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The Effect of Covariational Information on Implicit Causality

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There has been a lot of interest in a phenomenon dubbed "the implicit causality in verbs." It has been demonstrated that a subset of verbs which describe an interaction between two individuals carries information about which entity is the cause of the event. Sentences of the form *NP1 Verbed NP2* induce people to ascribe the cause of the event to either the first NP or the second NP. The former set of verbs are NP1 biasing, the latter NP2 biasing. Hence, in *John hit Mary*, John is perceived as the cause of *hit*, making *hit* a NP1 biasing verb; whereas in *John praised Mary*, Mary is seen as the cause of *praise*, making *praise* a NP2 biasing verb. This effect has been demonstrated using a variety of techniques, including forced response tasks (Brown & Fish, 1983), completion studies (Au, 1986), and has, also, been shown to influence comprehension (Caramazza, Grober, Garvey & Yates, 1977).

Some researchers account for this verb bias in terms of thematic roles (Rudolph & Forsterling, 1997). Verbs have been divided into action verbs or state verbs. Of the action verbs there are a further two categories, Agent-Patient (AP) verbs (e.g., *hit*, *kick*, *telephone*) are NP1 biasing, whereas Agent-Evocator (AE) verbs, where an Evocator is the causal impetus of a following action, (e.g., *praise*, *blame*, *congratulate*) are NP2 biasing. State verbs on the other hand can be classified as either Stimulus-Experiencer (SE) or Experiencer-Stimulus (ES) verbs. Examples of SE verbs are *fascinate*, *bore*, *disappoint*, which all give rise to a NP1 bias. On the other hand, ES verbs (e.g., *adore*, *despise*, *honour*) are NP2 biasing.

Kelley (1967) argues that the cause of an event is that thing with which it covaries. Two possible sources of covariation are: firstly, the Person, the thing producing the response, or having the experience (i.e., the Agent or Experiencer). If many (few) people react in this way to the stimulus, then there is high (low) Consensus. The second source of covariation is the Entity, towards whom the response is directed, or alternatively, the one who gives rise to an experience (i.e., the Patient, Evocator, or Stimulus). If the person responds this way to many (few) entities then there is low (high) Distinctiveness.

In this experiment we aimed to discover how explicit causal information, namely, covariational information, influenced the implicit causality in verbs. In a completion task, 32 subjects were presented with a single sentence of covariational information, followed by a sentence of the form *Proper Name-Verbed-Proper Name*

because... For example, for the verb *praised*, subjects were presented with one of the following sentences:

- (1a) *Many people praised Mary.* (High Consensus)
- (1b) *Few people praised Mary.* (Low Consensus)
- (1c) *John praised few people.* (High Distinctiveness)
- (1d) *John praised many people.* (Low Distinctiveness)

Each of these sentences was followed by (2)

(2) *John praised Mary because...*

The subjects' task was to complete sentence (2) given the preceding context. It was found that (a) explicit covariational information did not override the bias present in interpersonal verbs; (b) Low Consensus information led to more Person attributions, whereas High Consensus led to more Entity attributions; and (c) Distinctiveness information did not influence the continuations produced. These findings are explained by assuming that information about the Person is more in focus, making the Consensus dimension more accessible. On the other hand, Distinctiveness information does not exert as strong an influence on continuations because information associated with the Entity is not as informative.

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