# EXPLORING THE STRUCTURE OF COGNITIVE PROCESSES: DISCRETE AND CONTINUOUS THEORIES OF MEMORY AND PERCEPTION

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## ABSTRACT

Cognitive psychologists often debate whether cognitive processes such as recognition memory and visual perception are better described as continuous or discrete. Much of the literature is dominated by continuous latent-strength models such as signal detection theory. Here the author sought to test the effectiveness of discrete-state models at predicting performance on cognitive tasks.

Thirty-nine participants completed Experiment 1, which analyzed recognition memory and visual word identification performance in two-alternative forced choice tasks. Fifty participants completed Experment 2, which focused on word identification in both two-choice and one-choice designs. Data were analyzed via maximum likelihood estimation for comparable discrete-state and latent-strength models for all participants. The discrete-state models outperformed latent-strength models for the majority of participants in both tasks of both experiments. Evidence for discrete states was especially strong in two-choice word identification tasks. The results indicate that discrete-state models should not be ignored in cognitive processing, as they provide a good account of data in recognition memory and word identification tasks.