Words, books and stories: A narrative summary of a child language research programme in Indian languages

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Talk Together — Supporting Oral Language Development

Introduction

Language development plays a foundational role in learning. A rich language environment at an early age offers the opportunities needed to acquire high quality oral language skills. *TalkTogether* is an international multi-site project with the principal aim to support children's oral language development. The project comprises a series of studies that aim to map children's language environments, assess component skills of language and examine interventions to boost the language. Seven studies have been initiated to date (Figure 1). In this poster, we discuss three, one each to show the mapping, assessing and intervention aims of the project: an Age-of-Acquisition study, the psychometric properties of the Books-Inside-Out checklist and the A-Story-A-Day study.
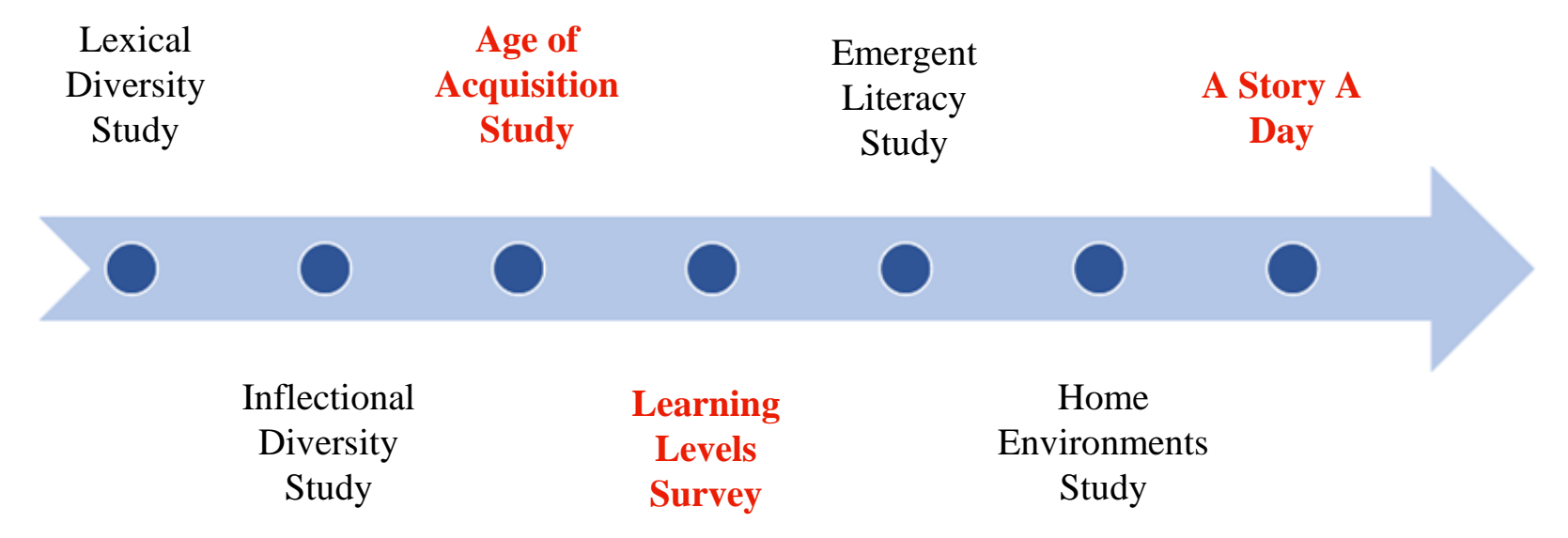

Figure 1. Timeline of tThe TalkTogether Study Series (2020-22)

Method and Results

❶ Age-of-Acquisition (AoA)

This study has been conducted in two Asian languages (Kannada and Filipino) and is now expanded to Hindi. Here we present the Kannada study.

Materials: A list of 885 Kannada words (nouns, verbs, adjectives, adverbs, and pronouns) and a set of 402 Kannada children's books graded for suitability for children aged 3-to-10 based on Padilla et al. (2021) (Figure 2a). Both the word list and the books were drawn from a larger child-directed print corpus (The Promise Foundation, 2020) (Figure 2b).

Method: Ratings of when a target word is first understood were collected from 22 parents, 32 teachers and 20 experts (e.g., speech and language therapists) (Nag et al., 2021). A second independent analysis was to identify the earliest book level when the same target word first appears.
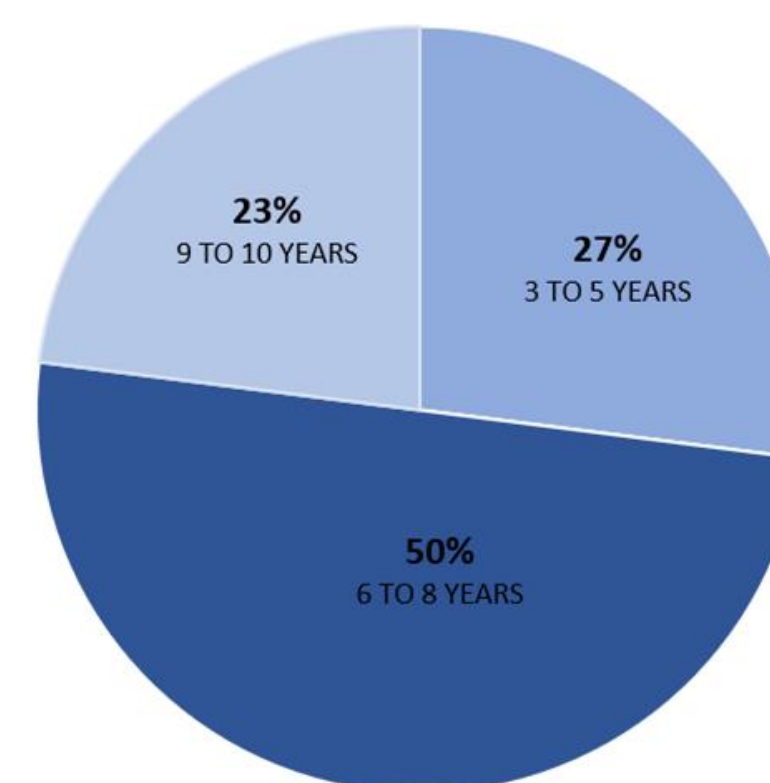

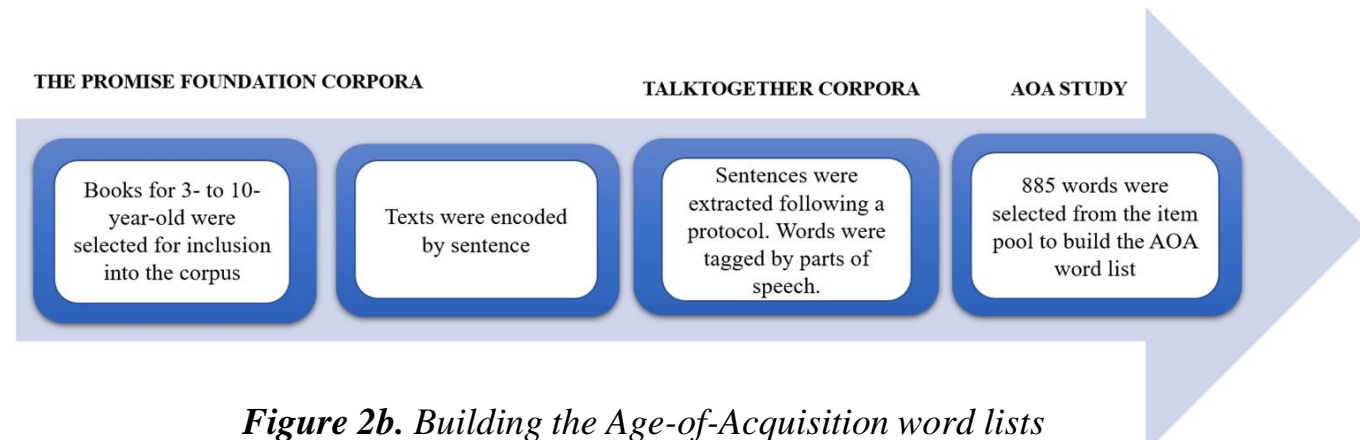*Figure 2a. The initial book levelling in Kannada by age bands*
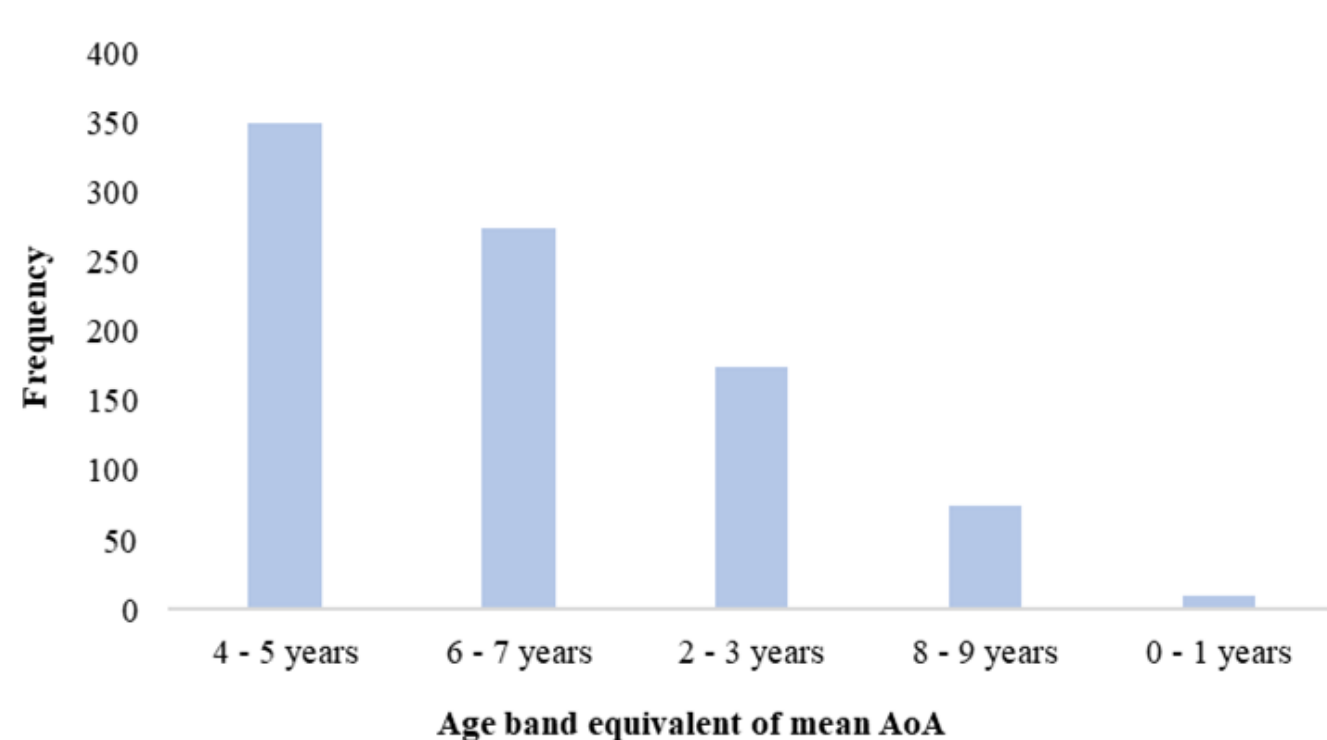

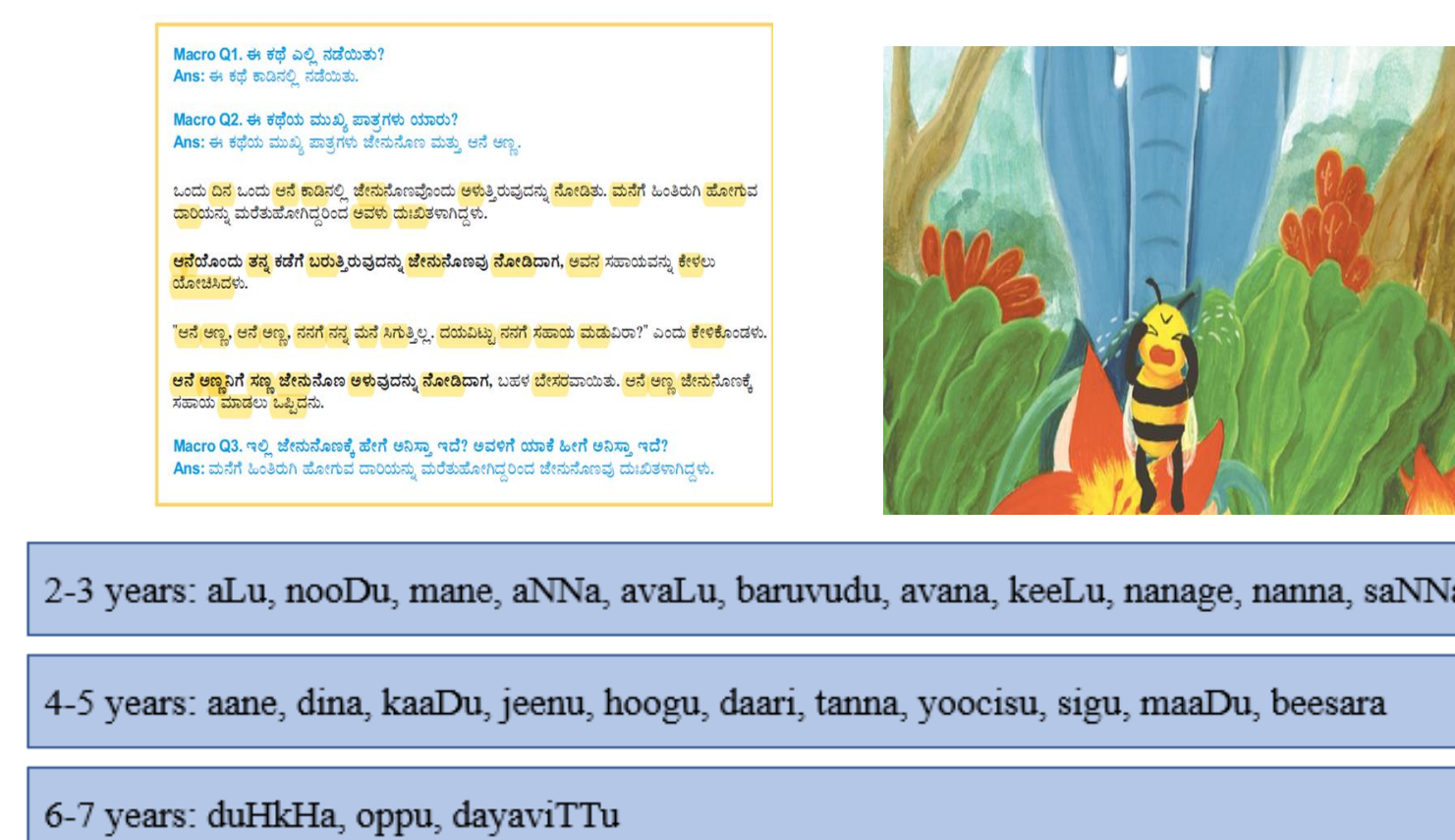*Figure 2b. Building the Age-of-Acquisition word lists*

Figure 2c: Frequency distribution of mean AoA ratings across age bands in Kannada

Results: The largest proportion of words were rated as acquired between 4-5 years (42%), followed by 6-7 years (32%), 2-3 years (20%) and 8-9 years (5%). Less than .01% of words were rated as acquired between 0-1 years (Figure 2c). Examples of earlier acquired words were 'appanu' (father [0-1 yrs]) and 'eenu' (what [2-3 yrs]), whereas later acquired words were 'bhaavisu' (think [6-7 yrs]) and 'hakku' (right [as in child rights][8-9 yrs]).

Examination of subjective AoA ratings and age of occurrence in print found an association. Words rated as understood at an earlier age also appeared first in books for younger children, and words rated as first understood only at a later age appeared for the first time in books for older children.

Figure 2d. Using AoA ratings to better understand reading demand per page in story books. (Source: Books from 'A Story A Day' study)

2-3 years: nooDu, avaLu, kuudalu, heeLu, Shuru, nagu
4-5 years: kattari, takShaNa, tanna, yoocisu, modalu, maaDu

2-3 years: aLu, nooDu, mane, aNNa, avaLu, baruvudu, avana, keeLu, nanage, nanna, saNNa
4-5 years: aane, dina, kaaDu, jeenu, hoogu, daari, tanna, yoocisu, sigu, maaDu, beesara
6-7 years: duHkHa, oppu, dayaviTTu

❷ Psychometric properties of a Print Concepts Inventory

Materials: The Books-Inside-Out checklist is to estimate children's emergent literacy skills specific to print and books. This twenty-item checklist has 7 sections (Figure 3a). One item elicits qualitative data (children's explanations of their book handling). Of the rest of the 19 items, 17 are scored dichotomously as 0 (incorrect) and 1 (correct) and two are scored polytomously as 0 (incorrect), 0.5 (partially correct), and 1 (correct).
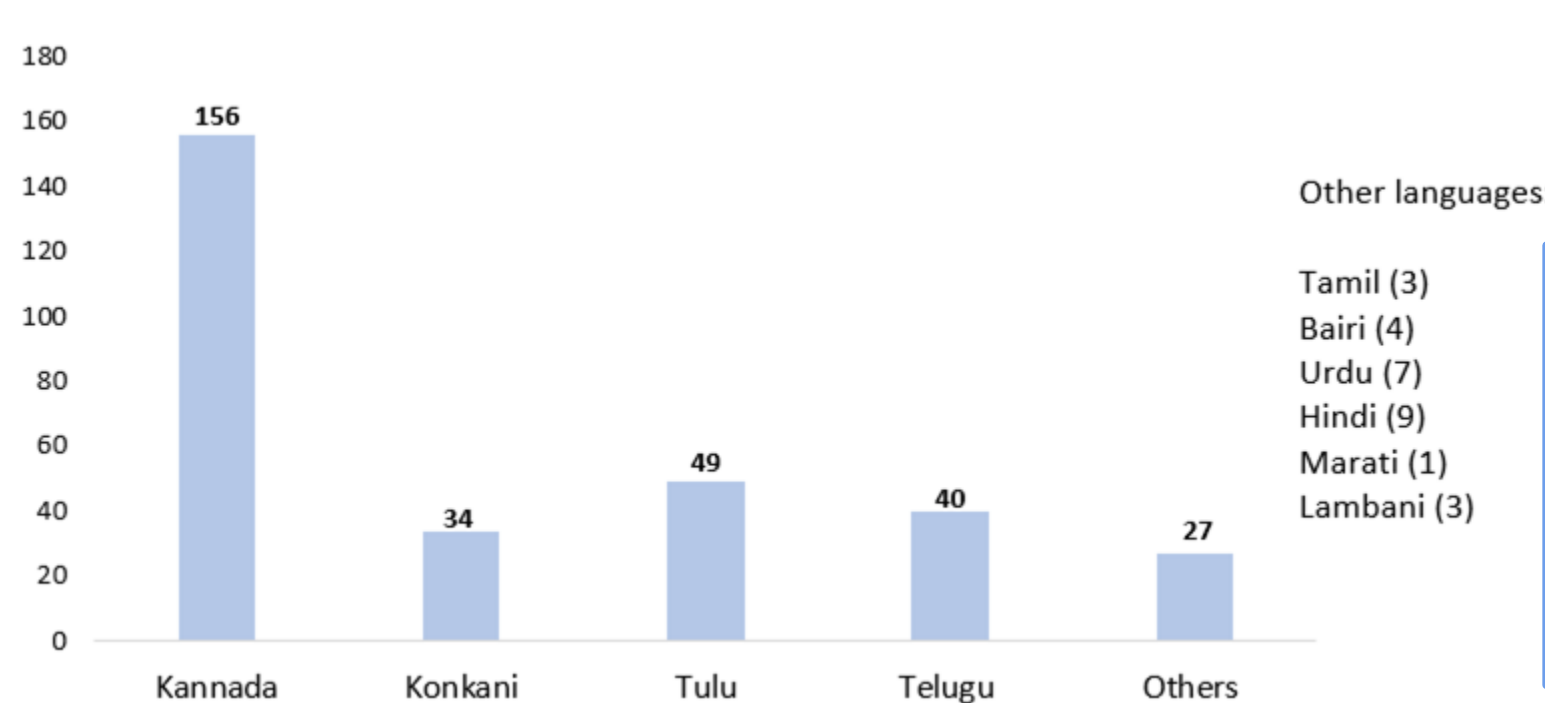

Figure 3a. Sections of the Books Inside Out checklist

Method: Three-hundred 5- and 6-year-olds with ten home languages (Figure 3b) took the Books Inside Out checklist with a Kannada story book and instructions in Kannada (Nag et al. 2022). Rasch analysis and psychometric tests were run.

Other languages:
Tamil (3)
Bairi (4)
Urdu (7)
Hindi (9)
Marati (1)
Lambani (3)

Figure 3b. Home Languages in the sample (n=300)

Inspection of the targeting items shows a good spread of person ability estimates, and reasonably good alignment of the item difficulties to these ability estimates. Only one item was too easy for the children (*show me the picture*) (Nag, McGrane, Ntalli et al., 2022; Figure 3c).
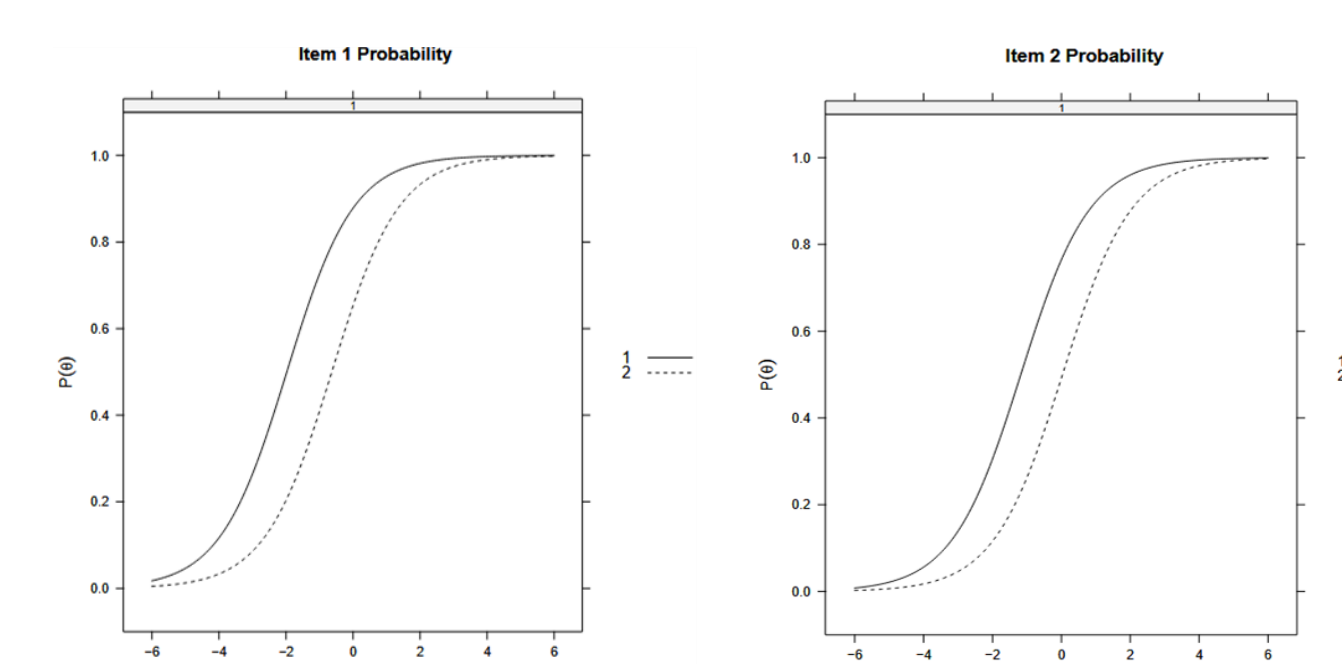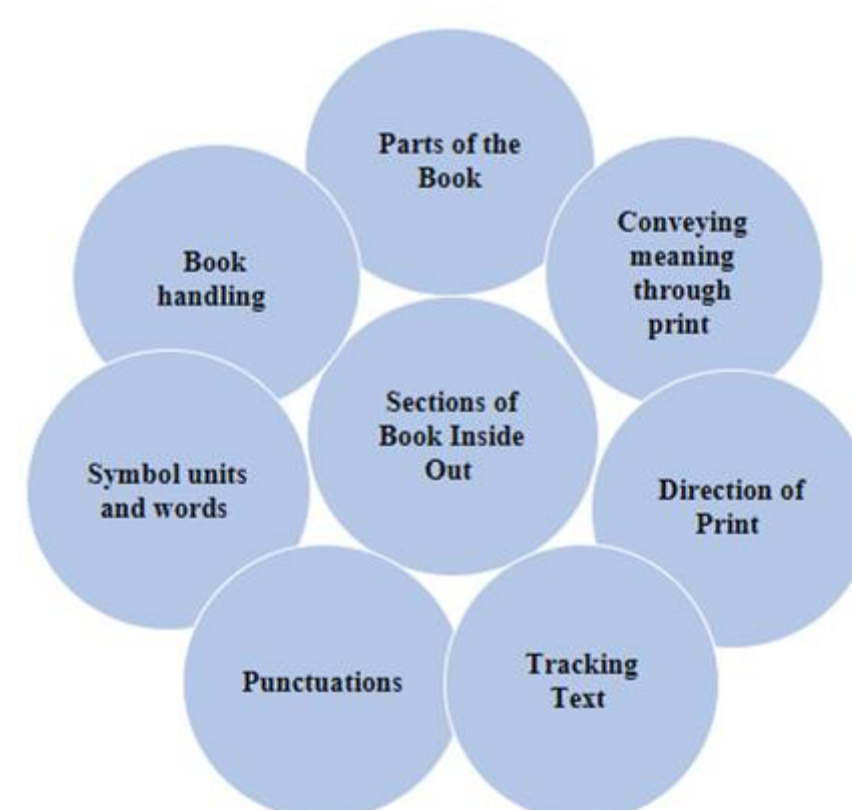

Figure 3c. Wrightmap of the BIO items

Figure 3d. Differential Item Functioning (DIF) analyses.
Note: In these graphs, 1 = Kannada first language (L1), 2 = Kannada second language (L2). Further in these graphs, x-axis shows the estimated ability level of participants and y-axis the probability of participants to get the item correct.
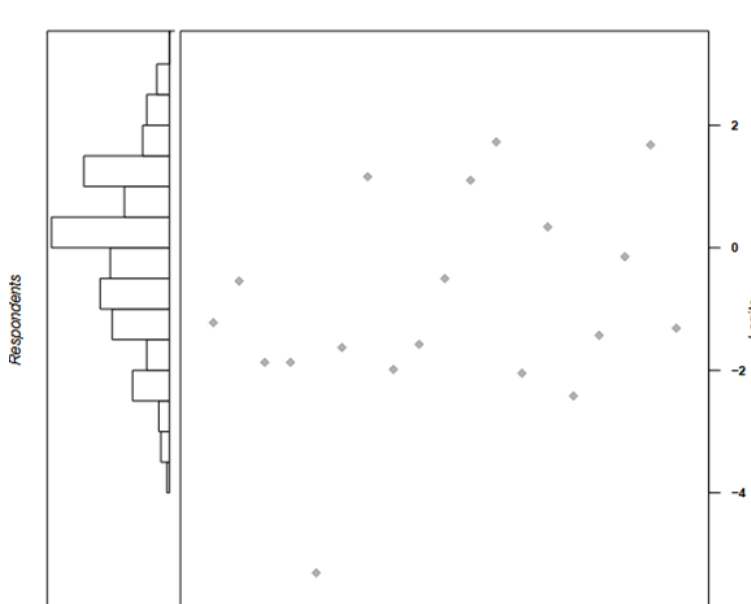
On the analysis of Differential Item Functioning (DIF), for assessment of knowledge of the parts of the book (e.g., *show me the front and back of the book*), Kannada home language children found the items easier compared to children with other home languages. Kannada L1 children have higher probability getting the item correct compared to Kannada L2 children (Nag, McGrane, Ntalli et al., 2022; Figure 3d).

Despite these item-level behaviours, the checklist was found to have a good level of reliability: Cronbach's alpha (.82) and Rasch model reliability (.80).
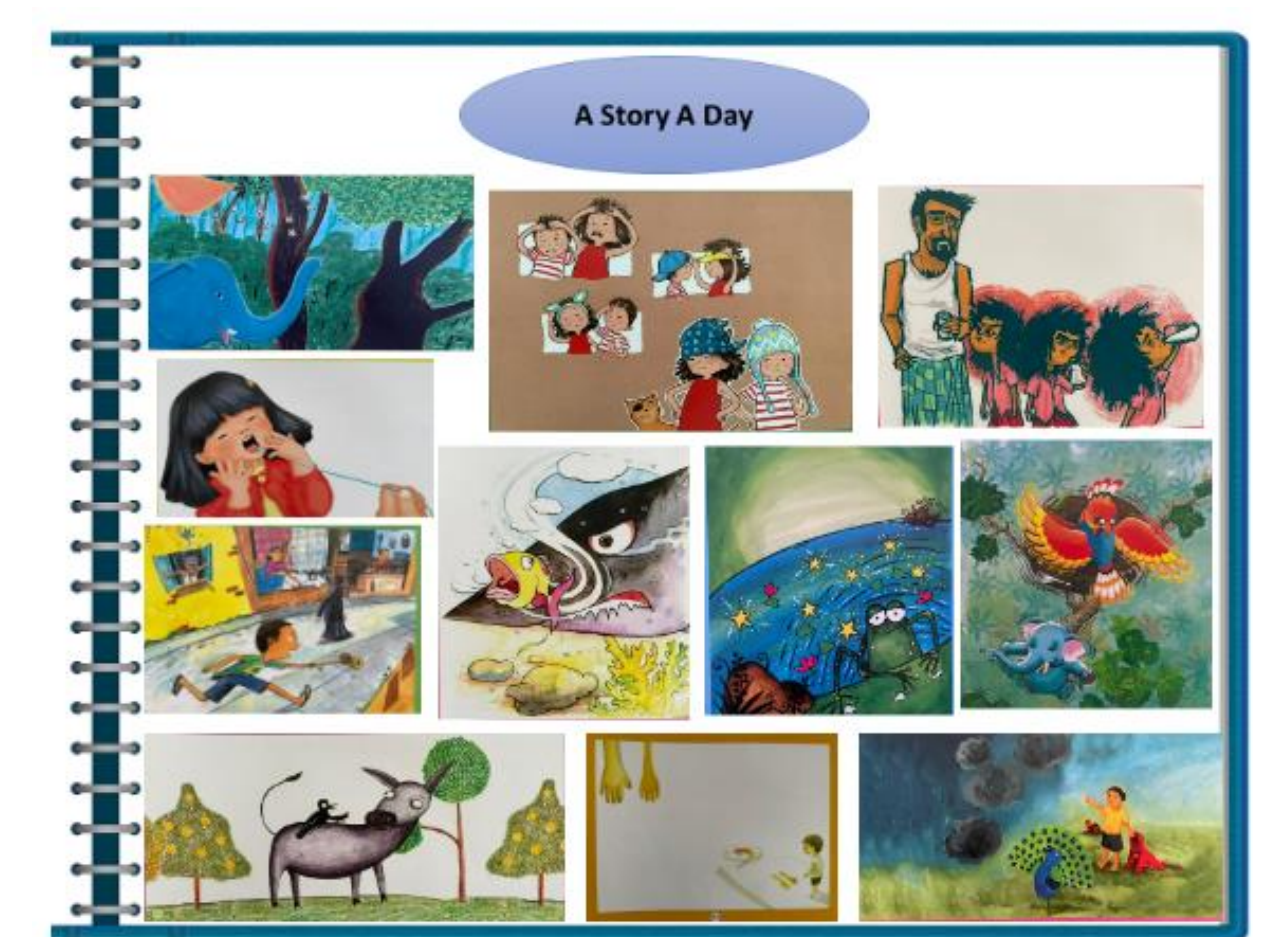
❸ A Story A Day Study

Figure 4. Books used in "A Story A Day" study

Materials: Fourteen richly illustrated story books were used (for collage of story pages see Figure 4).

Method: This study examined language production gains in children exposed to rich language through ten shared book reading sessions. The focus is on implicit learning of story grammar (e.g., settings, characters, initiating events), inflections across different parts-of-speech and specific microstructures (adverbial clauses). Examples of adverbial clauses in one storybook—SNIP! (Jimo, 2018/2022)—are:

Hindi: इससे पहले कि टोटो कुछ कह पाए, अवी कैंची से अपने बाल काटने लगी।

(Before Toto could say something, Avi started to cut her hair with the scissors.)

Kannada: avara appa-amma kelasakke hooda nantara, avaru tamma aaTadalli toDagidaru.

(After their parents left for work, they got busy with their play.)

Results: Qualitative data from the study in Kannada suggests children's retelling is growing in idea units. Results from this study will shape a longer, classroom-based intervention study.

Discussion

Each of the studies reported in this poster have produced materials to support replicable science. These include open access Age-of-Acquisition resources, child-directed print corpora, a checklist for assessing young children's print concepts and story books with rich language for young children. These TalkTogether resources can be used for psycholinguistic and cognitive science research on, for example, language comprehension and production, reading and writing development and memory, and for educational research related to language and literacy teaching, teacher education, and curriculum development (e.g. see Figure 2d).

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Acknowledgements & Enquiries