

MEDIATORS OR ALTERNATIVE EXPLANATIONS: TRANSITIVITY IN HUMAN-MEDIATED CAUSAL CHAINS

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SUMMARY

Background. This research investigates intuitions about transitivity in causal chains. If it is known that A causes B and B causes C, does this imply that A causes C? Most normative accounts agree that causality is transitive, but previous research indicates that people's intuitions in this regard are very heterogeneous across different cases (e.g., Johnson & Ahn, 2015). It is not yet well understood which item properties determine the degree to which a given chain is judged to be transitive.

Our experiments focus on cases in which human agency turns out to be involved in the implementation of an established type-level causal relationship. Building on prior work by Hilton, McClure, and Sutton (2009, **Figure 1**), we asked whether finding out that a natural root cause influences its effects by affecting intentional agents' decisions makes the chain intransitive (**Figure 2**). Intentional agents may be seen as unmoved movers who initiate causal pro-

cesses rather than merely transfer external influences, producing intransitive chains and screening off the influence of the root cause from the explanandum.

Experiments. In a first experiment, we demonstrated the effect using a newly developed paradigm (**Table 1**). Firstly, subjects learned that the type-level causal relationship between a certain root cause and a certain effect existed. We then varied between subjects whether the mechanism was implemented by a deliberately acting person or by a blind physical process (for materials, see **Table 2**). **Figure 3** shows that intransitivity was obtained when the mechanism was an intentional agent.

In a second experiment, we shed light on the question whether intentionality is sufficient to render a type-level causal chain intransitive. In previous studies, the agent's actions were also morally abnormal. We removed this confound by comparing

two agents which were or were not morally dubious. As is shown by **Figure 4**, we solely obtained causal intransitivity in the case in which an intentional agent simultaneously violated a norm. In contrast, an unsuspecting agent realizing the causal mechanism elicited transitive causal judgments.

Conclusions. Taken together, these findings indicate that type-level mechanisms involving intentional action lead to intuitions of causal intransitivity, but only when these actions are norm-violating. This result may indicate that potentially a more general principle underlies intuitions of causal intransitivity. They may arise whenever the causal relationship is implemented by a highly unstable mechanism requiring highly specific boundary conditions (**Figure 5**). Future work will explore this possibility with inanimate materials where the uncovered mechanism violates statistical rather than moral norms (Hitchcock & Knobe, 2009).

FIG. 1: FINDINGS BY HILTON ET AL. (2009)

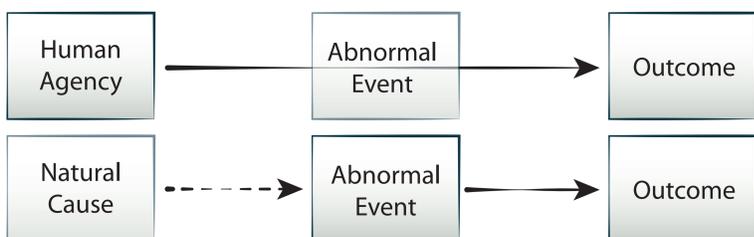


FIG. 2: HYPOTHESIS

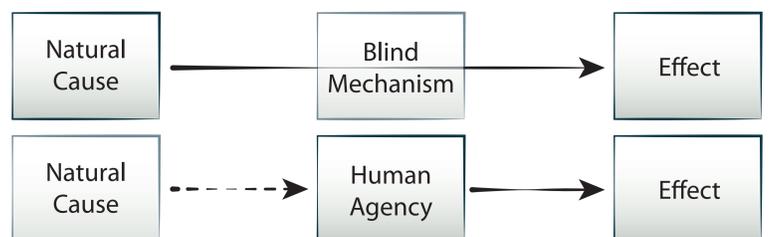


TABLE 1: PROCEDURE

Learning Phase 1	Pre-Mechanism Assessment	Learning Phase 2 (IV)	Post-Mechanism Assessment
	How appropriate is the following description: ⊙ „A is crucial for the occurrence of C“		How appropriate are the following descriptions: ⊙ „A is crucial for the occurrence of C.“ ⊙ „B is crucial for the occurrence of C.“

TABLE 2: MATERIALS

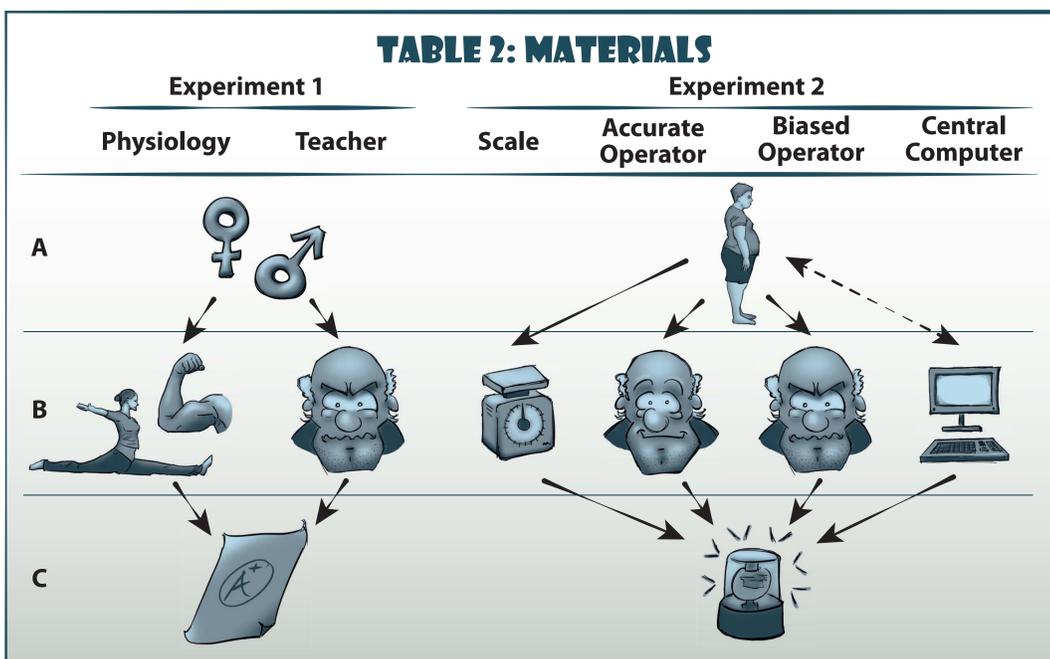


FIG. 3: RESULTS OF EXP. 1 (N = 139)

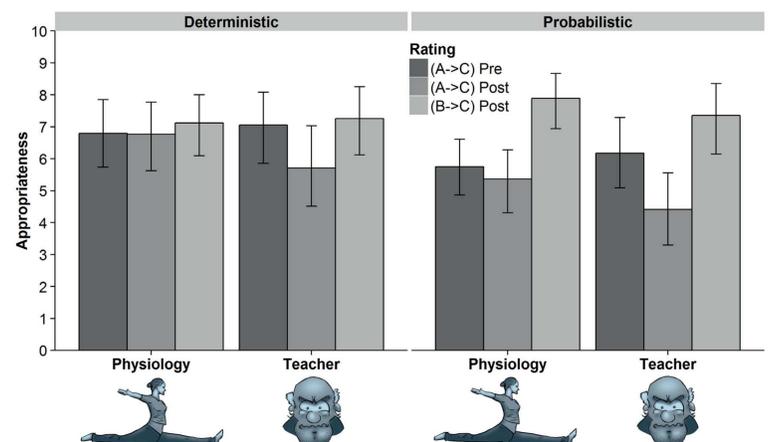


FIG. 4: RESULTS OF EXP. 2 (N = 201)

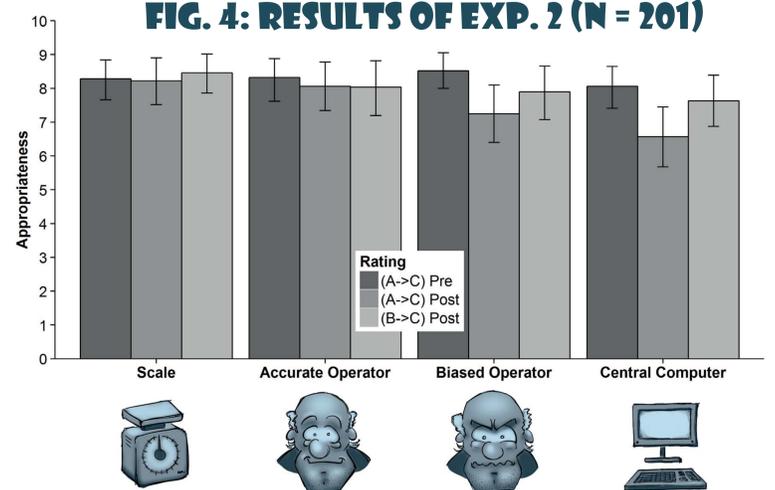
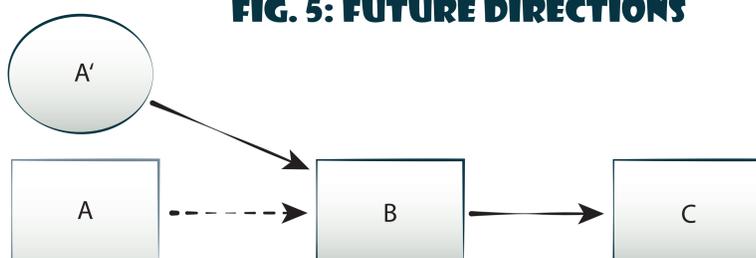


FIG. 5: FUTURE DIRECTIONS



REFERENCES

- ⊙ Hilton, D. J., McClure, J., & Sutton, R. M. (2009). Selecting explanations from causal chains: Do statistical principles explain preferences for voluntary causes? *European Journal of Social Psychology*, 40, 383–400.
- ⊙ Hitchcock, C., & Knobe, J. (2009). Cause and norm. *The Journal of Philosophy*, 106, 587–612.
- ⊙ Johnson, S. G., & Ahn, W.-K. (2015). Causal networks or causal islands? The representation of mechanisms and the transitivity of causal judgment. *Cognitive Science*.

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