

Toward a prenominal Syntax? A brief look at statistical alternations

The importance and existence of probability and statistical processing in language acquisition is debated in the field of Linguistics. This study intends to show that language learners indeed use subconscious statistical processing to aid in the acquisition of constructions, and frequent form-function mappings emerge as structures that work well together. Researchers have long shown that structured input can statistically alter a speaker's language system (*e.g.*, N. Ellis, VanPatten, Wells)ⁱ. Wells *et.al.* (2009)ⁱⁱ manipulated the frequency distributions of their subjects' relative clauses, causing them to more quickly process object RCs – a form less frequent and less regular than subject RCs, and normally processed more slowly.

The current study is a modified replication of Wells *et.al.* (2009), looking here at redistributions of the infrequent prenominal noun phrase, in native English speakers. The hypothesis was that the subjects would statistically re-categorize their linguistic systems when exposed to these types of clauses. Whereas English generally requires *postnominal* clauses to express relativization, the *prenominal* noun phrase, or “relative clause,” is an attested structure in many other primary languages.ⁱⁱⁱ

The prenominal NP rarely “works” in English. And when they do show up, they statistically much less frequent than the standard, post-nominal RC. Yet when kept simple, English speakers can still process them prenominally, *e.g.*, *the soup-cooking woman*.

A preliminary analysis of results shows that all subjects reanalyzed the statistical distributions of the prenominal NP. Pre- and Post-Tests recorded participants' self-paced reading times, in which subjects clicked through each sentence one word at a time. During two brief Experience Blocks, spaced about two days apart, subjects received limited exposure to the target structures.

Each within-subject time dropped from the Pre- to the Post-Test on prenominal NPs. Aggregated reading times decreased from a mean of 4.90 seconds per sentence (standard deviation 1.56) to a mean of 3.46 seconds at Post-Test (standard deviation 0.94). The decrease in reading times indicates a faster processing for *each* subject, something that can only be explained by an acquired ease of processing for the target structure.

The study is not concerned with short-term priming effects, but rather with true statistical restructuring. The Post-Test did not occur until two days after the second Experience Block. The redistributions of these subjects' NPs – a structure to which they had had virtually no prior experience – support the more general notion of statistical processing in language acquisition.

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References:

ⁱ N. Ellis and Larsen-Freeman (*e.g.*, 2009)ⁱ have independently and jointly argued that *every* encounter with language input slightly changes the system. See, for example, their co-edited book and 60th anniversary special issue of the journal *Language Learning*, titled *Language as a Complex Adaptive System*.

ⁱⁱ Wells, Christiansen, Race, Acheson & MacDonald (2009). Experience and Sentence Processing: Statistical Learning and Relative Clause Comprehension. *Cognitive Psychology*, 58, 250-271.

ⁱⁱⁱ It is standard in Japanese and Korean, for example, and is an optional relativization strategy in German.