



# 2.2 PASSIVES

Ashley Quinteros

LSCI 159



# THE SYNTACTIC KNOWLEDGE

- Passive Structure
  - Allows the subject to be the patient
  - Example: The toy kitten was broken by Lindy.
- Children need to learn:
  - Where the element in the subject position is understood
  - Which verbs in English can passivize
- Factors influencing when/how children learn which verbs can passivize
  - Verb meaning/ lexical semantics
    - Hug (an observable action) vs Love (a “psych subject experiencer”)
  - Transitive syntactic contexts
    - Subject + Direct Object
    - Example: Lindy broke the toy kitten.

# THE ACQUISITION THEORY

- Children decide whether a verb is passivizable based on:
  1. The verb's lexical semantic features and potentially the syntactic feature of transitivity
  2. how often verbs with those features are passivized in their input
- Assumption:
  - "Children would have enough prior knowledge and sufficient learning abilities to accurately extract this information from any particular verb use they encountered"

# THE ACQUISITION THEORY CONT.

- “Bayesian inference balances prior knowledge or biases against fit to the observed data.”
  - Prior
    - Captures how easy (or difficult) it is for children to deploy their knowledge of the passive in the moment
  - Fit
    - The modeled child assumes passivization is based on a verb’s features and the frequencies of those features in passive forms
    - If the verbs in the input are more probable, then there is a good fit to the observed data
- The modeled child can heed or ignore any given feature when deciding if a particular verb is passivizable
  - selective learning

# INFORMATION INTEGRATED

- Bayesian inference integrates selected features of verbs
- The features selected are
  - The same for all verbs
  - A combination of syntactic and non-syntactic info



# MODEL INPUT

## PASSIVES

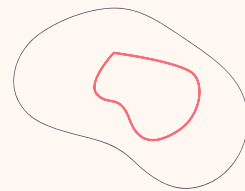
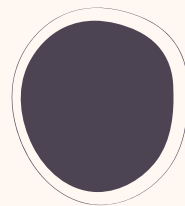
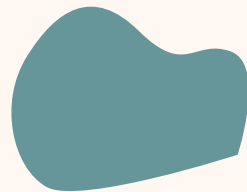
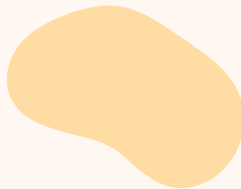
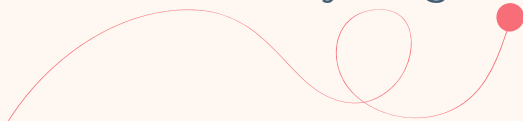
- Example:
  - The toy kitten was broken.

## ACTIVES

- Example:
  - The toy kitten broke.

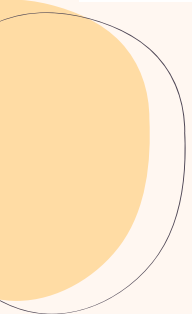
# MODEL OUTPUT AND EVALUATION

- Age of Acquisition (AoA)
  - “The age when children have been observed to correctly interpret or produce the passive of a verb more than half the time in previous child behavioral experiments”
- Model focused on AoA of 30 verbs
- Modeled learner predicts whether a verb is passivizable or not at a specific age based on input
- A modeled 5 year old was able to passivize the subset of verbs whose AoA was five or younger





# WHAT WE LEARNED



**What we learned.** These modeling results suggest that English five-year-old passivization behavior can be captured if five-year-olds selectively attend to these syntactic and lexical semantic features in their input.