

Individual differences and the actuation of sound change: data from imitation and perception experiments with /str/

A major challenge in sound change research is to explain sound change actuation. Synchronically, the phonetic biases that can develop into sound change are omnipresent. This raises the question of how and why a sound changes in a particular language at a particular point in time. This talk presents some preliminary results from two experiments designed to the idea that sound change actuation depends on individual differences in the degree of coarticulation (or coarticulation resistance) in speech production (Baker et al. 2011). The experiments were also designed to address whether sound change actuation might depend on individual differences in perception.

We took as a test case the production and perception of /str/ in Australian English (AusE). This cluster has undergone a sound change in many other varieties of English (e.g. Rutter 2011) such that the sibilant in e.g. *street* fully resembles that in *sheet*. This sound change has not taken place in AusE but acoustic evidence suggests that there is a synchronic bias towards retraction in the production of /s/ in /str/ (Stevens & Harrington, under review). Thus present-day AusE meets the pre-conditions for /s/-retraction and allows us to test whether actuation might depend on individual differences in the production and perception of /str/.

Twenty native AusE speaker participants ($n=20$) took part in an **auditory repetition test**. In the *str*- words that participants heard, the sibilant was manipulated to sound extremely retracted, i.e. [ʃtr]. The prediction is that individuals that resist coarticulation in their own production of /str/ will show more [ʃ]-like pronunciations after exposure to [ʃtr], whereas individuals who already coarticulate before exposure will not change their production target. The same participants also completed a **forced choice perception test** to determine their perceptual /s...S/ category boundary in /str/ contexts (*gassed rat* vs. *gashed rat*). These perception data will help tease apart whether imitation of the model talker's retracted /str/ pronunciation depends on perceptual categorization of the sibilant.

Baker, A., Archangeli, D. & Mielke, J. (2011). Variability in American English s-retraction suggests a solution to the actuation problem. *LVC* 23: 347-374.

Rutter, B., (2011) Acoustic analysis of a sound change in progress: The consonant cluster /stɹ/ in English. *JIPA* 41: 27 - 40.

Stevens, M. and J. Harrington (under review). *The phonetic origins of /s/-retraction: acoustic and perceptual evidence from Australian English*.