The time-course of lexical activation in Japanese two-character word recognition

An eye-tracking lexical decision study

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This visual lexical decision with eye-tracking study investigated the time-course of lexical activation in Japanese two-character word recognition. Of special interest were (1) in what order the whole two-character word and its constituents (i.e., characters and radicals) are activated in the course of lexical access, (2) whether either the left character or the right character is relatively more important for lexicality judgment, and (3) whether lexical effects are modulated by readers' locus of attention.

Mixed-effects regression analyses of response times and subgaze durations revealed joint contributions of morphological units at all levels of the linguistic structure in the course of lexical decision, in line with the previous lexical decision with eye-tracking study on Dutch compound processing (Kuperman, Schreuder, Bertram, & Baayen, 2009). At the first subgaze, the magnitudes of effects associated with the features and character units were larger than those of the radical and whole word units. Interestingly, slight yet significant contribution of whole word frequency was observed already in this early time frame. The left and the right character frequencies contributed at different points in time in the left-to-right preferential processing path, with the magnitude and direction of these effects modulated by readers' locus of attention. The general pattern of lexical activation was unaffected by font sizes and nonword types.

Given the intricacy associated with two-character word lexical decision, we stress the advantage of considering morphological units at multiple levels and non-linguistic variables simultaneously in a single statistical model without pre-experimental control. The present results do not straightforwardly conform to the predictions of strictly top-down or bottom-up localist models of compound processing. We therefore propose a character-driven processing model with an assumption that connections from the feature level by-pass the lower radical level and link up directly to the higher character level.

References

Kuperman, V., Schreuder, R., Bertram, R., & Baayen, R. H. (2009). Reading of polymorphemic Dutch compounds: Towards a multiple route model of lexical processing. *Journal of Experimental Psychology: Human Perception and Performance, 35*, 876-895.