

Children's acquisition of modals and causatives

Margaret Chui Yi Lee

University of Connecticut

Angelica Hill

University of Massachusetts

Motivation. It has been debated whether causatives contain a modal component [3, 4, 2] or not [1, 6]. Yet any semantic theory must capture the fact that **deontic modal interpretations are associated with causative constructions** confirmed with cancelation tests showing the inability to cancel the entailed deontic meaning, "*Julie is making George go to the store, ?but he doesn't have to.*" Moreover, causatives and modals are semantically similar in that they can vary in strength. For causatives: *cause* vs. *allow*, for modals: *necessity* vs. *possibility*, and they have similar entailment patterns between strength: *cause* entails *allow*, and *necessity* entails *possibility*. To account for this [2] provides a counterfactual analysis of causatives, in which *made* universally quantifies over possible situations, entailing necessity, which is also entailed by deontic modal expressions, such as *has to*. **Yet unlike causatives, deontic modals are ambiguous with respect to the origin of obligation:** external (as in above example) or internal (*George has to go to the store, because he ran out of flour for the cake*).

Hypothesis. We tested whether children are sensitive to (i) the source of obligation of *has to*: external/internal; (ii) the association between deontic modals and causatives.

Design. Employing a **picture selection task**, we ran a between-subject experiment where we tested English-speaking **4-6 year olds** ($n=14$, $M_{age}=5;05$) **and adults** ($n=10$). The experiment had a 2x2 design: causative-make/modal-has to sentence x external obligation/internal obligation. There are 11 trials in total, including 2 training, 3 fillers, 6 test trials: 3 testing internal/external obligation (Test A), and 3 testing absent/internal obligation (Test B). In each trial, participants were presented with 2 scenes both depicting the same activity. In one scene, X and Papa; in the other scene, Y. In Test A trials X is not doing said activity and Papa is getting angry— external obligation, in the other scene Y intends to do said activity— internal obligation. In Test B trials X is not doing an activity and Papa is happy (no external obligation), and as in the other scene, Y intends to do said activity— internal obligation. After presenting a short dialogue for each scene the puppet utters either a *made*-sentence (e.g., "Papa is making her clean her closet") or a *has to*-sentence (e.g., "She has to clean her closet") where *she/her* can refer to either X or Y. The experimenter then asks, "Who is the puppet talking about?" The causative/modal sentence conditions were split across two stimuli lists: in the Test A trials of List 1 the puppet uttered a *made*-sentence, in the Test A trials of List 2 the puppet uttered a *has to*-sentence. In Test B trials for both List 1 and 2 the puppet uttered a *has-to* sentence.

Predictions. Following [5], **we predict children** (i) prefer to interpret *has to*-sentences in contexts expressing internal obligation, and (ii) are able to interpret *has to*-sentences and *make*-sentences in similar contexts [2]. **We predict adults** (i) are able to interpret *has to* with either external obligation or internal obligation and so when presented with contexts in which both interpretations are available, they will choose one or the other equally, and (ii) both *has to*-sentences and *make*-sentences are available for interpretation in similar contexts [2].

Results. Preliminary results indicate that contrary to our predictions when faced with two contexts in which external and internal origin interpretations are both available, **children and adults prefer to interpret *has to*-sentences as involving external obligation** (ch: 87.5%; adults: 93%) **In addition, both children and adults overwhelmingly prefer an external obligation in *make*-sentences** (ch: 88.8%; adults: 100%). However, while adults are able to interpret *has to*-sentences as involving internal obligation when it is the most viable context (Test B trials), in the same contexts **children have difficulty interpreting *has to*-sentences as involving internal obligation** (ch: 48.5%; adults: 79%).

Conclusion. This paper presents novel results supporting semantic theories in which deontic modals and causatives share similar meaning. From the acquisitional perspective our results suggest that children between 4 and 6 years old are aware of the origin of deontic obligation,

but they do not perform adult-like when external obligation is absent in both scenes (i.e. Test B trials).

S. Ref. [1] Copley, B., & Harley, H. (2015). A force-theoretic framework for event structure. *Linguistics and Philosophy*, 38, 103-158. **[2]** Hill, A. (2023). Making causatives modal. [Ms in preparation]. **[3]** Ilić, T. (2013). *Modality and causation in Serbian dative anticausatives: A crosslinguistic perspective* (Doctoral dissertation, University of Hawai'i at Manoa). **[4]** Ilić, T. (2014). Modality and causation: Two sides of the same coin. In B. Copley & F. Martin (Eds.), *Causation in Grammatical Structures* (72-86). Oxford University Press. **[5]** Lee, C.Y., (2024). Acquisition of Modality in Mandarin Chinese: A grammar-based account. [Ms in preparation]. **[6]** Martin, F. (2018). Time in probabilistic causation: Direct vs. indirect uses of lexical causative verbs. In *Proceedings of Sinn und Bedeutung* (Vol. 22, No. 2, pp. 107-124).



		<p>[Picture 1] Little Cat: I hate being dirty. I like to be clean. I'm going to get a shower now (and she grabs a towel). [Picture 2] Little Bear: I love being dirty. I don't like to be clean. Angry Papa: You're too dirty. I'm getting angry now! Get into the shower and clean yourself (and he gives a towel to Little Bear)! Little Bear: Papa is very angry now. Puppet Bobby: [List 1] Papa is making her shower. (causative) [List 2] She has to take a shower. (modal)</p>
Internal obligation (Int. Oblig)	External obligation (Ext. Oblig)	Experimenter: Who did Bobby talk about?

Figure 1. Example of Test A trial



		<p>[Picture 1] Red-haired girl: I hate using dirty hands to grab cookies. I like to be clean. I'm going to get soap now (and she grabs soap). [Picture 2] Yellow-haired girl: I love using dirty hands to grab cookies. I don't like clean hands. Happy Papa: The cookies look tasty. I'm happy to eat cookies with you. Let's eat cookies! Puppet Bobby: She has to wash her hands.</p>
Internal obligation (Int. Oblig)	No obligation (No Oblig)	Experimenter: Who did Bobby talk about?

Figure 2. Example of Test B trial

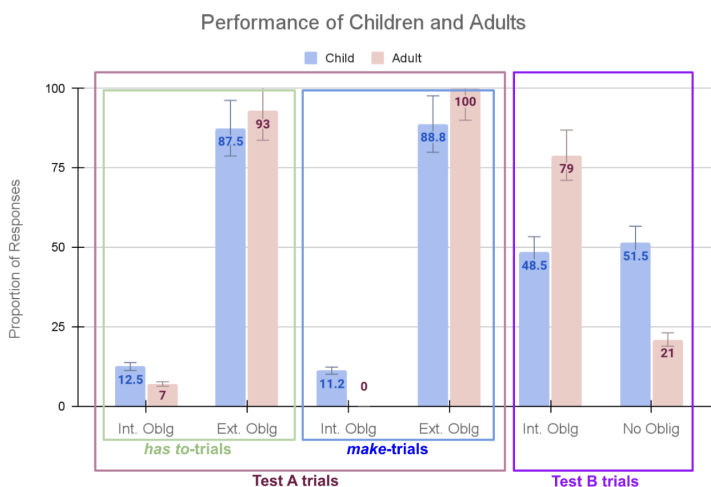


Figure 3: Results of Obligation Types across Conditions (Test A trials vs. Test B trials)