8084V-Acquisition of Spatial Prepositions in Mandarin-speaking Preschoolers: A scoping review

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Introduction

Spatial prepositions: such as "in," "under," "between," or "around," play a crucial role in defining locations or directions in relation to a reference (Schlosser et al., 2012). Mastery of these spatial prepositions is essential for children, aiding them in daily tasks, particularly in understanding and following instructions (Schlosser et al., 2014).

However, due to the abstract nature of spatial concepts and the diverse strategies different languages employ to encode spatial relationships, there is no universal agreement on their description. Furthermore, research indicates that the acquisition of spatial linguistic tools is highly language-specific and age-dependent. These factors pose challenges to the use of AAC (Augmentative and Alternative Communication), which proposes the use of symbols to augment or replace natural language when expressing spatial relationships.

Objective: To address this challenge, we conducted a scoping review to map the literature on the assessment of typical Mandarin-speaking children's acquisition of spatial prepositions in Chinese.

Methods

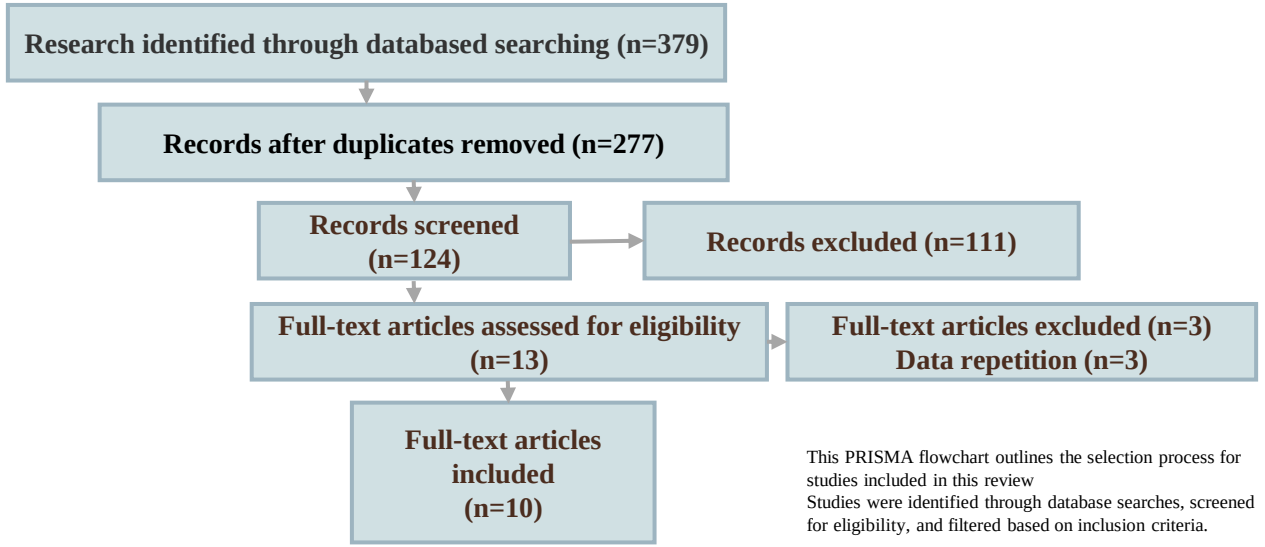
Databases:

Four global databases (Linguistics and Language Behavior Abstracts (LLBA), PsychInfo, Web Science Database, Google Scholar)

Chinese database (CNKI)

Keywords: ("Spatial expression" OR "spatial preposition" OR "spatial words" OR "spatial language" OR "spatial terms" OR "locative terms" OR "localizers" OR "spatial grams") AND (children OR child OR preschooler OR kid OR youth) AND (Mandarin OR Chinese) NOT (teenager OR adult)

Only words indicating physical relationships are included. Studies focusing on the acquisition of metaphorical meanings for spatial words, spatial words related to proximity, spatial words related to scale and sizes, are excluded. However, if a study investigates words indicating physical relationships as part of its broader scope, it is included.



This PRISMA flowchart outlines the selection process for studies included in this review
Studies were identified through database searches, screened for eligibility, and filtered based on inclusion criteria.

Findings

Various tools and methodologies have been used to enhance spatial preposition acquisition in Mandarin-speaking population, including:tangible objects; photos; static and animated graphic symbols. This study identified three types of tasks to investigate the developmental effect on spatial preposition acquisition.

Classic production and comprehension tasks

Involves a production and/or a comprehension task.
•A typical outcome variable was task accuracy.
•Age-related effects were observed, with small effect sizes across studies (Hedges' g = 0.17 to 0.42), indicating variation in the impact of age on production tasks.
Five comprehension tasks were reviewed.
•Forced choice task (Deng, 2014):
•Participants saw a picture and heard two descriptions from two characters on a computer screen.
•They had to judge which statement accurately described the spatial relationship in the picture.
•Age effects were generally small, with effect sizes ranging from (Hedges' g = 0.16 to 0.29).

Immersive tasks category

Wang's study (2018):
•A block-building game within various contexts (storytelling, free play, themed, and imitation block building).
•Researchers recorded the children's use of spatial language.
•A significant age effect was observed, but the effect sizes were small (Hedges' g = 0.04 to 0.06).
•The condition-specific effect for block building was also small (Hedges' g = 0.01 to 0.02)
Si's study (2015):
•Conducted in a virtual environment where children interacted with challenges that mapped their movements to in-game characters.
•The study used an innovative approach but lacked detailed statistical reporting. (lack of effect size)

Spontaneous conversation approaches

to assessment were studied using corpus studies.
•Age effect was identified as the most important factor in these studies. (e.g., the first use of a specific spatial word from one child
•The review employed survival analysis to capture the cumulative probability of a child's first use of specific spatial prepositions over time.
•Key references: Survival analysis is suited for cases where the exact time of the event is not observed for some subjects, making it appropriate for analyzing corpus data.
•The median survival time (age by which 50% of the children had used a spatial preposition) was 30 months.
•Median Survival Time = 30 months; 95% Confidence Interval (CI) [28, 32 months].
•This metric provides an average benchmark for pediatric language development milestones related to spatial language emergence.

Conclusion

Our review showed that the acquisition of spatial prepositions in Mandarin-speaking children involves a complex interplay of age-related effects, and varied assessment methodologies can be utilized for study. The study implies that tailored strategies and innovative approaches might be considered for optimizing AAC interventions and promoting the acquisition of spatial language skills in Mandarin-speaking children and individuals with communication difficulties.

Selected References

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Acknowledgments

The authors are grateful to Meryl Brodsky for their guidance and support throughout this research.

Disclosures

The authors declare no conflicts of interest related to this research. No external funding was received for this study.

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