Intraspeaker change in later life:
Implications for grammatical representations

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Introduction. In recent years, a growing body of work has addressed the situation of individual speakers vis-à-vis language changes that are ongoing in their communities. Though it is most common for individuals to remain stable in their rate of use of an incoming variant across their lives, presumably adhering to the way of speaking they acquired in childhood, longitudinal studies have now documented both 'lifespan change' (individual participation in ongoing change) and 'retrograde change' (individual movement against ongoing change) (see Wagner, 2012 for an overview). What has not yet been addressed, however, are the implications of such later-life changes for linguistic theory: specifically, for theories of mental representations. The present paper intends to open up discussion concerning these issues through a novel longitudinal case study.

Our particular interest is in what have been come to be known as 'usage-based models' of grammar and their predictions for later-life change. Usage-based models of language are those in which mental representations are phonetically rich clouds of stored memories (see Hinskens et al., 2014 for a recent review). These theories propose that a speaker's language production is shaped by the input (s)he receives over time, and specifically that the stored memories of more frequently heard words will be updated more often. Such theories have an obvious connection to the aforementioned 'lifespan change', i.e. the post-critical period participation of individual speakers in the generational changes ongoing in their community. Specifically, these theories predict that when lifespan change occurs, it should be driven by frequent words, as memories of these words will be updated more often, making them susceptible to influence from new forms in the input (Nycz, 2013). The present paper explores this hypothesis.

Methodology. Following Sankoff (2004), we sidestep many of the complications inherent to lifespan studies by working with publicly-available longitudinal data. We examine the speech of Sir David Attenborough, a well-known nature documentary narrator whose career spans half a century. Attenborough, born in London in 1926 and educated at Cambridge, speaks with Received Pronunciation (RP), and is thus a prime candidate for examination of the generational changes that have been observed in RP in the twentieth century.

The variable under study in the present paper is the articulation of rhoticity. One feature of traditional RP is the use of a tapped /r/ ([ɾ]) in particular phonological environments, such as word-internally after a stressed vowel (e.g. *very*, *there is*) (Wells, 1982). The use of tapped /r/ declined over the twentieth century in favour of an approximant ([ɹ]) (Fabricius, 2014), leading us to examine whether the same has occurred within Attenborough's speech over time.

We examine Attenborough's speech in two nature documentaries, *Zoo Quest* (1959) and *Planet Earth* (2006), for evidence of lifespan change. Tokens of underlying /r/ after a stressed vowel in both word-internal (e.g. *very*) and linking (e.g. *there is*) contexts were auditorily coded as being a tap or an approximant and were subjected to mixed-effects logistic regression. The frequency of each lexical item (in the case of word-internal /r/) or bigram (in the case of linking /r/) in the coded data was calculated via the 51-million word SUBTLEX-UK corpus, compiled from movie subtitles (Brysbaert and New, 2009).

Results. Results of the regression reveal that Attenborough exhibits what Wagner and Sankoff (2011) term 'retrograde change': he moves in the opposite direction of the community, significantly increasing his use of tapped [r] in *Planet Earth* as compared to *Zoo Quest* ($p < 0.001$).

Interestingly, this change is found only in instances of linking /r/; Attenborough shows no significant change in word-internal /r/. Frequency is, perhaps unsurprisingly given the retrograde movement, not found to play a role in the variation. However, we do find that, just as predicted by Wagner and Sankoff (2011), this retrograde movement occurs alongside style-shifting. When Attenborough is not narrating — for instance, when he is speaking to others onscreen — his use of the tap significantly decreases ($p = 0.02$ in 1959, $p < 0.001$ in 2006).

Discussion. Our findings jibe nicely with Wagner and Sankoff's (2014) view of 'seniorhood' as a life stage during which elderly speakers recognise the conservatism of the age grade they have entered and modify their speech to match it, boosting their rate of use of variants that are stylistically marked as being more formal. The existence of such increased conservatism in the face of an innovating community seems to pose problems for usage-based theories in which community input should gradually shift an individual's mental representations toward an incoming form. Additionally, we survey a growing body of literature that finds later-life change to be restricted to the re-weighting of variants a speaker already commands, rather than the acquisition of novel forms, suggesting that individuals don't simply pick up whatever they hear around them. Summing up the available evidence, we argue that the strong predictions made by usage-based models concerning later-life intraspeaker change are not supported, but we suggest ways forward for resolving them with the array of different trajectories that individuals display across their lifespans.

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