Improving children's spoken language via implicit learning of syntactic and narrative structures

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Introduction

❖ **Strong spoken language skills** are **fundamental** for literacy development when children start school, and for later **academic** achievement and **life outcomes** (Adlof & Hogan, 2019).

❖ **Implicit learning mechanisms** play a key role in oral language acquisition throughout childhood (Aslin, 2017; Romberg & Saffran, 2010). Implicit learning mechanisms enable the child to **extract the statistical regularities** that natural languages abound at multiple levels of analysis (e.g., Altman & Mirković, 2009), from individual speech sounds (e.g., Maye et al., 2002) to syntactic structures (e.g., Kidd, 2012). Less is known about the role of language exposure and implicit learning mechanisms in learning higher-order structures, e.g., story grammars of oral narratives.

❖ **Here**, we examine the effects of **exposure to structured narratives on oral language development in Kannada**, an **understudied** agglutinative **language of South India** spoken by approximately 70 million people as a first or an additional language. The stories had the same story grammar and were rich in complex sentence structures.

❖ This oral language intervention additionally included a question & answer activity eliciting different story elements and sentence structures. In this way, we also examined **the role of questions** (e.g., Silva & Cain, 2019) and **language production** (e.g., Hopman & MacDonald, 2018) on oral language development in **5- and 6-year-old multilingual Kannada speakers**.
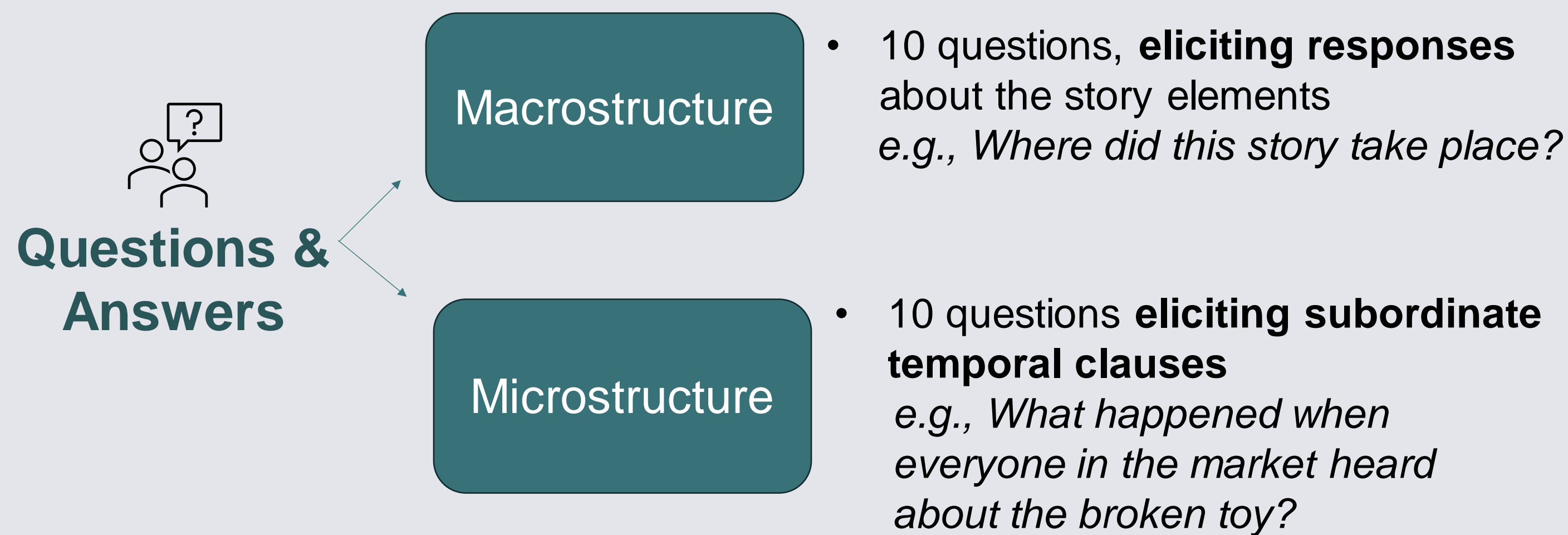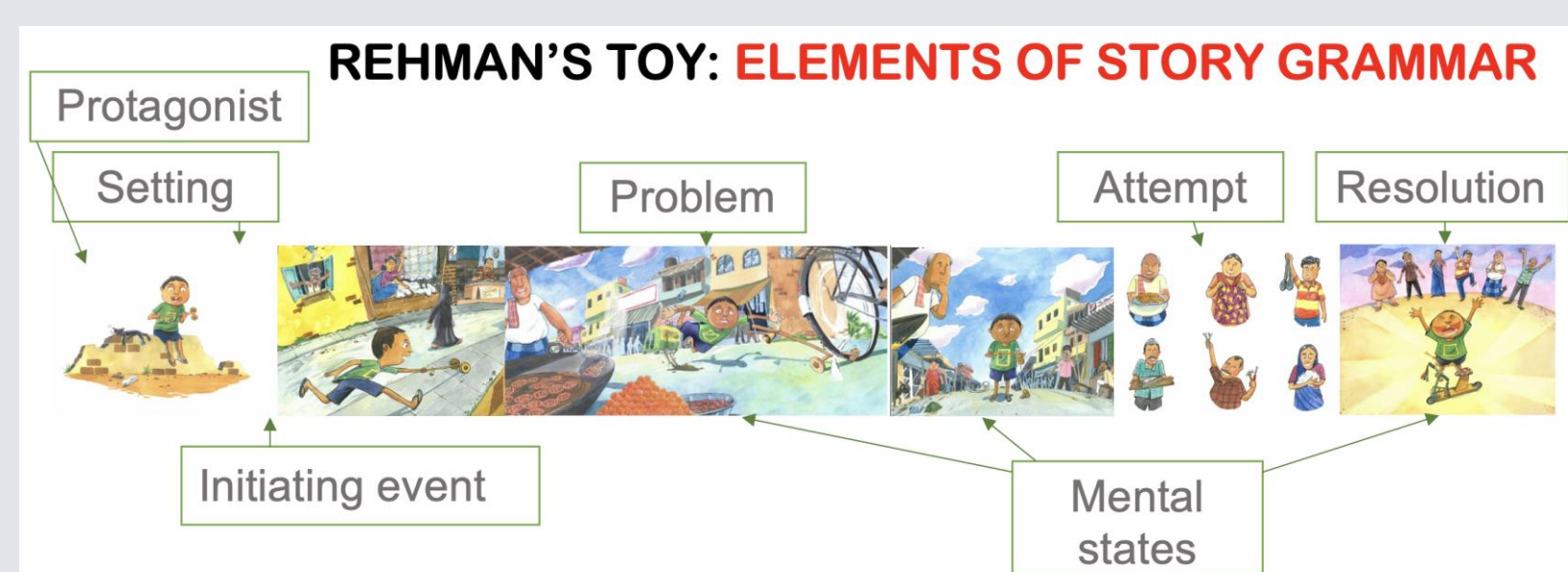
Methods

Intervention session in small groups (4-10 children):

Focusing → Shared story-book reading → Questions & Answers → Stretching
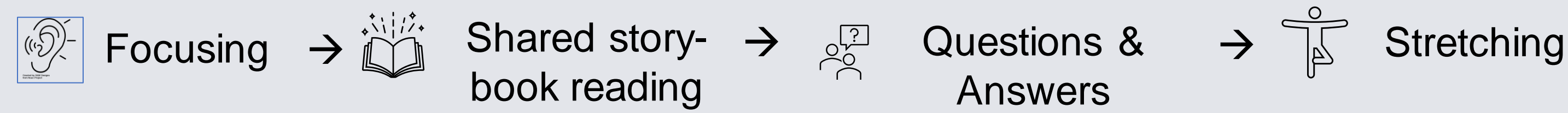
Story design

❖ All stories had the same story grammar: the same story elements in the same sequence (except mental states)
❖ All story scripts were rich in subordinate temporal clauses (15-17 instances per story).
❖ Stories were culturally appropriate and richly illustrated.
❖ 14 stories designed, and counterbalanced across all test and intervention sessions.

REHMAN'S TOY: ELEMENTS OF STORY GRAMMAR
Protagonist, Setting, Problem, Attempt, Resolution, Initiating event, Mental states

Questions & Answers

Macrostructure
• 10 questions, **eliciting responses** about the story elements
e.g., Where did this story take place?

Microstructure
• 10 questions **eliciting subordinate temporal clauses**
*e.g., What happened when everyone in the market heard about the broken toy?*

❖ **Question type was counterbalanced:** In 5 sessions the shared story reading was followed by macrostructure Q&A activity, and in 5 with the microstructure Q&A activity. The order of the Q&A activity (macrostructure first, microstructure first) was counterbalanced across groups.

Test (individual sessions)

Story retelling
• each retelling was transcribed using CHAT by a Kannada speaker
• **macrostructure scoring**: 0 = no element produced; 1 = element produced; 2 = element produced & elaborated (linked to another story element)
• **microstructure coding** is ongoing

Additional measures: home survey for family socio-economic status (SES), and the language of books-at-home; child receptive vocabulary & grammar in Kannada (Picture Vocabulary & Sentence Repetition task; Nag, in preparation).

Participants

❖ 87 5- and 6-year-old multilingual children (mean$_{age\ in\ months}$ 76; SD= 6.1) with Kannada as one of their school languages
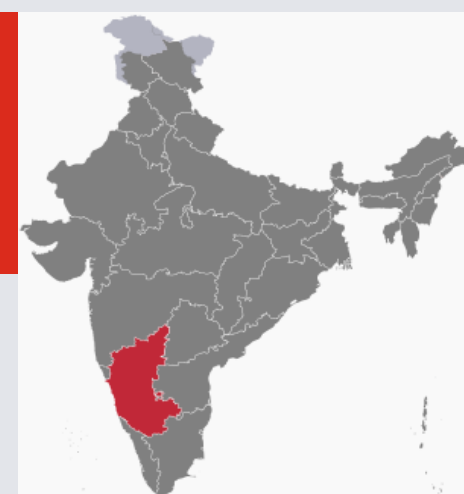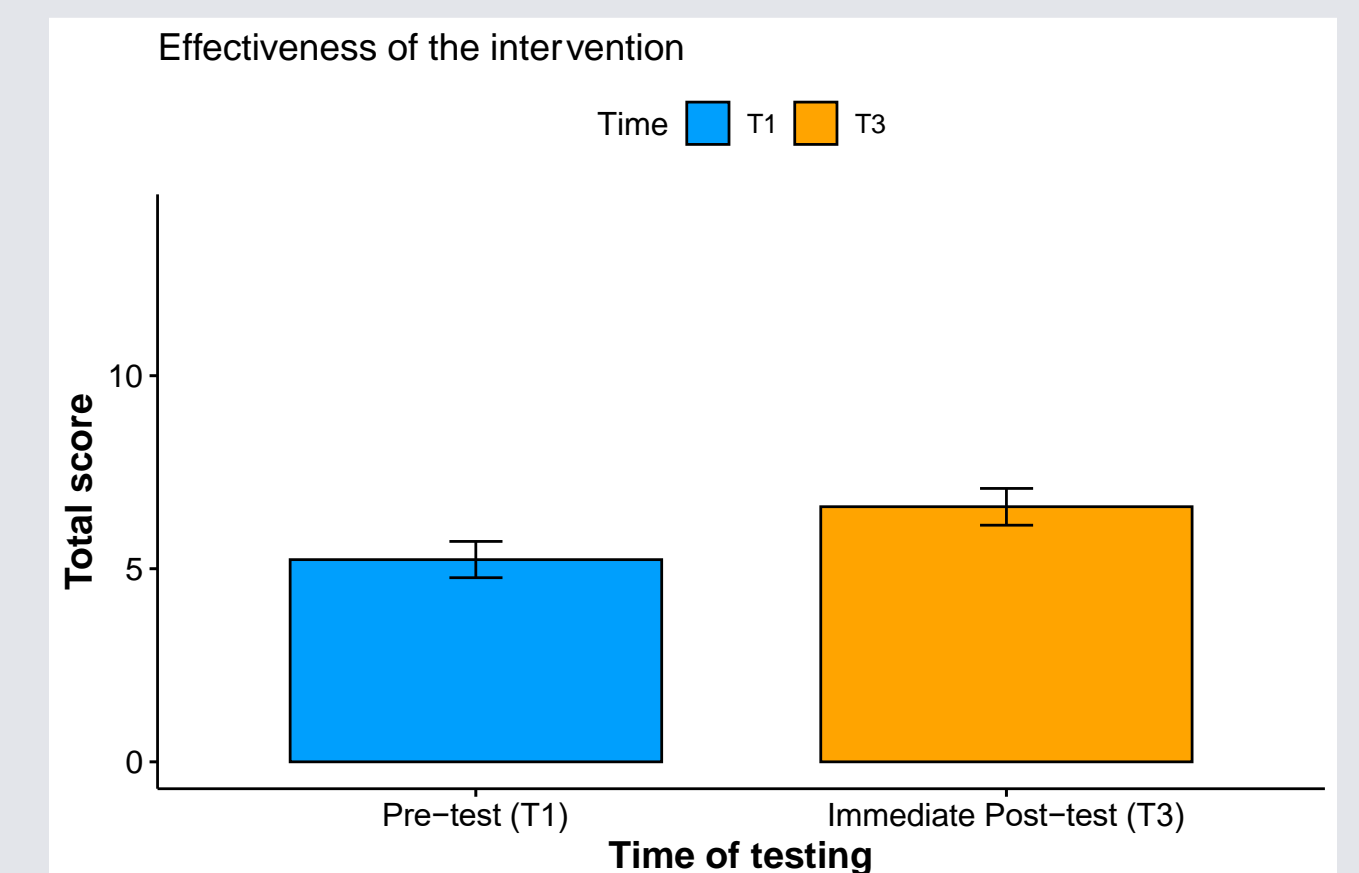
Research Questions and Results

RQ1. Is the intervention effective in enhancing the story grammar of children's story retellings?
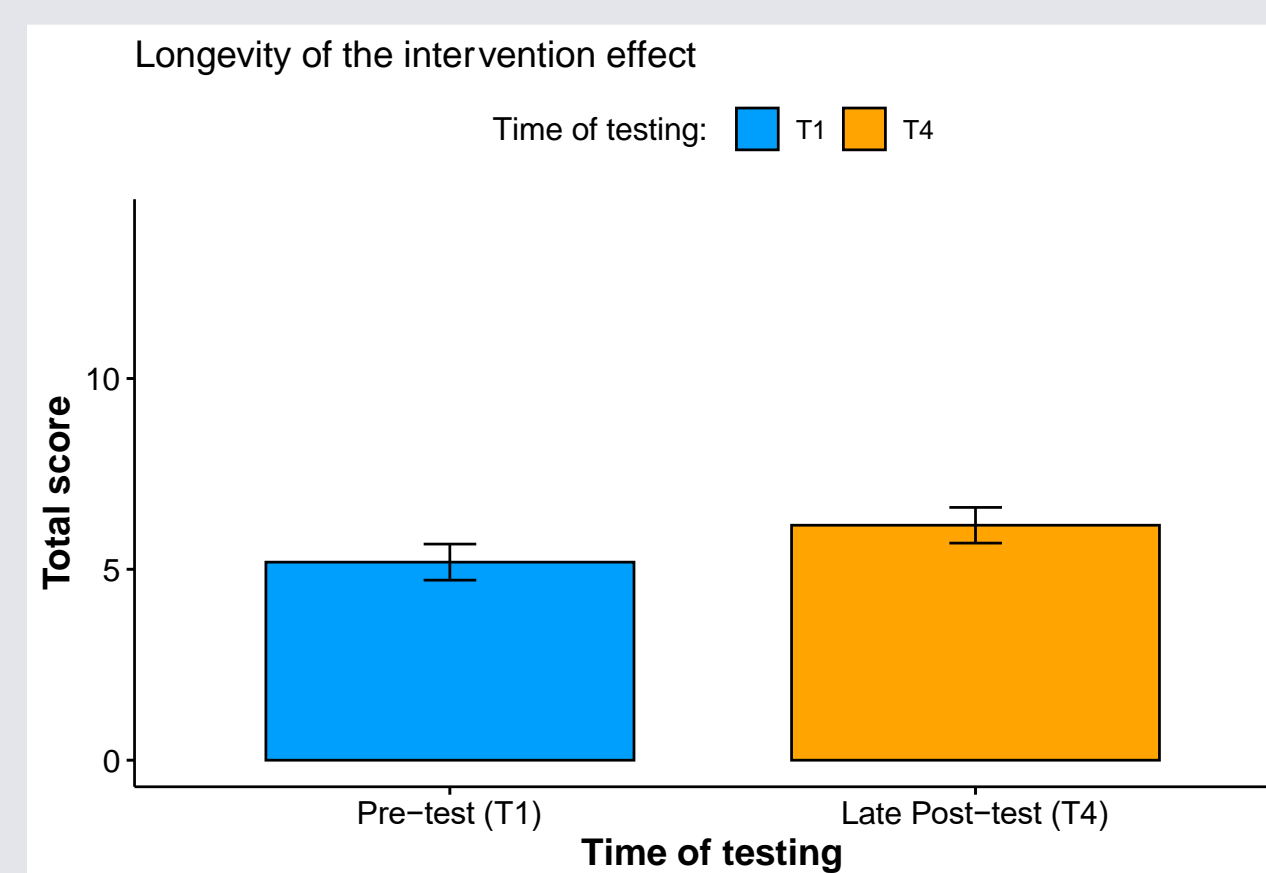
Total macrostructure score: the sum of scores for the 7 elements.

➢ Children did significantly better in T3 compared to T1.

Effectiveness of the intervention

	Estimate	SE	t	p
Test point	1.504	0.416	3.612	<.001

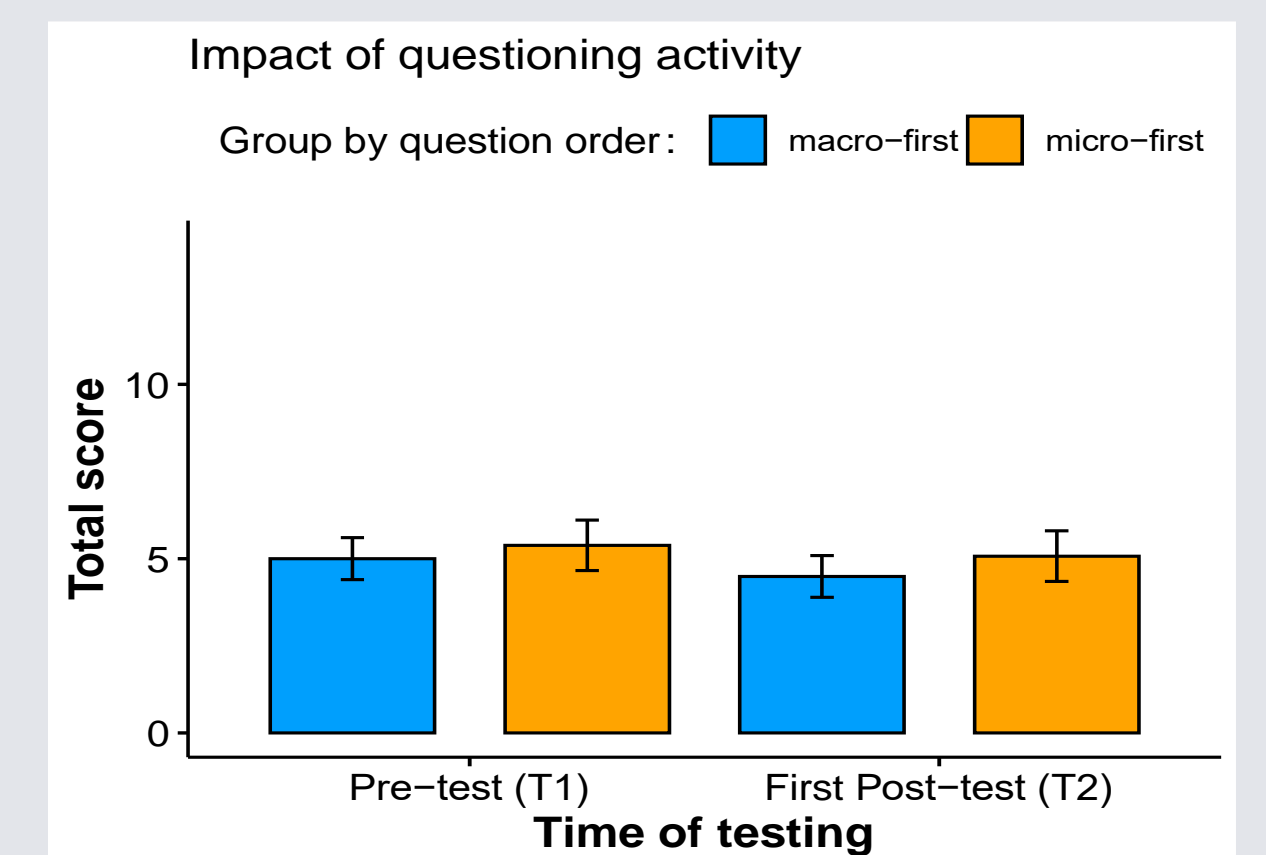**RQ2.** Are the intervention effects long-lasting?

Longevity of the intervention effect

➢ Children did significantly better in T4 relative to T1, hence intervention effect holds over one month.

	Estimate	SE	t	p
Test point	1.028	0.444	2.314	0.021

**RQ3.** What is the impact of the type of question & answer activity?

➢ Midway through intervention (T2 vs. T1): No significant difference between children who were asked the questions eliciting the macrostructure (story elements) and those eliciting the microstructure (subordinate temporal clauses).

Impact of questioning activity

	Estimate	SE	t	p
Test point	0.505	0.839	0.602	0.547
Question Type	-0.467	0.398	-1.173	0.241
Time x Question Type	-0.796	1.434	-0.555	0.579

RQ4. Are the intervention effects modulated by maternal education, Kannada print at home and child's pre-existing Kannada vocabulary & grammar knowledge?

➢ Children's pre-existing Kannada skills were significant predictors of children's total macrostructure score in both T1 and T3. Maternal education and Kannada print at home were not.
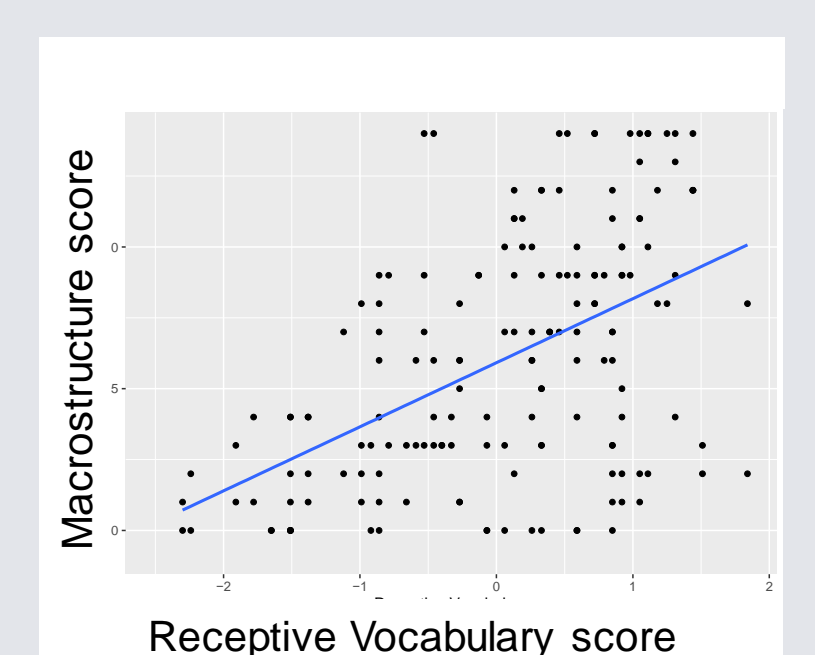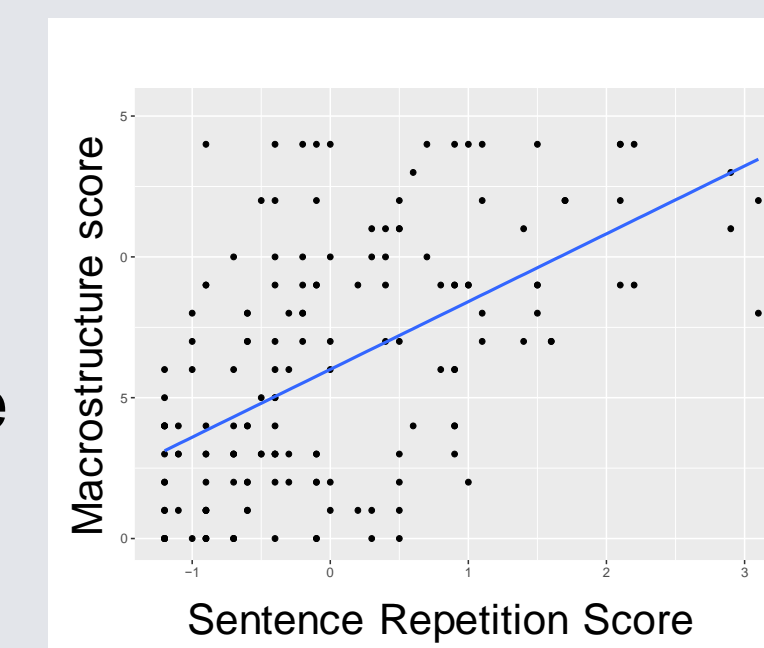
Discussion

✓ These results demonstrate that structured input and systematic opportunity for language production can enhance children's narrative skills at the macrostructure level, and the effect seems to maintain over time.
✓ Children's existing Kannada vocabulary and grammar skills were predictive of their total score in macrostructure, while SES and Kannada print at home were not.
✓ The questions specifically eliciting elements of the story grammar (macrostructure) did not influence the narrative structure of the story retellings, unlike in previous studies (e.g., Silva, Strasser & Cain, 2014, Silva & Cain, 2019). This could be because the number of sessions prior to T2 assessment were too few, or varied levels of Kannada proficiency in this multilingual group. One other reason to consider is varied levels of engagement with the questions when delivered in a small group intervention.

Cite as

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References

For references, please scan the QR code.