# Tiger Jump Over Baby: How Young Children Encode Events

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## Background

•This research was inspired by the work of Wolfram Hinzen, a philosopher of language whose work suggests that there is a conceptual framework that underlies human thought, and that language is necessary to organize these concepts into complex thoughts.

•According to this theory, while a a non-linguistic being could learn simple concepts such as "human" or even "tall-red-haired-human", they would not be capable of forming complex, combinatorial concepts.

•Our research set out to investigate the role that language, specifically syntax, plays in the conceptualization of complex events.

•We examined childrens ability to form concepts of events - that is, concepts that require a subject and a predicate, such as "the baby is chasing the dog" or "the tiger is jumping over the baby"

•This experiment was based on work done in the previous year to test this hypothesis, which tested adults ability to form concepts of events with and without their language faculty tied up by "language shadowing".

•In this study, children were tested because they offer a unique opportunity to study pre-linguistic human abilities without artificially interfering with the language faculty.

## Idea

•Based on this theory, we hypothesized that children whose syntactic abilities are not fully intact (<3.5 years) would be unable to generalize a concept of an event such as "Tiger jump over baby" to different "tigers", "babies", and "acts of jumping" – that is, they would be incapable of forming such complex concepts.

•Additionally, we hypothesized that if young children were prompted with language while watching the original event, that this would aid them by giving them the necessary structures to form such concepts, and thus improve their success at the task relative to the older children who could already succeed without language prompting.

## Task

A child correctly performing the "tiger jump over baby" event.

## Method

• We tested 39 children between the ages of 2 and 5 in the Northampton and Boston area.

•10 trials were conducted for each child, each using a different event consisting of an **agent, a patient, and a verb** (jump over, kiss, chase, push, stand on). Of the agents and patients, one was always an animal (horse, dog, duck, bear, or tiger) and one was always a human (boy, girl, man, woman, or baby).

**Events:**

| | |
|---|---|
| *Tiger jump over baby* | *Duck push man* |
| *Girl kiss bear* | *Baby chase dog* |
| *Duck chase woman* | *Man stand on horse* |
| *Boy push tiger* | *Dog kiss boy* |
| *Bear stand on girl* | *Woman jump over horse* |

• For each trial, the experimenter first modeled the event twice, using the toys to enact the event. After the event was performed, a screen behind the "stage" lit up and a short noise clip was played. The experimenter's toys were then placed out of view, and the child was handed a tray of four new toys – a new "agent", a new "patient", and two distracter toys (one human and one animal). The children were prompted with "now you do it!". If the child performed the event correctly, the screen lit up and played the sound clip again. The first two events were considered "practice" and were not scored.

•Each child was tested in one of two conditions:

- **"no language" condition:** each time the experimenter modeled the event, she said "Look at my show!"
- **"language" condition:** each time the experimenter modeled the event, she used language to describe the event. For example, in the "tiger jump over baby" event, the experimenter said "Look, the tiger is jumping over the baby!"

•22 children (mean age = 3.86) were tested in the "no-language" condition. 17 children (mean age = 3.13) were tested in the "language" condition.

•A child could receive a total of 4 points per event – one point for selecting the correct "agent" toy, one point for selecting the correct "patient" toy, one for performing the correct verb, and one for performing the action in the correct "direction" (i.e. "tiger jump over baby" and not "baby jump over tiger"

**Example: Tiger jump over baby**


*First, the experimenter modeled the event with these toys.*


*After the experimenter modeled the event, the child was presented with these toys.*

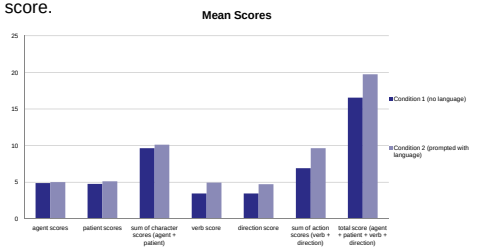
## Results

•Correlation between age and score:

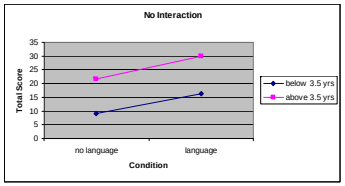
no language condition: r=.75, p<.001

language condition: r = .81, p<.001

•Multuvariate ANOVA: There was a significant effect of condition on all aspects of the event except for the "agent" score.




•No interaction was found between age and condition:




## Discussion & Future DIrections

•This experiment supported our first hypothesis – the younger children were unable to generalize the entire concept across a change in agent and patient, suggesting that they are unable to form a concept of these events.

•The experiment failed to support our second hypothesis, that prompting with language would *differentially* improve the scores of younger children by providing them with the necessary linguistic framework.

•However, the language prompting condition did improve the scores of children across the board. This improvement was primarily in the realm of "actions" - whether the children used the correct verb in the correct direction.

•It is unclear what mechanisms may be responsible for the failure of younger children relative to older children. Further work must be done to rule out the possibility that memory, simple generalization skills, attention, etc. could be responsible for the older children's success, and not linguistic structures.

•Further work will be done to examine the ability of adults to complete similar tasks when their ability to use language is tied up.

•Future work is being planned regarding the role of language and syntax in other types of complex concepts, such as negation.