

sphere (RH) exhibits a passive and sustained spread of activation to all related information (for review; Chiarello, 1985). The left hemisphere (LH) has been described as a finely coded network (Beeman, 1993) which strongly activates only highly related information. However, Atchley, Burgess, and Keeney (in submission) suggest that activation for subordinate semantic features which are related to the dominant representation of the priming noun does not decline over time.

Priming for these subordinate, but compatible features show priming equal to that found for the dominant features. The present study acts as a replication of this research which compares the relative influence of association strength and dominance compatibility in determining meaning selection in the LH.

In order to determine the relative influence of context across the cerebral hemispheres, a divided visual field triplets priming paradigm (Schvaneveldt, Meyer, & Becker, 1971) was used. Beeman (1993; Beeman, et al., 1994) would argue that the RH is able to integrate contextual information at the lexical level. In a sentence many of the component words are remotely related. Consequently, the RH activates a large area of related information in response to the activation provided by these remotely related sentence components. These multiple areas of activation will overlap and lead to comprehension. It has been argued that the role of the LH is to make quick, on-line selection of the appropriate word meanings or semantic feature information (Chiarello, 1991; Burgess & Simpson, 1988). It seems logical that having feedback from other language processors and context would be advantageous for this quick selection process. Faust and Gernsbacher (1996) provide evidence that the LH may be better able to use top-down constraints of contextually inappropriate information early in the timecourse of meaning selection.

In this experiment, the noun prime word is simultaneously presented with a context word. The context words and the target words are either perceptual features (sensory information) or function features (the operation or behavior performed by an object). Three types of triplet relationships are being studied in this paradigm: related trials with dominant targets (BROWN-POTATO-FRY); related trials with subordinate targets (BROWN-POTATO-SKIN or BROWN-POTATO-SLICE) and no-context trials in which context word is not related to the noun and target (JUMP-POTATO-SKIN). These three trial types are compared to unrelated trials (JUMP-POTATO-WINDOWS).

In the RH all related targets should show priming (related trials and no-context trials), particularly at the long SOA. Based on earlier results (Atchley, Burgess, & Keeney, in submission), we would make the prediction that all related targets should show sustained priming in the LH because all targets are referring to the same dominant representation of the noun. It is predicted that the no-context trials may show no priming in the LH because of the inhibitory effect of the unrelated context word (Faust & Gernsbacher, 1996).

M-19. Contextual Influences on Meaning Retrieval in the Cerebral Hemispheres

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Two ways in which the language processing components of the cerebral hemispheres have been found to differ is in their mechanisms for meaning retrieval (Burgess & Simpson, 1988; Atchley, Burgess, Audet, & Arambel, 1995; Chiarello, 1991) and in the degree to which each is affected by sentential context (Titone, 1995; Faust & Gernsbacher, 1996). In a single word priming experiment, when there is no context information, the right hemi-

Methods

A $2 \times 2 \times 2 \times 3$ mixed factors design was used to examine the effects of SOA (50 ms and 750 ms) and the within subject factors: relatedness, visual field, and context type (related trials/dominant targets, related trials/subordinate targets, no-context trials). Subjects were 55 native English-speaking, right handed undergraduates. A trial consisted of a fixation cross that was followed by a context word and an unambiguous noun prime that was presented centrally and stacked. The prime words were shown for either 50 or 750 ms followed by a flash mask. At the end of the SOA the target was presented laterally for 185 ms and was followed by a flash mask. At this point the subject made a lexical decision to the target. After each trial feedback was provided and there was a 2000 ms ITI. The experiment took two hours to complete.

Results

LVF/RH results. For all trial types there was priming, and the magnitude of priming for all three context/ target conditions did not change between the short and long SOAs (F 's < 1). In the related context/ dominant target condition the mean RT priming effect was 24 ms ($F(1, 53) = 5.14, p < .05$) and for accuracy was 4.75% ($F(1, 53) = 7.08, p < .05$). For related context/ subordinate target trials the mean priming effect in RT was 37 ms ($F(1, 53) = 13.53, P < .001$) and in accuracy was 6.45% ($F(1, 53) = 36.90, p < .001$).

Finally in the no-context condition the mean priming effect in RT was 30 ms ($F(1, 53) = 5.68, p < .05$) and in accuracy was 3.95% ($F(1, 53) = 5.59, p < .05$).

RVF/LH results. Like in the LVF/RH results, there was no difference in the priming magnitude between the two related conditions ($F < 1$). A priming main effect analysis indicates that there was reliable priming for the related context/ dominant target trials with both dependent measures (mean RT priming = 35 ms, $F(1, 53) = 17.06, p < .001$; mean accuracy priming = 4.3%, $F(1, 53) = 9.25, p < .01$). Priming also obtained for the related context/ subordinate target condition (mean RT priming = 34 ms, $F(1, 53) = 13.53, p < .001$; mean accuracy priming = 4.5%, $F(1, 53) = 13.67, p < .001$). There was no difference in the magnitude of priming in these two condition when compared across SOA (F 's < 1). For the no-context condition there was no priming in the RVF/LH at either SOA (F 's < 1).

Discussion

The LH is shown here to be influenced by context at both the short and long SOAs while sustaining activation for both dominant and subordinate targets when the context is related to the prime and target information. The

observed effect of context is consistent with earlier findings obtained by Faust and Gernsbacher (1996) which argue that the LH is sensitive to incompatible contextual information. The LH results also replicate Atchley, Burgess and Keeney (in submission) which argue that activation for subordinate targets is maintained if this subordinate information is consistent with the dominant representation of the noun.

One interesting aspect of these results is that the RH is not similarly negatively influenced by the discordant context word. Even in this more difficult meaning retrieval situation (i.e., in the no-context condition) the RH exhibits priming between the prime word and the target. This pattern of results might reflect a RH advantage for meaning retrieval under the varied conditions one might face during on-line language comprehension. These results are consistent with the idea that the role of the RH is to register the possibly disparate elements of discourse and provide all related information to the post-lexical language processing components (Beeman, 1993; Burgess & Simpson, 1988).

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