# Comprehension and Production as Avenues of Syntactic Priming

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The persistence of syntactic patterns in sentence production as a result of syntactic priming is a well-established phenomenon (Bock, 1986): the syntactic structure of prime sentences persists in the structure of subsequent freely produced sentences. One purpose of the original studies of syntactic priming was to show that it is the action of producing a particular syntactic structure that primes the later use of that same structure. The success of the experiments was taken as evidence that syntactic priming is a reflection of procedural (not declarative) memory. However, the methodology used renders this interpretation somewhat uncertain, and others have also raised the question of whether it is procedural or declarative memory that is responsible for syntactic priming (Branigan, Pickering, Liversedge, Stewart, & Urbach, 1995).

There are two difficulties with the methodology that has been used up to now. First, producing a syntactic structure might well increase the activation not only of a procedure that creates a syntactic pattern, but also of a declarative representation of that structure. Thus it could be this declarative representation that was responsible for the priming effect. Second, subjects were induced to produce the priming sentences by being instructed first to listen to a priming sentence and then to repeat it aloud. Given that subjects listened to the prime sentences before re-producing them, it is also possible that some portion of the effect arises from activation of a declarative representation that occurred while the subject listened to the prime. If so, then declarative memory, and not just procedural memory, must be implicated in syntactic persistence. The present study evaluates the roles of declarative and procedural memory by comparing the effects of prime sentences that are only heard ("comprehension-to-production priming") with the effects of prime sentences that are heard as well as repeated ("production-to-production priming").

The "production-to-production priming" condition is a replication of the original task (Bock, 1986). Under cover of a memory test structured as a running recognition task (Shepard & Teghtsoonian, 1961), subjects are presented with an apparently random list of 240 sentences and pictures. Their task is, first, to repeat the sentence or to describe the picture in their own words, and then to judge whether that item has been presented before. Unbeknownst to the subjects, a selected portion of the sentences are priming sentences, which are followed by target pictures. Priming sentences that are transitive are presented in either the active or the passive voice. The pictures that follow them depict transitive scenes, and can be described in either the active or the passive voice. Dative priming sentences are presented in either the prepositional ("X gave the Y to Z") or the double-object ("X gave Z the Y") form. The target pictures following the dative sentences depict scenes amenable to description with dative sentences of either type. Subjects' picture descriptions are coded as to whether they match the form (active versus passive, or prepositional versus double-object) of the preceding priming sentence.

The "comprehension-to-production priming" condition is the same as the "production-to-production priming" condition except that, while subjects are instructed to describe the pictures, they are not instructed to repeat the sentences. Thus, on priming trials, they produce a sentence describing the picture, having comprehended but not having produced the priming sentence. Responses are coded in the same way as in the other condition.

Comparing the priming effects generated in these two conditions allows us to appraise the relative contributions, to syntactic persistence in spoken sentence production, of comprehension priming versus production priming. Differences between the effects of the two conditions are ascribed to the differential contribution of declarative versus procedural memory.

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## References

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