Young children's modal productions: children differentiate modal "flavor" and force

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Modals

force

flavor	**Possibility** (◊)	**Necessity** (□)
Epistemic (knowledge-based)	He **{could/might/#can}** be hiding in the blue box	He **{must/should/#has to}** be hiding in the blue box
Priority (orders, **goals**, desires)	She **{can/could/might}** go down the yellow path	She **{has to/should/must}** go down the pink path

Acquisition Background

Previous studies show apparent gaps in children's modals:

Comprehension Studies
- Children give un-adultlike judgments about the force of *have to* and *might* in epistemic contexts [1-2]
  - ➢ Do children interpret *have to* and *might* under the intended "flavor"?

Natural Production Studies
- Children don't produce modals with epistemic flavors until at least age 3 (vs. age 2 for root flavors) [3-6]
- Context can be difficult to recover from the corpus

Elicited Production Studies
- 4-5 year-olds use different modals than adults do in different flavors [7]
- What about younger children?

This Study

Question:
What modals do children (and adults) produce to express epistemic and priority possibility and necessity?
- ➢ Do children distinguish possibility and necessity with different words?
- ➢ Do children use different words for different flavors?

Method:
- Carefully control the context for force and flavor
- How to get children to use modals:
  - ➢ White noise occupies a position where an adult would use a modal in the sentence
  - ➢ Children trained to repeat sentence to shy snail puppet, repairing the "glitch" with a word

Selected References: [1] Noveck, I. A. (2001). When children are more logical than adults: Experimental investigations of scalar implicature. Cognition, 78(2), 165-188. [2] Ozturk, O., & Papafragou, A. (2015). The acquisition of epistemic modality: From semantic meaning to pragmatic interpretation. Language Learning and Development, 11(3), 191-214. [3] Kuczaj & Maratsos (1975). What children can say before they will. Merrill-Palmer Quarterly of Behavior and Development 21, 89–111. [4] Wells (1979). Learning and using the auxiliary verb in English. In Lee (ed.), Language Development, 250-270. Croom Helm. [5] Cournane, A. (2015). Revisiting the epistemic gap: Evidence for a grammatical source. In *Proceedings of the 39th annual Boston University conference on language development*. [6] Cournane (2015). Modal development. PhD. Thesis. UToronto. [7] Ailís Cournane (2014) In Search of L1 Evidence for Diachronic Reanalysis: Mapping Modal Verbs, Language Acquisition, 21:1, 103-117, DOI: 10.1080/10489223.2013.855218

Materials

- Within-subjects, 2x2 design (flavor x force)
- Trials: 4 per condition (16 total trials)
- Trial Presentation:
  - all Priority then all Epistemic, or all Epistemic then all Priority
  - Force pseudo-randomized within each flavor block (children either see possibility or necessity first)

Sample stories:

Epistemic-Possibility Contexts:

This time, there's a blue box and an orange box, so there are two hiding spots…

Where's Nick? One spot is in the orange box… …look! **Or, Nick *shh* be hiding in the blue box**

Epistemic-Necessity Contexts:

This time, there's a brown box and a blue box, so there are two hiding spots…

Where's Nick? One spot is in the brown box… …but look! It's empty! **So, Nick *shh* be hiding in the blue box**

Priority-Possibility Contexts:

Now, Kat is going to the flower shop to get flowers! There are two ways to get to the flower shop. One way is to go down the brown path…

…look! **Or, Kat *shh* go down the yellow path**

Priority-Necessity Contexts:

Now, Kat is going to the balloon store to get balloons! There are two ways to get to the balloon store. One way is to go down the brown path…

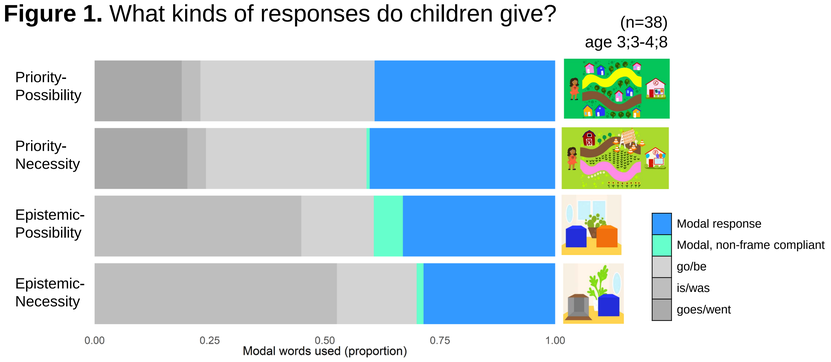
…but, uh oh! It's blocked! **So, Kat *shh* go down the pink path**

Results (all response types)

- Adults: 99% of responses are modals
- Children: 36% of responses are modals

- Children gave more non-frame compliant answers than adults did:
  - ➢ Epistemic: **{I'm pretty sure/I guess/maybe}** Nick **{is/was/be}** hiding in the blue box
  - ➢ Priority: **{I think}** Kat **{goes/went/is going/go}** down the yellow/pink path

Figure 1. What kinds of responses do children give?



Results (modal responses)

Figure 2. Which modals do **adults** prefer?

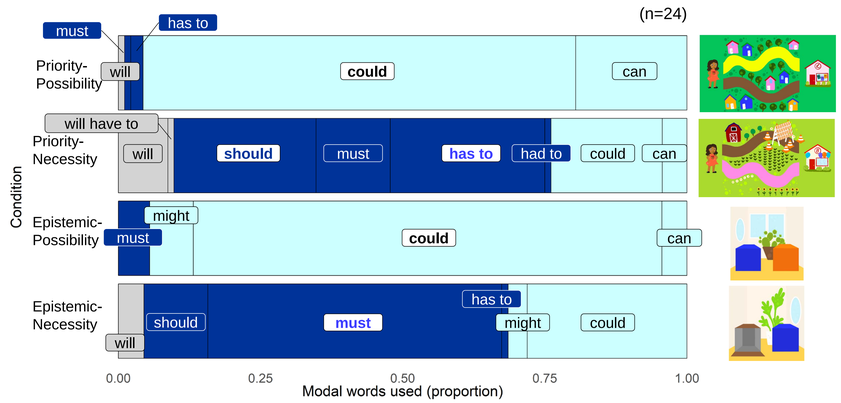
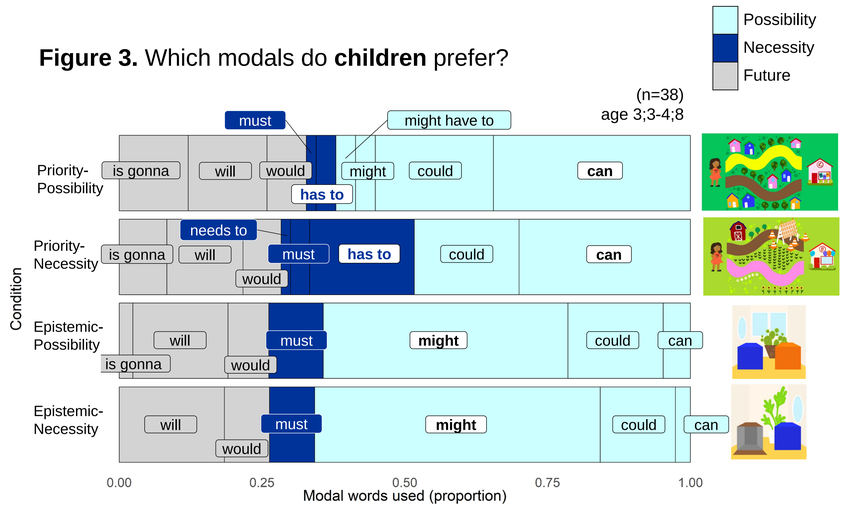


Figure 3. Which modals do **children** prefer?



Take Away

Differentiating Force
- ➢ Children tend to use possibility modals in both possibility and necessity contexts
- ➢ Children tend to use necessity modals more in priority necessity contexts than possibility contexts
- ➢ Children don't seem to differentiate epistemic necessity and possibility contexts

Differentiating Flavor
- ➢ Children tend to use *might* for epistemic contexts and *can* for priority contexts
- ➢ Children also use the same modals for both flavors: *could*, *must* and future markers *would*, *will*, and *gonna*

Acknowledgments

Thank you to Anouk Dieuleveut, Annemarie van Dooren, Tyler Knowlton, Jeff Lidz, Ellen Lau, Alexander Williams, Laurel Perkins, Yu'an Yang, Tara Mease, Maddy Seymour, Hannah Lee, Grace Hynes, audiences at the University of Maryland and New York University, and participants from the CYC, TPCNS, and UMD. This material is based upon work supported by the National Science Foundation under Grant #1449815 and #1551628.