Diagnosing pronunciation errors for Arabic learners of English

What this research was about and why it is important

Teachers are often not prepared to teach pronunciation to second language (L2) learners. When teaching English in diverse classrooms, in which students come from a variety first language (L1) backgrounds, diagnosing pronunciation errors becomes necessary. Currently existing resources for pronunciation error diagnosis for different L1 backgrounds are mainly based on experiences of linguists or English language teachers. As a result, data-driven approaches to error identification may reveal new distributions of previously-identified patterns or show new patterns that have been previously missed. Although these can be helpful, they can miss persistent errors that are less noticeable but important. For this study, we used a new approach to error identification using a phonetically-annotated database called L2 Arctic. To demonstrate the usefulness of our approach, we analyzed their recorded read-aloud sentences of Arabic learners of English to identify common pronunciation errors. We found that using such recorded speech is useful for diagnosis of pronunciation errors, and we include a discussion of how this approach can inform which errors are likely to be important to address in pronunciation instruction.

What the researchers did

- We analyzed 599 recordings of sentences read aloud by four advanced L1 Arabic speakers of English.
- Sentences had previously been annotated to mark pronunciation deviations from native speech.
- Pronunciations deviation categories included:
    - Substitutions (when an English sound is substituted with another English sound)
    - Distortions (when an English sound is substituted with a similar sound not present in English)
    - Addition (when a sound is added to a word)
    - Deletion (when a sound is deleted from a word)
- All pronunciation deviations were counted within their category, and their distribution was analyzed.

What the researchers found

- A database of read-aloud sentences identified both expected and unexpected errors for our Arabic speakers.
- For L1 Arabic learners, substitutions and distortions accounted for the majority of pronunciation errors. Additions and deletions were frequent but restricted to particular linguistic environments.
- In light of importance of certain sounds in making meaning distinctions and combining that information with error frequency, we include a list of sounds likely to be problematic for L1 Arabic learners and, therefore, should be included in classroom instruction.

Things to consider

- Using read-aloud sentences to diagnose errors helped confirm some previously known errors for L1 Arabic learners, identified error patterns that existing resources overlooked, and more closely described errors that had been inadequately generalized.
- Even advanced speakers have persistent pronunciation errors that may affect their intelligibility. Appealing to considerations of Functional Load, we suggest which errors should be prioritized in instruction.
- Our analysis of persistent pronunciation errors for L1 Arabic learners of English can be used to inform research using listener judgments of comprehensibility, intelligibility and accentedness.
- Phonetically-annotated databases can be used for similar analyses for other L1 groups of learners.

Recordings used for this study are available at: https://psi.engr.tamu.edu/l2-arctic-corpus/

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