

## Can 'hard words' become easy? Mapping evidential meanings onto different forms

Why are some word meanings harder for children to acquire than others? According to a prominent hypothesis, this difficulty stems from the complexity of the underlying concepts.<sup>1</sup> On an alternative proposal, the difficulty often lies in the mapping between linguistic expressions and concepts, even if the concepts themselves are available.<sup>2,3</sup> Here, we offer a novel argument for the role of mapping factors in acquiring a well-known 'hard' case: evidentiality (i.e., the linguistic encoding of the speaker's information source).<sup>4-6</sup>

Using an artificial language learning paradigm, we compare adult learners' acquisition of a single evidential meaning expressed by different linguistic forms (a novel verb/morpheme/adverb). Our goal is to see whether mapping the *same concept* onto *different forms* yields different learning outcomes. We expect the learnability of evidential meanings to differ depending on the linguistic and extra-linguistic (pragmatic) properties of the forms that encode these meanings and, correspondingly, the tools that learners use to extract the commonalities within a particular set of events during form-to-meaning mappings. In a control condition, the same meanings are encoded by a non-linguistic stimulus.

In our experiment, 280 English speakers were shown 5 videos in which a girl gained access to an event through observation (Visual Access), and 5 that involved a third character's report (Reportative Access; mixed order; Fig.1). At the end of each video, the speaker described what happened and marked her own evidential access through an alien *verb* ('I *gorp* she lit the lamp'), *morpheme* ('She *litgorp* the lamp') or *adverb* ('*Gorpingly*, she lit the lamp'). In a fourth, control condition, the speaker uttered a regular English sentence ('I lit the lamp') but her access was marked by a non-linguistic form - a red frame placed around the video. Participants had to figure out what the novel form meant. We crossed two between-subject factors: Form (verb/morpheme/adverb/frame) and Evidential Access Meaning (visual or reportative). Participants later completed a Production task: they watched 8 new videos (4 per access type) and had to use the target form if appropriate. They also completed a Comprehension task: they watched 24 videos (12 per access type) and detect any errors in the use of the form.

We hypothesized that evidential meanings should be more easily discoverable for verbs compared to the control condition because of verb syntax (overt finite sentence complementation); for morphemes and adverbs, no such advantage over the control condition should exist (for adverbs, their placement suggested but did not require sentential scope). Additionally, across linguistic and non-linguistic forms, we hypothesized that pragmatic factors should prioritize marking indirect, potentially unreliable access (e.g., reported information) over direct, more reliable access (e.g., visual perception).<sup>7</sup> Our results confirmed both of these predictions. Evidential verbs were learned better compared to the non-linguistic control ( $\beta = -3.12$ ,  $z = -6.4$ ,  $p < 0.001$ ) but evidential morphemes were harder ( $\beta = 3.28$ ,  $z = 7.07$ ,  $p < 0.001$ ) and evidential adverbs showed no difference from the control condition. Throughout, reportative evidentials were acquired more easily than visual evidentials ( $\beta = -1.29$ ,  $z = -4.7$ ,  $p < 0.001$ ).

Our findings provide novel evidence in support of the claim that what makes lexical meanings easy or hard to learn, regardless of their conceptual presuppositions, often lies in the transparency of the correspondence between those meanings and the linguistic forms that express them.



Figure 1. Sample screenshots from one video for each Access type: (A) Reportative, (B) Visual. Videos always had the same ending (Panel 5). In that panel, the girl in white either uttered an evidential sentence with an alien verb: “I gorp she lit the lamp”, morpheme: “She litgorp the lamp”, or adverb: “Gorpingly, she lit the lamp”, or offered an unmarked sentence (“She lit the lamp”) while a red frame marked the video of the target access throughout the event.

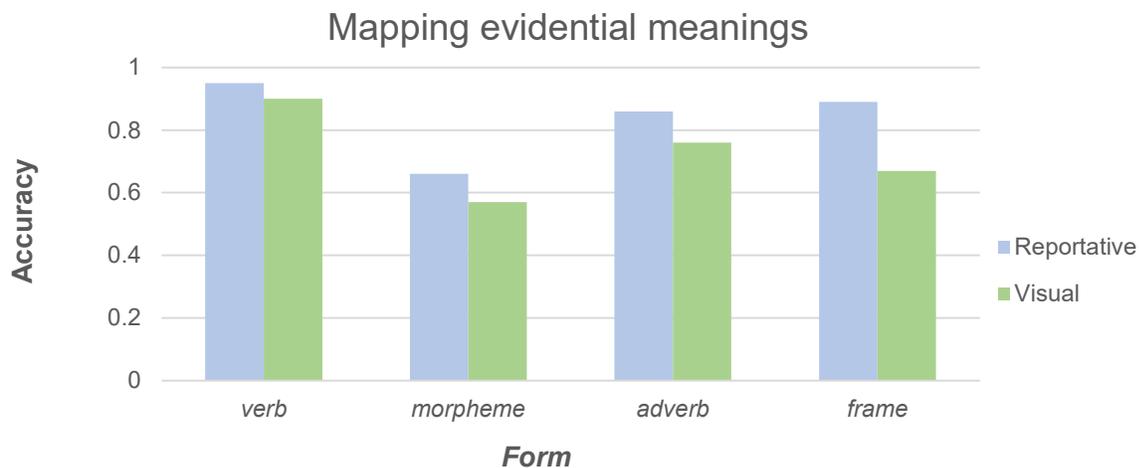


Figure 2. Accuracy in acquiring evidential forms.

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