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Disposition or Disruption: How do young learners explain inconsistent causal evidence?

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Abstract

The causal world is highly inconsistent. While past research demonstrates even young learners' ability to reason from probabilistic evidence, there has been little examination of how learners reason about the nature of causal inconsistencies. For instance, what do we think about why variations occur? Four- to six-year-olds ($N=90$) watched either a person or machine repeatedly act in one of two possible ways. At test, the opposite behavior occurred, and children were asked whether the change was due to an internal disposition/capacity for variation or constraints in the external context. Results reveal a significant bias towards internal explanations of agents' inconsistencies (70%, $p=0.01$, two-tailed binomial) and for external explanations of machines in older (63%, $p=0.09$, two-tailed binomial), but not younger (50%) children – suggesting young learners consider both inherent and contextual sources of variation in causal relationships and gradually develop complex expectations about the different likelihoods of these sources depending on domain.