When is children’s scope interpretation non-isomorphic, and why?

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Claims:
1. Hungarian preschoolers can access both the isomorphic and the inverse scope readings of doubly quantified sentences – contrary to Musolino’s (1998) Observed Isomorphism.
2. Scopal ambiguity represents a garden-path problem (Musolino & Ldiz 2003, 2006), which children resolve by sticking to the default reading as long as it is compatible with pragmatics. The default reading of doubly quantified sentences is not the isomorphic but the collective reading.
3. Isomorphic readings are dissociated from the linear flow of speech, their scope order can be determined by factors other than linear order, e.g., by thematic prominence, or the structure of the visual input, which may yield inverse readings.

Evidence: Experiment 1

Research question: Do Hungarian preschoolers accept the isomorphic and the inverse distributive readings of doubly quantified sentences such as (1)?

Participants: 46 children (aged 6.5, 6D 4 months)
Materials: sentence–picture pairs where the sentence is SOV or OSV, and the picture shows either its isomorphic reading (Picture A) or its inverse reading (Picture B).
Method: Truth value judgment

Results: Children show only a mild bias towards isomorphism, whereas adult answers are highly isomorphic.

Evidence: Experiment 3

Research question: Which is the default reading of doubly quantified sentences for Hungarian preschoolers?
Materials: Doubly quantified sentences such as (2) (3), sets of identical boys
Method: Acting Out
Results: Children acted out the collective reading in 72.5% of all the test cases. Distributive readings occurred only when the collective reading was pragmatically implausible (as in [3]).

Evidence: Experiment 4

Hypothesis: As a distributive reading represents a garden-path problem, it requires a longer reaction time than the collective reading.
Participants: 23 children (aged 5.11, SD 6 months)
Materials: sentence–picture pairs where the sentence (e.g. 4) is SOV or OSV, and the picture shows its collective (Picture C) or inverse (Picture D), or inverse reading (Picture E).
Method: Reaction-time of truth value judgements

Results: Children access the distributive readings significantly more slowly than the collective readings. They also access the inverse readings significantly more slowly than the isomorphic readings. Adults’ reaction times by readings do not differ significantly.

References

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Observation isomorphism is limited to the interaction of quantification and negation, and does not extend to doubly quantified sentences.

Craig, 1910. 

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