

ABSTRACT OF THE DISSERTATION

Event-Related Brain Potentials in the Processing of Japanese Wh-Questions

By

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This dissertation examines the processing of Japanese wh-questions using event-related brain potentials (ERPs), reading times, and acceptability ratings.

Following brief theoretical and experimental overviews in Chapter 1, Chapter 2 investigates the relationship between a displaced (scrambled) wh-element and its gap by comparing mono-clausal scrambled wh-questions to mono-clausal wh-in-situ questions. Despite the difference in basic word order, the experiment revealed patterns of brain responses similar to those found in English and German, i.e., slow anterior negative potentials between filler and gap, phasic left anterior negativity (LAN) (Kluender & Kutas, 1993; King & Kutas, 1995), and a P600 (Kaan et al., 2000) around the gap. These results suggest there are universal parsing operations for filler-gap dependencies, which are more compatible with an incremental (Inoue & Fodor, 1995) than head-driven parser model (Pritchett, 1992).

Chapter 3 explores the relationship between a Japanese wh-element and its corresponding Q[uestion]-particle (Cheng, 1991) by comparing mono-clausal wh-questions with structurally equivalent yes/no-questions. Both scrambled and in situ wh-questions elicited right-lateralized anterior negativity (RAN) sentence-finally, relative to yes/no-question counterparts.

Chapter 4 compares bi-clausal matrix and embedded wh-questions to structurally equivalent yes/no-question counterparts. At the embedded clause region, wh-questions elicited sustained AN in comparison to yes/no-questions. Matrix clause wh-questions, in comparison to embedded clause wh-questions, also elicited sustained (R)AN between the embedded and matrix verbs.

These results suggest a reliable neural processing correlate of a wh-element/Q-particle dependency in Japanese, similar to ERP effects seen between wh-fillers and gaps in English, but with a right- rather than left-lateralized distribution. Rather than a local scope calculation process at the verb-Q position, the scope of a Japanese wh-element seems to be licensed by a long-distance incremental linkage with its Q-particle. These results can further be interpreted as the reflection of structural dependencies (i.e., wh-element licensed by COMP).

Chapter 5 examines reading time processing of bi-clausal Japanese wh-questions. The results revealed a continuing slowdown for matrix clause wh-questions, again suggesting a long-distance wh-element/Q-particle linkage.

Chapter 6 concludes that the processing of syntactically distinct languages elicits strikingly similar brain responses, and that there may be some discernible relationship between linguistic theory and brain responses.