

RESEARCH SNAPSHOT

The word gap emerges by 18 months of age

Background

Previous research found evidence in which parents who were on welfare spoke 30 million words less to their children by age four, compared to parents who were in professional occupations. This coined the term '30-million-word gap' and has garnered widespread attention. However, there are limitations to this work which include (1) a small sample of only 42 children from Kansas USA; (2) the method of data collection, whereby researchers videotaped one hour in the family home per month, potentially leading to unnatural interactions; and (3) data was only collected from 10 months onwards, limiting our understanding of language experience in the first year of life.

The Language in Little Ones (LiLO) study was designed to overcome these limitations (see Study Design for further details) and provide an understanding of socioeconomic differences in infants and toddlers language experience during the first five years of life within an Australian context. Early findings from the LiLO study revealed no meaningful differences on average between high and low educated parents in the amount they spoke to their children at both 6 and 12 months of age. However, large variation amongst families was shown with families speaking anywhere from 3000 words to over 40,000 words per day to their child.

Aims

This study builds on the early findings of the LiLO study; this time including the first three waves of data collection when children are 6, 12 and 18 months old. Data on the number of adult words spoken to the child, number of child vocalisations and number of conversational turns at each age will be presented by highest level of mother's education.



Key Findings

A word gap between high and low educated families (based on mother's highest level of education) emerges by 18 months of age. However, there is still wide variability within the education groups.

Adult words

For the number of adult words spoken, at 6 months old there was a difference of 17 words, at 12 months the difference was 568 words, and at 18 months the gap between high and low education groups grew to 3,851 words, with higher educated parents talking more. Interestingly, low educated families decrease the amount they spoke to their children over time, whereas high educated families remained relatively consistent (see Figure 1).

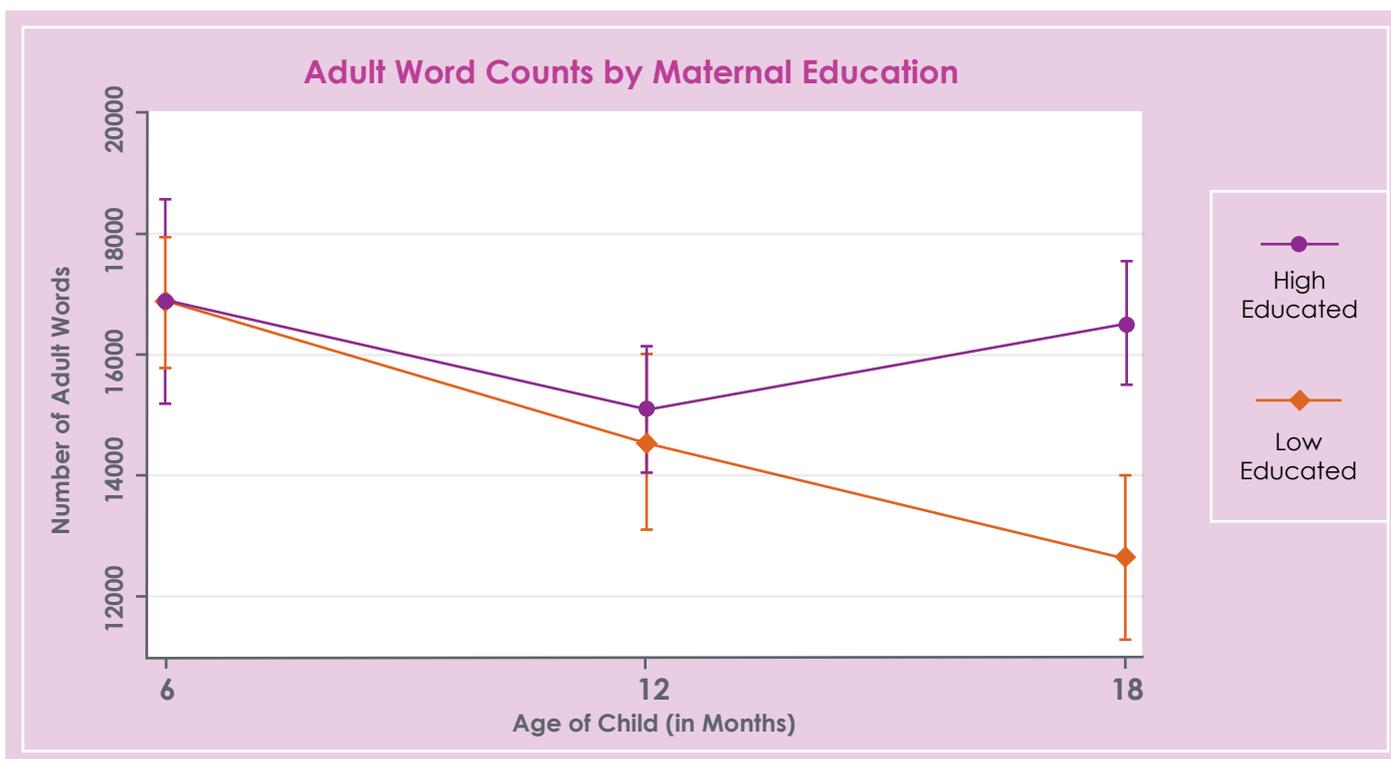


Figure 1 – Average differences between high and low education groups for the number of adult words* at 6-month, 12 month and 18-month wave of data collection.

*See Study Details section for information on how number of adult words have been measured and categorised in this study.



Child vocalisations

For child vocalisations, the difference between education groups was 166 vocalisations at 6 months, 22 at 12 months and growing to 418 at 18 months. Once again, children from high educated backgrounds were vocalising more by 18 months, compared to those from low educated backgrounds.

Conversational turns

For conversational turns between adult and child, a similar pattern plays out with high educated families engaging in more conversational turns by 18 months, compared to families from low educated backgrounds. The difference is just 24 conversational turns at 6 months and 34 at 12 months. By 18 months, this has grown to a difference of 212 conversational turns on average between education groups.

Implications

This snapshot summarises early findings from the LiLO study when children were 6, 12 and 18 months old. Results demonstrated that a word gap related to maternal education emerged by the time children were 18 months old. Families from high educated backgrounds were engaging in more talk on average by the time children were 18 months, compared to families from low educated backgrounds. This pattern of no difference between education groups at 6 and 12 months, and a gap emerging by 18 months was found for adult words, child vocalisations and conversational turns.

For the first time, researchers have identified the age at which the word gap emerges. This has implications for the timing of interventions that support parents to talk more to their children during the early years. Ideally, policy makers and early childhood educators would implement these programs prior to 18 months of age. These results also suggest a proportionate universalist approach may be most appropriate, whereby services are universally available but designed with a scale and intensity that is proportionate to the nature of disadvantage. This is due to the large variability in parent-child talk still evident within both education groups, despite the average differences in measures of talk. Therefore, targeting interventions only towards low educated families would miss many children who are experiencing a low talking environment among higher educated families.



Study Details

The Language in Little Ones study is a National Health and Medical Research Council funded longitudinal study, which follows children once every six months, from 6 months old until their first year of school. A total of 265 families were involved in the third wave (when children were 18 months old) with 166 families in the high educated group and 99 families in the low educated group. The high educated group included families where the mother's highest level of education was a bachelor's degree or higher. The low educated group included families where the mother's highest level of education was Year 12 or less and had not completed any post-secondary school education. Children were born between January 1, 2017 and December 31, 2017 and lived in Adelaide or Port Pirie, South Australia, Bunbury, Western Australia or Gold Coast, Queensland. Recruitment occurred at Child and Family Health Service early parenting groups, public hospitals during antenatal visits, council run immunisation clinics and library programs, children's centres, and community playgroups.

The **Language Environment Analysis (LENA)** system was used to measure families' natural home language environments. LENA technology consisted of a digital language processor that uses advanced speech recognition technology to automatically process acoustic properties in the speech signal to provide adult word counts (AWC; number of adult words spoken to child), child vocalisation counts (CVC; the number of speech-related sounds made by the child) and conversational turns (CT; the number of alternations between adult and child occurring within at least 5s of each other). At each six-monthly milestone, researchers attended the family's home and provided the parent with the LENA equipment, showed them how to use it and completed standardized questionnaires with the primary caregiver and developmental assessments with the child. The family were then given approximately two weeks to complete one LENA recording day which had to be a day when the child was not in childcare, not sick and not when the family had a big public event such as a birthday party or sporting event.



Details of the Research Paper

For full technical details of this research paper see:

Brushe, M.E., Lynch, J. W., Reilly, S., Melhuish, E., Mittinty, M., & Brinkman, S. A. (2021) The education word gap emerges by 18 months: findings from an Australian prospective study. *BMC Pediatrics*, 21, 247. <https://doi.org/10.1186/s12887-021-02712-1>

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