

Evidence summary – the research behind Bookstart Bump

Introduction

Bookstart Bump is an early years intervention programme being piloted by Book Trust. It is aimed at vulnerable expectant mothers to encourage them to talk, read, sing and say rhymes to their baby in utero. The following evidence summary brings together research which has informed the programme development. For research which is open access, a link to the full report or website is included.

Learning in utero

Information from the NHS states that the unborn baby can hear from 15 weeks, and can hear people around the mother by 24 weeks ([NHS website](#)). Since the 1980s, mounting evidence has shown that babies begin to learn through the sounds they hear (e.g. their mother talking, singing and playing music) whilst in the womb. Foetuses can recognise and remember sounds from the outside world.

New-borns recognise their native language

Language experienced in utero affects vowel perception after birth: a two-country study, Moon et al, 2012

- This study which gathered evidence in America and Finland indicated that new-born babies were more attuned to native language sounds, could distinguish between their mother tongue and a foreign language and therefore had been learning and remembering the vowel sounds of their mother tongue in utero.
- The study focussed on 40 new-borns in America and 40 newborns in Sweden. They tested the babies (7-7.5 hours after birth) on two sets of vowel sounds – 17 native language sounds and 17 foreign language sounds. The researchers tested the babies' interest in the vowel sounds based on how long and often they sucked on a dummy. Half of the infants heard their native language vowels, and the other half heard the foreign vowels.
- In both countries, the babies listening to the foreign vowels sucked more than those listening to their native tongue, regardless of how much postnatal experience they had, showing a marked interest in the unfamiliar vowel sounds.

New-borns recognise music, nursery rhymes and lullabies heard in the womb

Fetal soap addiction, Hepper 1988

- This study found that the babies of mothers who regularly watched the soap opera 'Neighbours' whilst pregnant, would respond to the theme tune once they were born. 'Neighbours' babies stopped crying when they heard the music, whereas a control group of non-Neighbours babies continued to cry. This suggested that the Neighbours babies remembered the music, found it soothing and that babies learn naturally through repeat exposure to music
- The study compared 7 pregnant women who regularly watched the soap opera 'Neighbours' with a control group of 8 women who didn't watch the soap opera. The effect was found to last for 3 weeks after birth.

[Prenatal Music Exposure Induces Long-Term Neural Effects, Partanen et al, 2013](#)

- This study in Finland found that babies recognised (for up to 4 months after birth) the lullaby 'twinkle twinkle' which was sung to them whilst in the womb.
- The study focused on 24 women during the final trimester of their pregnancies. Half of the women played the melody of Twinkle Twinkle Little Star to their bump five days a week for the final stages of their pregnancies. The brains of the babies who heard the melody in utero reacted more strongly to the familiar melody both immediately and four months after birth when compared with the control group.

[Emergence of retention of learning in early fetal development, Kreuger et al, 2014](#)

- This study from the University of Florida found that babies can learn to recognise nursery rhymes while in the womb, during the third trimester. The study found that the heart rate of babies who heard the familiar nursery rhyme slowed down whereas the heart rate of those who heard the unfamiliar rhyme stayed the same, demonstrating foetal learning (Kreuger et al, 2014).
- The study involved 32 pregnant women reciting a nursery rhyme twice a day to their bumps during weeks 28-32 of pregnancy. They were then tested 4 weeks later. The mother listened to head phones (so she was unaware of when or what the foetus was being exposed to). The researcher either recited the test nursery rhyme, or a completely different nursery rhyme and the babies' heart rates were measured using a heart monitor.

Despite these positive findings, researchers warn mothers not to put speakers directly onto the bump as loud sounds can cause stress to the baby and damage their ears.

The importance of early intervention for neuro-development

This evidence demonstrates that what parents or parents-to-be do at this very early stage is crucially important in cognitive, social and emotional outcomes. Therefore, what we do to prepare vulnerable parents-to-be is vitally important for the development of their child. Bookstart Bump is founded on the principal that primary intervention is needed to prevent developmental problems occurring, rather than treating symptoms that materialise later.

[The 1001 Critical Days: The Importance of the Conception to Age Two Period' \(2012\)](#)

- The importance of acting early to enhance outcomes for children is highlighted in this cross party manifesto
- The report highlights evidence which shows that from birth to age 18 months, connections in the brain are created at a rate of one million per second and early experiences shape a baby's brain development.

[In Brief: The Science of Early Childhood Development, Havard University, 2008](#)

This briefing on 'the science of early childhood development' shows that:

- The brain is most flexible earlier in life, particularly before birth. The plasticity of the brain at this early stage means it is easier and more effective to influence the brain.

- Cognitive, emotional and social capacities are intertwined throughout life. Early emotional well-being and social competence provide a strong foundation for emerging cognitive abilities

The importance of pre-natal support for parental engagement

Parents can be particularly receptive to messaging, advice and support during pregnancy; therefore it is regarded as a critical 'window of opportunity' for engagement. The following evidence focuses on teenage pregnancy.

[Evaluating the evidence: What works in supporting teenage parents, Asmussen et al, 2010](#)

- This report brings together evidence on supporting teenage pregnancy and shows that the research consistently suggests that most young parents want what is best for their child and that many young women perceive their pregnancy as an opportunity for making positive life changes. In this respect, many young mothers are highly motivated at this time to take the advice and support offered to them via midwifery services, especially if it is provided to them in a way that is respectful and non-judgemental.

['Planned' teenage pregnancy, Cater and Coleman, 2006.](#)

- This JRF qualitative study explored the motivations for 'planned' teenage pregnancy among those facing poverty and disadvantage in England. Among many motivating factors, the study found that the young women expressed a need to prove their capability as a parent and for many, wanted to put their own negative childhood experiences behind them and prove that they could do a better job of bringing up a child than their own parents did.

The importance of a positive home learning environment

One of the aims of Bookstart Bump is to encourage mums-to be to establish good habits during pregnancy that can be built on once the baby is born. This is particularly important given the evidence on positive home learning environments, especially around reading every day and its links with literacy development and attainment at school. Home learning environments refer to a number of behaviours connected with literacy and numeracy including being read to, singing or saying songs, rhymes and poems, going to the library and playing with letters.

[Bookstart: Planting a seed for life, Collins and Stevenson, 2005.](#)

- Regular and consistent reading to and with babies and young children in the home literacy environment was a key feature in those children who were reading in advance of their peers.

[Mother-child book reading in low-income families: correlates and outcomes during the first three years of life, Raikes, 2006](#)

- The more children read, the more they progress: there is a relationship between reading frequency and children's cognitive and language skills in the first years of life.

[Social inequalities in cognitive scores at age 16: The role of reading, Sullivan and Brown, 2013](#)

- Children of all backgrounds who were read to regularly by their parents at age 5 performed better in maths, vocabulary and spelling at age 16 than those who were not read to.

[Reading to young children: A head start in life, Kalb 2012](#)

- Reading 3-5 days per week (compared to 2 or less) has the same effect on a child's reading skills at age 4-5 as being six months older. Reading to children 6-7 days per week has the same effect as being almost 12 months older.

[Low income and early cognitive development in the U.K, Washbrook and Waldfogel, 2010](#)

- "The research shows that a child who is read to every day at age 3 has a vocabulary at age 5 that is 1.92 months more advanced than a child who has exactly the same observable characteristics (including income group), but who is not read to every day at age 3."

[The Effective Provision of Pre-School Education \[EPPE\] Project, Sylva, 2004](#)

- 'For all children, the quality of the home learning environment is more important for intellectual and social development than parental occupation, education or income. What parents do is more important than who parents are.'

['Bucking the trend': What enables those who are disadvantaged in childhood to succeed later in life?, Blanden, 2006](#)

- There is a strong link between being read to frequently as a child and the likelihood that an individual will escape poverty; individuals who are poor at age 30 are significantly less likely to have been read to once a week at age 5 than those who escape poverty.

[What can parents do to help their children succeed in school, PISA in focus OECD, 2011](#)

- Fifteen-year-old students whose parents often read books with them during their first year of primary school showed markedly higher scores in the 2009 Programme for International Student Assessment (PISA) evaluations than students whose parents read with them infrequently or not at all. The average difference was 25 points - equivalent to well over half a school year