

Title: Word frequency is a cue to lexical category for 8-month-old infants

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The division of labor hypothesis between function words, signalling grammatical structure, and content words, carrying meaning, is linguistic universal^{1, 2}. One potential cue to this lexical distinction is word frequency: functors are much more frequent than content words³. It has been shown that this different frequency distribution guides 8-month-olds to build a rudimentary representation of the native word order³. Does this mean that they also map infrequent words onto the lexical category of content words and frequent words onto functors?

As functors constitute closed classes, while content words come in open classes, we examined whether infants are flexible to accept new test items within the infrequent category, but not in the frequent one. Using the Headturn Preference Paradigm, we familiarized six groups of French-learning 8-month-olds with an artificial language in which frequent (F) and infrequent words (I) strictly alternated (...*gefofibugedefikogepa*...).

In Experiment 1 infants were tested with test items from the familiarization (*F-I-F-I* vs. *I-F-I-F*) in their preference for frequent word initial items, as they are naturally exposed to a functor-initial language. Experiment 2 and Experiment 3 then investigated, respectively, the sensitivity for the open-class property of the content words and the closed-class property of functors. During the test phase we therefore replaced infrequent (Experiment 2: *F-N-F-N* vs. *N-F-N-F*) and frequent items (Experiment 3: (*N-I-N-I* vs. *I-N-I-N*) with novel ones. We expected infants to maintain unaltered their preference when the changes occurred within the infrequent category whereas to suppress their preference for the novel frequent one, as function words are assumed to be a closed class.

Additionally, in Experiment 4 we tested the memory for the infrequent items by presenting infants with the familiar infrequent items contrasted with entirely novel words. Finally, we run two additional experiments to investigate whether infants encoded the position of infrequent words at all. In Experiment 5 we presented infants with test items that carried no information at all (*N-N-N-N*) compared with test items in which frequent words were replaced by novel syllables in the initial position (*N-I-N-I*). By contrast, in Experiment 6, the *N-N-N-N* items were contrasted with test items where frequent words were replaced by novel syllables in the final position (*I-N-I-N*).

In both Experiments 1 and 2 we found that infants treated frequent words as functors and infrequent words as content words, showing the predicted frequent-initial preference. In Experiment 3, by contrast, no such preference was found. This was not simply due to a better recall of the frequent words, as infants discriminated the infrequent tokens from novel ones (Experiment 4). Importantly, by showing a preference for the test items in which infrequent words were presented in their native-like final position (*N-I-N-I*, Experiment 5) but not for the test items in which the infrequent word were placed in a non-native like order (*I-N-I-N*, Experiment 6), infants demonstrated their ability to associate positional information with infrequent words to apply their word order representation correctly.

These findings provide the earliest evidence that infants use word frequency as a cue to lexical early lexical categorization.

(500 Words)

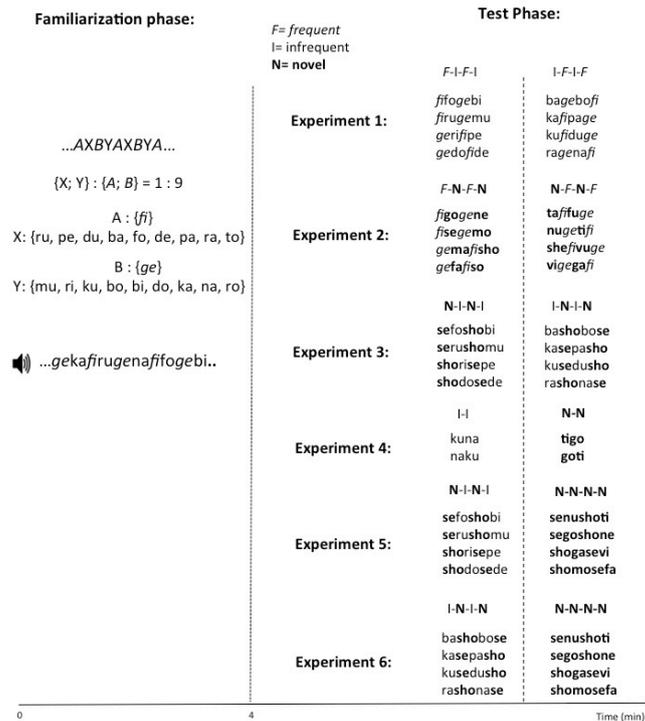


Figure 1. Artificial grammar task used in Experiments 1-6

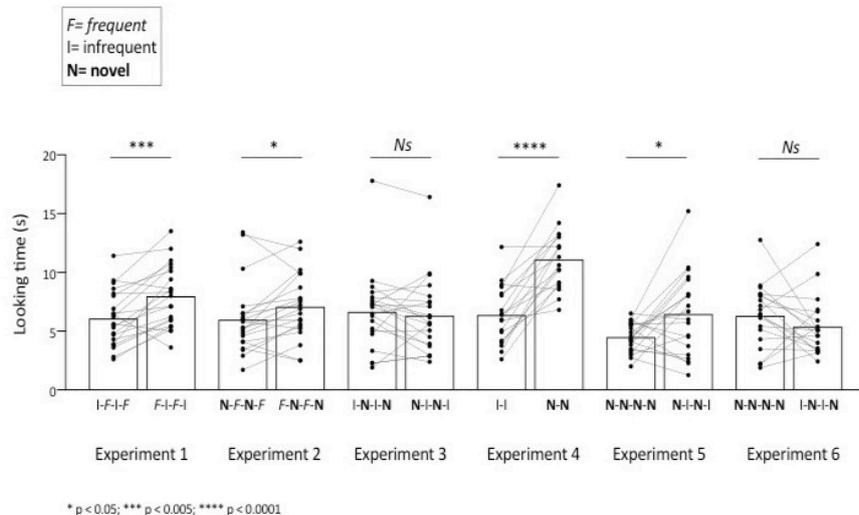


Figure 2. Results of Experiments 1-6. The x-axis presents the different experimental groups. The y-axis shows looking time(s). Bars represent group means; connected dots represent individual participants' looking times in the two experimental conditions.

References:

1. Fukui, N. (1986). *A Theory of Category Projection and its Applications*. Unpublished PhD, MIT, Cambridge, MA.
2. Abney, S. (1987). *The English Noun Phrase in its Sentential Aspect*. Unpublished PhD, MIT, Cambridge, MA.
3. Gervain, J., Nespors, M., Mazuka, R., Horie, R., and Mehler, J. (2008). *Bootstrapping Word Order in Prelexical Infants: A Japanese-Italian Cross-linguistic Study*. *Cognitive Psychology*, 57:56-74.