A review of behavioural and brain development in the early years: the "toolkit" for later book-related skills

Executive summary

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Overview

This report reviews current evidence on human brain and behavioural development over the early years, specifically in relation to the sensory and cognitive "toolkit" of abilities relevant to book use and enjoyment. Based on current research findings from studies of infants we recommend that book experiences commence from 3 or 4 months of age, with evidence that such experiences benefit later language and communicative skills from 8 months. The sharing experience of books between parents and their infants provides a rich context for developing a variety of social skills known to be critical for facilitating later learning. Further, multiple readings of the same book within a social interactive context provides both the degree of repetition and variability necessary for optimal learning. Such experiences in the early years have the potential to equalise imbalances in pre-schoolers readiness for school education. Little is currently known about whether electronic books have the same or different benefits. Research is also urgently required on the effects of early book experience on infants with sensory limitations or developmental disorders. Children's ability to adapt to different early environments (such as bilingualism, deafness, poor sight) may be enhanced by the use of appropriately modified books as these afford the opportunity to strengthen communication skills around shared materials.

Recommendations

1. What is the best age to start to share rhymes, stories and books with children?

In sections I and II of the main report, we discussed evidence indicating that children can remember the tune and sounds of language quite early, and even prenatally. Newborns are able to extract information from rhymes and songs.

We suggest that starting to share books at 3 to 4 months may be particularly appropriate. At this age, visual acuity and basic attention skills are sufficiently developed, and infants have a rudimentary ability to begin to explore the world with their hands. In addition, they have an active interest in exploring objects. Evidence suggests that language benefits (measured by later receptive and expressive language ability) may only accrue from shared reading after 8-months of age (Karrass & Braungart-Rieker, 2005). Therefore, *the period between 4-8 months appears optimal to begin book sharing with text*.

Story comprehension and understanding of narratives may only emerge by the preschool years. However, as we have highlighted, children may extract other information from stories and may enjoy the changes in the tone of parent's voice as well as the repetition of certain words and phrases. There is no evidence against reading stories before 12 months, but parents should be aware that babies are unlikely to be following the full structure of the story at this stage. Rather, babies may

be using this shared activity to build social routines, and to begin their journey towards understanding language and vocabulary.

2. What is the best way for parents to share rhymes, stories and books with children?

As we have highlighted in the main report, young children benefit more from book sharing than book reading. Parents should be responsive to children's attempts to communicate. This means they should ask open-ended questions, shadow their child's interest (or lack of it), and encourage their child to explore different aspects of the book. Book reading helps children learn language when they engage in responsive interactions about word meanings. This is best learnt in a positive and socially engaging context.

We have also discussed the value of both repetition and variability. It seems that repetition is particularly important for younger children, who benefit from hearing the same word often and in different contexts. Parents should also be aware that children focus on different components of a book at different ages. Infants start with extracting pictures from the visual scenes, then learning new words, but progress to learning more about the stories, characters and routines in books by the preschool years. They may be able to extract different information over multiple readings of the same book. However, the interactive component may help to introduce variability in the language that parents use, ensuring that it is targeted at the child's level.

While it has been shown that learning is more efficient in social situations using books and toys (as compared to passively watching TV), research on how digital media (for example, books delivered on an iPad or kindle) will contrast with more traditional paper books (Kucirkova, 2013) has only just begun and was not the focus of this review. Unlike TVs, such electronic devices do allow for social interaction and manual exploration by the child. Yet, the content displayed on the device is more transitory in nature, suggesting that there may be differences in the skills children learn from these devices (Parish Morris et. al, 2013). Please see the cited papers for further information on this area of research. We recommend further research on this topic, considering its importance in modern day living.

3. How do environmental factors affect language and literacy development?

Bilingual environments can affect children's language development in that they use different strategies for learning. This is not a disadvantage when learning language or becoming literate, and in some specific cases may even be an advantage. Considering the real-world benefits of speaking multiple languages, we endorse the continuing use of all languages in multi-lingual homes.

Socioeconomic differences may affect language and literacy. In this regard, shared book reading, especially when child-focused may be particularly beneficial in changing existing language trajectories and levelling the field for school entry. In book sharing parents should be child-focused and provide encouragement to children to make their wishes and desires about the book clear.

Other environments discussed in the main report include being born blind or deaf. For deaf children, it is clear that visual language input is key. Especially for deaf children born to hearing families, books that include “sign and sing along” may provide one way for parents to engage and create social and language environments for their children. Rhymes, songs and social routines are likely to be valuable for children with visual impairments, again, because they help create shared social experiences and a context for further learning. More research is required into how the early tactile experience of books and toys could benefit these children. Targeted programmes, such as Bookstart Corner, Bookshine, and Booktouch aim to provide additional support for families who need it and, while the current literature on how books play a role in developing symbolic representations is encouraging, further research on the effects of these programmes is strongly recommended.

Other factors associated with poor language and literacy outcomes later in life are self-control and attention. An open question in this regard is whether de-cluttering the visual scene (to make children focus on one object at a time) is beneficial for children who are easily distracted. Parents may be able to do this by covering other objects, pointing to the object in question and using other means to direct children’s interest to the object of interest. Removing distractors (such as switching off the competing TV/radio) may be useful in helping children focus on the book.

Sources and further reading

Karrass, J. & Braungart-Rieker, J. M. Effects of shared parent–infant book reading on early language acquisition. *Journal of Applied Developmental Psychology* **26,** 133–148 (2005).

Kucirkova, N. Children's interactions with iPad books: research chapters still to be written. *Front. Psychology* **4,** 995 (2013).

Parish Morris, J., Mahajan, N., Hirsh-Pasek, K., Golinkoff, R. M. & Collins, M. F. Once Upon a Time: Parent–Child Dialogue and Storybook Reading in the Electronic Era. *Mind, Brain, and Education* **7,** 200–211 (2013).