Sound change reverse via short-term phonetic accommodation: evidence from an in-progress tonal sound change toward the prestigious accent

Liu Huangmei[1] & Zhang Chunmei[2]
University of Shanghai for Science and Technology (China)
Lauraliu4321@163.com, zhangchunmeiw@163.com

Phonetic accommodation is defined as a phenomenon that speakers spontaneously adjusting their speech when talking to another talker, which could lead a result of convergence (being more similar to the counterpart) or divergence (being more different from the counterpart). When hearing a new sound, no matter the hearer choose to spontaneously imitate the new sound or stay different with it, he or she will always play a role in the progress of language development. The decision of the hearer either could become a new trend of sound change, or could reinforce the prestige of the original one. Therefore, phonetic accommodation of the speakers in contact is one of the powerful forces that drive our language into sound changes. Phonetic accommodation is adopted to investigate a huge amount of possible sound changes within one language (Babel et al., 2013; Kwon, 2021), between two languages (Tobin, Nam, & Fowler, 2017), or even in conditions between human and virtual talkers (Gijssels et al., 2016; Wynn & Borrie, 2020). Empirical findings suggested that phonetic accommodation could be affect by various of factors, such as age, gender, social statues, and other social factors (Labov, 2001), linguistic experience (Lee, Politzer-Ahles & Jongman, 2013), stage of a change in progress (Lin et al., 2021), motor activation condition, cognitive sensitivity, and other cognitive factors.

The present study endeavors to find whether shadowers could reverse back to their dialectal accent from an in-progress sound change toward the standard sound. On one hand, despite the fruitful achievement of the previous finding, most studies on phonetic accommodation used an imitation target which might not be on either end of in-progress sound changes. However the shadowers knowledge of the variant (the imitation target) may affected the result of phonetic imitation task. Therefore, our study tries to contribute in exploring imitation effect on sound change phenomenons that is occurring in progress now. On the other hand, though sound change which had completed rarely reverse its development, those in-progress ones may show uncertainty of sound change directions (reversible or irreversible). For example, Babel et al. (2013) find a reversing effect of phonetic accommodation of New Zealand English speakers shadowing Australian vowels. Yao and Chang (2016) also found empirical evidence for Shanghainese speakers could reverse some sound change towards Mandarin vowels. Lin et al. (2021) evidenced that a tone merger-in-progress in Hong Kong Cantonese could be reversed via short-term imitation tasks. Moreover, the above researches only investigated imitation effect on mergers. Mergers usually are sound changes between two or more categorical phonemes / tonemes. The present study here tries to extend the research targets to in-progress sound change towards the standard accent, which is a non-categorical change.

Therefore, the present studies was designed to include both production and perception activities of phonetic accommodation. The in-progress tonal sound change is T2 of Shanghai accented Mandarin1. T2 in Shanghai accented Mandarin is under a sound changing progress from a low flat tone to a high rising tone2 (Gu, 2007). The progress gives a unique and thrilling opportunity to study non-categorical sound change. Therefore, 60 Shanghainese (younger group: 30 young adult, aged from 20-30; older group: 30 old adult, aged from 45-55 with no hearing impairment) participant in the shadowing experiments. Only monosyllabic words in Shanghai accented Mandarin is used as models in the experiment. Stimuli for pre and post shadowing perception tests are the same with those in the shadowing task. In the experiment, the perception task follows the production task both in of pre-shadowing phase and post-shadowing phase with no break in between. The main procedure includes “a baseline production, a baseline perception,

shadow task 1, shadow task 2, a post shadowing production, a post shadowing perception", and "a familiarity & attitude test to sound change" in separate in temporal order. Both production and perception results of the shadowing task of participants are recorded and analyzed as phonetic accommodation results. The familiarity and attitude tests are two separate tests performed consecutively. The familiarity test asks the participant to make lexical decision on 20 monosyllabic Mandarin stimuli. The accuracy and latency results are analyzed as the familiarity data. The attitude test asks participants to score pleasantness (1: the least pleasant; 5: the most pleasant) on the same monosyllabic stimuli in the familiarity tasks, with the scoring result and latency analyzed as attitude data. The difference between baseline and model tone production of participants (Baseline difference) is calculated as the main factor. A between group factor (age) and two individual factors (familiarity and attitude) are added to see individual effect on sound change.

Results show interesting findings. Both groups show tendency of reversing, with shadowers having larger baseline difference from the model showing a more noticeable imitation. This is consistent with other empirical evidence that bigger difference in baseline promote imitation. Familiarity shows a strong interactive effect with Baseline difference in both group, while attitude only interact with Baseline different within the younger group. Our finding suggested two important evidences: i) talkers are sensitive to non-categorical difference in phonetic accommodation activities; ii) a reversing development for an in-progress non-categorical tone change toward a prestigious accent is possible by phonetic accommodation, which still undergo impact from talkers' sound change statues, age, linguistic familiarity, and sound change attitude. Still future studies are needed to illuminate the role of present factors on other tonal sound changes, as the ample materials of non-categorial tonal sound change in Mandarin present a unique and thrilling opportunity of study like ours.

Keywords: Mandarin tone; sound change; phonetic imitation; phonetic accommodation

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[1] Shanghai accented Mandarin and Northern Mandarin share the same phonological system with four tones but are different in acoustical realization [T1: Yinping, a high flat tone in acoustics; T2: Yangping, a high rising tone (*a lowflat tone*); T3: Shang sheng, a low dipping tone (*a lowfalling tone*); T4: Qu sheng, a high falling tone (the ones with different acoustical realization in Shanghai accented Mandarin is display in blanket in Italic)].

[2] Though there is a noticeable tone shape difference, the tonal system is stable, therefore it is more like a non-categorical change.