Do you really mean it?:
Linking lexical semantic profiles and the age of acquisition for the English passive

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1. Introduction

- Within the domain of passives, children’s performance differs
  i. By-phrase passive: Alex was loved by Emma.
- Proposed factors (Demuth et al. 2010; Maratsos et al. 1985; O’Brien et al. 2005; Snyder & Hyams 2015; a.o.):
  - Frequency
  - Lexical Semantics
- This study:
  1) Experimental meta-analysis capturing the demonstrated age of acquisition for English by-phrase passives use.
  2) Corpus analysis of children’s input.

Goal: Identify the contributions of frequency and lexical semantic factors for children’s acquisition of English by-phrase passives.

2. Verb Frequency Hypothesis

- Frequency-based idea: Differing performance due to hearing some verbs in the passive form more than others.

3. Lexical Semantic Feature Hypothesis

- Performance depends on verb lexical semantics
- Lexical semantics-based idea: Differing performance due to lexical features.
- Important: Potentially relevant features have been proposed but no formal investigation of how well these descriptive features account for the development of the by-phrase passive.

4. Research Questions

Do children’s age of acquisition of the passive form of a particular verb correlate with...

- Frequency factor: ... the verb’s frequency in the input?
- Lexical Semantic factor: ... the lexical semantic features of that verb?

5. Annotating Verbs for Lexical Semantic Features

6. Meta Analysis

- 12 experimental studies
- 50 verbs total
- 31 verbs had an “age of acquisition” (AoA)
- AoA: Determined by assessing at which age children start producing significantly above chance in any of the studies.

- All meta-analysis verbs were annotated for lexical semantic features.

7. Corpus Analysis

- CHILDES Treebank (MacWhinney 2000; Pearl and Sprouse 2013)
- Brown Corpus (Brown 1973): Adam, Eve, and Sarah
- Valian Corpus (Valian 1991)
- 113,024 total child-directed speech utterances spanning from 1.06 to 5.01

8. Findings

- We find a striking correlation between the lexical semantic profiles of verbs and the demonstrated age of acquisition for their passive use by English-speaking children with no relationship at all to individual verb frequency.

- The verbs were sorted based on the age of significantly above chance performance.
- Profiles emerged.

- Do semantic features correlate with age of acquisition?
  ➔ Answer: Suggestive! But needs to be experimentally validated.

- These profiles could suggest a natural developmental trajectory for the lexical semantic cues that influence children’s ability to interpret by-phrase passives.

Final Remarks

Theoretical, Experimental, & Corpus: This synthesis of the literature and analysis of the input is needed to capture how kids are learning by-phrase passives.

Upshot: Lexical features matter. Individual verb frequency doesn’t.

Future work: Frequency may still matter, but perhaps it’s the frequency of lexical features associated with the verbs that are passivized in the input.

These results provide a strong foundation for future corpus, theoretical, computational, and experimental investigations about the learnability of the English passive.