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The temporal structure of spoken language understanding

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Abstract

The word-by-word time-course of spoken language understanding was investigated in two experiments, focussing simultaneously on word-recognition (local) processes and on structural and interpretative (global) processes. Both experiments used three word-monitoring tasks, which varied the description under which the word-target was monitored for (phonetic, semantic, or both) and three different prose contexts (normal, semantically anomalous, and scrambled), as well as distributing word-targets across nine word-positions in the test-sentences. The presence or absence of a context sentence, varied across the two experiments, allowed an estimate of between-sentence effects on local and global processes. The combined results, presenting a detailed picture of the temporal structuring of these various processes, provided evidence for an on-line interactive language processing theory, in which lexical, structural (syntactic), and interpretative knowledge sources communicate and interact during processing in an optimally efficient and accurate manner.

Résumé

On présente deux expériences faites pour étudier la compréhension du langage parlé en fonction du parcours temporel dans la chaîne. La recherche a porté à la fois sur les processus (locaux) de reconnaissance des mots et sur les processus structuraux et interprétatifs (globaux).

Dans chacune des expériences on a utilisé trois tâches de détection de mots. Ces tâches se distinguaient par la qualification sous laquelle le mot à détecter était décrit (phonétique, sémantique ou les deux) et par trois contextes différents (normal, sémantiquement anormal ou brouillé).

D'autre part les mots cibles se distribuaient selon neuf positions dans les phrase-tests. La présence ou l'absence d'un contexte phrastique permettait une estimation des effets inter-phrases sur les processus locaux et globaux. L'ensemble des résultats donnent une image détaillée de la structuration temporelle des différents processus. L'hypothèse d'un calcul du langage interactif en temps réel est favorisée. Selon cette hypothèse, durant le traitement, les diverses sources de connaissance, lexicales, structurales (syntaxiques) et interprétatives communiquent et interagissent d'une façon maximale précise et efficace.



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to the Committee on Cognition and Communication at the University of Chicago, and was supported by a grant to WMW from the Spencer Foundation. We thank David McNeill for the use of his laboratory, David Thissen for statistical advice, and Elena Levy for help in running Experiment 2. Additional data analyses and the preparation of the manuscript were carried out after the authors moved to the Max-Planck-Gesellschaft, Projektgruppe f1/4r Psycholinguistik, Nijmegen. We thank Tony Ades for helping us think about sentence processing, and the two reviewers, Ann Cutler and David Swinney, for their comments on the manuscript. LKT is also attached to the Werkgroep Taalen Spraakgedrag, at the Katholieke Universiteit, Nijmegen. A preliminary report of part of Experiment 1 was published in *Nature*, 1975, 257, 784â€“786.

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