# Self-Construal and the Processing of Base Rate Information in a Contingency Learning Task

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## Introduction

A reliable finding in studies of causal inference from contingency data is the outcome density effect: subjects' judgments regarding the effectiveness of a potential cause increase with increases in the occurrence of the outcome irrespective of the relation between the cause and the outcome. But increasing the base rate of an outcome while holding the contingency between a potential cause and an outcome constant results in an increase in the probability of the outcome in the absence of the cause, p(e|~c). Thus, in certain cases, the outcome density effect is predicted by Cheng's (1997) Power PC, as well as Bayesian models of causal inference. Some, however, have attributed the outcome density effect to a response bias rather than to an ability to accurately discriminate contingencies while adjusting for p(e|~c) (Allan, Siegel, & Tangen, 2005).

Kim, Grimm, and Markman (in press) found that subjects primed with an interdependent self-construal were more likely to conditionalize on a causally-relevant co-factor than those primed with an independent self-construal. The aim of this study was to determine whether self-construal also influences sensitivity to base rate information during a contingency learning and causal judgment task.

## Method

Eighty-six subjects were primed with either a control, an independent, or an interdependent self-construal (after Gardner, Gabriel, & Lee, 1999). Subjects then received contingency information over 60 trials in which they saw a liquid either applied to or withheld from a plant, predicted whether the plant would bloom (the outcome), and received feedback. Subjects rated the effectiveness of the liquid in plant blooming on a scale from -100 to +100. The base rate of the outcome [p(e)] was manipulated while holding Δ P constant at approximately 0.47 (see Table).

## Results & Discussion

Subjects in the control and independent priming conditions exhibited the outcome density effect, with causal ratings increasing as the base rate of the outcome increased from .33 to .50 to .67 (see Figure). However, those primed with an interdependent self-construal did not exhibit the typical outcome density effect, particularly when the base rate was .33. Nevertheless, those primed with an interdependent self-construal were (the most) sensitive to the base rate as evidenced by their trial-by-trial predictions of the outcome in the absence of the treatment (see Table), $F(2, 27) = 4.77$, $p = .01$.

Table: Probabilities presented and subjects' predictions.

| Information Provided | | | Derived | | Predicted p(e\|~c) | | |
|---|---|---|---|---|---|---|---|
| p(e) | *p(e\|~c)* | p(e\|c) | ΔP | CP | C | Ind | Int |
| .67 | *.43* | .90 | .47 | .82 | .41 | .39 | .42 |
| .50 | *.27* | .73 | .46 | .63 | .32 | .33 | .20 |
| .33 | *.10* | .57 | .47 | .52 | .29 | .26 | .09 |

*Note:* CP = Cheng's Causal Power; C = control; Ind = independent; Int = Interdependent.

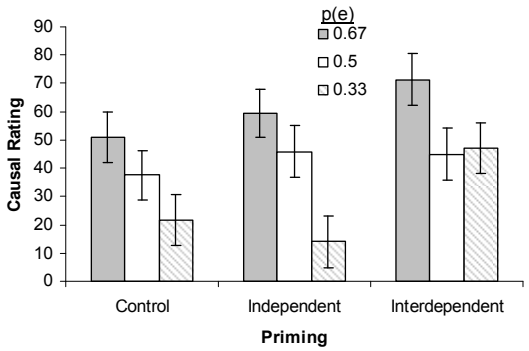


Figure: Causal ratings across conditions. Error bars are 1*SE*.

## References

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