Strategic reasoning when formulating and comprehending knowledge ascriptions

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In communicating about certainty, speakers make choices among available formulations and hearers will aim to recover speaker intentions. In two studies, we assess speakers' production choices and hearers' interpretations to test (a) how maximal certainty is formulated, (b) whether those formulations adjust depending on context, and (c) whether speakers' context-driven adjustments are apparent to hearers. We compare the lower-certainty formulation *I believe that the deadline is tomorrow* ['believe'] with two high-certainty formulations, *I know that the deadline is tomorrow* ['know'] and *The deadline is tomorrow* [bare assertion]. Following Williamson [2000] and DeRose [2002], it is unclear which one of the latter two conveys higher epistemic standards. Given the unclear picture, we investigate when (if ever) 'know' should be felicitous to utter over the bare assertion. One reason could be that 'know' may be uttered felicitously for a wider range of contexts than the bare assertion [DeRose, 1992]. Furthermore, 'know' might be a useful linguistic tool for speakers to structure the subsequent dialogue to their liking. By presupposing content speakers assume or act as if the conveyed information was already shared knowledge and not up for debate. Thus, hearers might be more inclined to accept and accommodate (e.g. Lewis [1979]) presupposed content than asserted content.

We investigated whether interlocutors align in the way they convey and recover meaning from statements about degrees of belief, comparing their behaviour across cooperative and uncooperative scenarios. In the production experiment, 86 participants played the role of a detective in an investigation where they briefed a colleague (cooperative setting) and interrogated a suspect (uncooperative setting). Participants saw Q/A pairs (e.g. Q: *Did [Emily Brown/you] have any financial problems?*/ A: *Financially [the suspect/I] was doing alright*.) and responded with choosing between 'believe'/'know'/bare assertion (e.g. *I know that [the suspect was/you were] in need of money.*) in the light of evidence about the suspect's whereabouts (e.g. a bank statement/statement of a friend). Participants evaluated their confidence in each piece of evidence retrospectively in a post-test (evidentiality measure). A mixed-effects Bayesian categorical regression model disclosed an effect of evidentiality. Averaged over scenarios, participants were less likely to choose 'believe' ($\hat{\beta}$ =-1.51, CrI:[-1.85, -1.19]) or the bare assertion ($\hat{\beta}$ =-0.36, CrI:[-0.67, -0.04]) over 'know' when they considered the evidence strong for the proposition they wanted to communicate (table 1). We also found an effect of scenario: for both 'believe' ($\hat{\beta}$ =0.59, CrI:[0.39, 0.81]) and the bare assertion ($\hat{\beta}$ = 0.27, CrI:[0.05, 0.48]) the probability to be chosen over 'know' increased in the briefing and decreased in the interrogation (figure 1).

In the comprehension experiment, 121 participants played the role of a detective in training and evaluated their colleague's certainty when uttering 'believe'/'know'/bare assertion on a scale from 0 to 100. The speaker spoke to another colleague (briefing) or a suspect (interrogation). A mixed-effects Bayesian beta regression model disclosed an effect of formulation but not scenario. Speakers' certainty was rated highest when uttering 'know', followed by the bare assertion and 'believe' (table 2). There was only an unreliable tendency that hearers assign higher degrees of belief to speakers in uncooperative settings opposed to cooperative settings ($\hat{\beta}$ = -0.06, CrI:[-0.13, 0.01]).

Our results suggest (a) that speakers use $know > bare > believe$ for content with successively lower evidentiality scores and that hearers likewise infer $know > bare > believe$ in the same relative ordering. Regarding (b), speakers used 'know' strategically in the uncooperative scenario to overstate their knowledge indicating that the usage of 'know' is context-dependent. Regarding (c), hearers seemingly fail to recover these production strategies. This may be due to our experimental design where we investigated comprehension from a bystander point of view, or might similarly suggest that speakers succeed with their strategic approach.

Formulation	Coefficient	posterior mean	Standard Error	l-95% CrI	u-95% CrI	$\hat{R}$
believe	Intercept	1.18	0.21	0.77	1.60	1.00
bare assertion	Intercept	0.26	0.16	-0.07	0.57	1.00
believe	Evidentiality	-1.51	0.17	-1.85	-1.19	1.00
bare assertion	Evidentiality	-0.36	0.16	-0.67	-0.04	1.00
believe	Scenario	0.59	0.11	0.39	0.81	1.00
bare assertion	Scenario	0.27	0.11	0.05	0.48	1.00

Table 1: Population-level estimates of the Bayesian categorical regression model in log-odds with 95% credible intervals. The effect scenario is the change in log-odds for the briefing (-1 interrogation, 1 briefing).

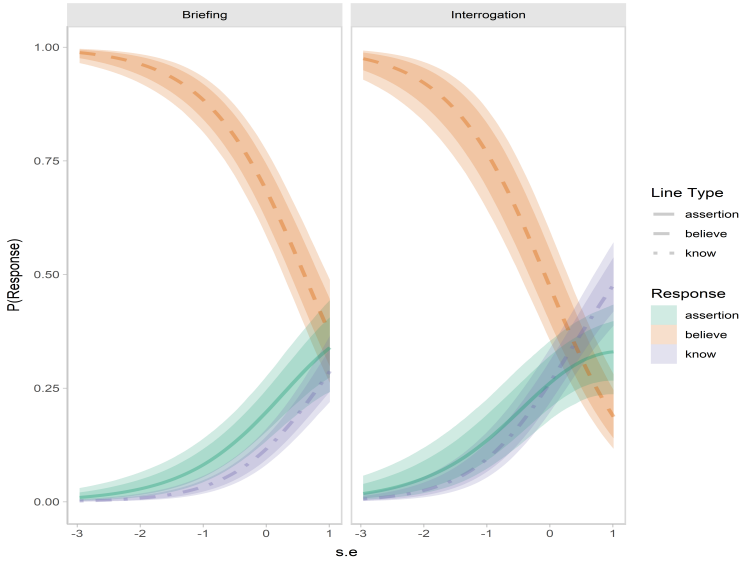

Figure 1: Prediction plot for the production data contrasts the two scenarios for each formulation. Log-odds were back-transformed to probabilities (y-axis). The x-axis is the standardised evidentiality measure: 0 stands for an evidentiality of 74.55.

Coefficient	posterior mean	Standard Error	l-95% CrI	u-95% CrI	$\hat{R}$
Intercept (grand mean)	1.05	0.09	0.86	1.24	1.00
Utterance I	-0.82	0.08	-0.97	-0.68	1.00
Utterance II	0.16	0.06	0.05	0.28	1.00
Scenario1	-0.07	0.04	-0.16	0.01	1.00

Table 2: Population-level estimates of the Bayesian beta regression model on the log-odds scale with 95% credible intervals. The categorical predictor formulation was sum-coded. The effect scenario is the change in log-odds for the briefing (-1 interrogation, 1 briefing).

References

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