Exemplartheoretic modeling of phonetic convergence in dialogs

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As a follow-up to Lewandowski's proposal of a hybrid model of phonetic convergence (i.e. partially automatic but prone to various within- and inter-speaker influences; Lewandowski [2012]) we set out to investigate the exemplar dynamics of speaker adaptation following such a framework. Current research into speaker accommodation and variation increasingly focuses not only on the socially-relevant details of an encounter but also on speakers' individual differences — of both psychological (personality-related) and cognitive (processing skill-related) nature (see Babel and McGuire, 2015, Lewandowski, 2013 and Vais et al., 2015). We propose an exemplar-theoretic model of convergence which incorporates these factors. Our computational simulation model is based on empirical data which combines dialog speech recordings with personality and cognitive data for all participants. A recently completed data collection extends the existing GECO database [Schweitzer and Lewandowski, 2013] with new dialogs from male and female subjects along with their individual personality and psychological data with a particular focus on general attention and attention to phonetic detail [Schweitzer et al., 2015]. We assume an exemplar-based speech production–perception loop which builds new productions on a collection of previously encountered speech items stored in memory. Taking into account recency, exemplars just experienced from an interlocutor may serve as or influence one's own production targets. This, however, may be enhanced or hampered by a person's personality trait combination and their respective attention skills.

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