

The effect of sociolinguistic cues on dialectal speaker adaptation: A study on *pin-pen* merger

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Speaker adaptation takes place when a listener stores speaker-specific phonetic details in memory and uses such information for subsequent lexical processing. Past studies demonstrated that a brief exposure to speaker-specific pronunciations facilitates recognition of words previously unheard in the tested voices [1, 2]. Speaker-adaptation also leads to an immediate lexical re-organization, such that cohorts become non-cohorts when listening to a speaker with dialect-based allophonic variation [3]. Previous work, however, has examined adaptation to speakers in isolation, without taking into account preexisting sociolinguistic knowledge of listeners. The current study investigates the role of sociolinguistic stereotypes on perceptual expectations prior to adaptation and on the process of adaptation itself.

The experimental design used the *pin-pen* merger in which the front vowels /ɪ/ and /e/ are merged before nasal stops. In two eye-tracking experiments, merged and non-merged voices gave instructions for an object search task (e.g., "Click on the pencil") in three blocks. Each voice was paired throughout the task with a photo of a White or Black face in professional or non-professional dress, counter-balanced across participants. In Block1, three target /ɛn/-words were pronounced unambiguously by all four speakers, minimizing lexical competition if only vocal cues are used. Block2 presented /ɪn/-words, which for our merged speakers were moved to overlap with their /ɛn/-words, leading to higher competition between the target (e.g., fins) and its competitor (e.g., fence). The non-merged voices were predicted to remain unambiguous. Block3 presented the same words as Block1 plus three previously unheard /ɛn/-words. If listeners use their knowledge about speaker-specific pronunciations, their target detections should be delayed for merged-voices for both repeated and novel target words. In contrast, the detection of repeated words should become faster for non-merged voices, based on the speaker adaptation literature. Social cues, if used, should lead to greater competition in Block1 for voices paired with Black pictures and for non-professional pictures. If they also contribute to the adaptation process, we expect the adaptation to the merged voices to be facilitated for those pictures.

The results show clear effects of both speaker adaptation and pre-existing sociolinguistic stereotypes. Regardless of which voice was heard, Block1 showed higher lexical competition (e.g., between *pencil* and *pins*) when the race was Black and the dress was unprofessional, indicating a strong effect of visual cues on dialectal perception *before* listeners learned the voices. Block2 showed the expected higher lexical competition with merged than with non-merged voices, as the ambiguous tokens were encountered. In Block3, both previously heard and novel tokens /ɛn/-words from merged voices led to increased looks to the /ɪn/-word competitor compared to Block1. In contrast, non-merged voices showed reduced competition compared to Block1. Despite this clear evidence for adaptation based on speaker pronunciation, however, the influence of picture-triggered sociolinguistic expectations remained active in Block3, with non-professionally dressed, Black, merged speakers showed the highest competition effects. Thus, the results confirm rapid adaptation to speaker cues, including the adjustment of cohort effects, but also a perceptual effect of sociolinguistic stereotypes which survives exposure to speech tokens.

References

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