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The effect of general knowledge on source memory and decision processes

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Abstract

Two experiments explored how semantic information affects episodic source decisions. Fictitious sources presented statements consistent with their respective professions, consistent with the other source's profession, and neutral with respect to either profession. Knowledge of the professions was manipulated as being available during encoding and retrieval, during retrieval only, or not at all. Source decisions for profession-related statements were biased by knowledge of the sources' professions only in the retrieval schema condition. Knowledge of the sources' professions at encoding actually prevented reliance on profession schemas, resulting in no bias at test. Experiment 2 demonstrated further that the response bias was not due simply to subjective guessing, but was in fact more prominent in higher levels of confidence associated with source decisions. We discuss the implications of these results for the manner in which general semantic knowledge affects source memory and decision processes.

Keywords: Source memory; Schemas; Response bias; Decision criteria; Confidence; Episodic memory; Semantic memory

The source monitoring framework (Johnson, Hashtroudi, & Lindsay, 1993; Mitchell & Johnson, 2000) proposes that people use two general classes of information to attribute memories to a source or context. One class includes qualitative characteristics bound in the memory when an event is experienced (i.e., episodic contextual features). People can retrieve characteristics such as sensory/perceptual detail, affective detail, spatiotemporal detail, semantic detail (gist or meaning), or records of cognitive operations. The existence and amount of these types of details helps one to infer the original source of the memory. One's reliance on such details, and the details considered, will depend on the goals of the rememberer and on the type of judgment being made, among other factors (Johnson et al., 1993; Marsh & Hicks, 1998; Marsh, Landau, & Hicks, 1997).

A second category of information people use to make source decisions are those external to a candidate memory trace. Included in this class are general knowledge, schemas, stereotypes, category knowledge, beliefs, and plausibility. People may often supplement (or even replace) an analysis of memorial details with background knowledge. For example, one might believe that a particular colleague was the source of a joke because the joke was heard in a context (e.g., the snack room) often frequented by that colleague. In this case, memorial detail for the spatiotemporal context may be lacking, but reliance on general knowledge that this particular colleague is often encountered in that context leads to a plausible inference. Reliance on background knowledge may usually be correct, but may sometimes be incorrect if the true source is another colleague less frequently encountered in that particular context.

Only recently has theoretical work focused on how general knowledge is used to supplement the analysis of memorial details found in a memory trace. Some studies

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have shown that people will use stereotypes in making source decisions. In a study by Mather, Johnson, and DeLeonardis (1999), people learned statements made by sources that varied in either political affiliation (Democrat vs. Republican) or primary hobby (athlete vs. writer). An additional manipulated variable was whether during encoding people focused on their own reactions to statements made by each source or focused on how they believed the sources felt about the statements. Mather et al. showed that reliance on stereotypes was more likely for older adults as compared to younger adults. Furthermore, regardless of age, stereotype reliance was more likely when participants had focused on their own reactions to statements made by the sources as opposed to a focus on the sources' ostensible beliefs. The least bias was observed for younger adults who rated how they believed the sources felt about the statements. One prominent feature of these results was that stereotype reliance was more likely for conditions in which source memory was less than optimal (i.e., for older adults and for people with a self focus). Conceptually similar results were reported by Sherman and Bessenoff (1999), in which people were more likely to inappropriately apply stereotypes in a source task when their attention was divided during retrieval as compared to full attention conditions.

Two other recent studies have investigated the use of general knowledge in source memory (Bayen, Nakamura, Dupuis, & Yang, 2000; Spaniol & Bayen, 2002). Notably, Bayen et al. (2000) used sources for which schemas were available. In one experiment, people encountered objects expected for a particular type of room (e.g., a soap dish in the bathroom) and objects less expected for a particular type of room (e.g., a radio in the bathroom). During a later source test for the room in which items were encountered, people were more likely to attribute items to rooms that were more schema consistent, regardless of the original room source.

In a second experiment, Bayen et al. (2000) reported that people showed biased source decisions by relying on profession schemas. Two sources presented statements consistent with what a doctor might say, consistent with what a lawyer might say, and neutral with regard to either profession. However, the professions of the sources were not known during encoding and were provided only before the source test. Doctor items were more often attributed to the doctor source and lawyer items were more often attributed to the lawyer source, regardless of the original source. Neutral items were attributed equally to the two sources. This pattern occurred both for encoded statements and for new statements on the source test. The authors demonstrated that the altered decisions for profession-related statements were due to decision biases, rather than the result of altered source memory. The cause of this bias was attributed to a guessing process by which source decisions were supplemented by general knowledge when episodic source memory was not adequate to render a decision. According to Bayen et al. (2000), "The *guessing hypothesis* proposes that when people cannot remember the source of information, they make guesses based on their schemas of possible sources." (p. 482).

The research just discussed suggests strongly that people will use generic information in addition to memorial details to make source judgments (cf. Johnson et al., 1993). How, and when, that information is used to supplement episodic memory for source is the focus of our study. Our overarching goal was to explore more fully the effect that schemas may have on source monitoring when those schemas are relevant to potential sources of information. As suggested by both Sherman and Bessenoff (1999) and Mather et al. (1999), generic knowledge may serve as a seemingly useful source-monitoring cue when that knowledge covaries with one or more potential sources. Bayen et al. (2000)'s guessing hypothesis is consistent with how others (e.g., Johnson et al., 1993) have depicted the influence of general knowledge on source decisions.

Moreover, general knowledge may affect source memory differently when available during encoding versus during retrieval of an experience. Schemas activated during encoding may provide people with an organizing theme or structure for information. As such, memory may be better for encoded concepts in general, and perhaps even better for concepts inconsistent with the schema (e.g., Brewer & Treyens, 1981; Bower, Black, & Turner, 1979; Graesser, Gordon, & Sawyer, 1979). One byproduct of this better encoding may be that schemas are less likely to affect source decisions in the form of a response bias. Spaniol and Bayen (2002)'s finding that higher levels of recognition memory were negatively correlated with the degree of schema-related response bias predicts that any process benefiting encoding may also decrease the degree of response bias. That younger, source-focused people in Mather et al.'s study had the highest level of source memory and the least amount of response bias is also consistent with this prediction.

Experiment 1

We extended the basic design from Experiment 2 of Bayen et al. (2000)'s study to explore how background knowledge affects both encoding and retrieval in source memory. As in that study, we had two fictitious sources present statements that a doctor might say, statements that a lawyer might say, and neutral statements. However, in addition to providing a profession schema at retrieval, we included two other important conditions. One was a control condition in which no profession information was provided. This allowed for a compari-