

The Causative Alternation & Types of Causation

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Two hypotheses about the construal of events and the syntactic properties of verbs:

(1) Internal vs. External Causation

(2) Direct vs. Indirect Causation

Which syntactic properties?

Argument realization

Specifically, whether English change of state verbs can participate in the causative alternation.

break: The vase broke.
Masoud broke the vase.
Masoud caused the vase to break/made the vase break.

bloom: The flowers bloomed.
* Phil bloomed the flowers.
Phil caused the flowers to bloom/made the flowers bloom.

Internal vs. External Causation

Smith (1970), Levin & Rappaport Hovav (1995), McKoon & Macfarland (2000)

Change of state verbs denoting externally caused events do participate in the alternation; verbs denoting internally caused events do not.

“The distinction between internally and externally caused eventualities is a distinction in the way events are conceptualized and does not necessarily correspond to a real difference in the types of events in the world.” (LRH 1995: 98)

Psychological Model of Causation

Following Kemp et al. (2010):

b = probability of change of state without external cause

s = strength of external cause

Hypothesis 1

Given our causal model and a verb v denoting e :

(1) V will participate in the causative alternation when $s > 0$.

(2) V will not participate in the causative alternation when $b > 0$ and $s = 0$.

(3) Acceptability of causative form of v will be proportional to value of s .

Direct vs. Indirect Causation

Comrie (1985), Croft (1991), Wolff (2003),
Rappaport Hovav & Levin (2012)

“Direct causation is present between the causer and the final causee in a causal chain (1) if there are no intermediate entities at the same level of granularity as either the initial causer or final causee, or (2) if any intermediate entities that are present can be construed as an enabling condition rather than an intervening causer.”

A causative use of a verb is licensed when the subject is a direct cause of the event denoted by the verb.

Hypothesis 2

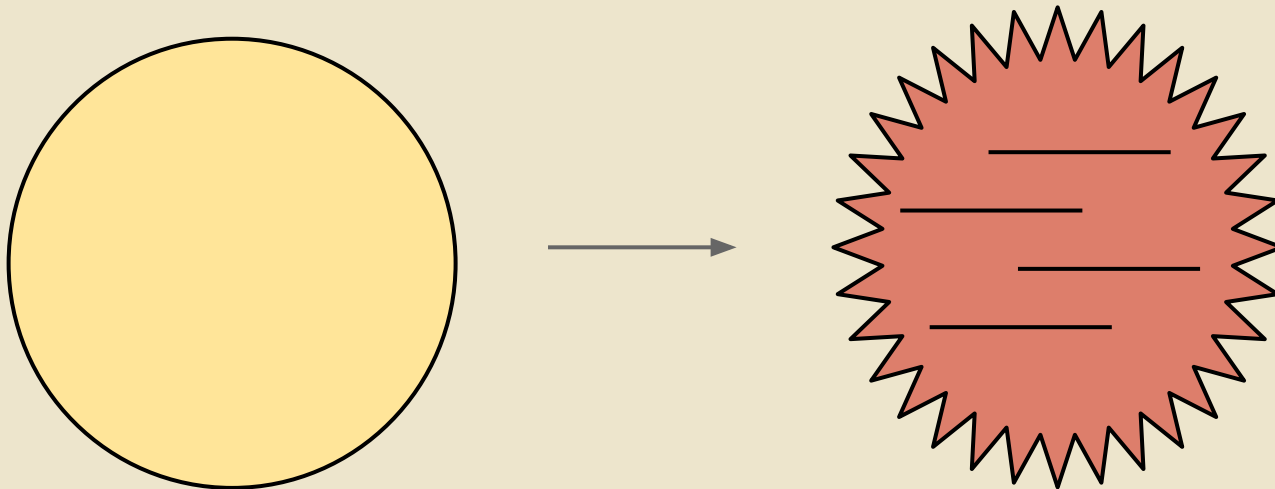
Given a verb v denoting an event e :

(1) Anticausative and periphrastic causative uses of v will always be licensed.

(2) Causative uses of v require a subject that is a direct cause of e .

Experiment

94 participants were told they were helping a team of scientists find out the cause of a certain change, called “cheeming”, in a cell:

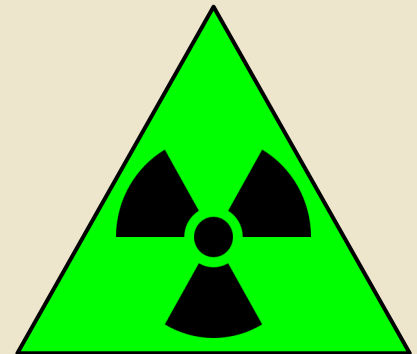


Scientist Hypotheses

The scientists have two hypotheses:

(1) Cheeming occurs due to something internal to the cell

(2) A radioactive substance is the reason cheeming occurs



Trials

They saw 8 trials with and 8 trials without the presence of the radioactive substance.

In order to make sure participants are paying attention, they had to report if cheeming occurred and if the substance was present for each trial.

Questions

Which hypothesis do you think was correct?

(1) internally caused ($b > 0, s = 0$)

n = 19

(2) externally caused ($b = 0, s > 0$)

n = 30

(3) int. and ext. caused ($b > 0, s > 0$)

n = 45

Questions

In **Task 1**, participants were asked to make a sentence using “cheem” after they saw a scene in which the substance was present and the cell did not cheem.

Questions

In **Task 2**, participants provided grammaticality judgements (7-point scale) on:

	Internal Cause	External Cause (direct)	External Cause (indirect)
Anticausative	The cell cheemed.	N/A	N/A
Causative	N/A	The radioactive substance cheemed the cell.	The scientists cheemed the cell.
Periphrastic Causative	N/A	The radioactive substance made the cell cheem.	The scientists made the cell cheem.

and their negative counterparts.

Predictions

Following Hypothesis 1:

- (1) Participants who believed the change to be externally caused will be more likely to use causative “cheem” in Task 1.
- (2) Participants who believed the change to be externally caused will give higher ratings to causative “cheem” in Task 2.

Following Hypothesis 2:

- (3) Participants will give higher ratings to causative “cheem” with direct cause subjects than to causative “cheem” with indirect cause subjects regardless of their beliefs about whether the change was externally caused.

Results

The great majority of people used the intransitive form in the free-form sentence making section:

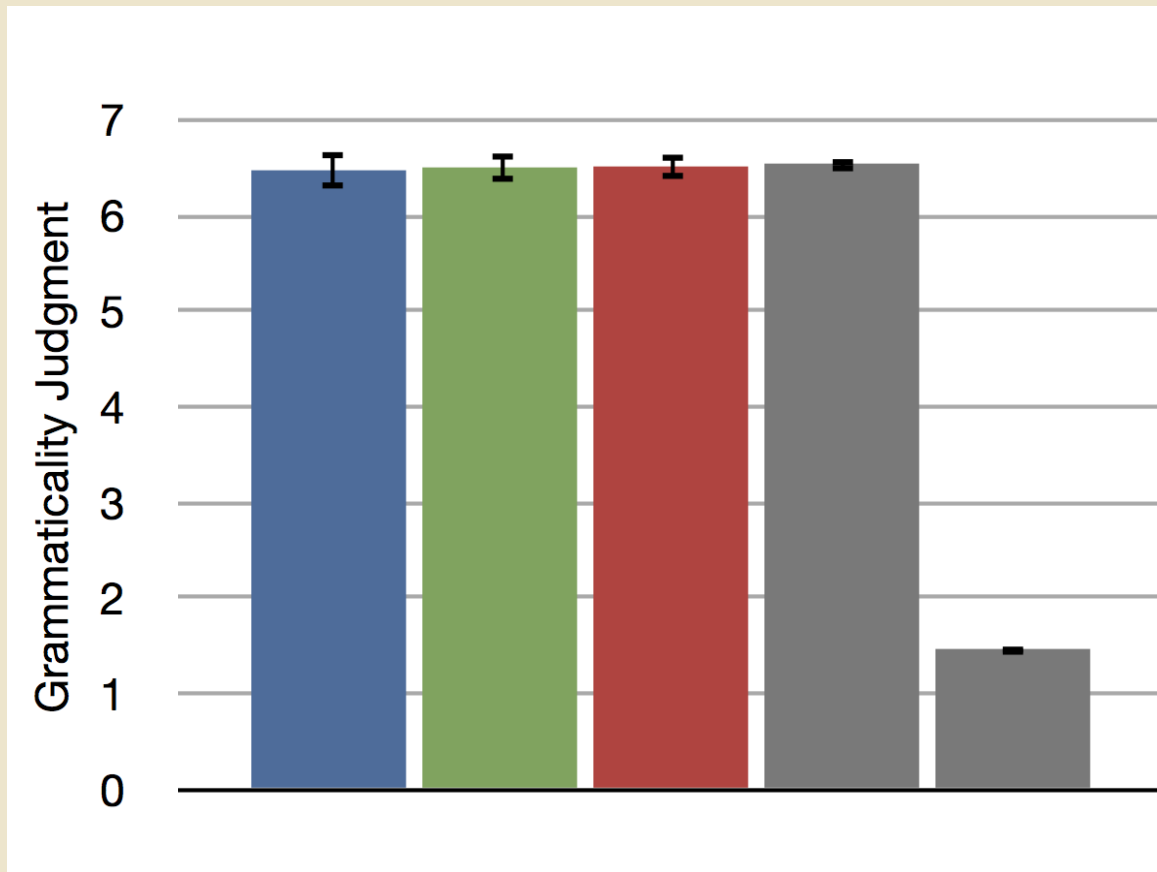
Anticausative = 76

Causative = 1

Periphrastic Causative = 11

Results

The cell cheemed/didn't cheem.



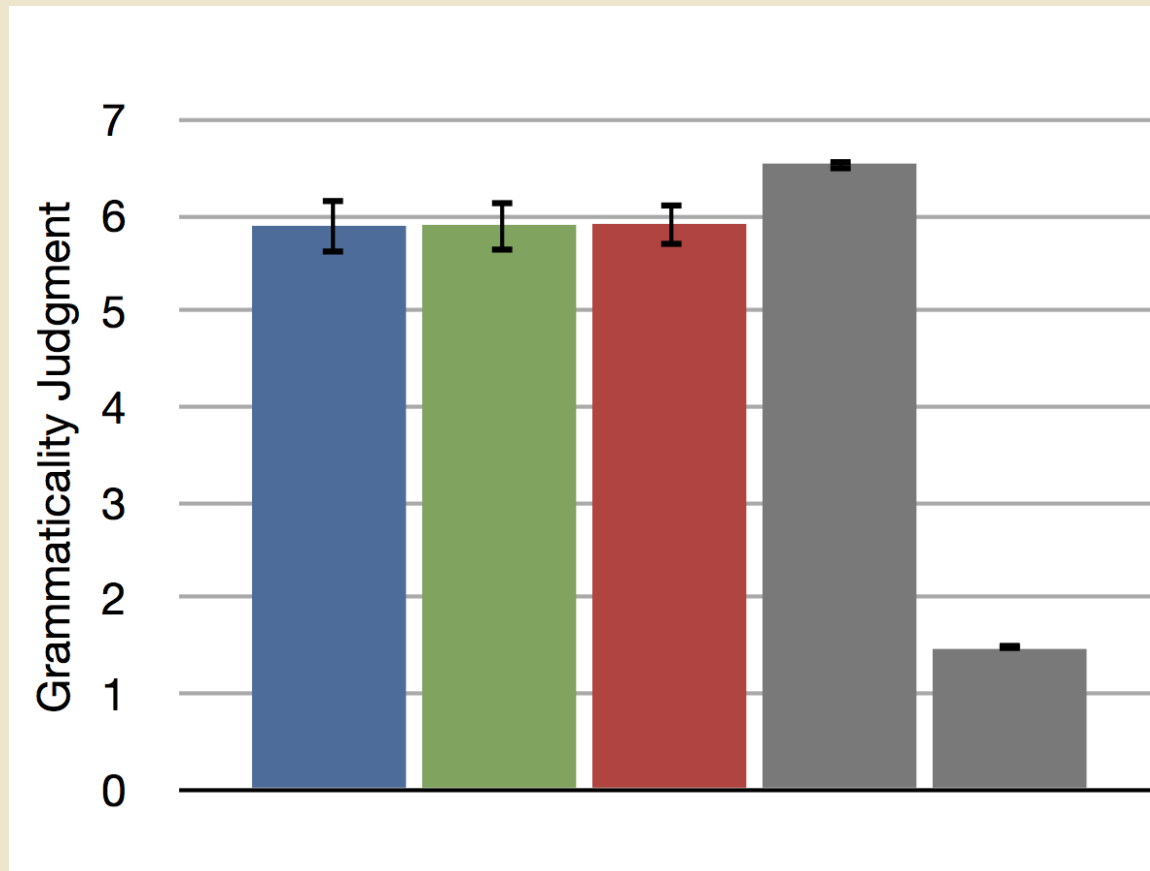
$b > 0, s = 0$

$b = 0, s > 0$

$b > 0, s > 0$

Results

The radioactive substance cheemed/didn't cheem the cell



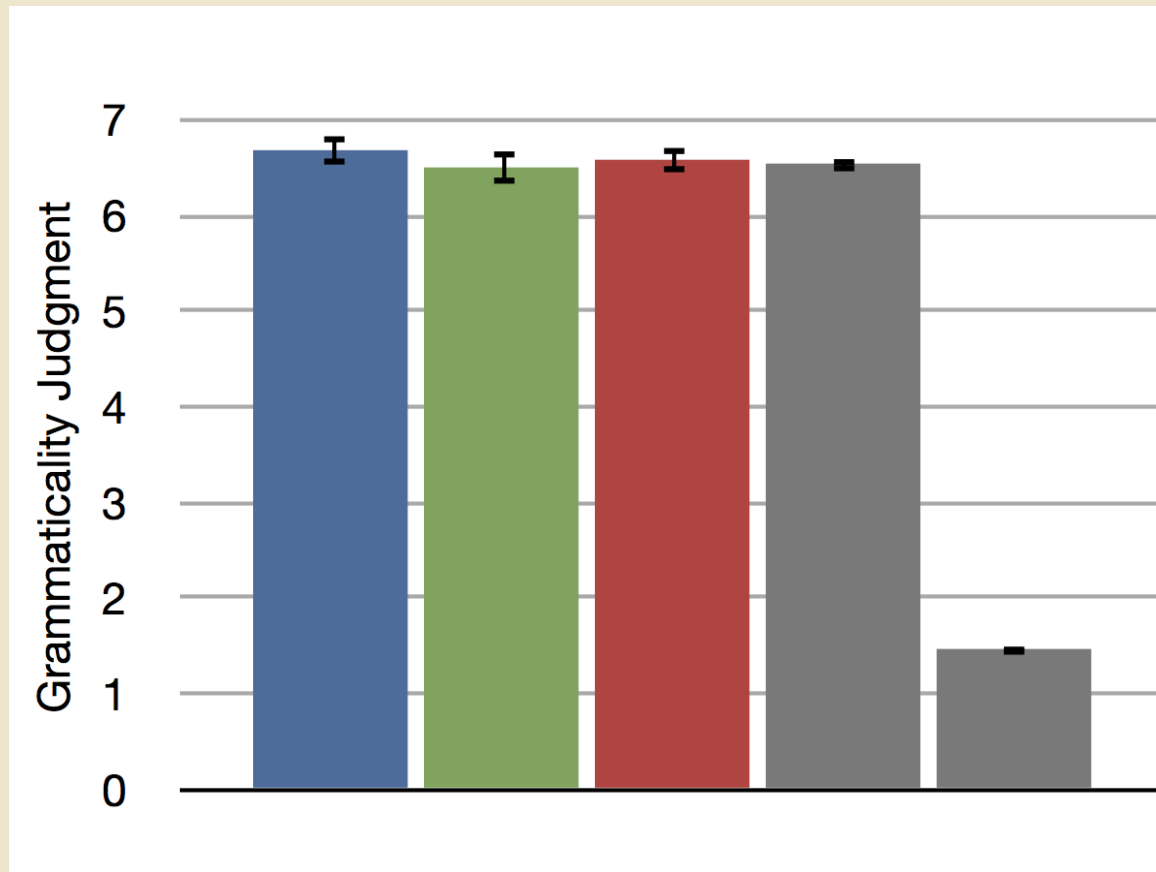
$b > 0, s = 0$

$b = 0, s > 0$

$b > 0, s > 0$

Results

The radioactive substance made/didn't make the cell cheem.



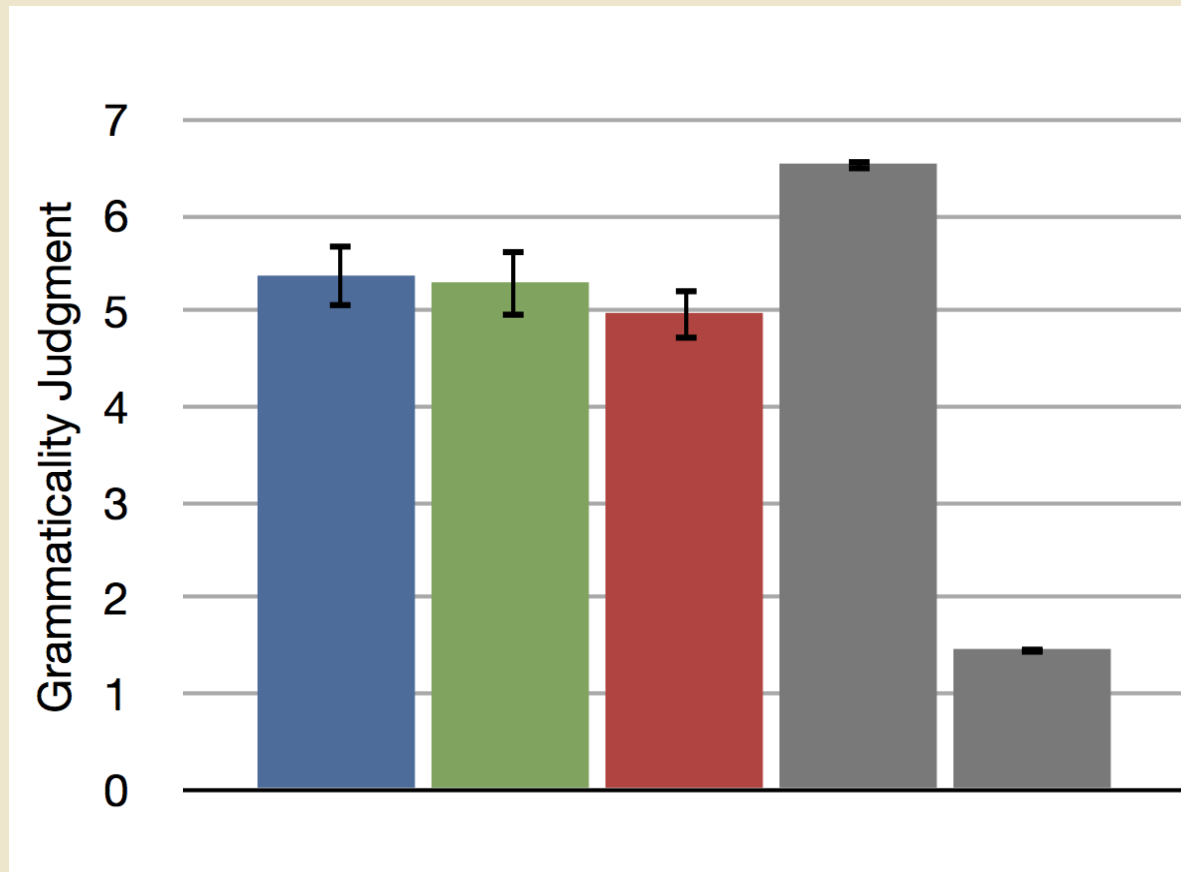
$b > 0, s = 0$

$b = 0, s > 0$

$b > 0, s > 0$

Results

The scientists cheemed/didn't cheem the cell.



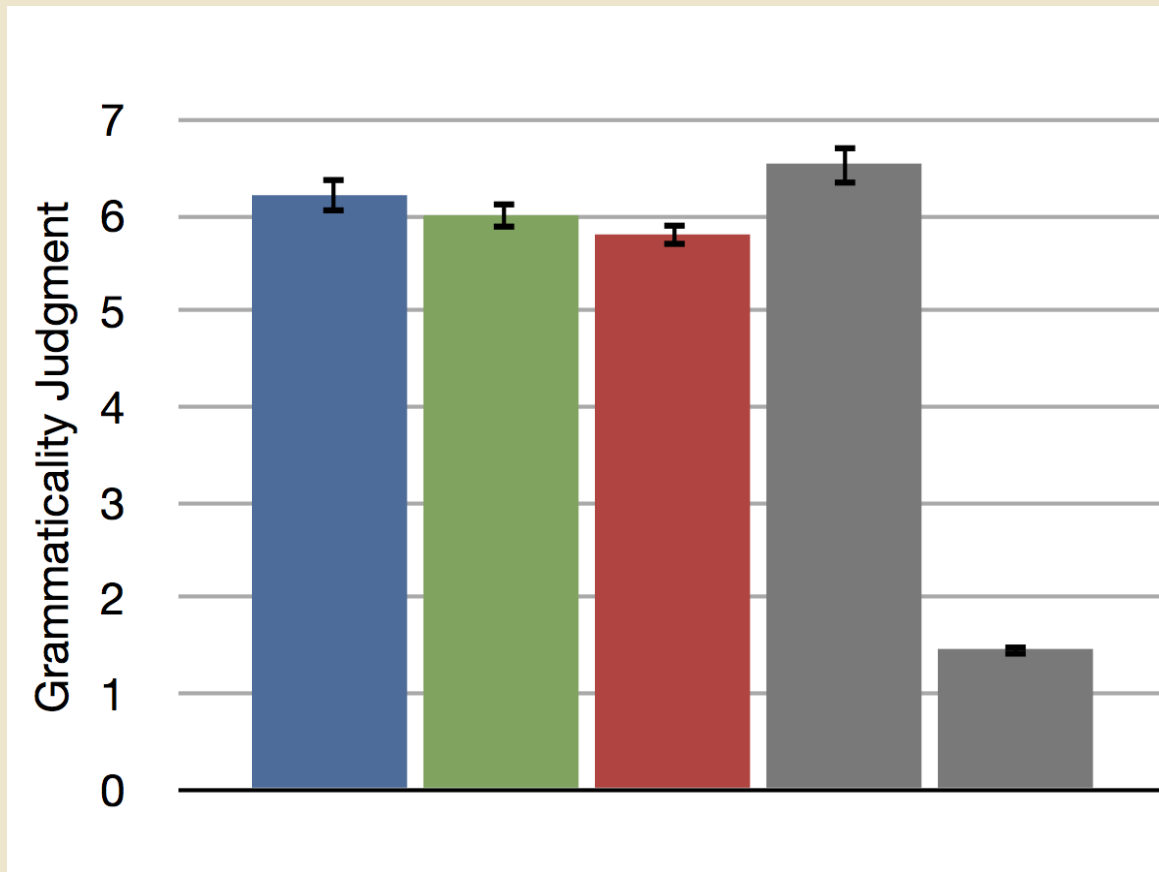
$b > 0, s = 0$

$b = 0, s > 0$

$b > 0, s > 0$

Results

The scientists made/didn't make the cell cheem.



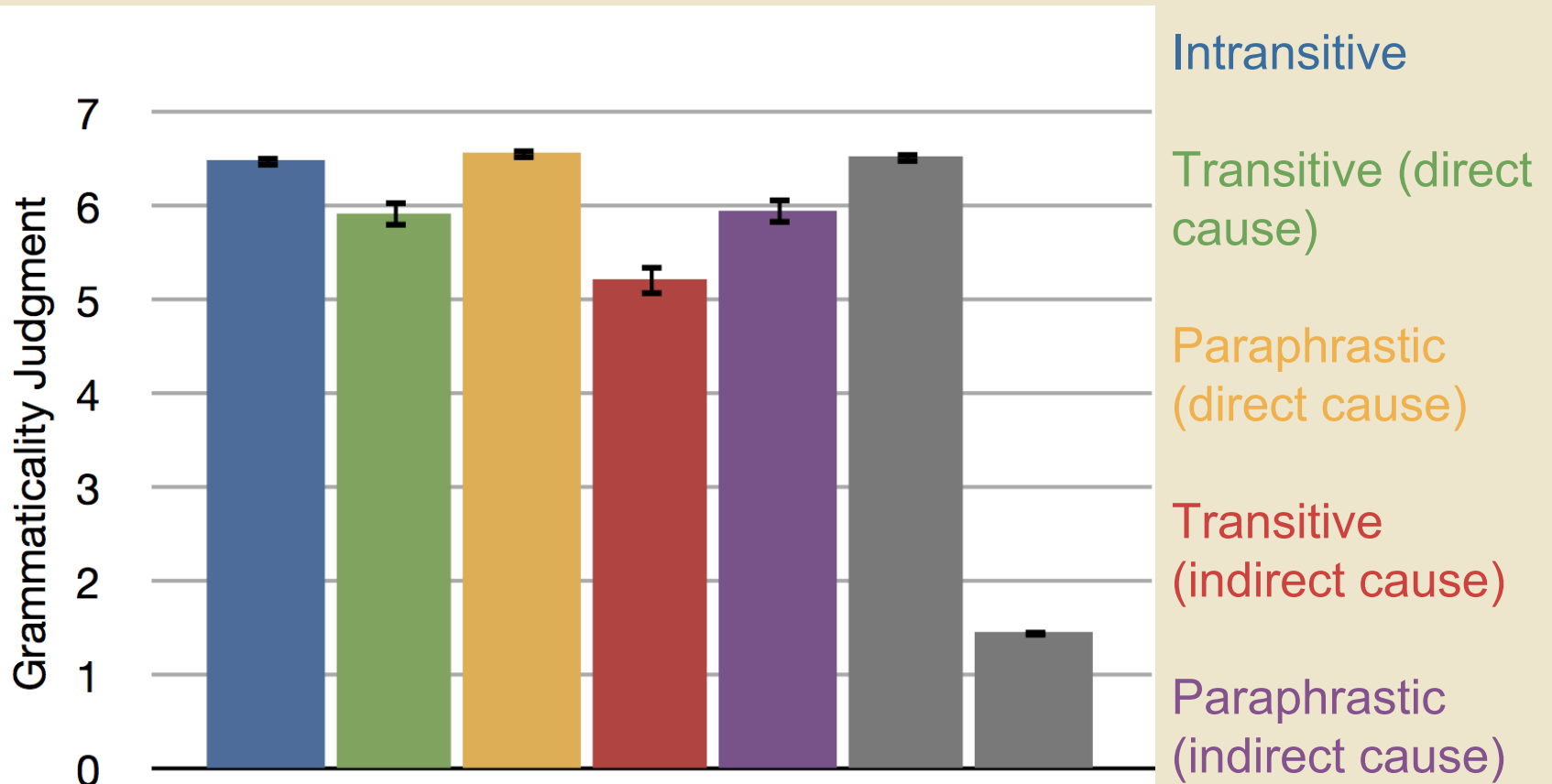
$b > 0, s = 0$

$b = 0, s > 0$

$b > 0, s > 0$

Results

All sentence types



Conclusions

Hypothesis 1:

We found no evidence for the claim that construal of events as internally or externally caused affects the argument structure of verbs denoting those events.

Hypothesis 2:

We found some evidence for the claim that indirect causes of events are not licensed as subjects of causative verbs denoting those events. However, indirect subjects also seem to be degraded for periphrastic causatives.

References

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Conditions

6 Conditions

<i>b</i>	<i>c</i>	<i>s</i>
0	1	1
0	0.5	0.5
0.5	0.5	0
0.5	1	1
1	1	0
1	0	-1

Each participant was randomly assigned to 1 condition.

Psychological Model of Causation

<i>o</i>	<i>e</i>
0	<i>b</i>
1	<i>b</i>

<i>o</i>	<i>e</i>
0	<i>b</i>
1	$1 - (1 - b)(1 - s)$