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Why do plausible short words like *fep* not exist in English?

Piantadosi, Tily, Gibson (2012) show a communicative advantage for re-using meanings for short words so that the overall code length of the lexicon can be shorter.

But why do we have so many unused words like *fep*?

Lexical items as privileged slots for meaning

Here, we test the hypothesis that polysemy and homophony are prevalent because it is easier to learn new meanings for existing words than to use new words altogether.

We test that hypothesis in a Memory Game paradigm.

Methods

- 235 participants and 128 words (64 real, 64 pseudo-words), of which each participants saw 8
- Words are drawn from nouns, verbs, adjective, function words in equal proportions.
- Pseudo-words are created by permuting 1 letter of each real word for every 4 letters, as below.

funct	among	agonk
adj	strong	strank
noun	animal	azival
verb	write	grize

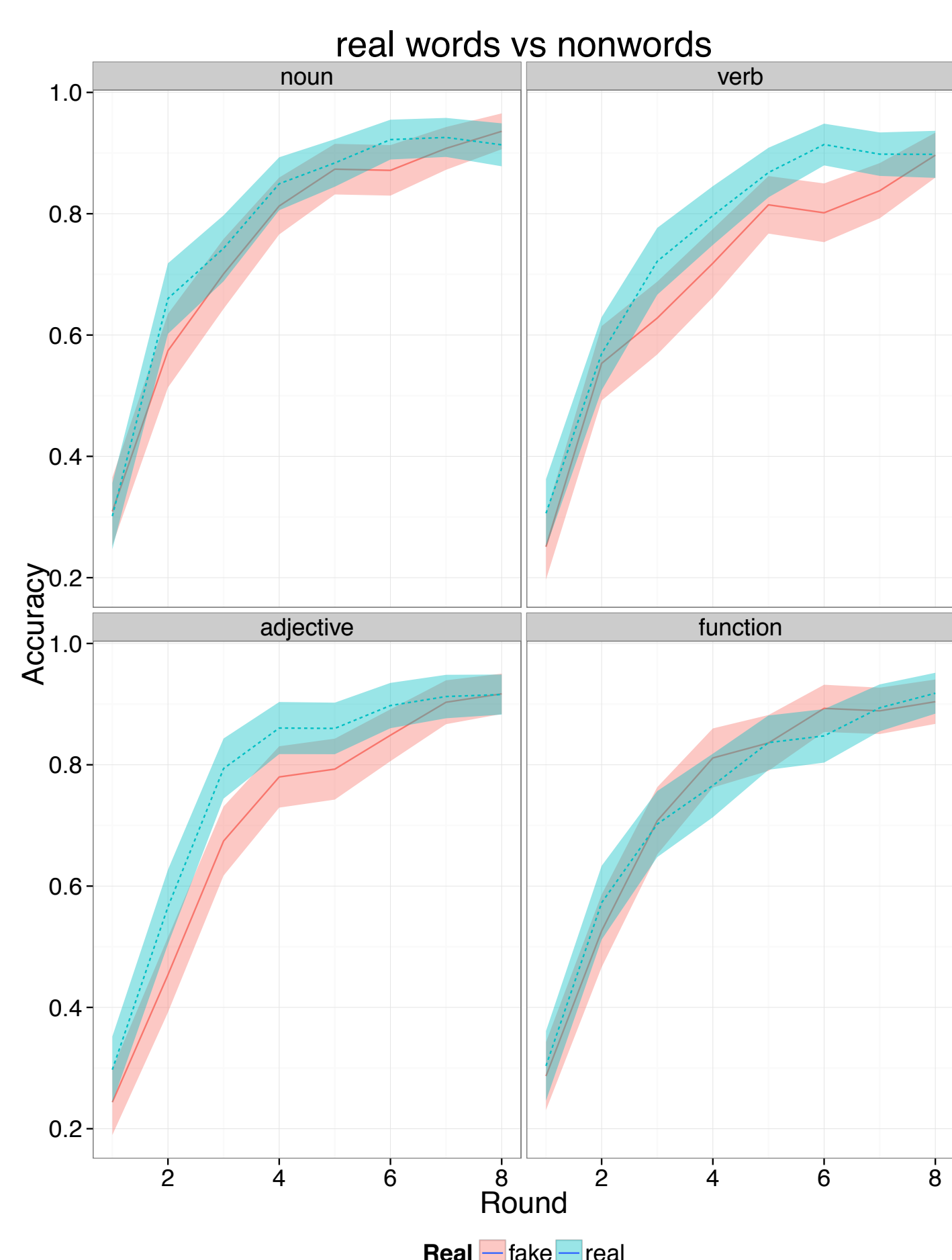
sample of words in study (real vs. matched psuedo-word)



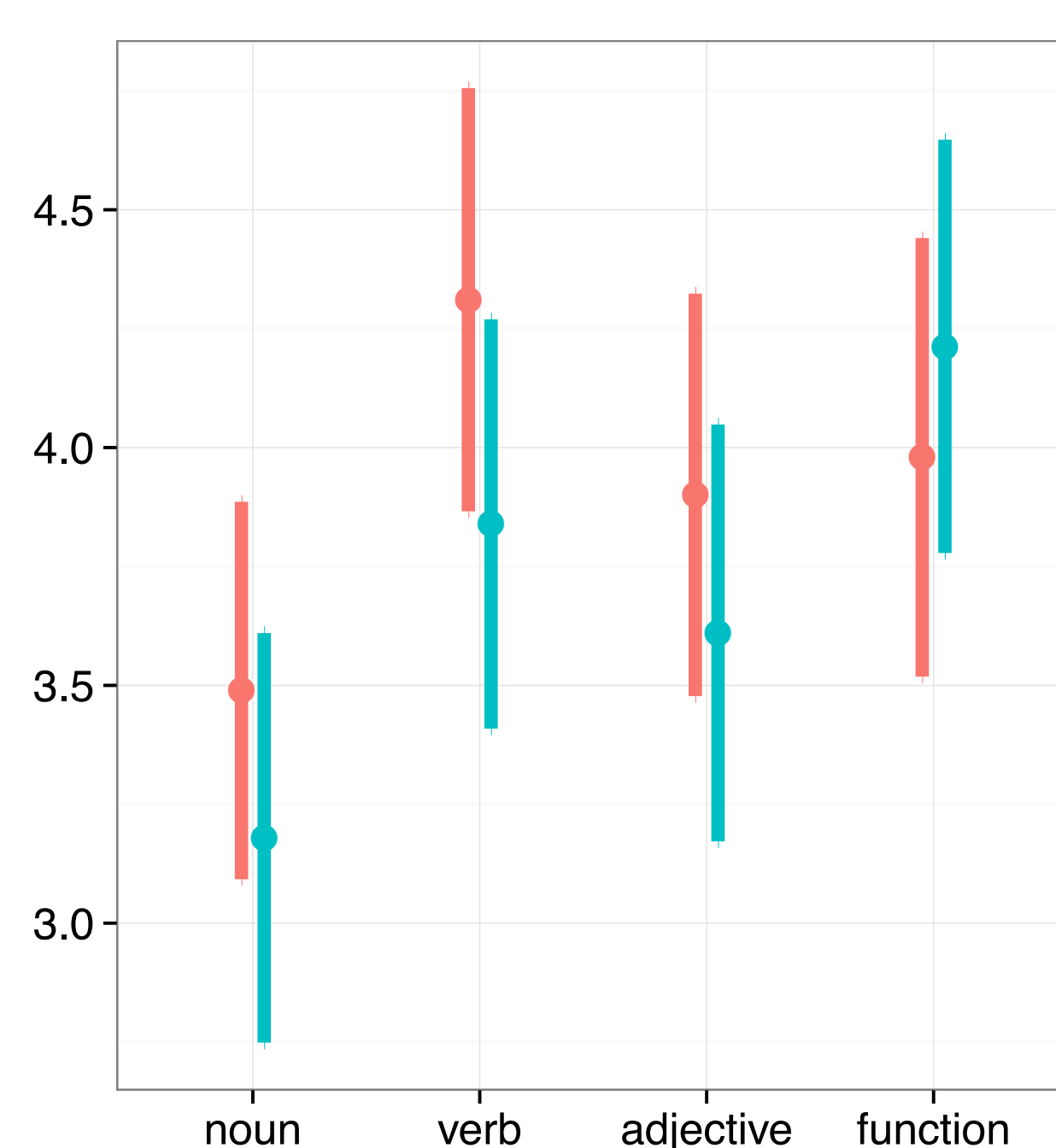
Possible outcomes

1. Real words are harder to remember due to semantic confusion.
2. All real words are easier to remember because they have a privileged lexical slot in memory.
3. Real words with semantics (i.e., content words) are easier to remember but function words are not.

Results



Average accuracies per round, split up by category for fake and real words. A difference between the red and blue lines reflects a learning advantage. The shading represents 95% CIs over subjects.



95% CIs on avg. number of trials until perfect. Real words in blue, fake words in red.

- For nouns, verbs, and adjectives, real nouns were remembered more accurately than pseudo-nouns (mean accuracy .63 vs .58 for nouns; .60 vs .53 for adjectives; .60 vs .52 for verbs).
- Function words showed little difference from the controls (.59 vs .57).
- To assess significance, we binned the data by rounds and used a mixed effect regression growth curve analysis (Mirman et al., 2008) predicting accuracy from a quadratic time term, whether the word is real, and whether the word is a function word. We included random intercepts and slopes for participant and word.
- There was a main effect of whether the word was real, significant by a likelihood ratio test ($\beta = .03$, $\chi^2 = 12$, $p < .001$), but the effect disappears for just function words vs. pseudo-function words ($\beta = .001$, $\chi^2 = .003$, $p = .95$).

Conclusion

- People remember nouns, adjectives and verbs more easily than they remember matched psuedo-words.
- People are not better at remembering function words relative to pseudo function words.
- This suggests that existing semantics can provide a cognitive “handle” with which to attach new meanings.
- More work is needed to explore how semantics plays a role.

Get it here!



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