



Causal priming: How a language production mechanism guides representation



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Questions

- How do people talk about causal events? Do people use language that matches the form of what they've recently heard or read? (e.g., Bock, 1986; Sankoff & Laberge, 1978)
- In particular, does local linguistic context influence whether people talk about causal agents?

We compared people's event descriptions in agentive and non-agentive linguistic contexts.

Agentive: *He broke the vase.*
Non-agentive: *The vase broke.*

Answers

- In both natural dialogue and in an experiment, people were more likely to talk about causal agents after they had recently encountered agentive language than non-agentive language.
- Comprehending different kinds of causal event descriptions changes other behaviors like memory and reasoning (e.g., Fausey & Boroditsky, 2008; Majid et al., 2007). Sensitivity to local linguistic context may be one mechanism that contributes to the production of these descriptions in the first place.

References and Acknowledgements

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Causal Language in the Wild: Corpus Study

Natural spoken language data

Corpus Manually-parsed Penn Treebank (800,000 words)

Tokens Transitive and intransitive forms of 24 verbs
begin, boil, break, burn, change, close, connect, develop, dry, fill, finish, freeze, gather, improve, melt, open, rock, roll, sink, split, spread, stop, turn, wake

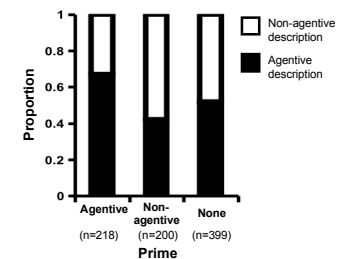
Data Total tokens: 817 (72 passives excluded)
Mean token occurrence per verb: 37.2
Mean Prime-Target distance: 60.78 turns

Targets Each token
Primes Nearest previous use of each target token

Targets and primes coded as agentive or non-agentive

Results: Overall trends

(statistical analyses considered several additional factors)



How did people talk about causal events?

When the prime and target verb were the same

✓ Target form depended on prime form
($\chi^2 = 17.7, p < .001$)

People were 2.4 times more likely to describe an event agentively after hearing agentive language than after no prime.

People were 3.8 times less likely to describe an event agentively after hearing non-agentive language than after no prime.

When the prime and target verb were different

✗ No effect of prime form

Analysis approach: Mixed logit model

Several fixed factors and a random speaker factor. Non-significant factors: Prime x (topic agentivity bias, verb agentivity bias, prime-target distance, prime-target speaker).

Causal Language in the Lab: Experiment

Participants and Experimental Task

338 UC Merced students completed a 2-sided survey

Front Participants read a sentence and were asked to continue the story for a few more sentences

Back Participants saw start and end pictures of an event and were asked to describe what happened

Design

People read one prime sentence (either agentive or non-agentive) and described one pictured event

Primes and pictured events were fully crossed

Some participants completed a 1-sided survey in which they only described a pictured event.

Materials: Linguistic primes

Agentive	Non-agentive
He popped the balloon.	The balloon popped.
He opened the umbrella.	The umbrella opened.
He unfastened the necklace.	The necklace unfastened.
He blew out the match.	The match blew out.

Materials: Pictured events

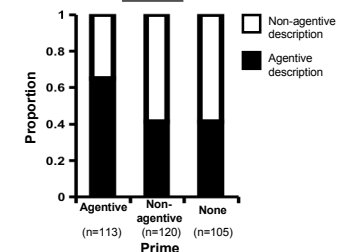


Data: Example event descriptions

Agentive
Somebody broke the vase.
Somebody took the paint and splattered it on the wall.

Non-agentive
The pretty antique vase broke and shattered into pieces.
The paint was in the buckets then it spilled onto the wall.

Results



How did people talk about causal events?

✓ Event descriptions depended on the prime form

People were more likely to describe an event agentively after reading agentive language than either non-agentive or no language ($\chi^2 = 9.79, p = .002; \chi^2 = 6.38, p < .012$).

These effects occurred even when the verbs in prime and target descriptions differed.