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How many instances come to mind when making probability estimates?

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Abstract

Sampling-based models, which assume that people remember or simulate instances of events and count outcome proportions to make probability judgments, account for many apparent biases in human judgment. The success of such models is generally dependent on sample size, as particularly large or particularly small samples are often required for a model to reproduce effects observed in data. Thus, systematically exploring the actual number of instances that people tend to sample is an important criterion in evaluating model credibility. Here we propose a method of estimating sample size by way of inter-judgment variance. We show through model recovery that this method will reliably recover the correct sample size and subsequently apply the method to two well-supported models of human probability judgment, Probability Theory Plus Noise and the Bayesian Sampler. Results indicate, in both cases, that human probability judgments are based on a relatively plausible ($<$ 10) number of sampled instances.