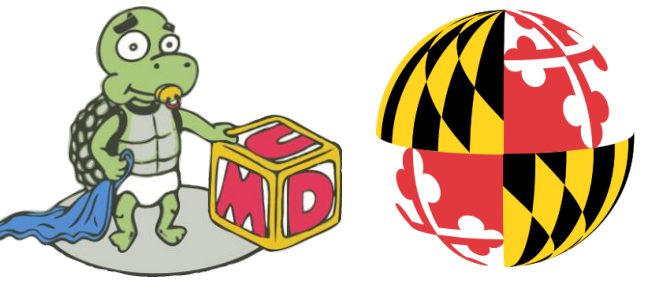# Do 4-year-olds employ island constraints during sentence processing?

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Research Question

Does children's processing of wh questions show knowledge of grammatical constraints?

➤ **Do children use knowledge of islands to process sentences in real time?**
   ➤ **Goal: Design an experiment to test this question**

Adult and Children Sentence Processing

- Adults and children interpret and process filler-gap dependencies actively.

  (1) *Where did Lizzie say (_) that she was catching butterflies (_)?*

  - Adults and children answer in response to the verb "say."

  - These results indicate incremental processing (Omaki Dissertation 2010 & Omaki et al 2013).

- In environments where a filler-gap dependency is impossible (islands) adults no longer actively resolve filler-gap dependencies.

  (2) *Where did the girl who said something (*_) catch butterflies (_)?*

  - Adults cannot respond to the verb "said" in (2), unlike the verb "say" in (1).

  - Relative clauses (e.g. [NP the girl who said something]) are islands that block wh-movement (Ross 1967).

- Children by age 4 have knowledge of relative clause island constraints (Fetters & Lidz 2016).

Experiment

- Question After Story Task

  Baseline: Where did the bear **agree** (_) [to play (_)]?

  Test: Where did [the bear that **agreed**] play (_)?

- When the first verb (**agree**) is in a relative clause, it creates an island for wh-movement.

- Can children use knowledge of islands in real time to avoid associating the wh-adjunct with the first verb they hear?

Materials

Look! These bears are twins! They look almost exactly the same, they like some of the same stuff, but *sometimes* they disagree!

"Look Bunny is picking apples at the apple tree!"

"Bunny! Bunny! Where do you think we should play?"

"Hmm… What if we played in the sandbox this time? What do you think?"

"I **agree**! Let's play there today! It's a perfect day for the sandbox! I'll meet you there!"

"Awesome! I'm so glad you **agree** with me! I was going to eat these apples at the sandbox! Could you carry them for me? They're too heavy…" "Yeah! Okay!" and he took the apples…

On his way to the sandbox, he saw his twin in the garden.

"Hey buddy! I saw Bunny at the apple tree. He had the idea that it's the perfect day to play in the sandbox and I **agreed** with him! What do you think about Bunny's idea?"

"No way! Ew! Yuck! It's so dirty in the sandbox! I don't want to play there! I **disagree** with Bunny! It is NOT the perfect day to play in the sandbox!"

"In fact, I think it is the perfect day for the beach! If you ask me! So I'm going to play on the beach! Bye!!!!"

"Wooo!" … and he social distanced at the beach.

Meanwhile at the sandbox, the other twin and Bunny played together for the rest of the afternoon… and it was great.

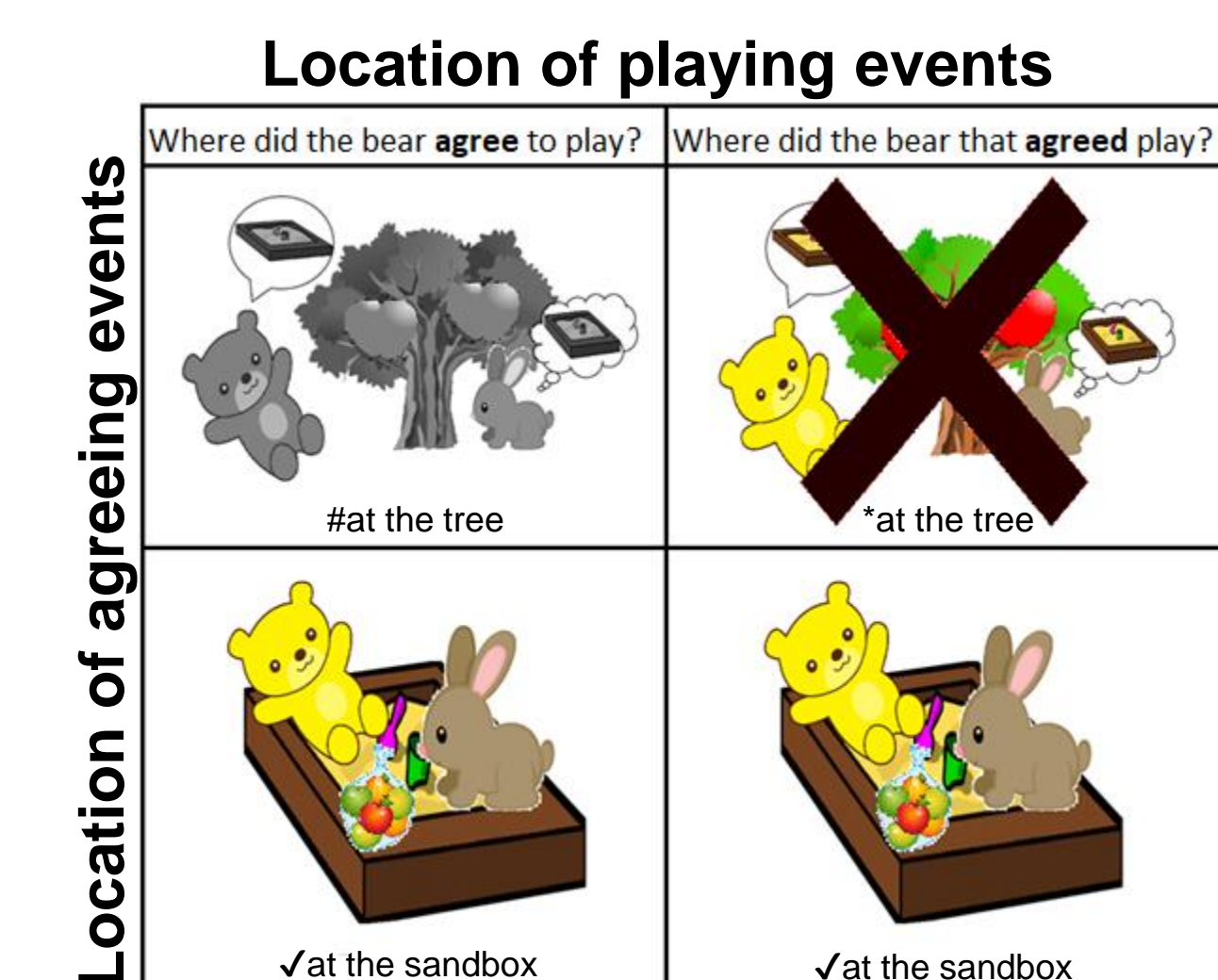Where did the bear **agree** to play?
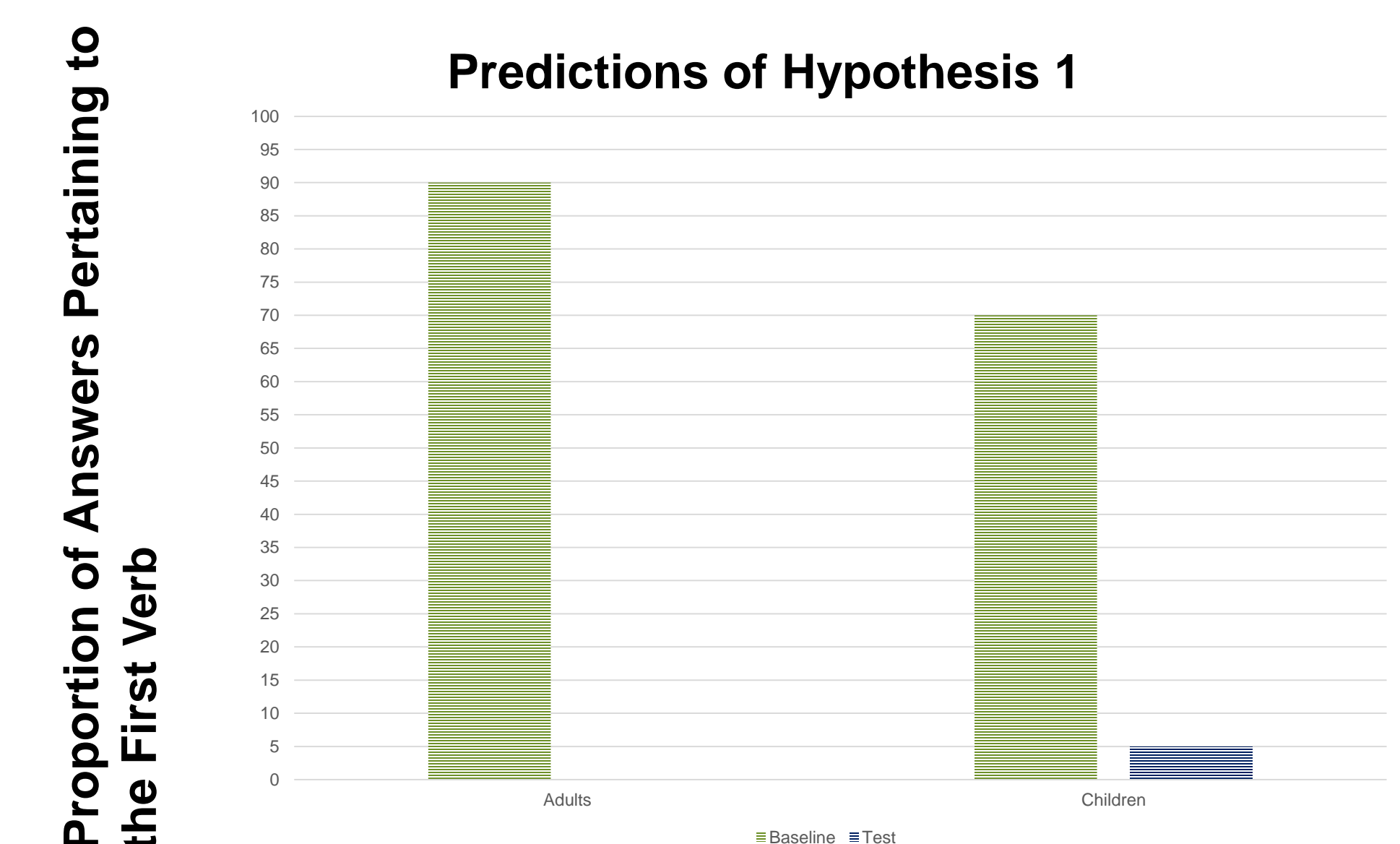
Where did the bear that **agreed** play?

- Between subjects design
- 40 English speaking adults and 4 year olds
- Each participant will see 8 stories.
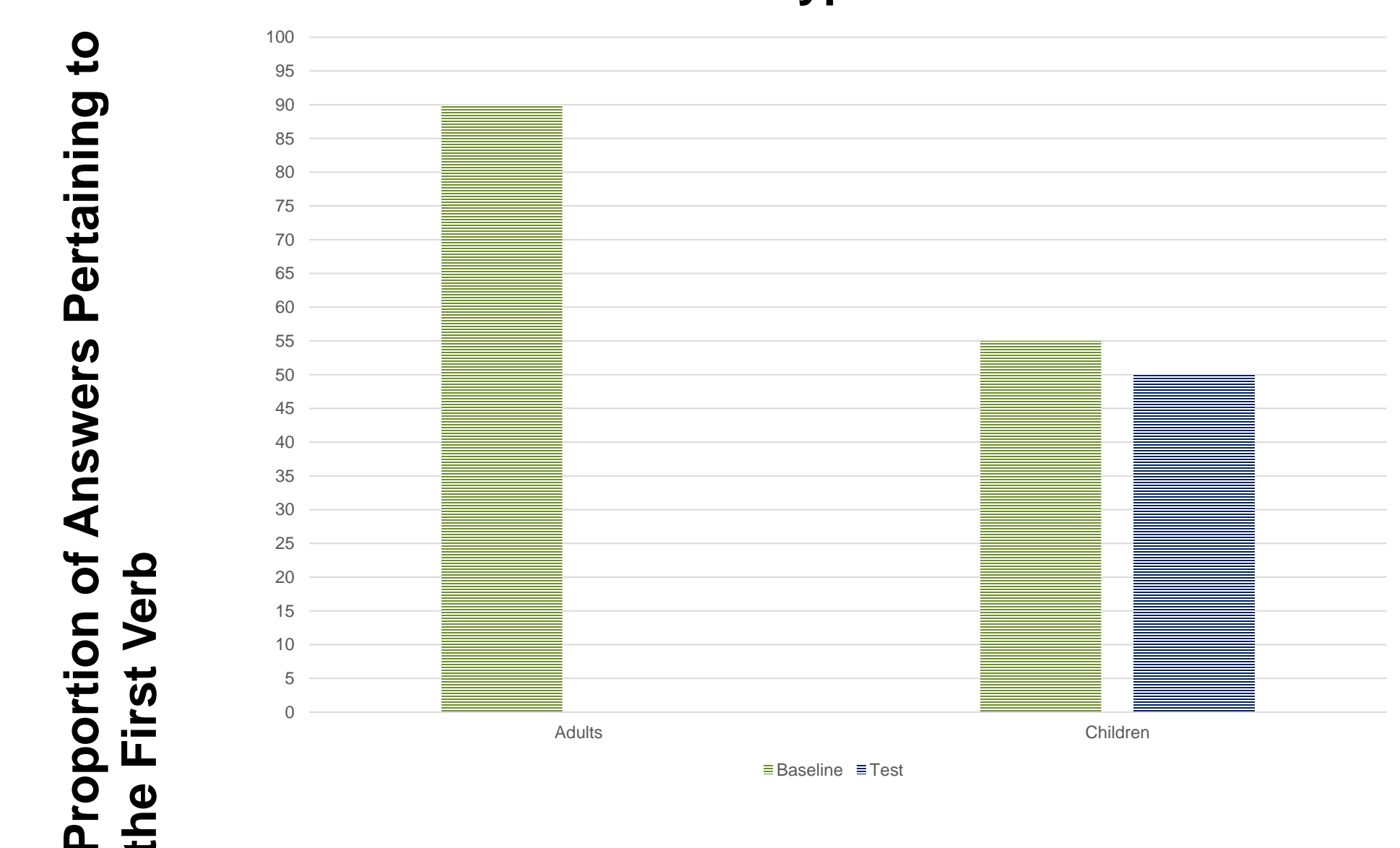
Predictions

Possible Responses

- Hypothesis 1: Children use knowledge of island constraints in real time.
  - Prediction: Children will not resolve filler-gap dependencies within the syntactic island.
    - Children prefer to only answer in response to the second verb in the test condition compared to the baseline condition.

- Hypothesis 2: Children do not use knowledge of island constraints in real time.
  - Prediction: A relative clause in the subject position will have no effects on sentence processing.
    - Children answer in response to the first verb in the test condition.
    - Children show no difference in behavior between the test and baseline conditions.

Selected References: Fetters, M., & Lidz, J. (2017). Early Knowledge of Relative Clause Islands and Island Repair. Omaki, A. (2010). *Commitment and flexibility in the developing parser* (Doctoral dissertation). Omaki, A., Davidson White, I., Goro, T., Lidz, J., & Phillips, C. (2014). No fear of commitment: Children's incremental interpretation in English and Japanese wh-questions. *Language Learning and Development, 10*(3), 206-233. Ross, J. R. (1967). Constraints on variables in syntax.