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# Simplicity beyond probability: Simplicity's role in evaluating explanations goes beyond providing cues to priors and likelihoods

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## Abstract

People often evaluate explanations by considering various 'explanatory virtues', such as an explanation's simplicity (i.e. the number of unexplained causes referred to). Simplicity has been thought to guide these evaluations by providing a cue to the inputs of Bayesian inference (priors and likelihoods), thus indirectly helping compute the outputs: the posterior probability of an explanation being true. Yet simplicity may also play other, more direct, roles in explanation evaluations. While study 1 supported the mediating role of priors and likelihoods in people's simplicity preferences, study 1 and 2 found that participants still preferred simpler explanations after statistically controlling for priors and likelihoods (either elicited or provided). These results suggest that simplicity guides explanation evaluations not just by providing cues to the inputs of Bayesian inference, but also by serving as a direct cue to the outputs of these inferences – perhaps providing a simplifying heuristic for these evaluations.