LENS Project: January 2018 Update Report

The LENS team would like to thank you once more for all your support. We are deeply indebted to the settings recruited to the project and very much appreciated your willingness to always go the extra mile to accommodate us. We have now completed two of the three scheduled data collections with the children. Of the original sample of eligible children who completed all number skills assessments in the spring term, 241 (88%) completed the full battery of language assessments in the summer term. All the children have been fantastic to work with and we are looking forward visiting them again in their Reception classes to see their progress. We are writing to you now to update you on two key aspects.

First, we would now like to communicate you some of our preliminary findings (see below), which include information we gained from the returned questionnaires and our spring term (phase 1) and summer term (phase 2) assessments and observations. We believe we can now provide you meaningful feedback on the relationships we identified between children's home learning environment and their numeracy and language skills.

We would also like to inform you that we have produced an update report for parents (see attachment *LENS Parents Report January 2018*) as we believe parents may also benefit from knowing our findings. We have tried to make it concise and easy to read and thus appropriate for this audience. This report will be send to parents via email this January. Parents who only provided a telephone number will be contacted by a member of the LENS team.

Phase 1: The home learning environment and early number skills

We looked at associations between the information we gathered using the parental questionnaire and the children's number skills (counting, number translation and early calculation skills) assessed in spring term. We were especially interested in the extent to which socio-economic status (parental education level and postcode area deprivation), parental attributes (parents' expectations, math attitudes and math anxiety) and quality of the home learning experiences (frequency of parental engagement in number and literacy experiences) are related to children's early number skills.

Key findings in relation to what parents do at home are:

*Parental reports on how often parents engage in different home learning experiences with their child were very varied, while some parents reported engaging in learning experiences several times a day others reported to never engage in these experiences.

*Parental attributes were less varied, parents showed a strong tendency towards having high expectations about their children's development, positive attitudes towards mathematics and low mathematical anxiety.

*Parents reported engaging more often in literacy experiences that focus on comprehension and meaning (e.g. reading or discussing stories, engaging with books and in conversations with the child) than in number experiences (e.g. teaching the names of numbers, identifying numerals, discussing quantities with the child and playing or completing number activities).

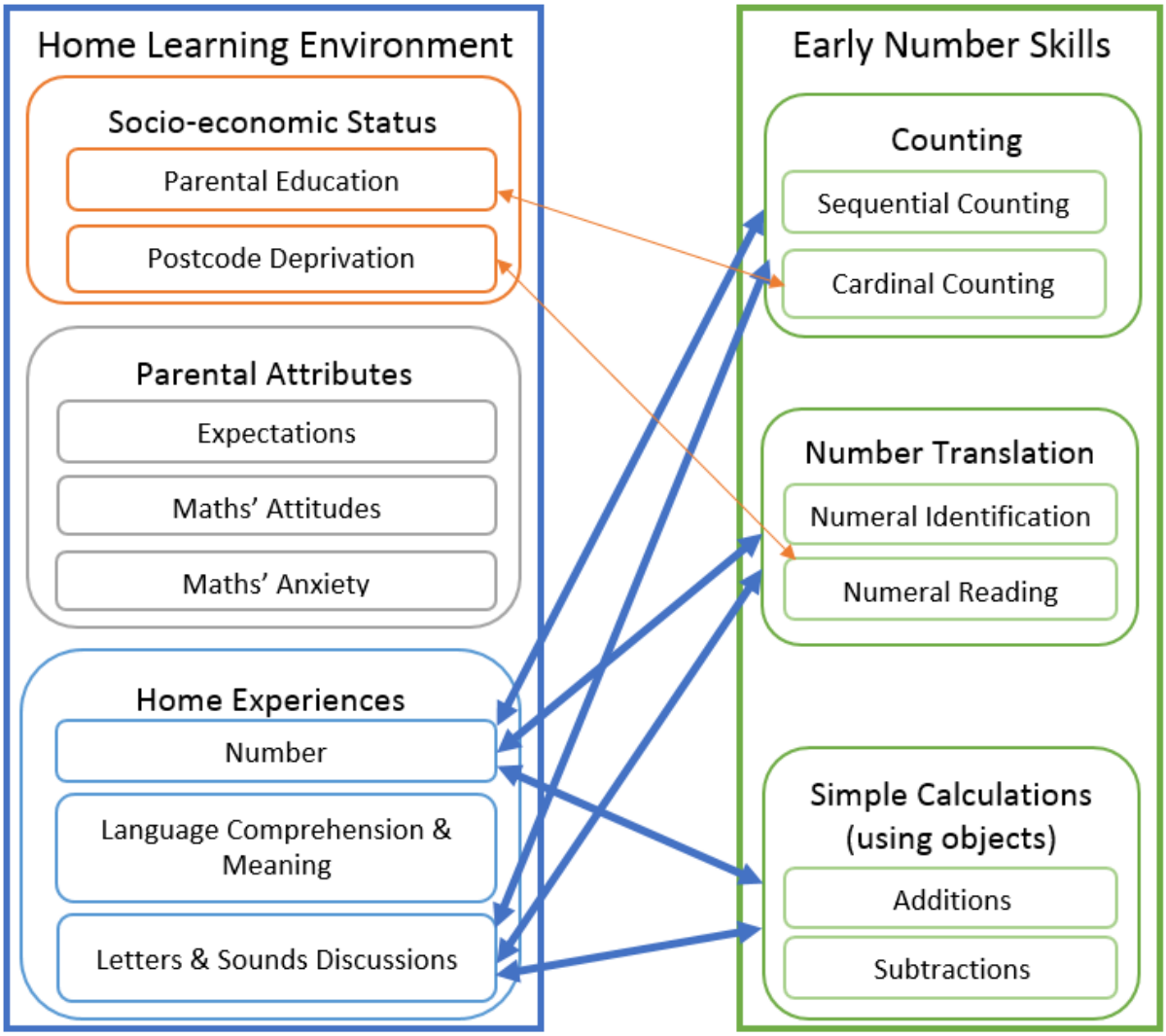
*Literacy experiences that focused on letters and their sounds (e. g. teaching the sounds of letters and discussing their sounds with the child, identifying and writing letters, reciting the alphabet and playing letter games) were the ones occurring least frequently in the children's homes.

Key findings in how what parents do at home relate to children's number skills are:

*Higher reported frequency of home number experiences and of letters-sounds experiences that involved discussions with the child were consistently related to how well children could do each of the number skills assessed.

*Socio-economic status and parental attributes were weak and inconsistent predictors of children's early number skills. Only the socio-economic status indices, but not parental attributes, related to two of the number tasks administered (cardinal counting and numeral reading skills) after the influence of parents' engagement in number experiences and in letters-sounds experiences were taken into account.

Graph 1. Identified relationships between aspects of the home learning environment and children's early number skills



Phase 2: The home literacy environment and early language skills

We looked at associations between the information we gathered using the parental questionnaire and the children's language skills assessed in summer term, when we evaluated children's phonological awareness (their ability to identify the speech sounds in words) alongside their expressive and their receptive vocabulary. We were especially interested in the extent to which socio-economic status (parental education level and postcode area deprivation) and the quality of the home literacy experiences (parent-child shared reading and frequency of parental engagement in letter-sounds discussions and in experiences that focused on language comprehension and meaning) are related to children's early language skills.

Key findings in relation to what parents do at home are:

*Parents with higher educational qualifications and/or who lived in less deprived neighborhoods engaged more frequently in shared reading (as indexed by a children's book checklist task).

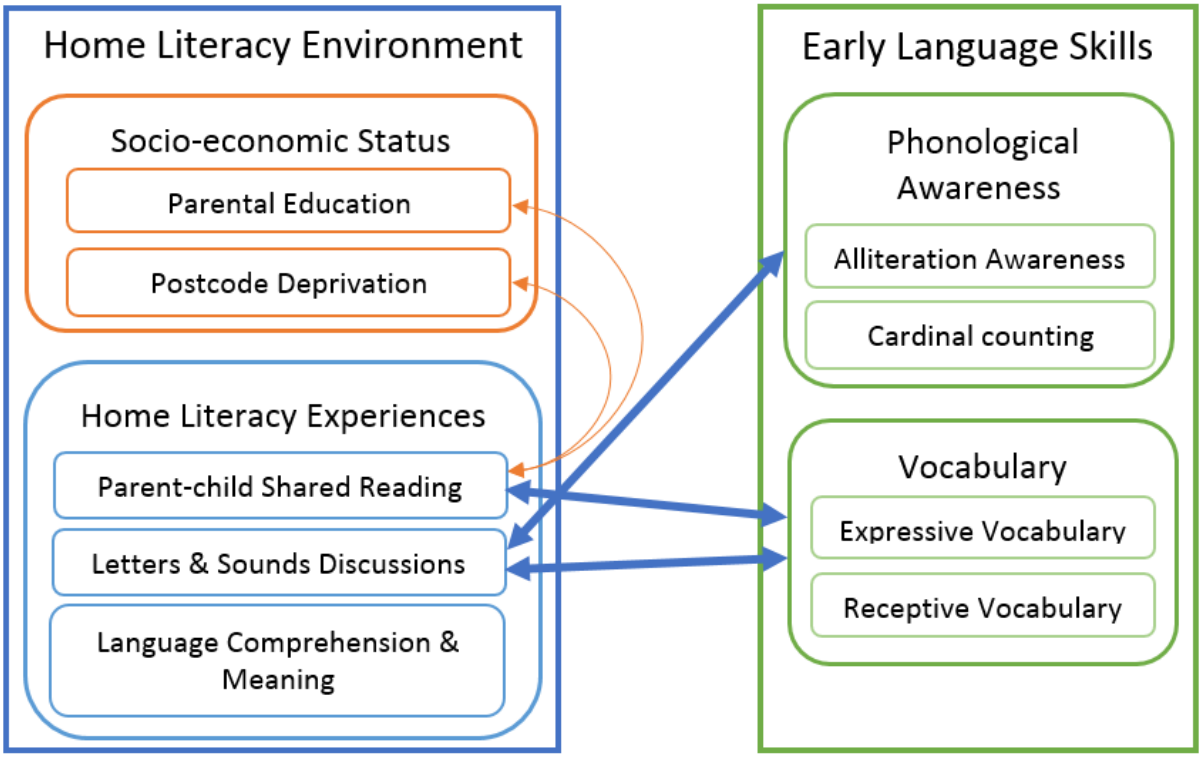
*Engagement in experiences focused on language comprehension and in experiences that involved adult-child discussions about letters and their sounds did not vary according to the indices of socio-economic status we used.

Key findings in how what parents do at home relate to children's language skills are:

*Children whose parents engaged more often in experiences that involved letters and sounds discussions tended to have better phonological awareness.

*Children whose parents engaged more often in shared reading and in experiences that involved letters and sounds discussions tended to have a wider vocabulary.

Graph 2. Identified relationships between aspects of the home literacy environment and children's early language skills



Phase 2: Preschool Observations

The purpose of the observations was to get an indication of the types of activities and interactions the children experience at their preschool setting. We conducted a three-hour observation in 21 of our 40 participating settings. Over 70% of the sample included in these analyses attended these settings at that time.

We used a standardised observation schedule, the Early Childhood Environment Rating Scale-3 (ECERS-3), which looks at quantity of resources available to the children as well as frequency and quality of interactions in seven different domains:

- **Space and Furnishings:** Includes indoor space, space for privacy and for gross motor play, gross motor equipment, child-related display as well as furnishings and room arrangement for care, play and learning.

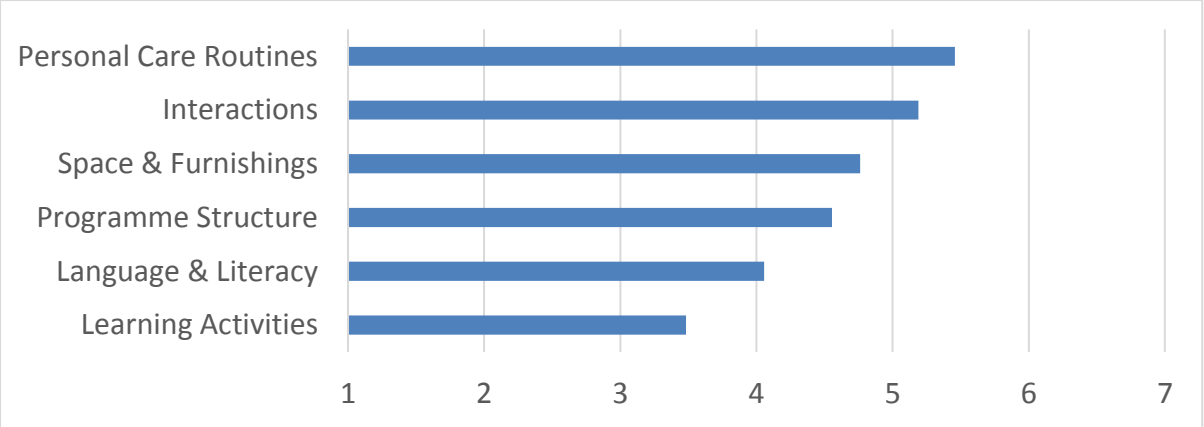
- **Personal Care Routines:** Includes health and safety practices, toileting practices and meals and snacks.
- **Language and Literacy:** Includes staff use of books with children, staff encouragement and help to use language, books and to expand children's vocabulary.
- **Learning Activities:** Includes dramatic play, fine motor activities, music and movement, art, nature, maths, understanding written numbers, promoting acceptance of diversity and use of appropriate technology.
- **Interactions:** Includes individualised teaching and learning, supervision of gross motor play, discipline, staff-child interactions and peer interactions.
- **Programme Structure:** Includes whole-group activities for play and learning, free play, transitions and waiting times.

<u>Some of our key findings in relation to what settings are doing:</u>

*Overall mean ratings ranged from "Fair" to "Good" (rating 5 to 6) in all but one scale (Learning Activities) across the observed settings.

*There was a tendency for scores of the Personal Care Routines scale and of the Interactions scale to be higher than for scores of the Learning Activities scale.

Graph 3. Mean (average) scores for the different ECERS scales across settings



Note. The individual observation scores cannot be released due to ethical clearance

In the future we will be analysing the relationships between the different quality indices and children's number and language skills.

Take home message

The LENS findings so far demonstrate that quality of preschoolers' home learning environments vary widely and that it is what parents report doing at home (rather than their socio-economic status or attributes) that is consistently related to their children's early language and number skills. Nevertheless, parents who had higher levels of education and/or lived in less deprived neighborhoods engaged more in shared reading (as indexed by a children's book checklist task). The relationships we have identified here are concurrent (data has been collected within the same period) so we cannot establish directionality between them. That is, we can say results show that the home learning environment is *associated* to children's number and language skills (with this association being statistically significant), but we cannot say that the home learning environment is *causing* the children to have better numeracy and language skills). It is only after we have gathered longitudinal data (data collected at different time periods) that we can be more confident about the direction of these relationships (i. e. whether the home learning environment has a *causal* influence on the development of number skills). However, our preliminary findings would support the encouragement of shared reading as well as interactive and playful home learning experiences that focus on numbers and promote letters-sounds' discussions with the children.

Next steps

We have now drafted two academic publications from the information we gathered using the parental questionnaire and the first two phases of data collection. We hope to finalise and submit these early this year. We are also starting to prepare all the materials and documentation we need for the last data collection (due to start in April 2018). This may not take place in your setting, but in the Reception classes of the new settings the children have transferred to. In the last data collection a researcher will see the children three times on one-to-one basis for approximately 10 minutes each time. Children's early number skills will be re-assessed. Additionally, children's mathematical and reading skills will be assessed using standarised measures.

Please do not hesitate to contact a member of the team if you have any questions about the project.

Thank you once again for you participation.

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