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Authors

Coenen, Anna

Gureckis, Todd

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Optimal stopping in a natural sampling task

Anna Coenen

New York University

Todd Gureckis

New York University

Abstract: Sampling biases are often assumed to arise from the type of information that learners sample (Fiedler, 2008), the possibility of negative payoffs (Denrell, 2001), or the prevalence of small samples (Kareev et al., 2002). Here, we show that even in a natural sampling situation (repeated Bernoulli trials), in which a learner's only decision is when to stop sampling, different sampling goals can have an impact on sample composition and on inferences drawn from them. Specifically, we find that learners sampling with a binary goal ("more heads/tails?") versus a distributional goal ("how many heads?") end up with samples that differ not only in size but also content. Binary sampling leads to more samples with extreme distributions (many more heads or tails) compared to distributional sampling. In this project, we explore the impact of those sampling goals on subsequent decision-making on the basis of those samples.