Sound change in the individual: Effects of exposure on cross-dialect speech processing

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Synchronic variation is a hallmark characteristic of human speech, and arises from both intra-talker sources, such as speaking style and emotional state, and inter-talker sources, such as age, gender, and regional background. Although speech perception and processing are generally robust to these sources of variability in ideal listening conditions, listeners in more difficult listening conditions exhibit significant processing benefits for familiar voices and varieties relative to less familiar voices and varieties. These results are consistent with models of processing, such as exemplar theories, in which ease of processing reflects frequency of exposure. More familiar exemplars are more strongly represented in the exemplar space than less frequently encountered exemplars and are therefore easier to process.

Listeners exhibit processing benefits for their native regional dialect in a range of tasks, including sentence intelligibility (Labov & Ash, 1997; Mason, 1946), word recognition (Clopper & Tamati, 2010), lexical decision (Floccia et al., 2006; Sumner & Samuel, 2009), and word shadowing (Phillips & Clopper, 2011). Speech produced in the native variety is more intelligible in noise than speech produced in a less familiar regional dialect. Similarly, lexical decision and shadowing responses are faster for words produced in the native variety than words produced in a less familiar variety. This effect of dialect familiarity suggests a relatively strong cognitive representation of the native regional dialect, which may contribute to the maintenance of sociolinguistic variation over time within and across individuals.

Processing benefits are also observed for the "standard" variety of a language, often represented in national media, regardless of a listener's native variety. Speech produced in the standard variety is more intelligible in noise than speech produced in a non-standard variety (Clopper, in press; Clopper & Bradlow, 2008). Similarly, lexical decision (Floccia et al,, 2006; Sumner & Samuel, 2009) and speeded lexical classification (Clopper & Pate, 2008) responses are faster for words produced in the standard dialect than a non-standard dialect. Finally, repetition effects are observed in implicit recognition memory tasks for standard varieties, but not for non-standard varieties (Clopper & Tamati, 2010). These results are also consistent with a model in which frequent exposure to a particular variety, even passively through the media, can facilitate speech processing. Unlike the strong representations associated with native regional varieties, however, the strong representations associated with the standard variety may contribute to dialect leveling and the reduction of sociolinguistic variation over time.

Both processing benefits and processing costs are observed for individuals who have extensive experience with multiple dialects, such as a native regional variety and the standard variety. In lexical decision tasks, non-standard variants exhibit semantic priming effects similar to standard variants for listeners who are familiar with both variants (Sumner & Samuel, 2009; Warren & Hay, 2006). However, whereas as standard variants also exhibit form priming, non-standard variants inhibit form priming for listeners who are familiar with both variants (Clopper, 2011). Similarly, larger cross-dialect interference effects are observed in speeded lexical classification tasks for listeners who are highly familiar with both the standard and a non-standard regional variety than for

listeners who are less familiar with the non-standard variety (Clopper & Pate, 2008). These interference effects for listeners with frequent exposure to multiple varieties suggest competition between linguistic and sociolinguistic representations. In an exemplar model, these competing representations would be realized as overlapping or bimodal distributions of exemplars. These kinds of distributions are inherently less stable than well-separated unimodal distributions and may therefore be more susceptible to drifting and changing over time.

Taken together, these effects of familiarity on cross-dialect speech processing suggest that long-term exposure to synchronic variation affects the representation and processing of linguistic information. The processing benefits associated with familiar varieties suggest that language users have strong cognitive representations for these varieties. However, the interference effects observed for listeners with frequent exposure to multiple dialects suggests that the maintenance of multiple competing linguistic systems negatively impacts speech processing. The competition between strong representations of a native regional variety and the standard variety may provide a locus of sound change for these individuals.