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The Influence of Different Parent-Child Dialogue Types on Preschoolers' Schema Accommodation

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Abstract. Within research on early childhood cognitive development, schema accommodation—a core Piagetian construct—refers to the cognitive restructuring process through which individuals revise existing schemas or form entirely new ones when encountering information that contradicts their prior knowledge. This mechanism is essential for cognitive growth, as it enables the child to resolve conflicts between entrenched mental frameworks and novel experiences. For instance, a child who initially believes that "all flying things are birds" must adjust that criterion after discovering that bees fly but are not birds. This adjustment involves not merely adding new facts but fundamentally altering the classification rule, thus exemplifying accommodation as a deep reorganization of the original cognitive structure, rather than simple assimilation. This study explores how questioning-based and descriptive-only parent-child dialogue affect preschoolers' schema accommodation and its age differences. Forty children aged 3–5 joined a randomized pretest-posttest experiment. Results show questioning-based dialogue better promotes schema accommodation, especially for 4–5-year-olds, and guides children to focus on functional features. The findings offer evidence-based guidance for parents' daily cognitive guidance.

Keywords: parent-child dialogue, schema accommodation, preschool

1. Introduction

This study mainly examines how different types of parent-child dialogue influence schema accommodation in young children [1, 2].

Within the field of early childhood cognitive development research, schema accommodation, a core construct in Piaget's theory of cognitive development, describes the fundamental mechanism underlying the renewal and evolution of an individual's cognitive structure. Specifically, it refers to the cognitive restructuring process wherein individuals modify their existing cognitive schemas or establish entirely new frameworks when newly encountered information conflicts with their prior knowledge system. For example, when young children initially form the naive cognition that "all things that can fly are birds" and then learn from new experience that "bees can fly but are not birds," they actively adjust their core criteria for judging "birds." This process is a typical example of schema accommodation involving the reconstruction of the original cognitive framework.

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However, schema accommodation does not occur spontaneously; its core driving force is cognitive dissonance. Heuristic questioning-based dialogue can effectively guide young children to identify discrepancies between new experiences and their prior cognition, thereby triggering the state of cognitive imbalance known as cognitive dissonance. This state of cognitive imbalance compels individuals to actively adjust or restructure their existing cognitive schemas, which provides the critical internal motivation for schema accommodation to occur.

Meanwhile, the formation and development of young children's cognitive schemas are not isolated internal psychological construction processes; rather, they are shaped primarily through the accumulation of daily experiences and social interactions. As the most central and frequent form of social interaction in early childhood, parent-child interaction serves as a key ecological context that shapes the emergence of cognitive dissonance and the progression of schema accommodation in young children.

Relevant research by Zhu Siying and Kong Shuxuan has yielded the following findings: (1) Dialogic teaching can promote the development of language skills in young children with developmental delays. (2) Dialogic teaching exerts immediate and retained effects on the overall language performance of young children with developmental delays, yet these retention effects are unstable. (3) In cross-situational settings, young children with developmental delays exhibit heterogeneous responses to dialogic teaching interventions due to factors such as the environment, attention span, and temperament [3].

This study aims to address two core issues: first, that questioning-based dialogue, which guides comparison and reflection on differences, promotes young children's schema accommodation toward new things more effectively than descriptive-only dialogue, which merely describes object characteristics; and second, that under the same type of dialogue, 4-5-year-old children demonstrate more obvious schema accommodation than 3-4-year-old children.

2. Method

A total of 40 preschool children aged 3 to 5 years were recruited for this study, including 20 children in the 3-4-year-old age group and 20 in the 4-5-year-old age group. Participants were randomly assigned to two equal groups (n=20 per group), with 10 children from each age bracket in each group [4]. This study employed a randomized controlled trial with a standardized pretest-intervention–post-test paradigm, which is widely used in experimental research on early childhood cognitive development.

All children were shown a picture of a "calf" (a novel object that shares perceptual similarities with, but has core categorical differences from, a dog) during the intervention, followed by a 5-minute parent-child dialogue with standardized group-specific protocols. The full experimental procedure is detailed in Table 1 [5].

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Table 1. Experimental procedures and group intervention design

Pretest		Ask children to describe the characteristics of a "dog" and establish a baseline for the dog schema (e.g."having four legs, being able to bark").	
Intervention test	Children in both groups are shown pictures of a "calf" (a novel object that shares similarities with but also differs from a dog), followed by a 5-minute parent-child dialogue:	Experimental Group (Questioning Dialogue):	Parents ask questions such as "How is this different from the dog you know?" and "What can it do that a dog cannot?"
		Control Group (Descriptive Dialogue):	Parents only provide descriptions, for example "This is a calf. It has four legs, is covered with fur, and feeds on grass."
Post-test		Ask children to describe the characteristics of the "calf" and distinguish the differences between dogs and calves, so as to assess whether a new calf schema has been established (indicating successful accommodation).	

3. Result

About group differences in schema accommodation outcomes, the success rate of pattern adaptation for children in the question-based dialogue group is significantly higher than that of children in the descriptive-only dialogue group, which shows that question-based dialogue is more effective in promoting cognitive reorganisation of preschool children.

The intervention effect is age-related. Compared with children aged 3-4, question-based dialogue has a significantly stronger promoting effect on children aged 4-5, while children in the descriptive dialogue group did not observe significant age-related differences in the results of model accommodation.

Finally, there are the characteristics of children's cognitive descriptions. Children in the dialogue group, based on questions, mainly focus on the functional attributes of objects (for example, "calves can produce milk"), while children in only descriptive dialogue groups mainly emphasise surface perception characteristics (for example, "calves have yellow fur"). It is worth noting that function-oriented cognitive coding is more in line with the core development requirements of model adaptation.

4. Discussion

This study examined how two types of parent-child dialogue—question-led and description-only—affect schema accommodation in preschool children, and how these effects differ across age groups. Below, we discuss our core findings in the context of existing research, Piaget's theory of cognitive development, and wider trends in the field [6].

First, our finding that question-led dialogue works better than description-only dialogue at promoting schema accommodation aligns with the core logic of cognitive dissonance theory [7]. Unlike one-way delivery of descriptive information, open-ended questions actively guide children to notice mismatches between new information and their existing schemas. This directly triggers cognitive dissonance—the internal drive that underpins schema accommodation. This result builds on prior research on dialogic interaction, and confirms that reflective questioning is a key mechanism linking parent-child communication to early cognitive restructuring [8].

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Second, the clear age difference in the impact of question-led dialogue matches Piaget's theory of preoperational cognitive development. Children aged 4-5 have more advanced symbolic thinking and executive function than 3-4-year-olds. This lets them better engage with reflective questions, use comparative thinking, and carry out the cognitive restructuring needed for schema accommodation. By contrast, description-only dialogue does not require children to process information actively, so its outcomes show no meaningful age-related differences.

Finally, differences in children's cognitive encoding patterns further confirm the core advantage of question-led dialogue. Description-only dialogue only conveys surface-level perceptual information, leading children to focus on outward features that do not challenge their existing category schemas. Question-led dialogue, on the other hand, guides children to explore the core functional traits that define category boundaries—an essential step for building a new, independent schema and achieving successful accommodation.

Current Field Limitations and Future Directions

While these findings offer valuable insights, they also highlight key gaps and areas for improvement across the broader field of early cognitive development and family interaction research.

Currently, the field relies heavily on cross-sectional designs and tightly controlled laboratory settings. A major drawback is that these methods only capture a static "snapshot" of cognitive restructuring, and cannot reflect the dynamic, cumulative nature of schema accommodation as it unfolds naturally over time. Furthermore, existing research often treats "parent-child dialogue" as a universal, standardized variable, and pays too little attention to how diverse cultural and socioeconomic backgrounds shape parental questioning styles and children's resulting cognitive responses.

To advance the field, future research should prioritize greater ecological validity and more diverse methodologies. First, longitudinal studies are needed to track how short-term cognitive dissonance sparked by questioning develops into long-term cognitive flexibility and categorization skills. Second, shifting observations from the lab to natural home environments would help capture spontaneous, everyday parent-child interactions. Finally, integrating multi-modal assessment tools, such as eye-tracking, EEG, or functional neuroimaging, could provide critical real-time physiological evidence of internal cognitive dissonance and schema encoding processes. This would move the field beyond behavioral observations alone, toward a deeper understanding of the underlying mechanisms.

5. Conclusion

This study mainly examines how different types of parent-child dialogue influence schema accommodation in young children. Overall, the results of this study show that question-based parent-child dialogue is more effective in promoting model adaptation of preschool children than descriptive dialogue alone, which is more obvious in preschool children aged 4-5. These results highlight the key role of heuristic and reflective parent-child interaction in supporting early cognitive development, and provide parents with actionable and evidence-based guidance to cultivate children's cognitive reorganisation through daily communication.

And this research still has shortcomings. First is the insufficient sample size, only 40 preschool children aged 3 to 5 were selected, with merely 20 children in each age group and each experimental group. The sample size is far below the conventional requirements for empirical studies on preschoolers' cognition. An overly small sample will result in insufficient statistical test power, making research results susceptible to random factors and making it difficult to guarantee the

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reliability and repeatability of conclusions. And the second, insufficient intervention duration, lacks practical significance: The core intervention only consists of a 5-minute parent-child conversation, while the core scenario of the study is daily parent-child communication. A short-term, one-time intervention cannot reflect the real impact of sustained daily parent-child dialogue on children's schema accommodation, nor can it embody the progressive nature of schema accommodation as a cognitive development process. The intervention results can only reflect an immediate effect and lack long-term value for practical guidance. The last one is that it lack of follow-up tests, making it impossible to verify the sustainability of effects: Only pretests and post-tests are designed without delayed follow-up tests (e.g., 1 week and 1 month after the intervention), making it unable to determine the retention of children's schema accommodation effects. In cognitive development research on preschool children, the sustainability of effects serves as the core basis for guiding family education, and this design deficiency significantly reduces the practical value of the study.

We should properly enlarge the sample size, extend the intervention duration, add delayed follow-up tests, and effectively enhance the reliability, repeatability and practical value of the research conclusions.

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