

The lexical encoding of novel phonological features: Discrimination of Arabic phonemes by native English speakers

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In an effort to better understand the mental processes involved in second language (L2) acquisition, the present study examines the ability of learners to perceive and lexically store novel phonological features (i.e., features not used to contrast phonemes in the learners' native language (L1)). Prior research indicates that it is more difficult for L2 learners to distinguish novel phonemes in tasks requiring lexical access than in non-lexical tasks (Curtin et al., 1998, Hayes-Harb & Masuda, 2008). Pater (2003), however, appears to provide evidence counter to this finding. In this study, subjects were taught to associate auditory non-words with pictures and were then asked to distinguish between them in AXB discrimination tasks. When X and A were both auditory forms and B a picture, subjects in fact performed as accurately as they did in non-lexical AXB tasks where all three forms were auditory. However, in a task where X and A were both auditory forms and B a picture, scores dropped to at-chance levels.

An explanation for why the scores differed between Pater's two lexical discrimination tasks may be found in other research on L2 phonology. For example, Hayes-Harb and Masuda (2008) speculated that L2 learners might not initially store the relevant features in their lexical representations, but rather store novel phonemes as "strange" versions of familiar L1 language phonemes. Native English learners of Thai might store the Thai /t^h/ phoneme as simply a "strange" version of English /t/ (i.e., as /t^{*}/) before they have learned to encode the aspirated feature (/t^h/). Such a scenario would predict the apparently contradictory findings reported by Pater (2003). When the task presents subjects with two contrasting auditory forms, subjects may be able to compare the sounds to each other and determine which one is "more strange." However, when only one auditory form is presented, the "strangeness" would be neutralized with the prediction that subjects would be unable to distinguish between the phonemes.

The current study tests the hypothesis that learners can lexically encode novel phoneme contrasts distinctively even before they have learned the relevant phonological features via a series of AXB discrimination tasks in which we take advantage of Arabic pharyngealized (e.g., /t^ʕ/) versus nonpharyngealized (e.g., /t/) consonant contrasts. Preliminary AXB experiments were conducted, one not requiring lexical access (i.e., where all tokens in the AXB task were auditory forms) and one requiring lexical access (i.e., where two tokens in the AXB task were auditory forms and subjects are required to match the forms to a picture). Findings from these experiments show that subjects perform as accurately when lexical access is required as when it is not, replicating Pater's findings. The first task in a follow-up experiment is similar to the previous lexical AXB task, where native English speakers are presented with two Arabic nonwords (e.g., [tiʕ] and [ti]) and asked to identify which of the two matches a picture. The second task in this experiment differs in that another group of native English speakers are presented with an AXB task consisting of one auditory token and two pictures. It is predicted that when the two contrasting sounds are presented in the AXB task, analysis of the relative strangeness between them will allow the subjects to discriminate between the sounds, but when only one sound is presented the subjects will no longer be able to distinguish between the minimal-pairs. Results will help to determine if subjects are able to identify the features of the novel phonemes and, therefore, be able to score as highly on the second task as on the first, or if the novel sound is stored as being "strange" version of the L1 phoneme in the lexicon, causing subjects to perform at chance levels on the second task.

References

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