

Processing liaison consonants in French: new acoustic and perceptual data

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In French, liaison refers to the appearance of a word-final consonant before a vowel-initial word in words that in other contexts end in a vowel (ex. *mes enfants* [mezãfã] “my children” vs. *mes parents* [mepãvã] “my parents”). Much attention has been recently devoted to how liaison consonants are processed by listeners in word recognition. Wauquier-Gravelines (1996) found that liaison consonants are more difficult to detect than word-initial consonants in a speeded phoneme-detection task (higher proportion of misses and longer reactions times for LCs than for WICs). She attributed this response pattern to differences in the phonological status of both consonants. In an autosegmental framework, liaison consonants may be treated as floating segments moved into the empty onset slot of a following vowel-initial word (Encrevé, 1988). Wauquier-Gravelines assumed that more cognitive resources are required to process a (underlyingly floating) liaison consonant, compared to a word-initial consonant. An alternative, more phonetically-oriented explanation for the listeners’ response pattern, relates to the fine-grained, subphonemic differences shown by liaison consonants compared to word-initial consonants (e.g. Dejean de la Bâtie, 1993; Fougeron et al., 2003; Gaskell et al., 2002; Spinelli et al., 2003; Wauquier-Gravelines, 1996). Liaison consonants have been found to be slightly but systematically shorter than word-initial consonants, and this, and other subtle phonetic differences, might make the former more difficult to detect in the speech chain than the latter.

The goal of the present study is to better understand the mechanisms involved in the processing of liaison consonants by listeners in French. A native speaker of French recorded a set of test and filler sentences. Test sentences contained the target consonant (/z/ or /n/) in the following positions; 1) word-initially, following a vowel (e.g. *des zébus* [dezeby]); 2) as a liaison consonant (*des élus* [dezely]); 3) word-finally, before a vowel (*treize élèves* [tʁɛzelev]); 4) word-medially (*aisément* [ezemã]). Two different versions of Patterns 1 and 2 were generated by inserting in each sentence the target consonant and the preceding vowel taken either from another token of the same sentence (identity-spliced version), or from the other sentence (cross-spliced version). Pattern 3 allowed us to characterize how listeners respond to word-final consonants compared to word-initial and liaison consonants. Pattern 4 prevented listeners from expecting the target consonant to occur at a word boundary only. Two main hypotheses were contrasted. The phonologically-based account of liaison processing predicts that target consonants are more difficult to detect in Pattern 2 than in Pattern 1, both for the identity- and cross-spliced versions of these patterns. According to the phonetically-based account, it is more difficult for listeners to detect a target consonant originally produced as a liaison consonant as opposed to a word-initial consonant. 24 subjects took part in the experiment (phoneme-detection task). A detailed report of the results will be presented at the conference.

References

- Dejean de la Bâtie, B. (1993). *Word boundary ambiguity in spoken French*. PhD thesis, Monash University, Victoria, Australia.
- Encrevé, P. (1988). *La liaison avec et sans enchaînement*. Seuil, Paris.
- Fougeron, C., Bagou, O., Content, A., Stefanuto, M., and Frauenfelder, U. (2003). Looking for acoustic cues of resyllabification in French. In *Proceedings of the XVth International Congress of Phonetic Sciences*, pages 2257–2260, Barcelone, Espagne.
- Gaskell, M., Spinelli, E., and Meunier, F. (2002). Perception of resyllabification in French. *Memory and Cognition*, 30:798–810.
- Spinelli, E., McQueen, J., and Cutler, A. (2003). Processing resyllabified words in French. *Journal of Memory and Language*, 48:233–254.
- Wauquier-Gravelines, S. (1996). *Organisation phonologique et traitement de la parole continue*. Thèse de doctorat, Université Paris 7, Paris.