

Public Abstract

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Title:ASSESSING SINGLE- AND DUAL-PROCESS ACCOUNTS OF RECOGNITION MEMORY USING HIERARCHICAL BAYESIAN MODELS

Humans have an amazing ability to recognize things they have encountered in the past, such as faces. In cognitive psychology, there is an active debate about how people are able to accomplish this feat. Specifically, some researchers claim that all recognition judgments (did I see this before?) are based solely on how strong a memory is. Other researchers claim that sometimes recognition judgments are based on how familiar something is; other times recognition judgments come about by an entirely different explicit recollection process. These two processes, familiarity and recollection, are proposed to involve different brain regions, be affected by different manipulations, and even be affected differently by natural aging and clinical disorders. All experimental support for the idea that there are two different processes has relied on averaging data over people or items that are different from one another in their memory characteristics (e.g., some words are easier to remember than others). I show that such averaging leads to distorted conclusions, such as mistaking explicit recollection for variability in items. To mitigate the distortions from averaging, I develop novel data analysis techniques that do not require researchers to average data. Using these techniques, I analyze data from 6 experiments in an effort to determine whether there are really two processes underlying recognition memory. Across these experiments, considerable evidence is garnered against the two-process view, suggesting that all recognition judgments are based simply on how strong a memory is. This result implies that previous studies of memory in aging and clinical populations, most of which assumed the two-process theory, must be reconsidered.