

# Gender Biases in Source Monitoring of Natural and Artificial Nouns



Arlo Clark-Foos, Ph.D.

Curtis D. Dobbs

Jonathan Schick

Nitya Sethuraman, Ph.D.

Tyler Wydendorf

Sara Hurt



## 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., Boroditsky, et al., 2003; Konishi, 1993; Sera, et al., 1994).

For example, native Spanish speakers may describe *puerta* (feminine noun, ‘door’) as *bonita* (stereotypically feminine adjective, ‘beautiful’).

Grammatical gender may come to be associated with semantic gender for semantically gendered nouns (e.g., *la* in Spanish is associated with the nouns that label *girl*, *queen*, *nun*, and so forth, attributing *la* with a feminine association). In turn, seemingly genderless things such as *shoes* and *bridges* used with *la* come to be associated with feminine notions. Correspondingly, speakers of languages without grammatical gender (“non-gendered languages”) are proposed to treat nouns as conceptually “genderless” (e.g., Vigliocco, et al., 2005).

In gendered languages, previous work has explored other sources of gender association deriving from general semantic properties, such as angular vs. curved; hard vs. soft; active vs. passive; used with males vs. used with females; and artificial vs. natural (Konishi, 1993; Sera, et al., 2002).

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.

By varying the gender of the person speaking the word (Experiment 1) and the location of the word (Experiment 2), the current study examines whether speakers of English associate gender with common nouns despite the lack of grammatical gender marking, by examining the association of natural objects with feminine gender and artificial objects with masculine gender (Sera, et al., 1994).

## 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.

## Results

Figure 1. Overall Recognition Memory

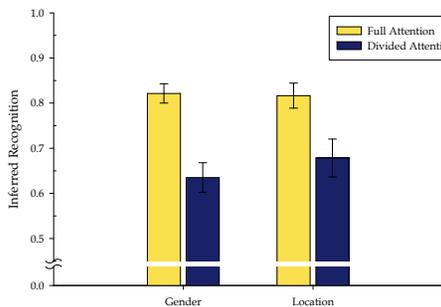
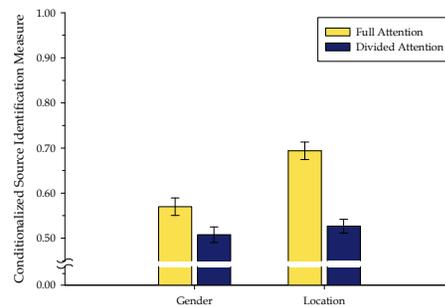


Figure 2. Overall Source Memory



Gaia AKA  
Mother  
& Earth



Figure 3. Source False Alarms for NATURAL Objects

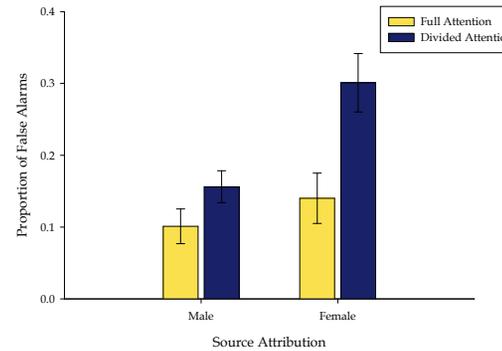
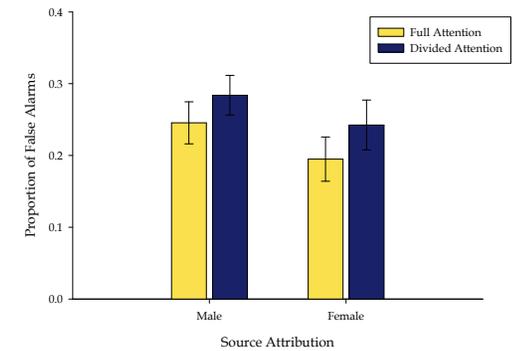


Figure 4. Source False Alarms For ARTIFICIAL Objects



## 2 (Attention) X 2 (FA\_Source) x 2 (Natural/Artificial) on Source Attributions for False Alarms

### Main Effects

**Natural/Artificial:**  $F(1,58) = 23.4, p < .001, \eta_p^2 = .29$   
 • More False Alarms for Artificial Objects

**Attention:**  $F(1,58) = 4.64, p = .04, \eta_p^2 = .07$   
 • More False Alarms with Divided Attention

### Interactions

**Nat/Art X Attention:**  $F(1,58) = 5.46, p = .02, \eta_p^2 = .08$

**\*\*Nat/Art X FA\_Source:**  $F(1,58) = 43.82, p < .001, \eta_p^2 = .43$

**Nat/Art X Attention X FA\_Source:**  $F(1,58) = 5.37, p = .02, \eta_p^2 = .09$

## Conclusions

- Divided Attention with Random Number Generation reduced overall inferred recognition and overall source memory
- When participants false alarm to new words during the source recognition test, their gender source attribution is consistent with the semantic properties of the word. That is, unstudied natural objects are more often falsely attributed to the female source while unstudied artificial objects are more often falsely attributed to the male source.
- Semantic properties of studied items can affect memory for the context or source of those items.