Expectation of temporal delays shapes Judgement of Causal Strength and Causal Structure

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Abstract

In order to accurately assess the causal relationship between variables, organisms utilise the length of temporal delays between events as a major source of information. Associative learning theories predict that judgements of causal strength uniformly decrease as temporal delays increase. Contrasting inferential learning theories, associative theories discount the influence of prior knowledge of existing causal mechanisms. In a total of two experiments, the present study demonstrates empirical evidence for inferential theories, that i) if prior knowledge suggests a long delay between cause and effect, reasoners regard variables long apart in time as equally causal as contiguous pairs ii) reasoners explain low causal strength by "re-attributing" the true cause to an alternative latent cause, altering the possible causal structure. Together, the study provides novel evidence for how people reason from temporal information towards causality.

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