



Wer sagt, dass: Source Monitoring is Better When You Understand the Language



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Background

Imagine you are attending an international research conference. You have walked into the end of a symposium and heard several important researchers speaking in a language you do not speak, German. Although you do not understand the bulk of their discussion, you are able to identify key words about each speaker's research area. After the conference you attempt to contact several of these researchers but you have trouble recalling which researcher said which topic (an example of source memory). Our primary question here was whether source memory would be lessened for information which is presented in a non-spoken language.

Source monitoring refers to the, often heuristic-like, decision making process used to determine the origin of a memory (Johnson, Hashtroudi, & Lindsay, 1993). Many models of long-term memory propose both an ITEM as well as its CONTEXT as separate nodes linked within the same network (c.f., SAM; Raaijmakers & Shiffrin, 1981).

Our belief is that reading and hearing a word in a non-spoken language would fail to fully activate an ITEM node, reducing the probability of associating the presented CONTEXT. This should not be the case for well-known words in one's spoken language, which should produce full activation of the ITEM node and allow for proper binding of CONTEXT.

In two experiments we examine the influence of one's knowledge and understanding of words in a specific language on source memory for those words. We asked participants to learn a list of words in either English or German. Later they were asked to identify which of two studied sources had been the studied source.

Experiment 1: Motivation & Methods

A sample of 81 participants from the University of Michigan Dearborn were asked to participate as part of a course research appreciation requirement. All participants were asked to learn 72 words for 4 seconds each (36 in each of two studied sources). Which words served as studied items versus recognition test distracters was randomized anew for each participant. The language of studied/tested words was either English or German (between subjects) and all participants affirmed they were English-speaking and had no comprehension of German language.

Participants in both conditions were told that they would also hear the words spoken over the computer speakers by either a male or female and that this was only to help them identify the word presented on the computer monitor. All participants in both experiments completed a final source recognition phase.

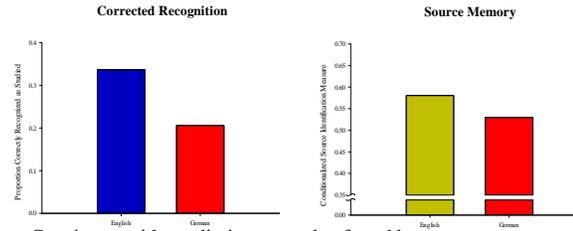
English Condition



German Condition



Experiment 1: Results & Discussion

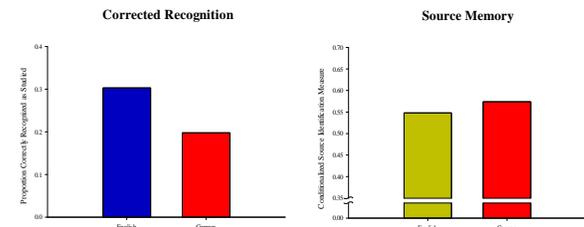


Consistent with predictions, we also found better source memory when participants studied ENGLISH words than when the words were in a foreign language, $t(79) = 2.20, p = .03$. Participant studying German words were less accurate in later remembering the gender of the person speaking the words. We believe this may be because an encoding strategy that associates a word (its meaning) with its context could not occur if the meaning was unknown.

In order to assess overall item recognition memory we created a measure of inferred recognition that pooled over both correct and incorrect source decisions. Then, in order to eliminate inflated recognition that can occur with high false alarms, we subtracted each participants individual false alarm rate from their inferred recognition, producing a corrected recognition measure. Not surprisingly, participants experienced greater corrected recognition when they studied English rather than German words, $t(79) = 3.66, p < .001$.

Experiment 2: Motivation & Methods

Although the results of Experiment 1 are encouraging and supportive of our hypothesis, we do not feel they are a particularly strong demonstration of an effect. To wit, Experiment 2 was designed as a conceptual replication of Experiment 1 using different studied sources: font color. Instead of studying words in black and white with accompanying audio, all words were studied visually and printed in either RED or BLUE font. The source recognition test now asked participants to make a judgment between RED, BLUE, or NEW. All other methodological details are identical to Experiment 1. 96 new participants the University of Michigan Dearborn participated in Experiment 2.



Experiment 2: Results and Discussion

One possible explanation for this cross-over interaction, and the increase in source memory for German words when using a font source, has to do with the orthographic (visual) distinctiveness of German nouns. Many German words utilize combinations of letters that are unfamiliar to English speakers and translated words are often longer in German. Lacking any comprehension of the meaning of the words, participants may have relied on visual characteristics to encode the words. As such, other visual characteristics (like font color) may have received a concomitant boost that was not present for English words. Ongoing work in our lab is investigating the different roles of visual distinctiveness and lack of comprehension on different dimensions of context.

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