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Sound change by selective imitation

Research questions: Do children imitate the vowel pronunciations of their peers based on social characteristics? Do these short-term social biases lead to long-term linguistic change?

Context: *Long-term sound change* All languages change over time. Some of these changes are obvious, such as the addition of words referring to new technology. Some, however, begin with minute changes in vowel pronunciation that people barely—or rarely—notice. When these changes continue for generations, they may completely transform the vowel system of a language or come to differentiate a regional dialect. For example, in an ongoing sound change referred to as the *Canadian Shift*, the vowel in 'pen' is becoming more like the vowel in 'pun' (Clarke, Elms and Youssef 1995, Boberg 2008). This type of sound change is identifiable in the form of small but measurable phonetic differences between older and younger adults (Labov 1963, Pope, Meyerhoff and Ladd 2007). It is not understood how an upcoming generation of speakers advances a sound change they are not consciously aware of. The aim of this study is to examine this question from the standpoint of children, whose vowel pronunciations are still developing.

Children and sound change As a child matures from about age 4 to young adulthood, her pronunciations gradually become less like those of her parents and more like those of teenagers and young adults in the wider community (Kerswill 1996, Kerswill and Williams 2000, Labov 2001, Tagliamonte and D'Arcy 2009). Convergence on community norms involves a growing participation in ongoing sound changes in that community (Kerswill 1996, Kerswill and Williams 2000). Is convergence primarily a passive process, a result of exposure to the community's more innovative speech? Or does the gradual adoption of community norms involve children modeling their speech on that of a particular reference group, for example, older children? Many sociolinguistic researchers have, in fact, suggested that children model their speech on that of older children (Kerswill and Williams 2000, Labov 2007). Although the role of social factors in speech convergence is known to be important to adults (Babel 2010, 2012) there is so far very little research examining whether this is true in interactions among children. The study of children is an important undertaking in sound change research: if children are biased towards a subset of their peers (and thus the speech accompanying this subset), this could partly explain how speakers of each generation continue to advance sound change without even being aware they are doing it.

Sound change by selective imitation The role of selective imitation as a medium of sound change is supported by a growing body of research showing that adults and children adjust their speech to resemble that of an adult model talker after only brief exposure to that model's speech (Goldinger 1998, Ward 2013). The degree of accommodation is mediated by social factors (Babel 2010, 2012, Fan, Babel, Kinzler and Russell 2013). These findings suggest that selective imitation is a plausible mechanism by which a change could spread through a speech community. In this project, I investigate whether children selectively imitate another child based on his/her social characteristics. Social factors to be examined include (but need not be limited to) those that have featured in sociolinguistic studies on sound change (e.g. gender, age, social category orientation, localness, degree of peer group integration [Labov 1963, Eckert 1988, Labov 2001, Kerswill and Williams 2000, D'Arcy 2005]) and those that have featured in psychological studies on imitation in children (e.g. gender, age, expertise/competence, power, perceived subject-model similarity [Bandura, Ross and Ross 1963, Rosenkrans 1967, Brody and Stoneman 1985, Bandura and Bussey 2004, Grace, David and Ryan 2008, Sobel and Corriveau 2010]).

Methodology: This project uses the lexical shadowing paradigm of Goldinger (1998) as adapted to include social variation by Babel (2010). Lexical shadowing involves exposing participants to the speech of a model talker and then measuring the effect of exposure on a participant's speech. Below, I describe an experiment controlling for model talker age. This is the first in a series of similarly-structured experiments which will address the other factors mentioned above. The age experiment uses audio only to avoid providing visual cues as to the model's age; however, other factors can make use of video to visually demonstrate the relevant social characteristic in the manner of Fan et al. (2013). All experiments control for gender.

Data collection: Approximately 60 6 year-old children will be placed in one of three "model talker" conditions: 1) Participants listen to a 6-year old talker but are told she is 5; 2) Participants listen to the same 6-year old talker but are told she is 7; 3) Participants listen to an adult talker. In the first phase of the experiment, children will participate in a picture-naming task in which they are instructed to name the objects shown in a set of thirty pictures. Two different vowels will be chosen as targets, and ten unique words containing each of these vowels (plus filler words) will be elicited. In the second phase, children will listen to a recording of the model talker performing the same task. In the third phase, the children will repeat the first task. The experiment is expected to take 15-20 minutes per subject.

Analysis: I will employ two complementary measurement techniques, one perceptual and one instrumental. The perceptual method is the AXB classification task (Goldinger 1998) in which naïve listeners are asked to judge whether a participant's pre- or post-exposure token most resembles the model's token. The instrumental method involves quantifying the degree of accommodation using instrumental measurements of the first and second vowel formants, a standard method of measuring vowel quality (e.g. Babel 2010).

Contribution: If, as predicted, socially-mediated selective imitation is found, this study will represent the first experimental evidence for this behaviour using a child model and child participants. This will support suggestions that interactions among children play a role in sound change. Specifically, this study will shed light on what social characteristics children pay attention to as they mature and converge on the speech norms of their community. As such, the research has implications for psychology and education in suggesting factors that may affect the imitation and long-term adoption of other social behaviours, such as cooperative play. Does selective imitation vary across cultures, social situations, individual children? A more articulated understanding of patterns of social imitation will have many applications, e.g. in designing teaching materials that take advantage of where a child's attention is naturally directed.

Personal information: I am a second-year Ph.D. student in the Department of Linguistics at the University of British Columbia. My supervisor is Carla Hudson-Kam, whose research focuses on child language acquisition and language change. She is currently working on the effects of social variables in language change with respect to newly emerging languages. My proposed project will also draw upon the expertise of Molly Babel, a UBC professor who is a leading researcher in phonetic imitation. My M.A. project examined children's role in two ongoing sound changes in Canadian English. This background has prepared me to pursue the same issue from an experimental perspective at UBC. I am currently developing my Ph.D. research project, which I will carry out during the award tenure. By the end of the award tenure, I plan to be completing my dissertation, which will help inform our knowledge of the relationships among children's language learning, children's social development and the continuation of behaviours over generations.

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