Modelling simultaneous convergence and divergence of linguistic features between differently-identifying groups in contact.

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Evidence suggests that differing group identity can promote divergence between linguistic features despite significant contact between groups (e.g., Labov 1972). However, a growing body of work also suggests that divergence may not occur not across the board in such situations. Rather, some features may diverge, while others converge (e.g., Denning 1989, Rickford 1999, Wolfram and Thomas 2002). Here, we use a dynamical systems model of language production and processing to investigate the potential interaction of two contributing factors to language change that can come into conflict when differently-identifying groups are in contact within a larger speech community. These factors are (i) lower-level mechanisms in language production and processing that promote featural convergence, and (ii) a hypothesized higher-level tendency to produce recognizably group-identified speech. Within dynamical systems, feedback loops across distinct levels of organization can result in complex patterns. When structure arises in this way, conflicting influences on the direction of a particular change can frequently interact constructively, rather than simply cancelling each other out.

We use simulation of a two-group speech community as a tool to investigate how conflicting pressures to converge and diverge may interact. Our model assumes a richly specified lexicon in which arbitrarily many degrees and types of experiential features may be stored along with lexical exemplars in memory, and that these features can influence the choice of production target by speakers. The simulation also includes a model of the perceptual magnet effect, which warps auditory percepts toward the centers of experienced sound distributions (Kuhl 1991). Within a speech community, this steady warping of percepts toward the center of experienced distributions should promote convergence between speakers over time (Wedel 2006). The perceptual magnet effect has been modeled as operating at the level of audition (Guenther and Gjaja 1996), and so should not be influenced by higher level social factors. In computational simulations of many cycles of communication within our model community, we show that this interaction frequently results in divergence of a few salient phonetic features, against a backdrop of general convergence. Interestingly, we find that simple preferential imitation of in-group speech tokens is not sufficient to drive divergence within our model. Instead, speakers must preferentially imitate tokens that can be positively identified with the in-group. To our knowledge, this result provides the first attempt at a mechanistic account for concurrent divergence and convergence of language features in contact situations.

Selected References

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