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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 25(25)

ISSN

1069-7977

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Publication Date

2003

Peer reviewed

Effects of dialogue structure on the activation of syntactic information

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Many theories assume that language production involves the activation of linguistic information (e.g., Dell, 1986; Levelt, Roelofs & Meyer, 1999). In such models, prior context can affect processing by altering the relative activation of different elements. Production and self-monitoring of their own utterances, or comprehension of others' utterances, may all activate speakers' linguistic representations to some degree. We report three experiments that investigate how prior context can affect syntactic activation in dialogue.

We identify three accounts of syntactic activation in production. Each makes different predictions regarding syntactic priming (re-use of particular structures) (Bock, 1986). Under one account, distinct syntactic information is activated in production and comprehension (Bock & Loebell, 1990). This predicts production-to-production priming but not comprehension-to-production priming. Evidence from sentence recall (Potter & Lombardi, 1998) and picture description in dialogue (Branigan, Pickering & Cleland, 2000) argues against this account, but is consistent with a model where production and comprehension activate shared syntactic information in the same way, and to the same extent. This model predicts equivalent comprehension-to-production and production-to-production priming. In a third model, syntactic information is shared, but the degree of activation is not equivalent: production involves both production processes and the comprehension processes implicated in self-monitoring (Postma, 2000), giving rise to stronger activation, whereas comprehension involves the activation of information by comprehension processes only. This model predicts stronger production-to-production than comprehension-to-production priming.

All three experiments used a picture description task. In Experiment 1, participants produced picture descriptions after either producing or comprehending another description. Participants produced more Prepositional Object (PO) descriptions like *The chef handing the jug to the swimmer* after producing or comprehending a PO description, and more Double Object (DO) descriptions like *The chef handing the swimmer the jug* after a DO description. However, the self-priming effect was stronger than the other-priming effect. This is compatible with a model in which production involves syntactic activation

from both production and self-monitoring processes. However, linguistic behavior in dialogues is influenced by interactivity (Fay, Garrod & Carletta, 2000): Could the low effects of comprehension-to-production priming actually reflect low interactivity? (Each participant produced sequences of utterances). To exclude this explanation, Experiments 2 and 3 manipulated degree of interactivity. Speakers produced either alternating utterances or sequences of utterances. Priming was unaffected by this manipulation. Overall, our results support a production-and-monitoring interpretation of Experiment 1. They suggest that prior interactivity plays a relatively reduced role in syntactic processing, or may only exert an influence in dialogues involving no external constraints on turn-taking.

Acknowledgments

We acknowledge the support of ESRC Grant R000239363.

References

- Bock, J. K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, 18, 355-387.
- Bock, J. K., & Loebell, H. (1990). Framing sentences. *Cognition*, 35, 1-39.
- Branigan, H. P., Pickering, M. J., & Cleland, A. A. (2000). Syntactic coordination in dialogue. *Cognition*, 75, B13-B25.
- Dell, G. S. (1986). A spreading-activation theory of retrieval in sentence production. *Psychological Review*, 93, 283-321.
- Fay, N., Garrod, S., & Carletta, J. (2000). Group discussion as interactive dialogue or as serial monologue: The influence of group size. *Psychological Science*, 11, 481-486.
- Levelt, W. J. M., Roelofs, A., & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences*, 22, 1-75.
- Potter, M. C., & Lombardi, L. (1998). Syntactic priming in immediate recall of sentences. *Journal of Memory and Language*, 38, 265-282.
- Postma, A. (2000). Detection of errors during speech production: A review of speech monitoring models. *Cognition*, 77, 97-131.