The trouble with quantifiers: Children’s difficulty with scalar terms extend beyond the realm of implicatures

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**Introduction**

* Why are implicatures important?
* What are the developmental differences?
  + Why is this interesting?
* What are some of the sources of difficulty with children understanding implicatures?
  + Stiller et al.
* Previous studies examine implicatures using differing methods, and the results are difficult to compare
* Introduce new paradigm for adhoc and scalar implicature research
* In study 1, we should that one paradigm provides reliable and consistent measurement of implicature performance in children 3-5; however, children succeed with ad hocs, but have difficulty with scalar items; given that children were successful in computing ad hoc implicatures with this paradigm, could the poor performance in these scalar trials be due to the fact that the trials were intermixed with the adhoc trials?
* In study 2, we examined this possibility by only testing scalar items, and found that while this increased performance for older children, children were still having difficulty with this task, particularly with the “some” and “none” trials
  + Children who had problems with “some” were also more likely to have issues with “none”
* There are several reasons we might have seen the results that we did
  + Children may need to know both ends of the quantifier scale in order to be able to make an implicature
  + There might be problems with inhibition; children in these trials might listening through the quantifier and answering purely based on the target noun; this is supported by the fact that children reliably choose “all” for “some” and “none” trials
  + Do children not know what these quantifiers mean?
* In study three, we explored these alternatives by running children on both the SI task, an inhibitory control task (DCCS) as well as the Give-Quantifier task, a productive measure of quantifier knowledge
  + Interestingly, we found that the patterns of performance persist in SI as in Horowitz & Frank, and that DCCS was not predictive of performance in either SI or GQ when controlled for age
  + However, we found correlations between the Give-Quantifier task with “some” and “none” trials (except for GQ none and SI some, I think) when controlling for age; this seems to indicate that difficulties with these scalar terms exist outside of the implicature realm
  + Children just seem to have a trouble with quantifiers

**Experiment 1**

**Methods**

*Participants:* A planned sample of 48 children was recruited from Bing Nursery School at Stanford University. These children were drawn from two age groups: twenty-four 4.0 – 4.5-year-olds (M = 4;2, median = 4.19, SD = 0.14) and 24 4.5 – 5.0-year-olds (M = 4.74, median = 4.73, SD = .16). Two children were excluded from the final sample for not completing the task, and one additional child was excluded due to experimenter error. The final sample was comprised of (XX males and XX females) with English as their primary language.

*Stimuli:* Stimuli for Experiment 1 were created to be appropriate for questions about both ad hoc and scalar implicatures, allowing the experimenter to use one set of stimuli for both kinds of items in one experimental session. Therefore, we created a set of printed pictures of three book covers with four familiar items on each cover. In each trial, one book cover four items of the same kind (e.g., four cats), another book cover showed four items of another kind (e.g., dogs), and the final cover contained two items of a new set and two items repeated from one of the other book covers (e.g., two birds and two cats). An example of the stimuli can be seen in (Figure XX). Experiment 1 consisted of 18 test trials preceded by one test trial, with three book covers with only one familiar item on each. All items on the book covers were familiar to children, and were able to be identified. All participants saw the same book covers in the same order.

*Procedure:* Participants were tested in individual sessions in a quiet room at their nursery school. The experimenter introduced the study as a guessing game, and explained that the child would receive one hint about which book cover the experimenter had in mind. In the instructions for the task, the experimenter emphasized that the child would only receive one clue about what book the experimenter was describing, and they had to use that clue to make their decision. All participants saw the same book covers in the same order; however, (three?) scripts were counterbalanced across participants so that

**Results**

**Experiment 2**

**Experiment 3**

**General Discussion**

**Conclusion**