
Does causality matter?

Impressions of agency influence judgments of both causal and non-causal sentences

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Imagine a train platform with a line that people aren't supposed to cross—if they do, incoming trains will automatically stop. Suppose that Tom deliberately steps over the line to stand in front of it, and this ends up causing a train delay. In this case, it seems natural to say:

- (1) Tom caused the train delay.

Existing research shows that people's willingness to apply this sentence depends in part on the degree to which Tom is exercising agency. Thus, suppose that, instead of acting intentionally, Tom blacks out and falls over the line. Just as in the first scenario, Tom is now too near the edge of the platform, and this leads to a delay. In this case, however, (1) seems like much less natural way to describe what has happened. Indeed, existing research shows that people's endorsement of sentences like (1) are often affected by whether an agent acted intentionally (see e.g., Kirfel & Lagnado, 2021; Lombrozo, 2010; Rose, 2017; Schwenkler & Sytsma, 2020).

This work typically understands these effects as demonstrating something about *causal* cognition in particular. In other words, existing research has focused especially on judgments about causation and on how impressions of agency might impact those judgments.

Consider, however, the following sentence:

- (2) Tom crossed over the line.

In (2), there is no longer any information about causation; the path verb *cross* is typically analyzed as devoid of causative semantics. Yet, strikingly, we find it in the experiments described below that people's evaluations of (2) are affected by intentionality in precisely the same way that their evaluations of (1) are. This result suggests that these effects of intentionality are not about how people reason about causation in particular, but instead show that perceptions of agency impact the way people think about a far broader class of sentences.

This raises a question about what gives rise to the effect of intentionality found in sentences like (1) and (2). One possibility is that these effects are not located in how people reason about the verb in the sentence (i.e., *cause* or *cross*), but instead in how they reason about the subject (i.e., *Tom*). To explore this hypothesis, we can look at cases in which the subject is inanimate:

- (3) a. The water caused the train delay.
b. The water crossed over the line.

If these sentences require intentionality in order to be acceptable, then people should also be hesitant to accept (3a-b), since the water is not acting (and cannot act) intentionally. In contrast, if the effect of intentionality has something to do with animate agents in particular, then (3) may be acceptable, since the water is not an animate in the first place.

In our experiments, we find that people endorse (3), to the same extent that they endorse (1) and (2) when Tom acts intentionally. These results suggest that intentionality affects the evaluation only of sentences that are about animate agents (and does so whether or not those sentences involve explicit causation).

Experiment 1

Four hundred adult participants were shown one of four short vignettes about a person, Tom, acting with full agency or with a very low degree of agency. For example, in one vignette, participants were told that Tom is waiting for a train and that there is a yellow line on the platform that people aren't supposed to cross. In the full agency condition, Tom deliberately crosses over the line, causing an adverse outcome. In the reduced agency condition, Tom passes out and falls over the line, causing the same outcome. Participants were then asked to evaluate *either* a causal statement (e.g., "Tom caused the train delay.") *or* a statement with one of the four non-causative verbs *hit*, *touch*, *enter* and *cross* (e.g., "Tom crossed the line.") on the basis of whether this sentence was a "natural/valid way of describing the event."

Results are displayed in Figure 1. We found no significant interaction between degree of agency and statement type. There was, however, a significant effect of degree of agency within each statement type ($p < .001$). This means that whether or not Tom acted with full agency affected participants' evaluations of both causal and non-causal statements.

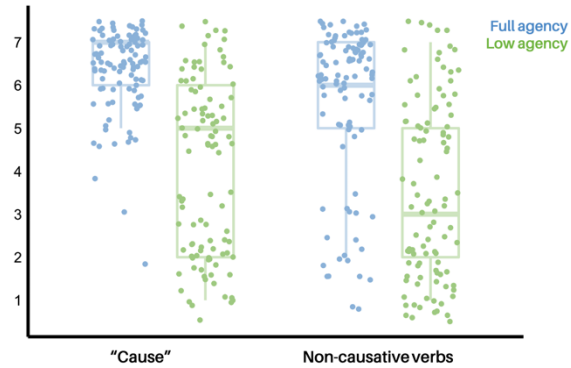


Figure 1. Results from Experiment 1.

Experiment 2

Six hundred adult participants were again shown one of four short vignettes. Now, however, participants were split into three agency conditions: (1) Tom acting with a very high degree of agency (e.g., Tom, in full control of his actions, deliberately stepping over the line); (2) Tom acting with very low agency (e.g., Tom blacking out and falling over the line); and (3) an inanimate object acting with little to no agency (e.g., a heavy rainstorm floods the train platform, and the weight of the water over the line triggers the same outcome). Participants were again asked to evaluate *either* a causal statement (e.g., "Tom caused the train delay" or "The water caused the train delay") *or* a statement with a non-causative verb (e.g., "Tom crossed over the line" or "The water crossed over the line") on the basis of whether this sentence was a "natural/valid way of describing the event."

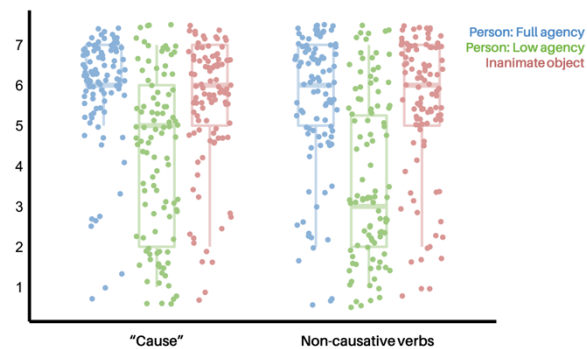


Figure 2. Results from Experiment 2.

Results are displayed in Figure 2. We again found no significant interaction between *degree of agency* and *statement type*—replicating the effect of degree of agency across sentences with both causative and non-causative verbs. Furthermore, degree of agency affected participants' evaluations of sentences about Tom, such that sentences describing Tom's actions were rated as more natural/valid when Tom acted intentionally than when he did not ($p < .001$)—but did *not* affect their evaluation of sentences about inanimate objects; participants thought a sentence like "The water crossed over the line" was an acceptable description of the scenario (even though the water obviously had a very low or null degree of agency; $p = .30$).

Conclusion

The effect of intentionality on people's evaluations of sentences like (1) are well-documented. We find, however, that these effects do not arise from something about causal cognition in particular. Instead, they may result from some more general role that agency plays in language. Thus to best understand how people are reasoning about intentional action in these cases, future research should focus not on developing theories that are specific to causal cognition in particular—but instead on developing theories designed to capture more general effects involving the role of agency in language.