

## Immature Syntax or Processing?

What causes “Scope marking Errors” in English-Speaking 5-year-olds?

C. Jane Lutken & Geraldine Legendre

Johns Hopkins University

(1) \*What/who do you think **who** the cat chased?

(2) *Who do you think the cat chased?*

(3) Q: How did the boy say **what** he caught?

*Child's answer: \*A fish! (as opposed to loudly)*

**Question: Is this error the result of access to Universal Grammar or Processing Errors?**

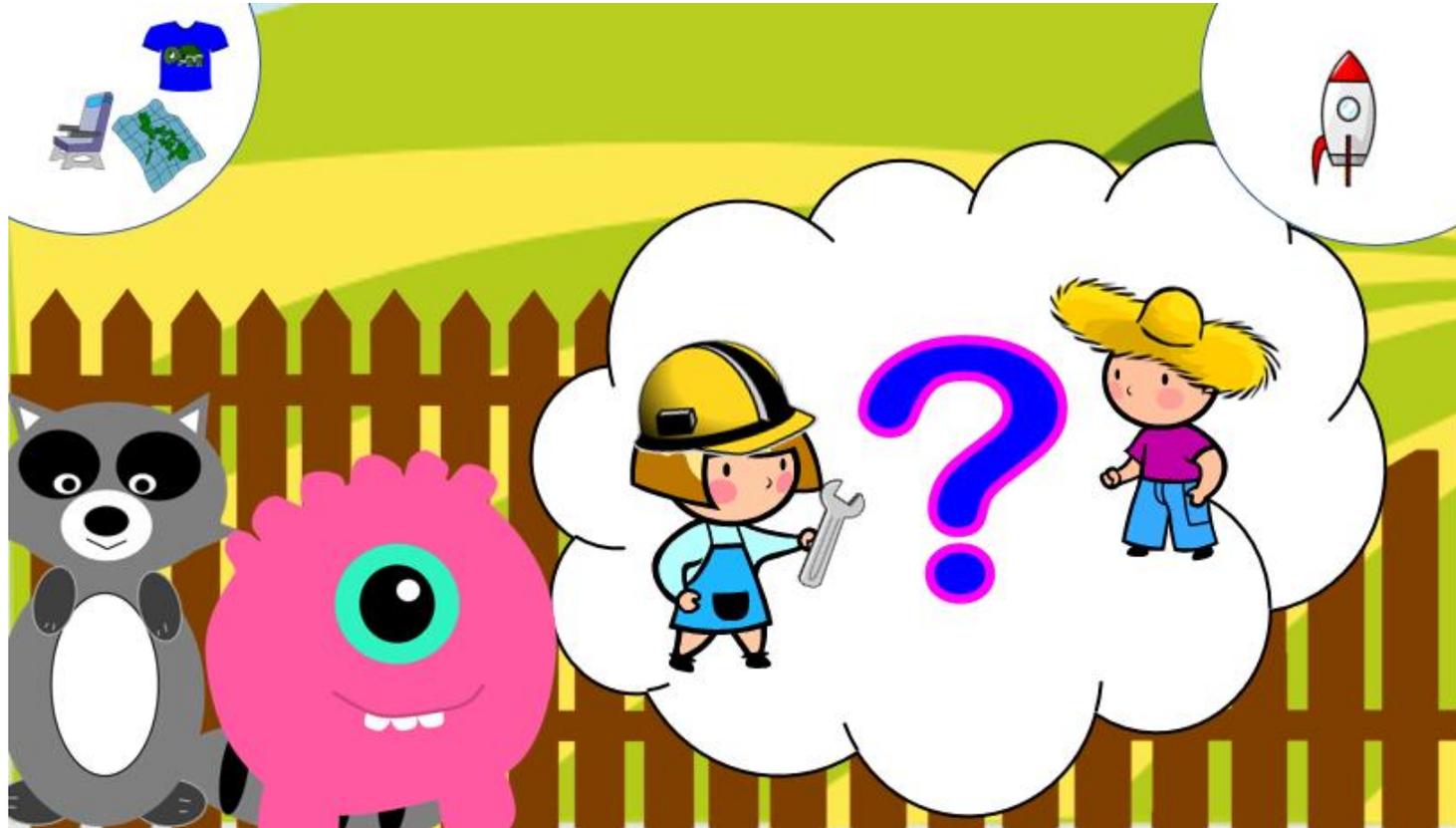
- **Production Task**
- **Comprehension Task**
- **Working Memory (WM)**

**Production and Comprehension are correlated with WM, but not each other**

**Design:** Within-subjects. The tasks were counter-balanced for whether production or comprehension was tested first. Working Memory always measured last.

**Participants:** 32 children recruited from the Baltimore area. Age range 4;4 to 5;10 (mean 5;6). 12 participants in person; 20 virtually due to COVID-19

## Production Task



Target: *Who does Mork think can fix the engine?*

Attested Error: *Who/What does Mork think **who** can fix the engine?*

# Comprehension Task



*Q: How did Evil Steve tell Detective Sherry **what** he was gonna steal?*

Adult-like answer: In a letter!

Scope Marking answer: The ring!

Embedded clause answer: The crown!

## Working Memory Task

- Forward and Backward Digit Span task from Differential Ability Scales- II (DAS-II)
- Composite Score = Forward Digit Span (FDS) + Backward Digit Span (BDS)

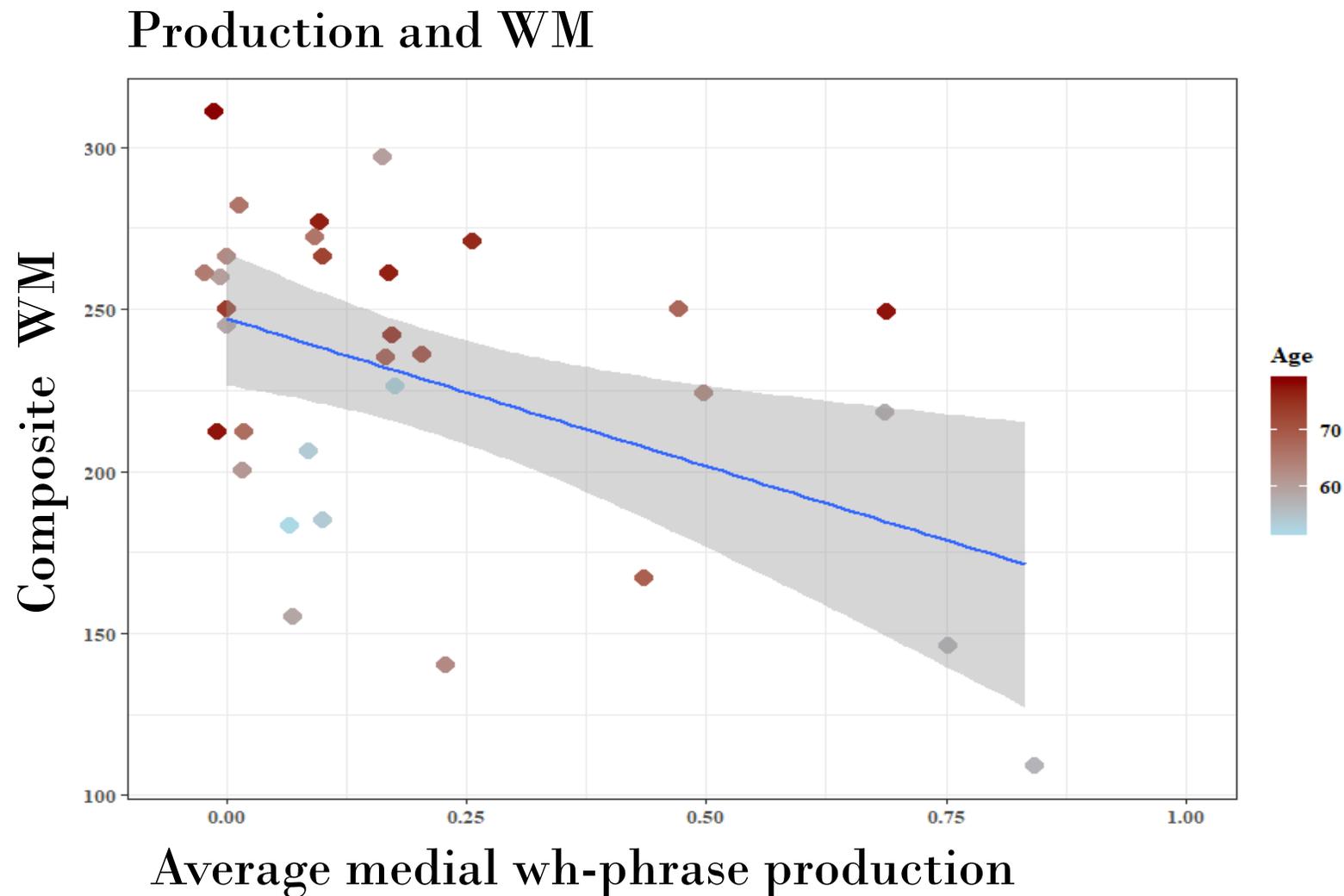
Prompt: 4 3 7 1

FDS response: 4 3 7 1

BDS response: 1 7 3 4

## Production Results

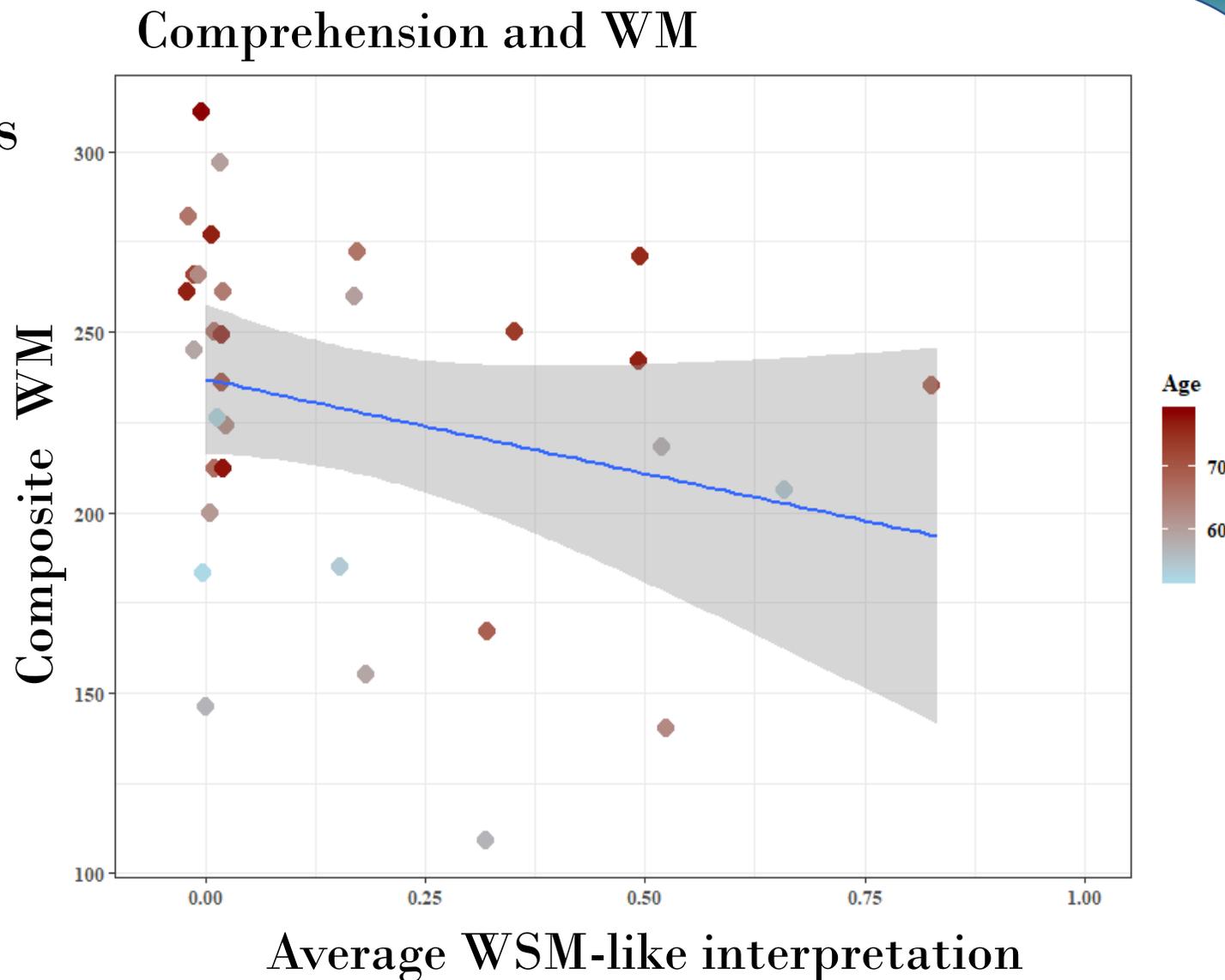
- 384 productions, 31 were not biclausal
- Composite WM negatively correlated with medial wh-production ( $p = 0.01$ )



**Production performance correlated with WM**

## Comprehension Results

- 60.3% adult-like responses
- 13.1% Scope Marking responses
- 5.5 % embedded clause
  
- Composite WM negatively correlated with WSM-like interpretation ( $p = 0.08$ )
  
- If we only consider FDS,  $p = .01$



**Comprehension performance correlated with WM**



### Conclusions:

- If WSM errors were the result of children thinking English included WSM, we would expect to see evidence of correlation between production and comprehension performance.
- We did not find such a relationship.
- Instead we found that individual performance on WM tasks is a reliable predictor of production and comprehension performance.
- This supports the hypothesis that errors on these tasks are indicative of immature processing mechanisms rather than grammar competence.