How acoustic reduction affects non-native speech processing

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Words are often pronounced shorter in casual speech than in formal speech. Segments may be shorter, weakly articulated or completely absent. For instance, English probably may be pronounced as proly and reasonable as reasable. Native listeners generally experience no problems understanding reduced word pronunciation variants, benefitting from the many cues in the acoustic signal, and from frequency, syntactic and semantic information. In this talk I will address the question how reduced word pronunciation variants are processed by non-native listeners of a language.

Our experiments show that even highly proficient learners of a language experience problems understanding reduced word pronunciation variants. They make many errors in dictation tasks. The errors suggest that non-native listeners try to produce transcriptions that match the speech signal but that they are unable to benefit from all acoustic cues. Moreover, non-native listeners seem unable to benefit from the semantic content and syntactic structure of the context. As a consequence, they provide transcriptions that have very different meanings from what the speaker said.

We also tested non-native listeners’ use of different types of cues in more controlled experiments, in which they had to identify words or make lexical decisions. The results show that, also in these more controlled experiments, non-native listeners tend to only rely on those acoustic cues that are relevant in their native languages. Moreover, non-native listeners have difficulties quickly using semantic cues for understanding reduced speech even in very simple experiments. Finally, we found that learners are sensitive to the frequencies of reduced word pronunciation variants, but that the frequencies of occurrences they are sensitive to do not match the native listeners’ frequencies. Together these results show that acoustic reduction affects non-native speech processing in several ways.

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