

Structural and Thematic Information in Sentence Production

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Previous work on structural priming (e.g. Bock 1986b; Bock and Griffin 2000) has shown that, given alternating syntactic forms like active-passive pairs, producing one syntactic structure (*The boy is being attacked by the shark*) makes a speaker more likely to produce a subsequent sentence with the same structure. These findings don't speak to what structural property is targeted by priming, but this is in fact precisely where syntactic theories make different predictions with respect to what verb form is retrieved from the lexicon, and how the verb and its arguments are mapped onto surface structure. The present work addresses this question by using structural priming to probe underlying structural similarity between sentence types that have different surface structural realizations.

The current experiments focus on a syntactic property shared by Passives (1a) and Unaccusatives (1b): under an account that involves syntactic movement, both Passive and Unaccusative sentences have surface subjects that are generated verb phrase-internally (Perlmutter 1978; Burzio 1986). If this is a real syntactic property shared by these sentence types, Unaccusatives might be expected to pattern with Passives in being able to prime Passive utterances. Experiment 1 used a picture description task (Bock 1986b and following), where subjects heard and repeated prime sentences, then produced a sentence describing a transitive event-depicting picture on a subsequent trial. Both Unaccusative and Passive sentences primed Passive structures, while Active sentences did not (2): more Passive descriptions were produced after Unaccusative and Passive primes than after Active primes). This suggests that—despite their superficial dissimilarity with respect to verbal morphology and number of arguments—these two sentence types share some property that is accessed during sentence production.

One interpretation of this finding is that Unaccusatives and Passives have common syntactic structure, but a remaining problem is that syntactic and thematic structure are confounded: in addition to whatever other properties they share, Passives and Unaccusatives both have Themes/Patients as surface subjects. In fact, in recent work Melinger (2006) takes very similar results as evidence of thematic priming. Two additional experiments address this confound by using both Experiencer verbs (3a) and Agentive verbs (3b), showing that structural priming occurs in the absence of overlapping thematic structure. Since arguments in the same structural positions (here, 'the children' and 'the dog') are assigned different thematic roles, any priming from Agentive passives to Experiencer passives (or vice versa) cannot be attributed to thematic priming.

Preliminary results from Experiment 2 show priming from Experiencer passives to Agentive passives in a picture description experiment: speakers produced substantially more Agentive passives after both Experiencer and Agentive passives than after Experiencer and Agentive actives. On the one hand, these data are compatible with Chang et al's (2003) finding that thematic and structural priming both occur independently of each other. However, since all prime sentences had verbs bearing passive morphology, the source of Unaccusative-to-Passive priming in Experiment 1 is not directly addressed.

In order to directly test whether Unaccusative-to-Passive priming occurs without thematic overlap, Experiment 3 uses an RSVP (rapid serial visual presentation) paradigm adapted from Potter and Lombardi (1990; also Lombardi and Potter 1992). After reading a prime sentence presented in RSVP, subjects performed a speeded numerical distractor task, then produced the sentence just presented; the same sequence then occurred with a target sentence. This paradigm made it possible to get around the difficulty of eliciting Experiencer verbs in picture descriptions: prime and target item types are given in (4).

Because of memory and time pressure, the repeated sentences are often produced in error—in particular, they are subject to structural priming from the sentence in the preceding trial. The dependent measure was the proportion of target utterances mis-recalled as Passives. The results show a striking interaction between prime structure target verb type: Active Experiencer targets are much more often mis-recalled as Passives when preceded by an Unaccusative or Passive Agentive prime, than when preceded by an Active Agentive prime. The priming effect does not occur for Agentive targets, but it might be that the task in Experiment 3 requires participants to do something substantially different from Experiments 1 and 2—this is suggested in part by mis-recalled Passives almost always failing to preserve the thematic role mapping of the prime. Results are discussed from the perspective of the place of theta theory in the lexicon, and in turn the role of lexical information in producing syntactic structure.

- (1) a. The boy was attacked by the shark (*Passive*)
 b. The visitors finally arrived (*Unaccusative*)

(2) Experiment 1 results

<i>Prime type</i>	<i>Active</i>	<i>Passive</i>	<i>Unaccusative</i>
<i>Mean % Passive responses</i>	8.5	15.3	14

<i>Pairwise comparisons</i>	<i>Passive—Active</i>	<i>Unaccusative—Active</i>	<i>Passive—Unaccusative</i>
<i>Difference in means, Tukey HSD (95% confidence int.)</i>	6.83 (1.68,11.98)	5.53 (0.38,10.69)	1.30 (-3.86,6.45)

- (3) a. The children were amused by the babysitter (*Experiencer-Causer*)
 b. The dog was being chased by the cat (*Patient/Theme-Agent*)

(4) Experiment 3 conditions

<i>Prime sentence</i>	<i>Target sentence</i>
The shark attacked the boy (active)	The cat chased the dog (active agentive)
The boy was attacked by the shark (passive)	The dog was chased by the cat (passive agentive)
The visitors finally arrived (unaccusative)	The babysitter amused the children (active experiencer)
	The children were amused by the babysitter (passive experiencer)

Selected References

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