Introduction

Difficultly accessing words is the most prevalent aphasic language deficit and is common to all aphasic syndromes (Dell et al., 1997). Recent studies suggest that individuals with Broca's aphasia exhibit delayed lexical access during comprehension, which contributes to sentence comprehension deficits (Love et al. 2008). This study examined whether lexical access is delayed only in Broca's aphasia or whether this extends to other aphasia types. We tested whether lexical access is affected similarly in anomic and Broca's aphasia during word comprehension.

Method

Four individuals with Broca's aphasia (ages: 36-72; WAB AQs: 56.4-86.2), four individuals with anomic aphasia (ages 46-63; WAB AQs: 83.6-94.1), and seven unimpaired control participants (ages: 36-70) were tested. All participants were native speakers of English. Diagnosis of anomic or Broca's aphasia was based on the Western Aphasia Battery (WAB; Kertesz, 1982). Eye movements were recorded with an ASL D6 eye tracker while participants looked at a 4-picture computer display. Participants were asked to point to the item that corresponded to the auditory word presented. In Experiment 1, effects of related distractors on word access were tested. Words were presented with phonological distractors (PHON), semantic distractors (SEM), combined distractors (COM) and no distractors (UNR). In Experiment 2, effects of word frequency and phonological neighborhood density were examined.

Results

In Experiment 1, the overall eye movement latencies were 558 ms, 709 ms and 876 ms for the control, the anomic and Broca's aphasia groups, respectively. The group with anomic aphasia was significantly delayed for the combined and phonological conditions compared to controls (COM: Z=3.6, p<0.05; PHON: Z=3.3, p<0.05). The group with Broca's aphasia was significantly delayed for all conditions compared to controls (COM: Z=14.6, p<0.05; PHON: Z=17.5, p<0.05; SEM: Z=12.7, p<0.05; UNR: Z=18.8, p<0.05). The group with Broca's aphasia was also significantly delayed compared to the anomic group for phonological (Z=9.9, p<0.05), combined (Z=7.1, p<0.05) and unrelated condition (Z=3.7, p<0.05).

In Experiment 2, eye movements were numerically faster for high frequency items than low frequency items for all groups, and faster for low neighborhood density items than high neighborhood density for all groups. The difference between high and low frequency items was not statistically significant for any group. The difference between dense and sparse neighborhoods was significant only for the Broca's group (Z = 3.013, p < 0.05).

Conclusion

The results show that individuals with anomic and Broca's aphasia exhibit delayed lexical access. Additionally, the pattern of deficit is similar between the two aphasic syndromes, although the delay in lexical
access is more severe for individuals with Broca’s aphasia. This difference may be due to impaired phonological processing in Broca’s aphasia. Finally, the results suggest that delayed lexical access alone is not responsible for sentence comprehension deficits in Broca’s aphasia.

References
