Word-Order and Lexical-Semantic Factors Influencing Thematic Role Assignment Strategies in Sentence Comprehension

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Introduction

How do people transform the surface structure of a sentence into the sentence's intended meaning? Word order is an important cue used by people in sentence comprehension (Bates et al., 1982; Ferreira, 2003). Another important cue is the meaning of individual words (i.e. nouns and verbs) which we refer to as "content words".

In these and many approaches in sentence processing studies, the focus has mainly been in investigating sentences in isolation. Could the processing of prior sentences, however, also play an influential role in sentence processing? Many earlier studies have suggested that context plays a relatively minor role in sentence comprehension, and that within-sentence information tends to dominate extra-sentential contextual cues (Holmes, 1984; Ferreira and Clifton, 1986). However, some studies have reported evidence showing that extra-sentential discourse-level semantic contextual cues (Su, 2004) or extra-sentential syntactic priming cues (Bock, 1986) are not always dominated by within-sentence cues. Of these prior studies, only Bates et al. (1982) and Su (2004) have focussed on how such cues influence agent role assignment in sentence comprehension.

In this study, the effects of extra-sentential syntactic priming cues and lexical semantic cues upon sentence comprehension role assignment strategies are investigated. Specifically, this study investigates if agent role assignment strategies are influenced not only by extra-sentential content word order cues but also by the presence of particular extra-sentential lexical semantic features.

Methods

In Experiment 1, using a forced choice task, 20 participants were asked to identify the agent role in a series of semantically symmetric content word sentences (i.e. "the man visited the woman" or "the woman visited the man"). Sentences were presented in three conditions of noun-verb-noun (NVN), verb-noun-noun (VNN), and noun-noun-verb (NNV). In Experiment 2, using the same paradigm, 20 new participants were asked to identify the agent role of the same sentences as in Experiment 1. However, in Experiment 2, test sentences were preceded by either a no bias (i.e. "the player chose the team"), syntactic bias (i.e. "the father the son helped"), or a semantic bias (i.e. "the patient cured the doctor") sentence.

Results and Discussion

In Experiment 1, participants selected the first noun as the agent 90% of times in the (NVN) condition compared to 20% and 22% of times in the VNN and NNV conditions, respectively. These results are in agreement with the results obtained in Bates et al. (1982). In Experiment 2, however, participants selected the first noun as the agent only 78% of times in the NVN condition and 38% and 42% of times in the VNN and NNV conditions, respectively. These results indicate that the processing of the previous sentence can influence the sentence comprehension process.

Our results demonstrate the effect of word order on role assignment using an identification paradigm. Furthermore, our results indicate that role assignment strategies are influenced by some aspects of the recently processed sentence. MacWhinney and Bates (1989), have proposed the Competition Model which identifies a series of cues used by people in sentence comprehension. Our results indicate that, in addition to cues proposed in the Competition Model, the context established by the prior sentence is also an additional important source of information in sentence comprehension.

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