RESEARCH BRIEF SERIES

Preschoolers' School Engagement with Teacher's Questions and Comments during Interactive Book Reading
A Child-centered Approach Using Electro-dermal Bracelet

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KEY IMPLICATIONS

- Teachers' lower-level cognitive loading questions (e.g., descriptions and enumeration) might elicit more mental effort from emergent English-Mandarin bilinguals to process the stories during interactive book reading (IBR) in Mandarin class.

- More mental effort supports children's Mandarin productive vocabulary learning, particularly in children who have lower initial productive vocabulary size.

- More mental effort promotes story comprehension in children with lower Mandarin proficiency.

BACKGROUND

IBR is considered one of the best activities to promote children's early language and literacy development at school (Sun & Yin, 2020), and teachers' well-designed questions may play a significant role in such promotion (Sun, Toh, & Steinkrauss, 2020). To better design the questions, it is crucial for teachers to understand the mechanism behind this teaching strategy on children's reading process (e.g., cognitive engagement) and learning outcomes. To date, there are limited studies which explore such mechanism.

FOCUS OF STUDY

The current study aims to explore the effects of teachers' questions on Singaporean emergent bilingual children's mental effort and Mandarin learning in Mandarin IBR. The first objective is to examine whether children invest more mental effort when teachers raise well-designed questions (i.e., higher and lower levels cognitive loading questions) in IBR. The second objective is to find out whether children's mental effort is positively related to their learning outcome including vocabulary learning and story comprehension.

KEY FINDINGS

The results revealed that children who listened to stories with lower-level questions had invested more mental effort than children who listened to the stories without being asked questions. More mental effort supported children's Mandarin productive vocabulary learning and the effect was more pronounced among children with lower initial productive vocabulary. More mental effort was also found to promote better story comprehension among children with lower Mandarin proficiency.

SIGNIFICANCE OF FINDINGS

This study confirmed that lower-level cognitive questions make significant contributions to emergent bilingual children's Mandarin learning (e.g., Sun & Verspoor, 2020), and explored the mechanism behind this positive correlation from the perspective of mental effort. Children with limited initial Mandarin language skills may find lower-level cognitive questions appropriately challenging for them and hence invest more mental effort in IBR. Once verified by more studies with teachers using a similar research design, the findings may be incorporated into professional development courses for teachers in bilingual programmes in Singapore.

PARTICIPANTS

A total of 99 English-Mandarin emergent bilingual children (45 girls and 54 boys) from 8 preschools were involved in the study.

RESEARCH DESIGN

Children were randomly assigned to one of these three reading conditions: (1) IBR with teachers' high-level cognitive loading questions; (2) IBR with teachers' low-level cognitive loading questions; and (3) IBR without teachers' questions. Prior to the intervention, children were tested for their general Mandarin language proficiency and their production, comprehension, and meaning transfer of targeted words chosen directly from the storybooks.

During the intervention, three reading sessions were conducted, and a group of children (N = 4 to 5 on average) were required to listen to the three selected stories in each session read by a research assistant.

During the IBR, children's mental effort was measured with Shimmer's NeuroLynQ™ system. The NeuroLynQ sensor is a lightweight wearable device that can capture real-time skin conductance using two AgCl electrodes. GSR signals were recorded at a frequency of 5 Hz. After the intervention, children's vocabulary and story retelling skills were tested.

REFERENCES

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