

Revisiting the acquisition of conditionals in early language production

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Background

- Across languages, children **produce conditionals (if-clauses) later than other complex constructions** of similar morphosyntactic complexity (e.g., *when*-clauses, *because*-clauses).¹⁻⁴
- However, the **reasons for the late emergence** of conditionals are debated.

Conceptual Explanation

- Children **acquire** conditionals later than other constructions because they are **cognitively more complex**.¹⁻³
 - While other constructions (e.g., *when*-clauses) make assertions about the actual world, **conditionals** specify **hypothetical situations**.

Psycholinguistic Explanation

- Children, **produce** conditionals infrequently because their meaning is **pragmatically superfluous**.¹
 - In **language production**, speakers may use alternative (non-conditional) constructions that convey similar meanings.

Children (but not adults) should use conditionals **later and less frequently** than other constructions of similar morphosyntactic complexity.

Children (similarly to adults) may use conditionals **as frequently as** other constructions of similar morphosyntactic complexity.

Current Study

- **Evidence** for children's acquisition of conditionals comes primarily from **early naturalistic studies** of children's spontaneous production.
 - Difficult to adjudicate between competing explanations.
- Here, we revisit children's early production of conditionals by **eliciting descriptions of hypothetical events experimentally**.
 - Unlike prior research, we tested both **children and adults** and **manipulated** the **hypotheticality** of the events.

(1) Bowerman, M. (1986). First steps in acquiring conditionals. In E. Traugott, A. Meulen, J. Reilly, & C. Ferguson (Eds), *On Conditionals* (pp. 285-308). Cambridge, UK: Cambridge University Press. (2) Reilly, S. J. (1986). The acquisition of temporals and conditionals. In E. Traugott, A. Meulen, J. Reilly, & C. Ferguson (Eds), *On Conditionals* (pp. 309-331). Cambridge, UK: Cambridge University Press. (3) Bloom, L., Lahey, M., Hood, L., Lifter, K., & Fiess, K. (1980). Complex sentences: Acquisition of syntactic connectives and the semantic relations they encode. *JCL*, 7(2), 235-261. (4) Kuczaj, S. A., & Daly, M. J. (1979). The development of hypothetical reference in the speech of young children. *JCL*, 6(03), 563-579.

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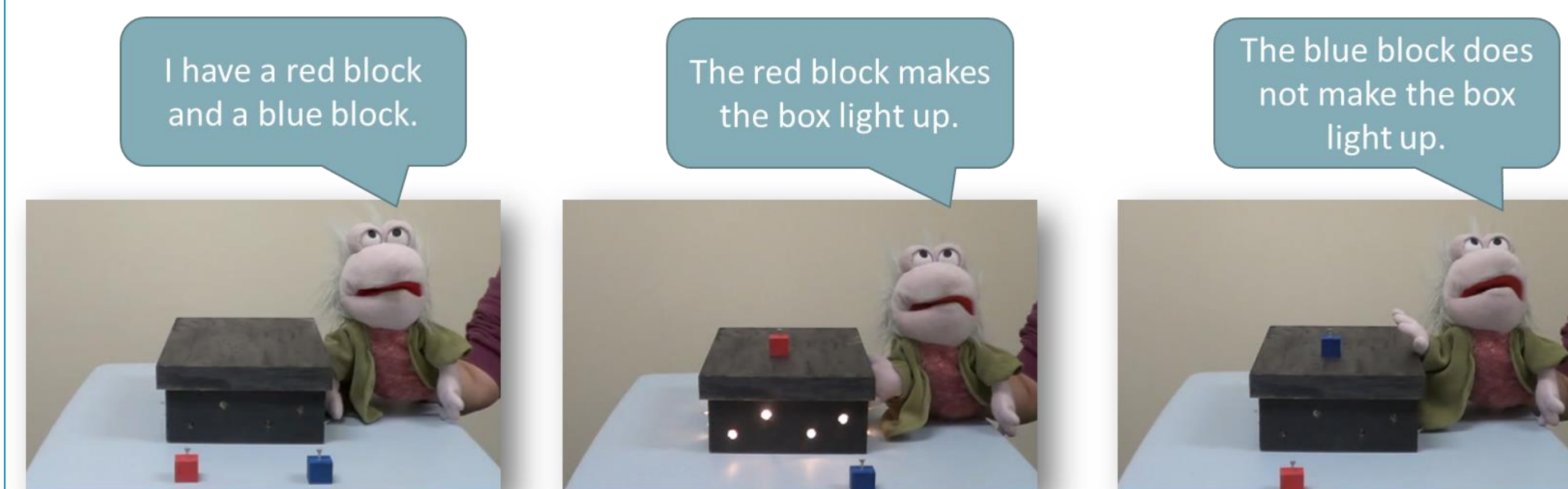
Methods

Participants

19 **3-year-olds** (M = 3;8, range = 3;0-3;11); 23 **4-year-olds** (M = 4;5, range = 4;0-4;10); 20 **5-year-olds** (M = 5;5, range = 5;0-5;11); 23 **6-year-olds** (M = 6;6, range = 6;0-6;11); 22 **Adults**

Demonstration phase

Teacher-puppet demonstrates how a novel toy with a simple causal structure works.



Test phase

Elicited production: participants teach a student-puppet how the toy works.

2 within-subjects conditions*

Low-hypotheticality



indicative conditional

E.g., *If you put the red block on the box, the box will light up.*

High-hypotheticality



counterfactual conditional

E.g., *If you had put the red block on the box, the box would have lit up.*

*questions chosen based on norming study: 20 adults were presented with indicative/counterfactual conditional "answers" and were asked to provide the puppet's most likely question.

Coding

Table 1. Syntactic-semantic complexity of utterances

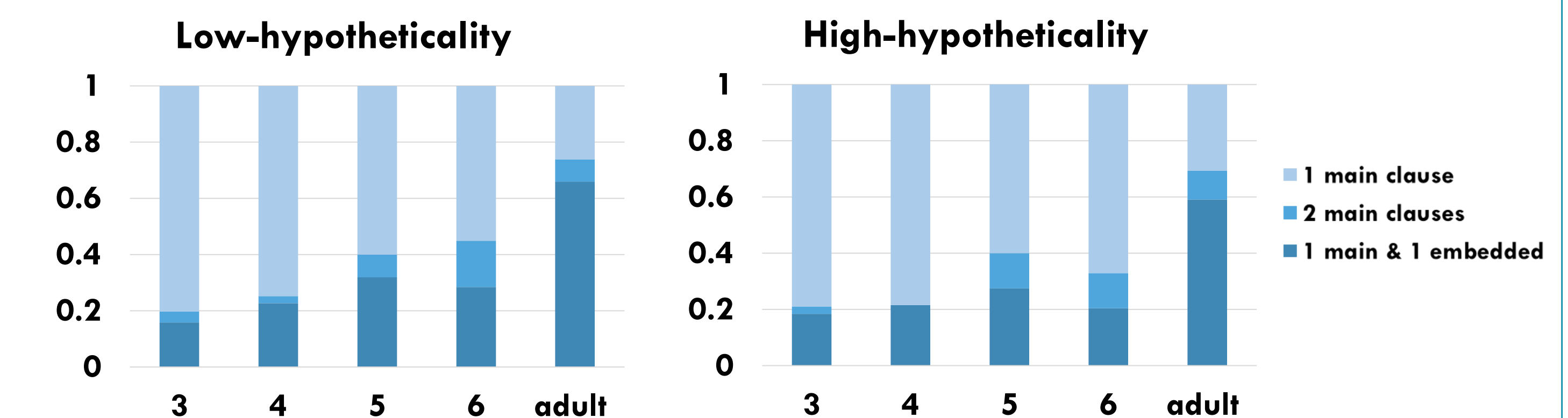
Syntactic complexity	Examples
1 main clause (antecedent only)	<i>Take the red one instead of the blue one.</i>
2 main clauses (ant. & consequent)	<i>You put the red block on the box and it will light up.</i>
1 main & 1 embedded (ant. & cons.)	<i>If you use the red block, it would have worked.</i>

Table 2. Types of (embedded) constructions used

	Types of clauses used	Examples
Non-finite	Main clause(s)	<i>Take the red one instead of the blue one.</i>
	Manner clause	<i>You can make the box work by putting the red cube on top of it.</i>
	Causative clause	<i>The red makes the light go on.</i>
Finite	Purpose clause	<i>Use the red block to light it up.</i>
	Conditional clause	<i>If he added the blue one, it could work.</i>
	Temporal clause	<i>When you put the red block on top of the box, the box lights up.</i>

Results

1. Syntactic-semantic complexity of utterances



- Hypotheticality (low vs. high): $\beta = -0.70$, $z = -2.88$, $p = 0.004$
- Age (adult vs. child): $\beta = -4.36$, $z = -4.61$, $p < 0.001$
- Hypotheticality (low vs. high): Age (6s vs. younger): $\beta = 1.56$, $z = 2.48$, $p < 0.013$

2. Types of (embedded) constructions used

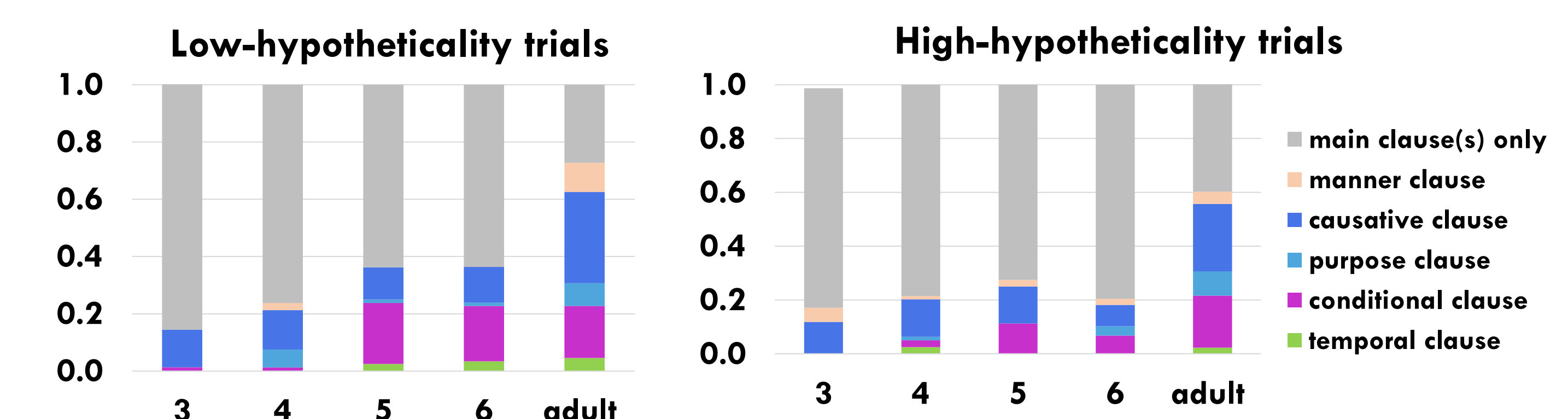


Table 3. Patterns of use of different constructions based on pairwise comparisons.

	Low-hypotheticality trials	High-hypotheticality trials
3s	causative < main	causative < main
4s	manner, purpose, conditional < causative < main	purpose, causative < main
5s	purpose, temporal ≤ causative, conditional < main	causative, conditional < main
6s	purpose, temporal ≤ causative, conditional < main	causative, conditional < main
adults	temporal, purpose manner, conditional ≤ causative, main	temporal, purpose, manner, conditional ≤ causative, main

Conclusion

- When describing hypothetical situations, **children used complex (i.e., embedded) constructions infrequently**, and less so than adults.
 - **Event hypotheticality** (low vs. high) affected use of embedded constructions only in **6-year-olds** but not in younger children.
- Unlike prior naturalistic studies,¹⁻⁴ we found **no evidence that conditionals are delayed compared to other constructions** of similar morphosyntactic complexity (i.e., finite embedded clauses).
 - Children, across age groups, did not use *if*-clauses less frequently than *when*-clauses.
 - However, children used conditionals more systematically, after age 5.
- Overall, data **support the psycholinguistic explanation**.
 - The infrequent use of conditionals (*if*-clauses) in children's production does not seem to be due to conceptual difficulties, but rather to the **availability of alternative** (grammatically simpler) **constructions with a similar meaning**.