school years. Summary data for these three cohorts are shown in Table 2 below.

Table 2: Cohort contextual information

| Cohort | Entry to Reception year | N | % Male | Mean age at T3 (months) | % Free School Meals | % SEN register | % EAL |
|--------|-------------------------|------|--------|-------------------------|---------------------|----------------|-------|
| 1 | 2006-7 | 1781 | 51 | 64.7 | 10.0 | 11.3 | 5.3 |
| 2 | 2007-8 | 1849 | 52 | 64.5 | 10.7 | 16.2 | 5.6 |
| 3 | 2008-9 | 1748 | 52 | 64.3 | 10.2 | 5.8 | 5.1 |

Note: T3 = end of first year in school

¹¹ Excluding one special school

¹² Snowling et al., (2009); Snowling et al., (2011)

It can be noted from this Table that the percentage of children with EAL was low for the LA in this period, as compared with the national average of 16% of children with EAL in primary schools (DFE, 2007). Similarly, the percentage of children eligible for Free School Meals is somewhat lower (national average = 17%).

4. DOES A CHILD'S LANGUAGE DEVELOPMENT AS MEASURED AGAINST THE EARLY YEARS FOUNDATION STAGE PROFILE CORRELATE WITH PERFORMANCE ON OBJECTIVE LANGUAGE TESTS ADMINISTERED DURING EARLY YEARS?

4.1 Data sources and methods

Oral language development during the first year in school is known to be a strong predictor of educational achievement through to school leaving age. Thus it would seem to be important to explore whether teachers' ratings of children's language and communication through ongoing observation and assessment at this stage provide a valid measure of their spoken language skills as measured by objective tests. To this end, children's scores on the EYFSP were correlated with their scores on 'Language Link', a normed language assessment battery administered at school entry.

Language Link was developed by in-house, Speech and Language Therapists at *Speech Link Multimedia Ltd* to provide a first stage screening for potential receptive language difficulties in children entering school. This is a web based programme (see www.speechlink.co.uk) designed to be administered by adults with no specialist knowledge. The test consists of 50 items, divided into 8 sections as follows:

- Prepositions (4 items)
- Verb tenses (4 items)
- Instructions (4 items)
- Pronouns (5 items)
- Negatives (4 items)
- Cause and effect (4 items)
- Concepts (15 items)
- Questions (10 items)

Once logged into the website with the school's details, each child's forename, surname and date of birth are entered, as well as the date of the test; the child's age is critical in deciding whether errors are a cause for concern. Other information such as the school class and whether English is the child's first or an additional language can also be entered.

For the test, the child and adult sit side by side facing the computer screen used to present the items. Each item is presented as a set of three or four pictures with a written prompt which the adult reads aloud to the child e.g. 'The spider is under the table'. The child selects

the picture they believe shows the spider under the table, and the adult clicks to record the child's selection, or – if required – 'no response'. Once responses have been recorded for all fifty items, the adult submits the child's test.

Language Link produces an individual printable assessment for each child, which gives the child's total score and number of sections passed as well as the child's responses to each question. It also identifies whether the test shows the child's understanding of spoken English is within appropriate limits, is delayed or severely delayed, and recommends whether speech and language therapy services should be involved. Even if the test does not suggest that the child's receptive language gives particular cause for concern, possible areas of weakness are identified.

Once pupils' test scores are entered for a class, overall data are produced showing children whose responses give cause for concern, but also areas of relative strength and weakness. Schools in Local Authorities which buy into the service screen all Reception entrants during their first few weeks in school. Their results can be used within the school to provide both a baseline and to inform teaching and intervention. Targeted activities to improve aspects of children's language can be downloaded. In addition, in those Local Authorities, information can be accessed and analysed centrally so that children whose receptive language gives cause for concern can be identified and referred for further assessments by local Speech and Language Therapy services.

4.2 What we have found

We found that the **Early Years Foundation Stage Profile Total score was predicted by the Language Link Total Score recorded some nine months earlier**, shortly after school entry. The correlation between the Language Link total score and the EYFSP score was .62. This is shown in Figure 1 below. The correlation between the Language Link total and the *Communication, Language and Literacy Scale* was also .63.

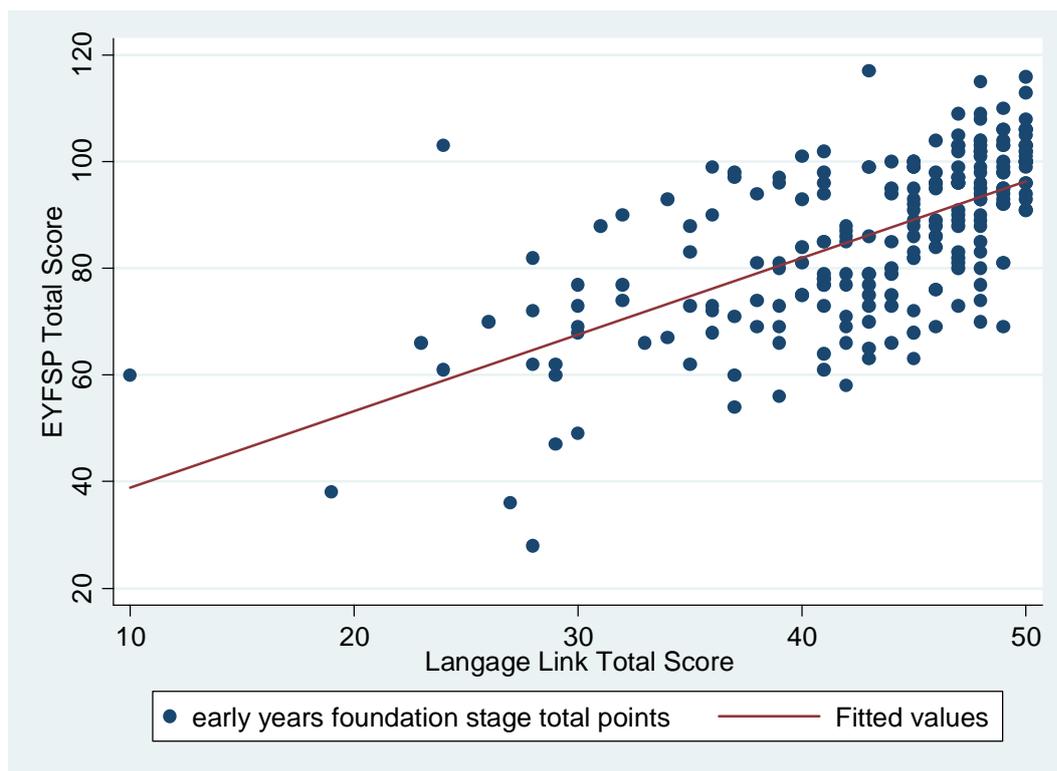


Figure 1. Relationship between language at school entry and EYFSP score at end of reception year

4.3. Summary

Scores on a language screening test given at school entry provide validation for teachers' judgements of children's language development against the Early Years Foundation Stage Profile.

The EYFSP could therefore be an appropriate screening tool for identifying children with spoken language difficulties.

In addition, tests which can be given at school entry to identify children's language difficulties may be useful for supplementing teacher ratings in order to identify children who would benefit from additional help before the end of Early Years. Such tools may be particularly useful in schools where there is known to be a high level of language need.

5. DO THE SCALES OF THE EARLY YEARS FOUNDATION STAGE PROFILE PROVIDE VALID MEASURES OF THE ABILITIES THEY PURPORT TO ASSESS?

5.1 Data sources and methods

We collected pupils' data from the Early Years Foundation Stage Profile (EYFSP) from the cohort of children entering 38 schools in the City of York LA in September 2009. The sample comprised 1658 children.

The EYFSP comprises 13 scales within 6 areas of learning each containing 9 scale points giving a total of 117 items (see Appendix 1). Each point was rated as true (achieved) or false (not achieved).

The areas of learning are as follows:

- i. Personal Social & Emotional (3 scales = 27 items) e.g., *"Takes turns and shares with adult support"*
- ii. Communication, Language and Literacy (4 scales = 36 items) e.g., *"Talks activities through, reflecting on and modifying actions"*.
- iii. Problem solving reasoning and numeracy (3 scales = 27 items) e.g., *"Counts reliably up to 10 everyday objects"*.
- iv. Knowledge and understanding of the world (9 items) e.g., *"Finds out about past and present events in own life, and in those of family members and other people s/he knows. Begins to know about own culture and beliefs and those of other people"*.
- v. Physical development (9 items) e.g., *"Uses small and large equipment, showing a range of basic skills"*.
- vi. Creative development (9 items) e.g., *"Explores colour, texture, shape, form and space in two or three dimensions"*.

On each scale, scale points 4-8 are the early learning goals and scale point 9 describes the attainment of a child who has achieved scale points 1-8 and is working consistently beyond early learning goals. Points 1-3 describe attainment below the early learning goals; attainment of any of points 4-8 must include assessment of points 1-3 as these are developmental steps leading to the attainment of scale points 4-8. Details of how we prepared these data for an initial analysis in which we assessed the validity and the independence of each of the scales are given in the Technical Appendix. For example, we dropped items 1-3 and 9 from each scale which reflected the fact that these items are not

independent of others in each scale. Following on from this, using an iterative process, we continued to drop items from some of the scales until we had a set of items that showed partial independence from each other. For the retained items we found a model of the inter-relationships between questions that fit the data well.

This model tells us which of the EYFSP items provide valid information about a child's development in language, literacy, mathematics, social and emotional development, physical and creative development (see below) and could be used as a starting point for predicting later language and literacy outcomes.

5.2 What we have found

The analyses of data from a whole cohort on the EYFS allow us to consider:

- How well each item of the profile taps what it purports to measure (i.e, do all the items in one scale tap the same underlying ability)?
- Whether the scales are independent from one another (e.g., does the *Communication, Language and Literacy Scale* test something different from the *Problem Solving, Reasoning and Numeracy Scale*, as it is supposed to do)?

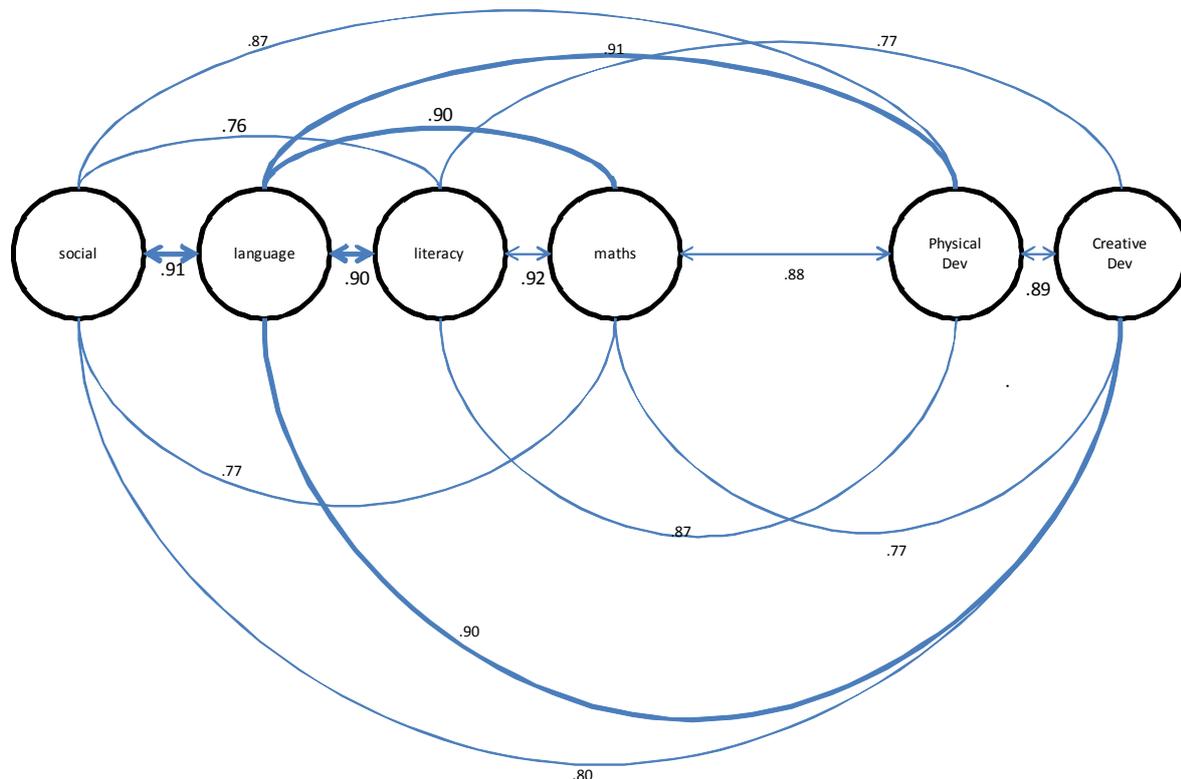
Following initial scrutiny of the data, we started by taking the items at “face value” according to the grouping they came from. We therefore examined the validity of a “naive” model of early development which included a Social factor (based on items from the Personal, Social and Emotional Scale), a Mathematics factor (based on items from the Problem Solving, Reasoning and Numeracy Scale), a Knowledge of the World factor, a Physical Development factor and a Creative Development factor. Since we were particularly interested in the value of teacher assessment of early language and literacy, we defined a further two factors by splitting the Communication, Language and Literacy scales: a Language factor (based on items from Language, Communication and Thinking area of learning and a Literacy factor (based on items from the Linking Sounds and Letters, Reading and Writing Scales).

Grouping the items in this way revealed that there was some redundancy across items and scales. Importantly, the Knowledge of the World Factor overlapped completely with the Language Factor, suggesting that the items comprising these scales were tapping similar abilities. Second, consideration of item content suggested that two items from the Literacy factor might be better seen as measures of Language; these were “*Shows an understanding of elements of stories such as character, sequence, events and openings*“

and “Retells narratives in the correct sequence drawing on language patterns of stories”. These two items are clearly assessing aspects of language comprehension and production.

Following reasoned adjustments to the model, we found that the best fit to the data was a structure with 6 factors: Language, Literacy, Mathematics, Social, Physical and Creative Development. In terms of the EYFSP, this means that there is validation for six rather than nine of its scales. However, these scales are not independent of each other. Importantly, **the Language scale correlates very strongly with all of the other scales, suggesting it is a fundamental ability associated with progress in all other domains of development.** In addition, there were very strong correlations between the Literacy and Mathematics scales and each of these factors correlated strongly though to a lesser degree with Social, Physical and Creative Development.

Figure 2 below shows the structure of the measures and how they relate to each other. The clearest factor in terms of how uniformly different items relate to this skill is the Literacy factor. This factor is essentially concerned with the skills involved in transcoding print to speech or speech to print; it is arguably, the simplest construct to measure.



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Figure 2. Model describing the valid measures extracted from the Early Years Foundation Stage Profile

Note: the strong relationships between language and related scales are highlighted.

The items included in the new model are shown in **Appendix 2**. The validated scales comprise 61 items from the original set of 117.

It is useful to note here that the findings of our analyses overlap to some extent with the recommendations for the revision of the EYFSP suggested in the Tickell Review. The present findings imply that simplification of the Profile is possible and are consistent with the suggestion that Communication and Language be split from Literacy in teacher assessments. Understanding of the World replaces the 'Knowledge of the World' which, with Expressive Arts and Design, are domains within which a child's development and learning is demonstrated.

5.3 Summary

- Analysis of data from the EYFSP indicated that six scales provide reliable measures of underlying skills. The simplest factor to measure uniformly is the Literacy factor. The least clear factor is Physical Development.
- The different scales appear to tap quite similar things. It might be that this simply reflects how teachers make generalizations about pupils across domains (teacher expectations). Alternatively, it is possible that individual differences between children in maturity or general ability influences performance in all scholastic domains and, in this regard, language appears to play a key role.
- The present findings are in line with the recommendation that the EYFSP can be simplified and that learning goals for Communication and Language should be assessed separately from those relating to Literacy Development.

6. DOES THE EARLY YEARS FOUNDATION STAGE PROFILE PREDICT FUTURE PROGRESS IN LANGUAGE AND LITERACY AS MEASURED BY SCHOOL-BASED ASSESSMENTS?

6.1 Data sources and Methods

We used data from the EYFSP for Cohorts 1 and 2, and from Phonic Phases assessments as predictors of subsequent performance. As outcomes we used data from the End of Key Stage 1 statutory assessment when pupils are assessed in reading, writing and mathematics.

We first examined correlations between the following EYFS measures and KS1 attainments: Ratings for *Personal, Social & Emotional Development* (PSE-total); *Communication, Language and Literacy* (CLL-total), *Problem solving, reasoning and numeracy* (MAT-Total) and the total *Foundation Stage Profile score* (FSP-total). Since the CLL-total correlated most strongly with the outcome measures, we also report correlations with each of the CLL scales *viz* Language for communication and thinking (CLL-lct), Linking sounds and letters (CLL-lsl), reading (CLL-rd) and writing (CLL-wr).

We proceeded to evaluate which measures provided a good prediction of individual differences in children's Key Stage 1 attainments. The range of attainment at the end of KS1 is from below Level 1 to Level 3. Typical attainment is at Level 2, which is divided into three sub-levels: 2C, 2B and 2A, from lowest to highest attainment. Children assessed at 2C and above (2C+) are judged to be working at the expected level for their age, so children assessed at or below Level 1 (identified as 'W' or Working towards the National Curriculum) are working below expected levels and are a cause for concern as they enter KS2. Children working at Level 3 (like children at 8 or 9 points in the EYFSP) are working beyond age-related expectations, in this case attaining the level expected of a typical child two years later.

In reading, writing and mathematics, teacher assessments of children's attainments are informed by statutory tasks and tests, which in York are usually administered during May of year 2.

The tests consist of:

Reading: At Level 2, a choice of one-to-one reading tasks consisting of an assessment of decoding (while the child reads aloud from a book) and comprehension from questioning

after the reading , or a written comprehension test. At Level 1, there is an optional task similar to the Level 2 task, and at Level 3 there is a higher level written comprehension test. Marking and grading criteria are provided for these tasks and tests with marks converted into National Curriculum Levels.

Writing: all children carry out two writing tasks – one long and one short – and a spelling test. Each task is marked against three areas: Sentence Structure and Punctuation, Text Structure and Organisation, and Composition and Effect. Marks obtained across the two pieces of writing are added to the marks from the spelling test and a mark for handwriting (assessed in the long writing task) to produce a total mark.

Mathematics: as in reading, there is an optional task for use at Level 1, then two tests, one at Level 2, and one at Level 3.

These tasks and tests contribute to the teacher assessments made of each child's attainment in each aspect, but are considered by teachers along with other evidence such as observations and pupils' work over time to arrive at a 'best fit' level judgement.

We also validated the findings using Phonic Phases. At the time of data collection, the implementation of phonics teaching in York schools (after Rose, 2006) included systematic assessment of basic skills on a regular basis during the first 3 years of instruction. Thus, teachers tracked pupils' progress through a series of developmental Phonic Phases, with each phase being quantified by a number of phonic-related skills (DCSF, 2008, *p. 18*). The phases move from sensitivity to rhyme and alliteration at Phase 1 to confident and fluent use of letter-sound knowledge (grapheme-phoneme correspondences – GPCs) for reading and spelling unfamiliar words at Phase 6. The current data set included ratings of phonics progression from each term during the first 3 years in school; here data were used from the third term in Reception (Phonics-R) and the third term in year 1 (Phonics-Y1).

6.2 What we found

The different EYFSP scores correlated with each other ($r_s = .7$ to $.8$) and there were moderate to strong correlations between EYFSP scores and KS1 attainments¹³.

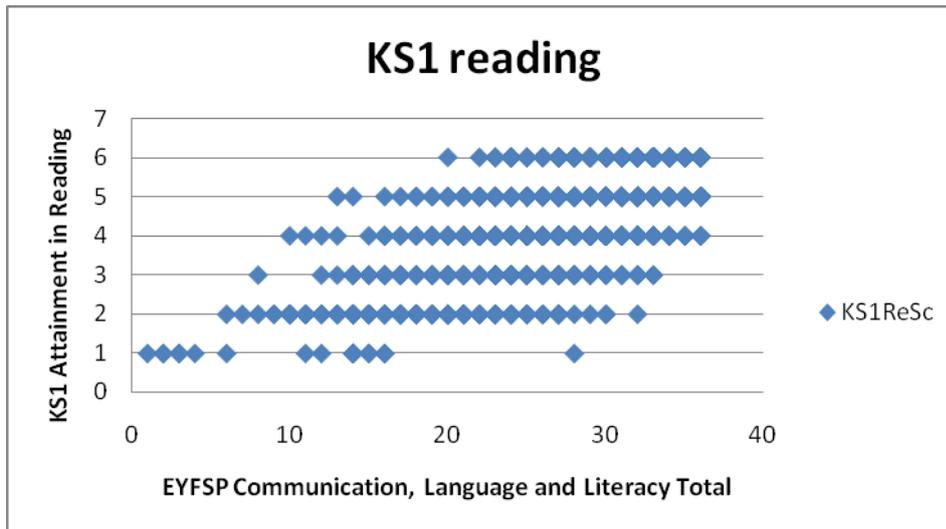
Key correlations between EYFSP scores and KS1 attainments are summarized in Table 3.

Table 3. Correlations between EYFSP scores for Personal, Social & Emotional Development (PSE-total); Communication, Language and Literacy (CLL-total), Problem solving, reasoning and numeracy (MAT-Total) and the Total Profile score (FSP-total) and attainments in KS1 two years later.

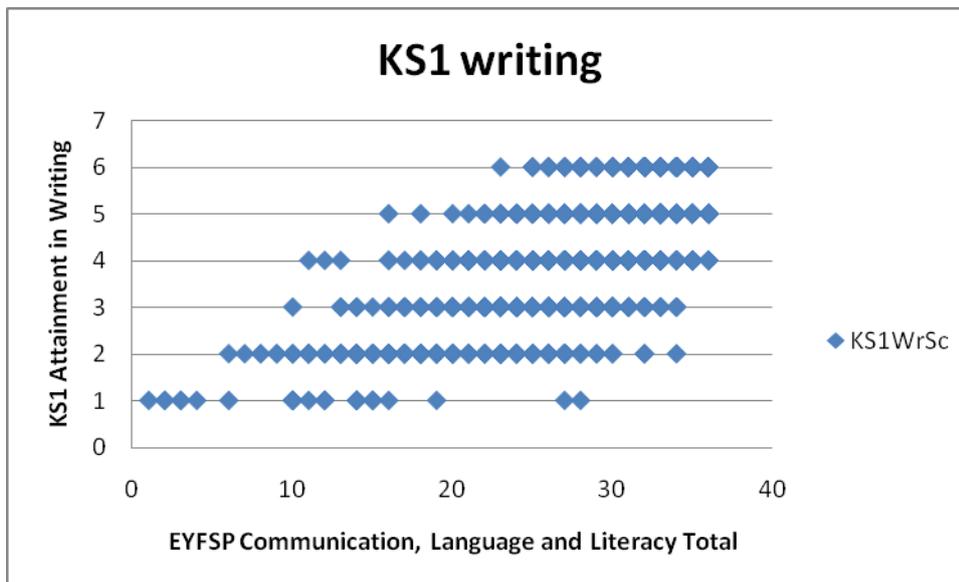
| | Personal, Social and Emotional | Communication, Language and Literacy | Problem solving, reasoning and numeracy | FSP-total |
|----------------|-----------------------------------|--|---|-----------|
| KS1Reading | .47 | .71 | .66 | .51 |
| KS1Writing | .48 | .69 | .63 | .49 |
| KS1Mathematics | .46 | .66 | .65 | .48 |

Neither the *Total score* nor the score for *Personal, Social & Emotional Development* correlated well with later attainments. However, **there were strong correlations between both the *Communication Language and Literacy* and the *Problem solving, reasoning and numeracy* scales and later literacy and mathematics attainments.** The highest correlations were between CLL-total and both reading and writing at the end of KS1 (see Figure 3 below).

¹³ Attainments in reading, writing and mathematics correlated highly ($r_s = .77$ to $.85$)



Note: 1: working towards level 1, 2: level 1, 3: level 2c, 4: Level 2b, 5: level 2a,
6: level 3



Note: 1: working towards level 1, 2: level 1, 3: level 2c, 4: Level 2b, 5: level 2a,
6: level 3

Figure 3. Relationship between EYFSP –Communication, Language and Literacy score at end of reception year and KS1 Attainments in reading (upper panel) and writing (lower panel).

To consider which of the *Communication Language and Literacy* scale scores was the best predictor of later outcome, we next conducted correlations between these and KS1 attainments. The first four columns of Table 4 show correlations of CLL scale scores with KS1 attainments.

Table 4 Correlations between Communication Language and Literacy scales, Phonic Assessments and KS1 attainments two years later.

| | <i>Language for communication and thinking</i> | <i>Linking letters and sounds</i> | <i>Reading</i> | <i>Writing</i> | <i>Phonics-R</i> | <i>Phonics-Y1</i> |
|----------------|--|-----------------------------------|----------------|----------------|------------------|-------------------|
| KS1Reading | .52 | .69 | .66 | .68 | .61 | .73 |
| KS1Writing | .51 | .66 | .63 | .67 | .60 | .71 |
| KS1Mathematics | .48 | .64 | .62 | .64 | .59 | .66 |

Both **CLL-reading and CLL-writing correlated strongly with attainments not only in literacy but almost as well with mathematics.** The ratings on the scale '*Language for Communication and Thinking*' ratings correlated moderately with later attainments but the lower correlations are to be expected since the KS1 attainment tests focus on written and not spoken language so there is a more direct link with earlier literacy-related skills.

As an alternative to the EYFSP scores, we examined how well teacher ratings of children's progress in phonics at the end of reception (Phonics-R) and the end of year 1 (Phonics-Y1) predicted their subsequent attainments in KS1 reading, writing and mathematics (the correlations are show in the right most columns of Table 4 above).

Ratings of progress in phonics were strong correlates of reading and writing attainments (particularly when assessed in year 1); correlations with mathematics were weaker.

Thus, **for predicting attainments at the end of KS1** from ratings made at the end of Early Years (reception class), **the best measures appear to be CLL-total and Phonics progress during the first three terms of formal reading instruction (Phonics-R).**

The next question concerned how much of the differences (variance) in children's attainments at the end of Key Stage 1 was accounted for by (i) the CLL scale measures of the EYFSP and (ii) the measure of phonics attainment recorded at the end of reception year. We also investigated whether a combination of these measures would provide a better 'fit' to the data.

Table 5 summarizes the findings from a series of analyses which addressed these questions. For each outcome measure, the table shows the amount of variance in children's attainments that is accounted for by each measure on its own and in combination. The right most column indicates the amount of variance in outcome that is accounted for once differences between schools are factored into the equation.

Table 5 Summary of analyses predicting individual differences in KS1 attainments

| Outcome at KS1 | Predictors (p<.001) | % variance explained (R ²) | % variance explained (R ²) when school controlled |
|----------------|---------------------------------|--|---|
| Reading | CLL Total, Phonics-R | 51 | |
| | CLL Total | 50 | 44 |
| | Phonics-R | 37.5 | |
| Writing | CLL Total, Phonics-R | 49 | |
| | CLL Total | 48 | 42 |
| | Phonics-R | 36 | |
| Mathematics | CLL Total | 45 | 38 |
| | CLL Total, PRN-total | 46 | |
| | CLL Total, PRN-total, Phonics-R | 48 | |
| | MAT-total | 42 | |

The findings indicate that **between 45 and 51% of the variance between children in Key Stage 1 attainments can be accounted for by teachers' ratings of their *Communication, Language and Literacy* at the end of Early Years on the EYFSP.**

Teacher ratings of phonics progress at the same point is a less good predictor and contributes only an additional 1% to the estimates if combined with EYFSP scores. The CCL total score predicts reading and writing better than mathematics attainments. Adding ratings of *Problem solving, Reasoning and Numeracy* (PRN) does not greatly improve the prediction of KS1 mathematics.

6.3 Summary

About 50% of the differences between children in statutory assessments at the end of Key Stage 1 (age 7 approximately) can be accounted for by teachers' ratings of their

Communication, Language and Literacy at the end of Early Years (around age 5) on the EYFSP.

After this, phonics progress during the first three terms of formal reading instruction (Phonics-R) is also a strong predictor of attainments two year later.

The *Problem solving, Reasoning and Numeracy* scale did not provide a more specific predictor of mathematics attainment than the *Communication, Language and Literacy* scale. Refinement of the items in these scales may be required to improve the predictive power of the scale.

7. CAN TEACHER-BASED ASSESSMENT AT THE END OF THE EARLY YEARS FOUNDATION STAGE PREDICT FUTURE PROGRESS IN LANGUAGE, LITERACY AND NUMERACY, AS MEASURED BY OBJECTIVE TESTS IN Y3?

7.1 Data sources and Methods

A sample of children from Cohort 2 was assessed in year 3 on a battery of measures to assess language, literacy and numeracy skills. The sample was recruited from 10 schools which were selected randomly, and should be representative of schools in the authority.

All year 3 pupils whose parents gave consent completed group-administered tests of vocabulary, listening comprehension, spelling and arithmetic. The total sample size was 360 children. A subsample of 124 children was randomly selected to complete two individually administered reading tests (SWRT and YARC Passage Reading).

The tests given were as follows:

To assess **Receptive Vocabulary**, 33 test items and 3 practice items were selected from the British Picture Vocabulary Scale 3 (2011) to include a range of difficulties that would be suitable for the full range of abilities in year 3 pupils (i.e., to eliminate the possibility of floor or ceiling effects). The test items were presented to the class using a projector which displayed four numbered pictures¹⁴. For each item, the researcher said a word and the children were asked to select the picture that matched the word. Each child completed an individual worksheet by circling the correct number that corresponded to the picture on the screen.

To assess **Listening comprehension**, two passages from a pilot version of the *York Assessment of Listening Comprehension* were administered. The children heard two short stories presented from a CD through speakers at the front of the classroom; at the end of each story, the children heard a series of comprehension questions. The children wrote the answers to the questions in individual response booklets. Any words that were illegible or ambiguous were checked with the child.

¹⁴ With the permission of GL Publishers to adapt the test

To assess **Spelling**, children completed the *British Ability Scales: Spelling Scale* (Test D, full range, short-form; Elliot, 1992) as a group test. Standard test norms were used to calculate T-scores and spelling ages:

To assess **Arithmetic**, two 'one minute' arithmetic tests were administered, one tapping addition the other subtraction. The children completed individual answer sheets on which they completed as many 'sums' as possible. A composite arithmetic score was derived by summing the scores from these two tests.

The individual assessments of **Reading** carried out with 124 children from the sample comprised a *Single Word Reading Test* (SWRT, included in YARC, Snowling et al., 2009) and to assess prose reading, the *York Assessment of Reading and Comprehension* (YARC; Snowling et al., 2009). The YARC was used to derive measures of reading accuracy, reading rate and reading comprehension.

In addition to using individual measures in the analyses, we also formed a 'Literacy year 3' factor score from scores on all of the reading and spelling measures¹⁵. Although data from fewer children were sampled, this score provided the most reliable estimate of literacy skills in year 3.

7.2 What we found

As background to the analyses, we first examined the concurrent relationships between measures of language and measures of literacy and numeracy. At the time of testing in year 3, there were low correlations between receptive vocabulary and reading and spelling accuracy (.35-.45) and, as would be expected, a stronger correlation with reading comprehension (.54). A similar pattern was observed for the correlations with listening comprehension (.42-.49).

The key question was how well performance in these skill areas is predicted by EYFSP scores recorded three years later. We focused on the total score and the score for *Communication, Language and Literacy* (CLL). The correlations are shown in Table 6, along with those with children's Phonics attainments also measured at the end of reception year.

¹⁵ The loadings of the tests on this factor ranged from .94 for reading rate and single word reading to .69 for reading comprehension

Table 6 Correlation between children’s ratings on the EYFSP and in Phonic Phases at the end of reception and scores on language and attainment tests in year 3.

| Year 3 Measures | EYFSP total | CLL-total | Phonics-R |
|--------------------|-------------|-----------|-----------|
| Vocabulary | .49 | .51 | .44 |
| Listening comp | .45 | .48 | .44 |
| Spelling | .50 | .57 | .53 |
| SWRT | .43 | .50 | .50 |
| YARC accuracy | .45 | .50 | .54 |
| YARC rate | .46 | .52 | .53 |
| YARC comprehension | .48 | .51 | .49 |
| Arithmetic | .43 | .47 | .44 |

As in previous analyses, it can be seen that the score for *Communication, Language and Literacy* was a slightly better predictor of later attainments than the EYFSP total score. It was also a marginally better predictor than the rating of children’s progression in phonics at the same stage. The score for *Communication, Language and Literacy* showed moderate correlations with measures of reading, spelling and reading comprehension, and somewhat weaker correlations with arithmetic, vocabulary and listening comprehension in year 3. The score for the *Problem Solving, Reasoning and Numeracy* did somewhat less well as a predictor of Arithmetic in year 2 (.42) than CLL total (.47).

Analyses were repeated using data from the composite literacy measure ‘Literacy year 3’. The correlation between this Literacy score and children’s CLL-total was .59 confirming the importance of the ratings for *Communication, Language and Literacy* to later literacy attainments.

The data set also allowed an assessment of how well children’s phonics attainments at the end of year 1 (Phonics-Y1) and their KS1 attainments in reading, writing and mathematics predicted attainments in year 3 on objective tests (see Table 7). It can be seen that Phonics progress as the end of year 1 and attainments at the end of KS1 were moderate predictors of language and arithmetic and strong predictors of literacy outcomes.

Table 7. Predictors of language, literacy and numeracy outcomes in year 3.

| | Vocabulary | Listening Comp | Literacy | Arithmetic |
|----------------|------------|----------------|----------|------------|
| Phonics-Y1 | .46 | .45 | .66 | .40 |
| KS1reading | .46 | .55 | .80 | .47 |
| KS1writing | .44 | .54 | .72 | .53 |
| KS1mathematics | .47 | .49 | .62 | .61 |

A final question concerned how much variability in children's literacy outcomes in year 3 can be predicted from combinations of predictor variables.

Ratings of *Communication, Language and Literacy* predicted 34% of the variance in children's year 3 attainments; the prediction was much better if phonics progress at the end of year 1 was also included in the model which then accounted for 47% of the variance¹⁶. After this there was no significant contribution of child demographic variables to their educational outcomes.

7.2 Summary

Teacher's ratings of children's *Communication, Language and Literacy* on the EYFSP did as well as (or in some cases better than) concurrent measures of vocabulary and listening comprehension in predicting year 3 attainments in reading, spelling, reading comprehension and arithmetic. The accuracy of prediction was better for literacy than for arithmetic or receptive language skills perhaps reflecting the greater ease with which literacy can be measured.

As to be expected, teacher assessments made closer in time were more highly predictive of children's attainments, and the prediction of literacy outcome in year 3 from KS1 Reading was very strong. Nonetheless, a combination of children's scores against the *Communication, Language and Literacy* goals and *Phonics Progress in year 1* accounted for almost 50% of the variability in literacy attainments in year 3. Once these variables were taken into account, the contribution of neither school nor social deprivation (as measured by eligibility for free school meals) was significant.

¹⁶ When included in the model, school accounted for a non-significant 1% of the variance.

Given that reading for understanding requires more than just phonics, a combination of the items in the EYFSP and progress in Phonics could provide a robust screen for future reading problems.

8. IN WHAT WAYS DO CHILDREN MAKING SLOW PROGRESS THROUGH EARLY YEARS AND KS1 DIFFER FROM TYPICALLY ACHIEVING CHILDREN ON THE EARLY YEARS FOUNDATION STAGE PROFILE?

8.1 Data sources and Methods

In order to answer this question we examined the data in two ways.

First, we investigated the predictors of individual differences in scores on the EYFSP and in a subsidiary analysis, the predictors of the total score for *Communication, Language and Literacy* (CLL).

Second, we examined what differentiates children who make slow progress at key assessment points from typically developing children. Here we defined 'slow progress' as either working towards Level 1 (W) or at Level 1 in the Key Stage 1 Reading assessment.

As predictors we examined the following child factors: Gender, Mother Tongue (EAL or not), Eligibility for free school meals (FSM) and Deprivation Rank obtained from postcodes. It should be noted that data relating to eligibility for free school meals were 'frozen' at the end of year 1 (since there were ongoing changes in this record in schools).

For the analyses involving gender, mother tongue and FSM, we used data from Cohorts 1 and 2 together (N = 3153); postcode index of deprivation (IDACI)¹⁷ was only available for Cohort 1 (N = 2033).

8.2 What we found

8.2.1 Predictors of EYFSP

Each of the demographic variables accounted for a small but significant proportion of the variance in EYFSP total score and for rather more variance in the scale assessing *Communication, Language and Literacy* (CLL).

Given the large sample size, the effect of all variables was statistically significant.

Together, the demographic variables accounted for 4.7% of the variance in EYFSP and 8.5% of the differences between children in their CLL-total scores. Over and

¹⁷ Income Deprivation Affecting Children Index

above this, school accounted for 23% variability in EYFSP total scores and 16% variability in CLL-total.

Arguably, the amount of variance attributable to social and linguistics factors is rather low in this sample because the population of York is relatively homogenous with fewer children with EAL and fewer eligible for Free School Meals, relative to the national average.

Table 8 summarizes the amount of variance accounted for by each variable on its own and when entered together in the model.

Table 8. Predictors of children’s scores on the EYFSP and on the CLL scale within it

| Predictor | % variance in EYFSP explained | % variance in CLL-total explained |
|--|-------------------------------|-----------------------------------|
| Gender* | 1 | 2.5 |
| Mother Tongue* | .2 | .5 |
| FSM* | 2.8 | 4.1 |
| Deprivation* | 1.8 | 3.3 |
| Gender*, Mother Tongue*, FSM*, Deprivation* | 4.7 | 8.5 |

* $p < .001$

The relatively small amount of variance explained by demographic variables in this sample is surprising given nationally available statistics. The low proportion of children with EAL in this LA should be noted when interpreting the findings.

The next question concerned whether gender, mother tongue, FSM and deprivation continued to predict attainments at the end of KS1 once development in ‘*Communication, language and literacy*’ at the end of the EYFS was taken into account. In other words does children’s performance at the end of Early Years capture the effects of their social circumstances or do these factors have a continuing impact on their later development as assessed at the end of Key Stage 1?

In order to investigate this question, we first controlled for CLL-total and then examined the amount of variability in children’s scores in KS1 attainments which was accounted for by demographic variables. The hypothesis tested whether the effect of these factors is mediated by language and literacy development at the end of Early Years; if it is then we

would expect to find no additional contribution to KS1 outcomes from the demographic variables after development as assessed by the EYFSP is controlled.

A summary of the analyses we conducted is provided in Table 9 where it can be seen that **the effects of demographic factors on Key Stage 1 attainments are extremely small (mostly less than 1% of variance) once individual differences between children at the end of Early Years are taken into account.** It will be recalled that the sample size is very large and therefore statistical significance is not of high importance. Moreover, Mother Tongue does not make a unique contribution when all of the variables are in the model, suggesting that that the continuing effects are associated with gender and/or social deprivation in the current sample.

Table 9. Predictors of KS1 Attainments when CLL–total in EYFSP is controlled

| Predictors | KS1 Reading % variance accounted for after controlling for CLL total | KS1 Writing % variance accounted for after controlling for CLL total | KS1 Mathematics % variance accounted for after controlling for CLL total |
|--|--|--|---|
| Gender* | . 1 | . 7 | 1.6 |
| Mother Tongue* | . 1 | . 2 | . 9 |
| FSM* | . 6 | . 7 | . 3 |
| Deprivation* | . 8 | 1 | . 8 |
| Gender*, Mother Tongue, FSM*, Deprivation* | 1.6 | 2.7 | 3.2 |

* $p < .001$

8.2.2 KS1 Attainment in Reading

We next turned to examine differences between typically developing and low attaining children at the end of Key Stage 1. Table 10 shows the numbers of children within Cohorts 1 and 2 performing at each level in reading in KS1 assessments.

Table 10. Numbers of children performing at each level in KS1 Reading.

| Level | N | % of sample |
|-------|-----|-------------|
| W | 57 | 1.7 |
| 1 | 303 | 9.1 |
| 2c | 343 | 10.2 |
| 2b | 769 | 23.0 |
| 2a | 937 | 28.0 |
| 3 | 938 | 28.0 |

According to these data, 360 children had attainments below the national expectation (10.8% of the sample), 2049 children whose performance was at the expected level (61.2% of the sample); the remainder were in advance and are not discussed further here.

To investigate what differentiated the children who were progressing slowly from the typically developing children, these two subgroups were compared. The comparisons were made retrospectively examining performance on the EYFSP, in phonics progress and on demographic variables. Children performing at above Level 2 (at Level 3) were excluded from these analyses.

Figure 4 below shows the data from the children who were progressing slowly on the left of the graph and from the typically developing children on the right. Data are shown for the mean EYFSP total scores and the *Communication, Language and Literacy* total.

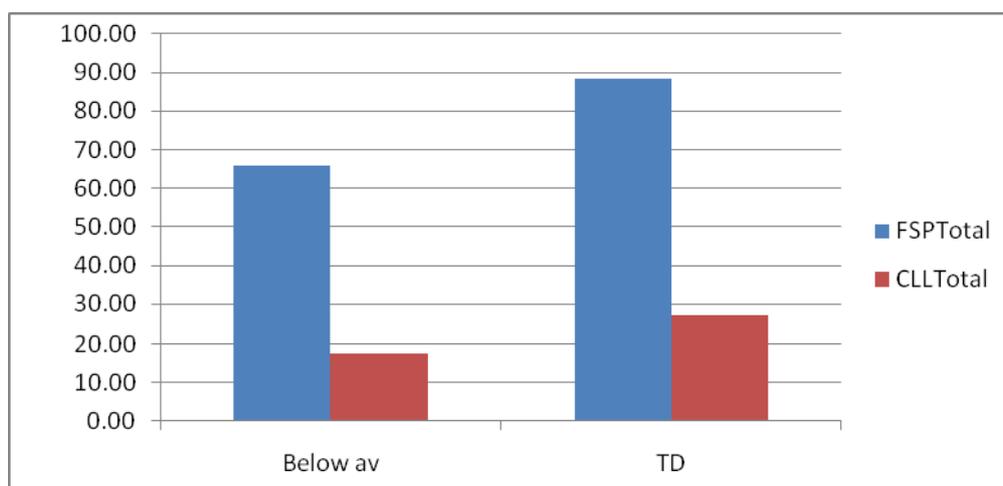


Figure 4: EYFSP scores for children who perform below national expectations at KS1 and typically attaining (TD) children

The data show that **children who attain below the nationally expected level in reading at the end of KS1 are typically characterized by delayed development of *Communication, Language and Literacy*** as indicated by their standing against the EYFSP. Moreover, their progress in phonics was poor at the end of Reception class and at the end of year 1.

Turning to demographic data, **more of the low attainers were boys, more were eligible for free school meals and more had English as an additional language** as compared to those who were typically developing (see Figure 5 below). Some 64.5% of the low attainers were known to their schools as having SEN and 7% had statements. These data should be interpreted cautiously because SEN data were not collected concurrently but a year earlier (in year 1) at a time when many schools may not yet have recorded children about whom they had concerns. Furthermore, some of these children may have been receiving support to address their additional needs.

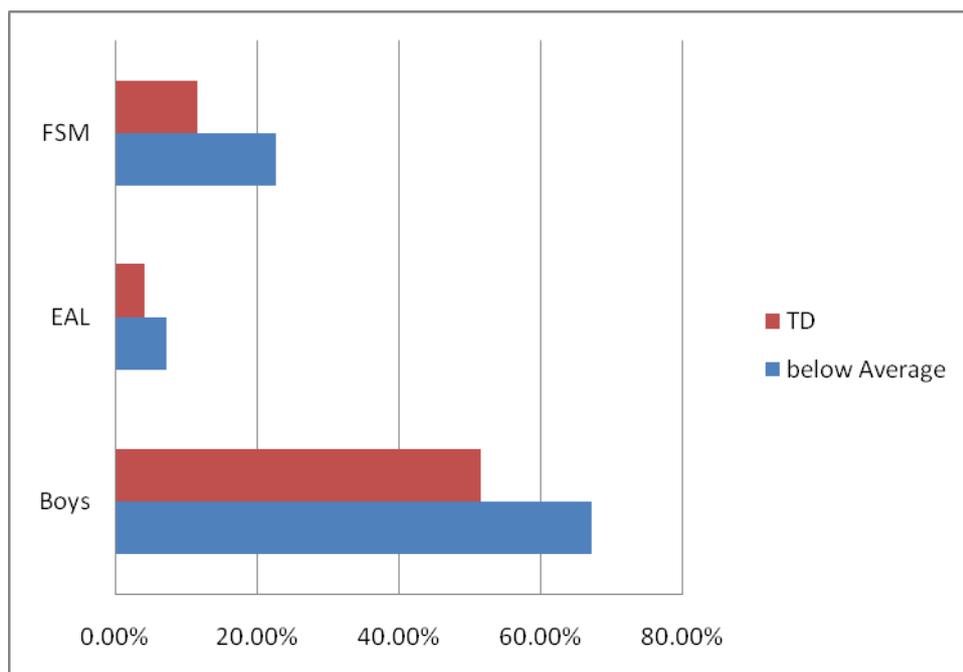


Figure 5: Proportion within each group of typically developing (TD) and of low attainers who were eligible for free school meals, who had EAL and who were boys.

8.3 Summary

Gender, Mother tongue, Deprivation and Eligibility for free school meals are all factors that account for small amounts of the variation between children both in their development as assessed by the EYFSP and in Key Stage 1 assessments. Together, the demographic

variables accounted for 4.7% of the variance in EYFSP and 8.5% of the variance in CLL-total scores and each made an independent contribution. In addition, School accounted for 23% variance in EYFSP total scores and 16% variance in CLL-total.

Many children who performed below national expectations in KS1 assessments could already be identified as low attaining one year after school entry. More of the low attainers were boys, more were eligible for free school meals and more had English as an additional language as compared to those who were typically developing. Some 64.5% of the low attainers were known to their schools as having SEN and 7% had statements. The remaining 35.5% were not on the SEN register but may nonetheless have been receiving provision. It should be noted that these figures may under-estimate need (given data were collected in year 1).

9. WHAT PROPORTION OF CHILDREN FROM DISADVANTAGED BACKGROUNDS SCORE BELOW EXPECTED LEVELS ON THE EARLY YEARS FOUNDATION STAGE PROFILE AND SHOW SLOW PROGRESS THROUGH THE PHONIC PHASES?

9.1. Data sources and Methods

'Disadvantaged background' was defined as falling into the bottom 10% of homes in terms of the multiple index of deprivation (deprivation ranks 1 and 2).

DFE guidance in the EYFSP suggests that children who are developing normally should score between 4 and 8 on a particular EYFSP scale. The areas of learning for which scores were available in this data set were: *Personal, Social and Emotional Development* (3 scales), *Communication, Language and Literacy* (4 scales) and *Problem solving, reasoning and numeracy* (3 scales). Cut points for 'below expected level' were taken as 12, 16 and 12 representing attainment 'below the early learning goals'.

9.2 What we found

There was a strong association between deprivation and attainments at the end of Key Stage 1. This is shown in Figure 6 for KS1 reading attainments. As the figure shows, the proportion of children scoring above the national expectation (at level 3) increases from 42% in the most deprived homes (deprivation ranks 1 and 2) to 70% in the least deprived homes. There is a corresponding decrease in the proportions of children performing below the nationally expected standards from 17% for children from the most deprived to 4% from the least deprived backgrounds.

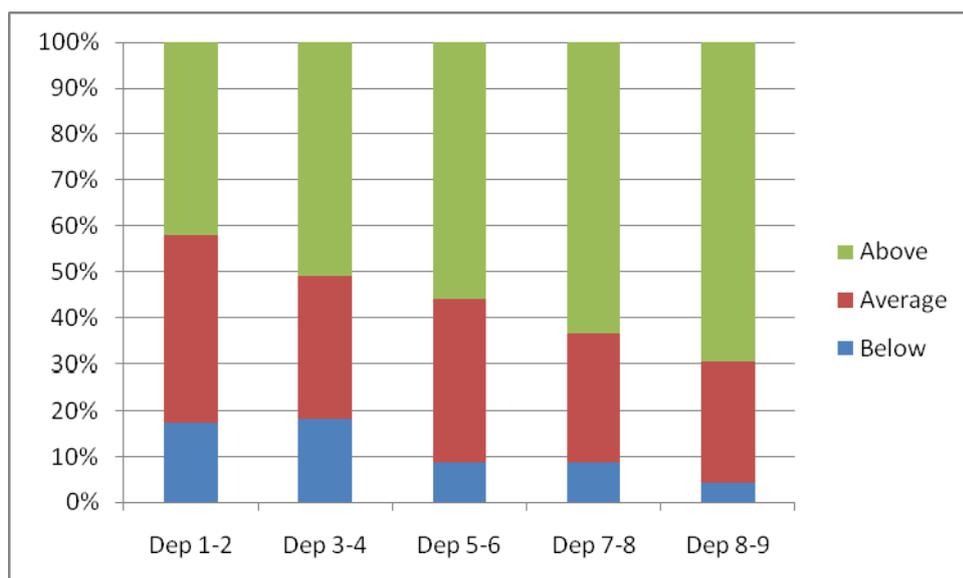


Figure 6. National curriculum levels at KS1 according to social deprivation.

Further detail can be seen in the upper rows of Table 11 which show the proportions of children within each deprivation band who score below Level 2 in KS1 assessments. Seventeen percent of children from the most disadvantaged backgrounds are failing to show expected progress in reading, 25% in writing and 12% in mathematics.

Table 11. Percentage of children within each social deprivation band who are working below national expectations at end of KS1 and who show slow progress in EYFSP scales.

| Deprivation code | 1 | 2 | 3 | 4 | 5 |
|--------------------|----|----|----|----|---|
| KS1 Reading <2 | 17 | 18 | 9 | 9 | 4 |
| KS1 Writing <2 | 25 | 20 | 12 | 11 | 7 |
| KS1 Mathematics <2 | 12 | 12 | 6 | 6 | 4 |
| CLL-total<16 | 8 | 11 | 5 | 5 | 3 |
| PSE-total<12 | 2 | 5 | 2 | 1 | 2 |
| PRN-total<12 | 7 | 8 | 3 | 3 | 2 |

A similar analysis can be done using data from the EYFSP. The lower rows of Table 11 show the proportion of children within each band of social deprivation who are considered to be developing slowly according to scores on the *Communication, Language and Literacy* (CLL), *Personal, Social and Emotional Development* (PSE) and *Problem solving, Reasoning and Numeracy* (PRN) scales respectively. In the bottom band (highest level of social

deprivation), 8% of children are considered by their teachers to be developing slowly in Communication, Language and Literacy, 2% in Personal, Social and Emotional Development and 7% in Problem Solving, Reasoning and Numeracy.

9.3 Summary

There was a clear effect of deprivation on development as measured by the EYFSP, and an association between deprivation and the frequency with which a child was identified as falling below national expectations both at the end of Early Years (EYFSP) and at the end of Key Stage 1. This finding is in line with published DfE data¹⁸

Using a cut-off on the EYFSP scales which classifies a child as slowly developing if they score below 4 on all scales, yielded the finding that **8% of children who are most disadvantaged in terms of socio-economic circumstances are considered to be developing slowly in *Communication, Language and Literacy*, 2% in *Personal, Social and Emotional Development* and 7% in *Problem Solving, Reasoning and Numeracy*.**

While it could be argued that this cut-off underestimates the true prevalence of slow development, (because children who dropped below the score of 4 on only one scale would not be regarded as of concern), it highlights the impact of social disadvantage on development.

Environmental disadvantage also had an impact at the end of Key Stage 1 when 17% of children from the most disadvantaged backgrounds are failing to show expected progress in reading, 25% in writing and 12% in mathematics.

¹⁸ DfE, Foundation Stage Profile Attainments by Pupil Characteristics in England 2009/10, published December 2010.

10. CONCLUSIONS

Data from one local authority from whole cohorts of children were used to investigate whether teacher assessment at 5 years, based on ongoing observation, provides a valid measure of children's current development and their educational attainments in future years. The focus of the study was on language, literacy and numeracy outcomes, representing three achievement domains in which children with spoken language difficulties are at risk of failure. Thus, the study assessed the utility of teacher-based assessments for identifying children at risk of low educational attainment.

The findings show clearly that teachers' assessments of children's development at the end of Early Years are reliable and they provide a valid measure of children's likely success. First, there was a strong predictive relationship between scores on the Early Years Foundation Stage Profile (EYFSP) and children's attainments at the end of Key Stage 1 (in reading, writing and mathematics). Second, these ratings correlated well with assessments of receptive language (using the web-based tool *Language Link*) administered at school entry to children in 6 schools representative of the LA). Third, teachers' ratings of children's *Communication, Language and Literacy* on the EYFSP did at least as well as concurrent measures of vocabulary and listening comprehension in predicting year 3 attainments in reading, spelling and arithmetic as well as reading comprehension. The accuracy of prediction was better for literacy than for arithmetic or receptive language skills, reflecting the greater ease and uniformity with which literacy skills can be measured.

It can be concluded that the EYFSP (particularly its *Communication, Language and Literacy* scale) provides a valid measure for predicting pupil's progress and therefore could be considered a useful tool to identify children at risk of later educational difficulties, particularly in literacy.

Analysis of the construct validity of the EYFSP suggested that, in line with the proposals of the Tickell Review of the Framework for the Early Years Foundation Stage¹⁹, it could be simplified to produce a shorter checklist since there was a high degree of inter-correlation between items and the constructs they purported to measure. The longitudinal findings presented here indicate that the most useful scale was *Communication, Language & Literacy* (CLL). Further, our analysis of the psychometric properties of the scale suggests

¹⁹ <http://www.education.gov.uk/tickellreview>

there is merit in dividing this into separate Language and Literacy Sub-scales, as current proposals for the revision of the EYFSP also suggest.

A number of child-factors were considered as predictors of scores on the EYFSP as well as of attainments at the end of year 2 and in year 3. Gender, Mother tongue, Deprivation and Eligibility for free school meals all accounted for variations in children's educational outcomes both on the EYFSP and at the end of KS1 though the amount of variance accounted for was small in this local authority. It should be noted that the percentage of children with EAL was low for the LA in this period (about 5.3%), as compared with the national average of 16% of children with EAL in primary schools). Similarly, the percentage of children eligible for Free School Meals was about 10% which is somewhat lower than the national average (17%).

Together, the demographic variables accounted for 4.7% of the differences between children in EYFSP scores (8.5% in CLL scores). In addition, school accounted for 23% of the variability in EYFSP total scores (16% in CLL-total). A much larger amount of the differences between children could be explained by the score they obtained in the *Communication, Language and Literacy* area of learning in the EYFSP and children's progress in phonics at the end of year 1; together these accounted for just short of 50% of the differences between children in literacy attainments in year 3 at which time, the additional contribution of demographic factors was not significant.

Children who performed below national expectations in KS1 assessments were typically already falling behind one year after school entry. More of the low attainers were boys, more were eligible for free school meals and more had English as an additional language as compared to those who were typically developing. Some 64.5% of the low attainers were known to their schools as having SEN and 7% had statements. While this figure may be an under-estimate (given it was collected in year 1), it suggests there may be a growing gap in achievement between many more children and their peers than such figures reveal.

11. IMPLICATIONS FOR POLICY AND PRACTICE

The present study shows that teachers, when appropriately trained, can make valid judgments of children's development in language and literacy when guided by a well validated, reliable measure, such as the EYFSP. In addition, teachers can accurately monitor their pupils' progress in key reading skills without the need for formal tests (see also Snowling et al., 2011). Moreover, children deemed by their teachers to be developing slowly after one year in school typically perform below national expectations in KS1 assessments. Boys, children with EAL and those who are eligible for free school meals are most at risk.

These findings make clear that a revised form of the EYFSP could be used to support monitoring and early identification of difficulties with language and communication.

Notwithstanding this, it is important to highlight that the present findings suggest that a tool based on the EYFSP can be expected to account for around 50% of the differences between children. Hence, if used as a 'one off' screening instrument a substantial number of children can be expected to 'fall through the net' and additional checks on progress must therefore be made at regular intervals. It follows that early identification should be built into a system of formative assessment that builds on and extends teacher's understanding of language and communication

Together the findings underline Government priorities viewing Early Years as providing a critical foundation for learning. They also provide evidence relevant to the Government's consultation on proposals for the revision of the Early Years Foundation Stage Framework in the Tickell Review²⁰. Thus, early identification of children's additional needs is important; key elements of development can be assessed at age five; assessments at the end of Early Years can be used to identify children who are at risk of educational difficulties; and the best predictors of educational success are measures of language, communication and literacy. This proposal does not imply that there is a need for large scale record keeping. Rather, the judicious choice of the key behaviours to assess, guided by an evidence-base such as the one provided here, could streamline the process and reduce work load. Moreover this does not preclude the inclusion of items that monitor behaviours which do not predict attainment but may be linked with well-being (such as aspects of physical development).

²⁰ <http://www.education.gov.uk/tickellreview>. The Government's consultation on the Tickell Review's proposals ended 30 September 2011.

School systems need to be aware that social disadvantage has its impact very early in schooling. Children from the most disadvantaged backgrounds may need additional support in Early Years to ensure a secure foundation for language and literacy development. A careful system of formative assessment and monitoring over time supported by a revised EYFSP, should be used to identify children who may be at risk.

The vulnerability of boys to poor achievement is apparent early and speculatively may be linked to neurodevelopmental immaturities rather than to social or motivational issues which set in later.

Children at risk of underachievement should have their additional needs recorded in a timely fashion, and early and effective intervention put in place, rather than following a period of waiting for formal identification or 'diagnosis'. However, even for children who are not on the SEN register, it is vital for early and effective interventions to be put in place, as recommended by the Tickell Review.

12. EXECUTIVE SUMMARY FOR A GENERAL AUDIENCE

- Teachers can make valid judgments of children's development in language and literacy and can accurately monitor their pupils' progress in key reading skills.
- Children deemed by their teachers to be developing slowly after one year in school typically perform below national expectations in KS1 assessments. Teachers are therefore able, with appropriate training, to identify children at risk of educational difficulties. However, this should be viewed as part of an ongoing system of monitoring through the Early Years, KS1 and beyond rather than a 'one off' screening measure.
- Groups most at risk of difficulties are boys, children with EAL and those who are eligible for free school meals. Demographic variables (Gender, Mother Tongue, Eligibility for Free School Meals and deprivation) accounted for differences between children in *Communication, Language and Literacy* as measured by the EYFSP. Each has an independent effect.
- Early identification of children's additional needs is important and key elements of development can be assessed at age five. Children who attained below the nationally expected level in reading at the end of KS1 were already developing slowly at the end of Early Years and their progress in phonics was poor both at the end of reception class and at the end of year 1. Slow developers were typically characterized by delayed development of *Communication, Language and Literacy*.
- Of the EYFSP scales, the best predictors of educational success are measures of language, communication and literacy. Between 45 and 51% of the differences between children in Key Stage 1 attainments can be accounted for by teachers' ratings of their *Communication, Language and Literacy* at the end of Early Years on the EYFSP.
- Of the EYFSP areas of learning, Communication, Language and Literacy is the best predictor of later attainment at KS1 and in year 3 not only in Literacy but also in mathematics.
- Ratings of progress in phonics (particularly when assessed in year 1) were also strong predictors of reading and writing attainments; correlations with mathematics were weaker.
- The EYFSP contained both overlapping items, overlapping scales and some items that all children in these mainstream schools achieve (and hence do not discriminate well). The current findings are in line with the proposal to reduce the number of items from 69 to 17, and to split the Communication, Language and Literacy scale into 'Language and Communication' and 'Literacy'.

- In the current sample, more of the low attainers were boys, more were eligible for free school meals and more had English as an additional language as compared to those who were typically developing. Some 64.5% of the low attainers were known to their schools as having SEN and 7% had statements.

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14. TECHNICAL APPENDICES

Appendix 1.

Early Years Foundation Stage Profile (2008-11)

Assessment Scales

<http://nationalstrategies.standards.dcsf.gov.uk/node/84551>

Personal, social and emotional development

Dispositions and attitudes

1. Shows an interest in classroom activities through observation or participation.
2. Dresses, undresses and manages own personal hygiene with adult support.
3. Displays high levels of involvement in self-chosen activities.
4. Dresses and undresses independently and manages own personal hygiene.
5. Selects and uses activities and resources independently.
6. Continues to be interested, motivated and excited to learn.
7. Is confident to try new activities, initiate ideas and speak in a familiar group.
8. Maintains attention and concentrates.
9. Sustains involvement and perseveres, particularly when trying to solve a problem or reach a satisfactory conclusion.

Social development

1. Plays alongside others.
2. Builds relationships through gesture and talk.
3. Takes turns and shares with adult support.
4. Works as part of a group or class, taking turns and sharing fairly.
5. Forms good relationships with adults and peers.
6. Understands that there need to be agreed values and codes of behaviour for groups of people, including adults and children, to work together harmoniously.
7. Understands that people have different needs, views, cultures and beliefs that need to be treated with respect.
8. Understands that s/he can expect others to treat their needs, views, cultures and beliefs with respect.
9. Takes into account the ideas of others.

Emotional development

1. Separates from main carer with support.
2. Communicates freely about home and community.
3. Expresses needs and feelings in appropriate ways.
4. Responds to significant experiences, showing a range of feelings when appropriate.

5. Has a developing awareness of own needs, views and feelings and is sensitive to the needs, views and feelings of others.
6. Has a developing respect for own culture and beliefs and those of other people.
7. Considers the consequences of words and actions for self and others.
8. Understands what is right, what is wrong, and why.
9. Displays a strong, positive sense of self-identity and is able to express a range of emotions fluently and appropriately.

Communication, language and literacy

Language for communication and thinking

1. Listens and responds
2. Initiates communication with others, displaying greater confidence in more informal contexts.
3. Talks activities through, reflecting on and modifying actions.
4. Listens with enjoyment to stories, songs, rhymes and poems, sustains attentive listening and responds with relevant comments, questions or actions.
5. Uses language to imagine and recreate roles and experiences.
6. Interacts with others in a variety of contexts, negotiating plans and activities and taking turns in conversation.
7. Uses talk to organise, sequence and clarify thinking, ideas, feelings and events, exploring the meanings and sounds of new words.
8. Speaks clearly with confidence and control, showing awareness of the listener.
9. Talks and listens confidently and with control, consistently showing awareness of the listener by including relevant detail Uses language to work out and clarify ideas, showing control of a range of appropriate vocabulary.

Linking sounds and letters

1. Joins in with rhyming and rhythmic activities.
2. Shows an awareness of rhyme and alliteration.
3. Links some sounds to letters.
4. Links sounds to letters, naming and sounding letters of the alphabet.
5. Hears and says sounds in words.
6. Blends sounds in words.
7. Uses phonic knowledge to read simple regular words.
8. Attempts to read more complex words, using phonic knowledge.
9. Uses knowledge of letters, sounds and words when reading and writing independently.

Reading

1. Is developing an interest in books.

2. Knows that print conveys meaning.
3. Recognises a few familiar words.
4. Knows that, in English, print is read from left to right and top to bottom.
5. Shows an understanding of the elements of stories, such as main character, sequence of events and openings.
6. Reads a range of familiar and common words and simple sentences independently.
7. Retells narratives in the correct sequence, drawing on language patterns of stories.
8. Shows an understanding of how information can be found in non-fiction texts to answer questions about where, who, why and how.
9. Reads books of own choice with some fluency and accuracy.

Writing

1. Experiments with mark making, sometimes ascribing meaning to the marks.
2. Uses some clearly identifiable letters to communicate meaning.
3. Represents some sounds correctly in writing ways.
4. Writes own name and other words from memory.
5. Holds a pencil and uses it effectively to form recognisable letters, most of which are correctly formed.
6. Attempts writing for a variety of purposes, using features of different forms.
7. Uses phonic knowledge to write simple regular words and make phonetically plausible attempts at more complex words.
8. Begins to form captions and simple sentences, sometimes using punctuation.
9. Communicates meaning through phrases and simple sentences with some consistency in punctuating sentences.

Problem solving, reasoning and numeracy

Numbers as labels and for counting

1. Says some number names in familiar contexts, such as nursery rhymes.
2. Counts reliably up to three everyday objects.
3. Counts reliably up to six everyday objects.
4. Says number names in order.
5. Recognises numerals 1 to 9.
6. Counts reliably up to 10 everyday objects.
7. Orders numbers up to 10.
8. Uses developing mathematical ideas and methods to solve practical problems.
9. Recognises, counts, orders, writes and uses numbers up to 20.

Calculating

1. Responds to the vocabulary involved in addition and subtraction in rhymes and games.

2. Recognises differences in quantity when comparing sets of objects.
3. Finds one more or one less from a group of up to five objects.
4. Relates addition by combining two groups.
5. Relates subtraction to taking away.
6. In practical activities and discussion, begins to use the vocabulary involved in adding and subtracting.
7. Finds one more or one less than a number from 1 to 10.
8. Uses developing mathematical ideas and methods to solve practical problems.
9. Uses a range of strategies for addition and subtraction, including some mental recall of number bonds.

Shape, space and measures

1. Experiments with a range of objects and materials showing some mathematical awareness.
2. Sorts or matches objects and talks about sorting.
3. Describes shapes in simple models, pictures and patterns.
4. Talks about, recognises and recreates simple patterns.
5. Uses everyday words to describe position.
6. Uses language such as 'circle' or 'bigger' to describe the shape and size of solids and flat shapes.
7. Uses language such as 'greater', 'smaller', 'heavier' or 'lighter' to compare quantities.
8. Uses developing mathematical ideas and methods to solve practical problems.
9. Uses mathematical language to describe solid (3D) objects and flat (2D) shapes.

Knowledge and understanding of the world

1. Shows curiosity and interest by exploring surroundings.
2. Observes, selects and manipulates objects and materials. Identifies simple features and significant personal events.
3. Identifies obvious similarities and differences when exploring and observing. Constructs in a purposeful way, using simple tools and techniques.
4. Investigates places, objects, materials and living things by using all the senses as appropriate. Identifies some features and talks about the features w/he likes and dislikes.
5. Asks questions about why things happen and how things work, looks closely at similarities, differences, patterns and change.
6. Finds out about past and present events in own life, and in those of family members and other people s/he knows. Begins to know about own culture and beliefs and those of other people.

7. Finds out about and identifies the uses of everyday technology and uses information and communication technology and programmable toys to support her/his learning.
8. Builds and constructs with a wide range of objects, selecting appropriate resources, tools and techniques, adapting her/his work where necessary.
9. Communicates simple planning for investigations and constructions and makes simple records and evaluations of her/his work. Identifies and names key features and properties, sometimes linking different experiences, observations and events Begins to explore what it means to belong to a variety of groups and communities.

Physical development

1. Moves spontaneously, showing some control and coordination.
2. Moves with confidence in a variety of ways, showing some awareness of space.
3. Usually shows appropriate control in large- and small-scale movements.
4. Moves with confidence, imagination and in safety Travels around, under, over and through balancing and climbing equipment Shows awareness of space, of self and others.
5. Demonstrates fine motor control and coordination.
6. Uses small and large equipment, showing a range of basic skills.
7. Handles tools, objects, construction and malleable materials safely and with basic control.
8. Recognises the importance of keeping healthy and those things that contribute to this. Recognises the changes that happen to her/his body when s/he is active.
9. Repeats, links and adapts simple movements, sometimes commenting on her/his work. Demonstrates coordination and control in large and small movements, and in using a range of tools and equipment.

Creative development

1. Explores different media and responds to a variety of sensory experiences. Engages in representational play.
2. Creates simple representations of events, people and objects and engages in music-making.
3. Tries to capture experiences, using a variety of different media.
4. Sings simple songs from memory.
5. Explores colour, texture, shape, form and space in two or three dimensions.
6. Recognises and explores how sounds can be changed Recognises repeated sounds and sound patterns and matches movements to music.
7. Uses imagination in art and design, music, dance, imaginative and role play and stories. Responds in a variety of ways to what s/he sees, hears, smells, touches and feels.
8. Expresses and communicates ideas, thoughts and feelings using a range of materials, suitable tools, imaginative and role play, movement, designing and making, and a variety of

songs and musical instruments.

9. Expresses feelings and preferences in response to artwork, drama and music and makes some comparisons and links between different pieces. Responds to own work and that of others when exploring and communicating ideas, feelings and preferences through art, music, dance, role play and imaginative play.

Appendix 2

| Items from EYFSP Scales which loaded on the validated constructs. | | | | | |
|---|---|--|--|---|---|
| Social | Language | Literacy | Mathematics | Physical | Creative |
| Dresses and undresses independently and manages own personal hygiene. | Listens with enjoyment to stories, songs, rhymes and poems, sustains attentive listening and responds with relevant comments, questions or actions. | Hears and says sounds in words. | Says number names in order. | Moves with confidence, imagination and in safety Travels around, under, over and through balancing and climbing equipment Shows awareness of space, of self and others. | Sings simple songs from memory. |
| Selects and uses activities and resources independently. | Uses language to imagine and recreate roles and experiences. | Blends sounds in words. | Recognises numerals 1 to 9. | Demonstrates fine motor control and coordination. | Explores colour, texture, shape, form and space in two or three dimensions. |
| Continues to be interested, motivated and excited to learn. | Interacts with others in a variety of contexts, negotiating plans and activities and taking turns in conversation. | Uses phonic knowledge to read simple regular words. | Counts reliably up to 10 everyday objects. | Uses small and large equipment, showing a range of basic skills. | Recognises and explores how sounds can be changed Recognises repeated sounds and sound patterns and matches movements to music. |
| Is confident to try new activities, initiate ideas and speak in a familiar group. | Uses talk to organise, sequence and clarify thinking, ideas, feelings and events, exploring the meanings and sounds of new words. | Knows that, in English, print is read from left to right and top to bottom | Orders numbers up to 10. | Handles tools, objects, construction and malleable materials safely and with basic control. | Uses imagination in art and design, music, dance, imaginative and role play and stories. Responds in a variety of ways to what s/he sees, hears, smells, touches and feels. |
| Maintains attention and concentrates. | Speaks clearly with confidence and | Reads a range of familiar and common words | Relates addition by combining two | Recognises the importance of keeping | Sings simple songs from memory. |

| | | | | | |
|--|---|---|--|---|--|
| | control, showing awareness of the listener. | and simple sentences independently. | groups. | healthy and those things that contribute to this. Recognises the changes that happen to her/his body when s/he is active. | |
| Works as part of a group or class, taking turns and sharing fairly. | Shows an understanding of the elements of stories, such as main character, sequence of events and openings. | Shows an understanding of how information can be found in non-fiction texts to answer questions about where, who, why and how | Relates subtraction to taking away. | Moves with confidence, imagination and in safety Travels around, under, over and through balancing and climbing equipment Shows awareness of space, of self and others. | |
| Forms good relationships with adults and peers. | Retells narratives in the correct sequence, drawing on language patterns of stories. | Writes own name and other words from memory. | In practical activities and discussion, begins to use the vocabulary involved in adding and subtracting. | | |
| Understands that there need to be agreed values and codes of behaviour for groups of people, including adults and children, to work together harmoniously. | | Attempts writing for a variety of purposes, using features of different forms. | Finds one more or one less than a number from 1 to 10 | | |
| Understands that people have different needs, views, cultures and beliefs that need to be treated with respect. | | Uses phonic knowledge to write simple regular words and make phonetically plausible attempts at more complex words. | Uses developing mathematical ideas and methods to solve practical problems | | |
| Understands that s/he can expect others | | Begins to form captions and simple | Talks about, recognises and recreates | | |

| | | | | | |
|--|--|---|--|--|--|
| to treat their needs, views, cultures and beliefs with respect. | | sentences, sometimes using punctuation. | simple patterns. | | |
| Responds to significant experiences, showing a range of feelings when appropriate. | | | Uses everyday words to describe position. | | |
| Has a developing awareness of own needs, views and feelings and is sensitive to the needs, views and feelings of others. | | | Uses language such as 'circle' or 'bigger' to describe the shape and size of solids and flat shapes. | | |
| Has a developing respect for own culture and beliefs and those of other people. | | | Uses language such as 'greater', 'smaller', 'heavier' or 'lighter' to compare quantities. | | |
| Considers the consequences of words and actions for self and others. | | | Uses developing mathematical ideas and methods to solve practical problems | | |
| Understands what is right, what is wrong, and why. | | | | | |

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