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# Filtering Out Irrelevant Material During Metaphor Comprehension

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How do people understand metaphors such as my lawyer is a shark? Most people would understand this utterance to mean that the metaphor topic my lawyer has certain properties of the metaphor vehicle shark, but at the same time does not have other shark properties. The properties of shark that are attributed to my lawyer would include, among others, aggressive, vicious and tenacious. These properties constitute the ground of the metaphor; they are metaphor-relevant. Metaphor-irrelevant properties are those that are associated with literal sharks but nevertheless are not attributed to the metaphor topic. For example, saying that one's lawyer is a shark would not be taken to mean that one's lawyer had gills and was a skilled swimmer.

How do people filter out such irrelevant material? One possibility, suggested by Gernsbacher's (1990) suppression hypothesis, is that people actively inhibit irrelevant information during metaphor comprehension. If so, then we might expect elderly people to show a deficit in suppression of metaphor-irrelevant properties because inhibitory processes tend to be relatively impaired in elderly populations. To assess whether older adults are impaired in filtering out irrelevant information when comprehending metaphors, we asked younger and older adults (mean ages 20 and 72 years) to read metaphors (e.g. "My lawyer is a shark") and literal control sentences (e.g., "The hammerhead is a shark"), and then to judge whether metaphor-relevant and metaphor-irrelevant property statements made sense (e.g., "Sharks are tenacious" or "Sharks are good swimmers"). Relative to literal control conditions, both younger and older adults quickly responded to metaphor-relevant sentences but were slow to respond to metaphor-irrelevant ones. This finding replicates those reported by Gernsbacher, Keysar and Robinson (1995), and suggests that irrelevant material is relatively inaccessible during comprehension.

The mechanism for the relative inaccessibility of metaphor-irrelevant information is, however, unclear. Irrelevant information may be actively suppressed or inhibited, but there are plausible alternatives. The episodic trace retrieval hypothesis, for example, can account for the suppression effect without postulating either suppression or inhibition of irrelevant information during comprehension (cf Neill, Valdes, Terry & Gorfein, 1992).

In order to distinguish between active inhibition of irrelevant information and alternative non-inhibitory mechanisms,

experiment 2 used the independent probe technique (Anderson & Spellman, 1995). This technique rules out episodic trace retrieval because probes do not elicit retrieval of prior processing episodes. As in Experiment 1, participants read metaphors and literal control sentences, and then judged whether metaphor-relevant and metaphor-irrelevant probe sentences made sense. Unlike Experiment 1, however, the probe sentences did not use the priming sentence predicate. If, for example, a metaphor prime were to be "my lawyer is a shark", the metaphor-irrelevant probe sentence would be "Geese are good swimmers". If the property swimming had been actively inhibited during metaphor comprehension, then the response to the Geese-swimming assertion should be slower when it follows a metaphor than when it follows a literal statement such as "The hammerhead is a shark".

The results were clear. Just as in Experiment 1, participants were slower to respond to metaphor-irrelevant sentences following metaphors than following literal assertions. These data directly implicate active inhibitory mechanisms during metaphor comprehension, consistent with Gernsbacher's (1990) structure-building model of text comprehension, as well as with the general class of models that posit inhibition as a mechanism for dealing with irrelevant information during text and discourse comprehension.

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