Imagine being a juror in a criminal trial... The prosecution presents you with one explanation for three pieces of evidence, and the defense presents you with an alternative explanation for the same three pieces of evidence – how do you compare and evaluate the two?

**Research in the cognitive sciences has suggested that people evaluate explanations based on how well they satisfy a set of explanatory virtues such as coherence, breadth, and simplicity.**

**Simpler explanations (e.g., containing fewer causes) seem to be preferred by people and found more satisfying in a range of settings (Chater & Vitanyi, 2003, Lombozo, 2016).**

This preference, however, seems to be mediated by the probability of the explanation (e.g., priors of causes; Lombozo, 2016) and context (complex explanations are preferred for more complex events, Zemla et al., 2017).

Do these preferences extend to legal domains? What explanatory features are valued when comparing legal narratives of “what happened”?

**Causal Bayesian Networks have been used to formalize how competing explanations can be normatively evaluated (Neil et al., 2019).** However...

They primarily assume that people represent competing explanations in one unified model.

- They assume evidence is assimilated all at once.

**Participants were asked:**

1. To choose the best explanation for the evidence.
2. To rate the explanations in terms of how satisfying, complete and probable they are.

**EXPERIMENT 1: RESULTS**

- Participants who *did not draw* causal models preferred the ‘complex’ explanation put forward by the defense.
- Participants who *did draw* causal models preferred ‘simple’ explanation put forward by prosecution. … but WHY?

Analyses of participants’ think-aloud responses showed that participants who drew causal models reasoned more about the probability of one cause occurring vs. three causes occurring.

**EXPERIMENT 2: RESULTS**

- **Replicated findings of Experiment 1:**
  - Participants who *did not draw* causal models preferred the ‘complex’ explanation put forward by the defense.
  - Participants who *did draw* causal models preferred ‘simple’ explanation put forward by prosecution and referred to arguments of probability of one cause occurring vs. three causes occurring.

**EXPERIMENT 1: METHODS**

**Participants viewed, in two different orders, the competing explanations of three pieces of evidence put forward by the prosecution (simple; one common cause) and the defense (complex; multiple independent causes).**

Half of the participants were asked to *draw causal models* of the explanations and the evidence using an online tool called LOOPY – the other half, were not.

**EXPERIMENT 2: METHODS**

**Does the order of presentation influence the causal models drawn and people’s explanatory preferences?**

Same task as in Exp.1 but participants viewed the two competing explanations simultaneously for each piece of evidence.

**How does the presence of a drawing causal model affect the quality of the evidence presented to a juror?**

**EXPERIMENT 2: RESULTS**

- **Replicated findings of Experiment 1:**
  - Participants who *did not draw* causal models preferred the ‘complex’ explanation put forward by the defense.
  - Participants who *did draw* causal models preferred ‘simple’ explanation put forward by prosecution and referred to arguments of probability of one cause occurring vs. three causes occurring.

**What kind of structures did participants draw?**

- **Integrated: 37%**
  - 57% drew combined (integrated) models
  - 25% drew three separate models (one for each piece of evidence)
  - 16% drew disjunctive models (one for each explanation)

- **Disjunctive model: 50%**
  - 25% drew each disjunctive model

- **Separate for each evidence: 7%**
  - 37% drew each disjunctive model
  - 25% drew each disjunctive model

**REFERENCES**


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