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Intelligibility is a widely used concept for evaluating speech communication, indexing how effectively listeners extract symbolic linguistic content from spoken language. It is typically operationally defined as the number of linguistic units—words, utterances, or phonemes—produced by someone that are correctly reported by a receptive language user, either by repeating what is heard, or by writing it down in conventional orthography. Improvements in the intelligibility of a person's speech is seen as a critical goal of intervention for people with a variety of conditions, including childhood speech sound disorders (Lousada et al., 2014), and both acquired and degenerative motor speech disorders (Mendoza Ramos et al., 2021). Intelligibility measures are commonly used to characterize the symbolic linguistic content that a person with a sensory impairment like hearing loss can understand (Carney, 1986). However, in any test of intelligibility, information other than the symbolic linguistic content is necessarily available to the participant (Beechey, 2022).

The focus of this talk is on how the social dynamic between a listener and a talker affects speech intelligibility. Numerous studies provide evidence that the presentation of acoustic or visual cues to the identities and appearance of talkers may substantially alter perception of symbolic linguistic information (Drager, 2011; Hay et al., 2006). That is, what we hear is in part determined by our belief that we are listening to a particular kind of person who has a particular set of social attributes and identities.

There is evidence that cues to a person's identities affect measures of the intelligibility of their speech. Both Babel and Russell, (2015) and McGowan (2015) found that the intelligibility of sentences in background noise was altered by pairing the sentence with a static picture of a person's face, which served to suggest the racial identity of the person who produced the sentence. Babel and Russell examined the intelligibility of Canadian people living in Richmond, British Columbia who were born in and raised speaking the local variety of English. This group comprised both ethnically white and ethnically Chinese individuals. When these groups' speech was played in background noise, intelligibility did not differ. When a talker's speech was played alongside pictures of that talker, the groups' intelligibility differed, with the white talkers being more intelligible than the Chinese talkers. Babel and Russell argued that this reflected listeners' expectation that the Chinese talkers would produce a Chinese-accented variety of English. The mismatch between this expectation and the stimuli might have resulted in the intelligibility decrease. The listeners were told that they were listening to people from Richmond, and hence this expectation might have reflected listeners' knowledge of the very large Chinese population living in Richmond, including recent arrivals to Canada who speak accented varieties. However, these Chinese people did not use an accented variety, and their decreased intelligibility to listeners who were told they were Chinese represents a negative consequence of the assumption that all Chinese people use Chinese-accented English.

The finding that assumptions about racial identity affect speech intelligibility measures has broad implications for our understanding of the way that these measures are used and interpreted in speech-language pathology (SLP) and audiology. Indeed, research has shown

that clinically trained SLPs, like laypeople, rate the accuracy of children's speech differently depending on whether they believe they are listening to a Black or a white child (Evans et al., 2017). Evans et al. interpreted this finding as evidence that SLPs assumed that Black children used African-American Language (AAL), and adjusted their expectations of production patterns accordingly. Such a finding would be consistent with culturally responsive practices if the Black children used AAL, and hence these effects are not entirely 'bad'. However, as shown by Babel and Russell, assumptions about race and language can have frankly negative outcomes.

The first section of the talk will review recent findings on this topic, including those findings described above. The second section of the talk summarizes the findings from a recent set of studies that the authors of this session have conducted on how the perception of talker racial identity affects speech intelligibility in younger and older adults with normal hearing, and older adults with hearing impairments. These include studies of (a) variation among normal-hearing adults in the perception of racial identity from speech (n=164), (b) audiovisual intelligibility of a racially diverse group of talkers to a large group of young, normal-hearing adults (n=235), (c) audiovisual intelligibility of a racially diverse group of talkers to well-matched groups of younger normal-hearing adults, older normal-hearing adults, and older adults with hearing impairment (n=45), and (d) intelligibility of a racially diverse group of talkers to a community sample (n=138) of 3-8 year old children. The results of these studies establish that the perception of racial identity affects speech intelligibility across the lifespan, and across different levels of hearing ability. The final section of this talk speculates on the implications of these findings for theories of language more broadly. I will speculate that the talker identity affects language processing in part because it prompts individuals to assess the reliability and credibility of the person producing language. This speculation is consistent with myriad studies on how children's evaluations of trustworthiness affect their language learning.

Cited References:

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Recommended readings prior to the Talk: Babel & Russell (2015), Tripp & Munson (2023, Applied Psycholinguistics)