



# Gender Biases and Divided Attention in Source Monitoring

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## Background

Previous research has shown that speakers of languages with grammatical gender (“gendered languages”) think about and categorize nouns in accordance with the noun’s grammatical gender (e.g., Sera et al., 1994). For example, native Spanish speakers may describe *puerta* (feminine noun, ‘door’) as *bonita* (stereotypically feminine adjective, ‘beautiful’).

Theoretically, English nouns do not have gender, however, associations among words with and without semantic gender in English may, through processes that create the observed effects in gendered languages, also cause English speakers to consistently attribute gender to nouns. For example, previous research involved second graders categorizing pictures of objects originating in nature and objects made by humans into male and female groups. The objects from the natural categories were more often categorized as female (e.g., Mullen, 1990). We attempt to explore the strength of this gender association by examining its effects on memory for the context in which the words appear.

Retrieving contextual details bound in memory is part of a process labeled source monitoring (Johnson, Hashtroudi, & Lindsay, 1993). Countless details are experienced when an event is encoded into memory and many of these are bound to the studied word as bits of context. Note that context can be broadly defined as anything from the learner’s internal emotional state to details about which of several individuals delivered a message. Determining the veracity of these contextual details is sometimes done heuristically (e.g., inferring that my wife, and not my 3 year old daughter, bought me tickets to the Rammstein concert). Other times there is a clear recollective detail that is retrieved that can identify the studied context. It is because source decisions can be made quickly and heuristically that we expect to see source monitoring errors and biases that result from gendered categories found in language.

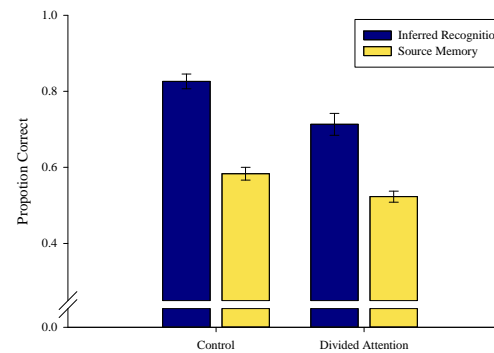
By varying the gender of the person speaking the word, the current study examines whether speakers of English associate gender with common nouns despite the lack of grammatical gender marking (Sera et al., 1994). That is, are they more likely to associate of natural objects with the female source and artificial objects with the male source? We predicted that source details would bind more efficiently when the source was consistent with the grammatical gender of the semantic category. That is, we expected better source memory for natural words spoken by a female source and artificial words spoken by a male source. It is possible, however, that source details will be bound relatively efficiently regardless of the source and grammatical gender simply due to good encoding. If, however, the bias does affect source attributions in addition to (or instead of) binding then we may see evidence of this when new words are declared old during the test phase and must be assigned a studied source. That is, false alarms may show evidence of the predicted bias.

## Methods

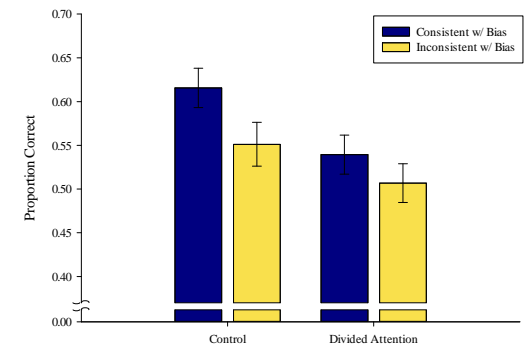
- 40 total words (20 natural and 20 artificial) were presented visually. Half of these were also heard spoken by a Male and half were heard spoken by a Female, creating four orthogonal types of studied items.
- 20 remaining words (10 natural and 10 artificial) served as distractors in the source recognition test.
- Random Number Generation required participants to speak a random digit every 1.5 seconds in response to a tone, hopefully reducing encoding of both the item and its contextual details by dividing attention.

## Results

Divided Attention in Item and Source Memory



Source Memory for Natural and Artificial Categories



- Divided Attention with Random Number Generation reduced overall inferred recognition and overall source memory,  $F(1,67) = 7.47, p = .008, \eta_p^2 = .10$ .
- For correct source memory, when the gender of the source was consistent with the semantic properties of the word (Natural-Female, Artificial-Male), overall source memory was better than if the gender of the source was not consistent with the semantic properties of the word,  $F(1, 67) = 4.08, p = .047, \eta_p^2 = .06$ .
- There were no differences in false alarm rates,  $F < 1$ .

## Conclusions

- We extend previous findings by demonstrating converging evidence for a gender association with natural and artificial categories in language.
- We replicated years of divided attention research, demonstrating an overall reduction in memory when attention is divided during encoding.
- Our future work is looking at a different, albeit not mutually exclusive, dimension that is thought to be associated with particular genders (i.e., word with Latinate vs. Germanic etymology).