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Evidence that Syntactic Priming is Long-lasting

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Introduction

Bock (1986) showed that using a particular syntactic pattern in one's speech primes that use of that pattern in subsequent speech. Bock et al. (1996) suggested that implicit learning may account for these priming effects. To support this claim, they showed that priming exerts its effect on test trials that are separated from the most recent priming trial by as many as ten neutral trials. However, the amount of time spanned by ten trials is only on the order of one minute, much shorter than the typical time span covered in implicit learning experiments (Seger, 1994).

This abstract describes the first evidence in normal subjects that syntactic priming lasts longer than a few minutes and thus proceeds on the same time scale as implicit learning. In the experiment described here, we found evidence for syntactic priming occurring at a delay of at least 20 minutes, which is an order of magnitude longer than has previously been demonstrated in normals, and on the same order of magnitude as is exemplified in typical implicit learning experiments.

Method

In this experiment, participants generate sentences before and after a priming task and a distractor task. In order that subjects not be self-conscious about the sentence structures they were producing and listening to, participants were required to perform a cover task, such that the apparent purpose of the experiment was to test recognition memory for scenes in picture versus sentence modality.

Stimuli consisted of a set of pictures depicting either transitive or dative scenes, and a set of dative and transitive sentences. Filler pictures and filler sentences were also included (which were neither transitive nor dative), in order to accommodate the cover task.

The experiment proceeded in four phases. First, the participant was shown a subset of the pictures, describing each of these pictures in sequence. The participant's performance in this phase provides a baseline.

Second, the participant repeated the priming sentences, one after the other. Each participant received either active or passive transitive sentences (but not both), and either prepositional or double-object dative sentences. Filler sentences (which were neither transitive nor dative) were included in order to provide variety and to prevent subjects from being suspicious about the large number of sentences employing the particular structures that were being primed.

Third, after the priming phase, the participants worked on a series of geometric puzzles for 20 minutes. Finally, the participants were again shown pictures to describe; in addition, they performed the cover task, of designating whether the scene depicted had been encountered before in either picture or sentence form. Only filler pictures had been described before in the priming phase. Participants' descriptions of both new pictures and repeated pictures were recorded, transcribed, and coded.

Results and Discussion

There was an overall effect of priming, 20 minutes later, providing evidence that syntactic priming operates on the same time scale as implicit learning. In contrast to earlier findings with immediate trial-to-trial priming, however (Boyland & Anderson, 1997), transitive structures were primed more strongly than dative structures. It is hypothesized that differences between strategies for producing transitive sentences and dative sentences may account for this difference.

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