Do faces speak volumes? A life span perspective on social biases in speech comprehension and evaluation

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An unresolved issue in social perception concerns the effect of perceived ethnicity on speech processing. Bias-based accounts assume conscious misunderstanding of speech in the case of a talker classification as nonnative (Rubin, 1992; Kang & Rubin, 2009). In contrast, expectation/exemplar-based accounts suggest that correct anticipation of a talker's accent facilitates processing (Babel & Russell, 2015; McGowan, 2015). Driven by theoretical and methodological differences in previous research, this study seeks to establish the extent to which effects of perceived ethnicity on speech processing depend on three sources of variability: experimental method, speech context, and age group. To this end, speech intelligibility and accent ratings from three non-university populations (72 teens, mean age 14.1; 50 younger adults, mean age 36; 50 older adults, mean age 77.6) were examined. Participants were primed with photographs of Asian and White European women and asked to repeat utterances and provide accent ratings for utterances spoken in standard, foreign, and regional accents of German, all embedded in background noise. Repetition accuracy increased when the expected and perceived speech matched, in line with expectation/exemplar-based accounts. This effect varied during the course of the experiment (first vs. second half, see Figure 1) and was most pronounced in the foreign accent and in the group of teens. In contrast, negative effects of ethnicity emerged for accent ratings (see Figure 2) irrespective of the speech context, consistent with a bias-based view. Asian speakers received the most negative accent ratings. The effect was stronger in the group of elderly than in the other groups. Adults showed weak or no effects of ethnicity in either task. The findings show that theoretical contradictions are a likely consequence of methodological choices that tap into distinct aspects of social information processing. Importantly, predictive abilities and strategies vary across the life span, underlining the importance of the inclusion of underrepresented populations in future research.

References
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Figure 1: Proportion of correctly repeated words in each speech context and listener group, for the first and second half of the experiment. Black dots represent the overall means and the colored dots show the individual participant means. The violin plots depict probability density. Error bars represent 95% confidence intervals.
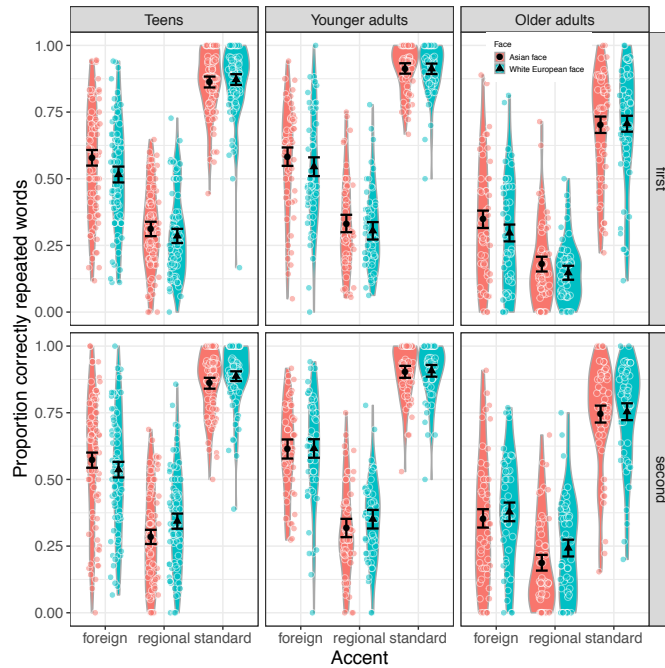

Figure 2: Linear prediction (estimated marginal means) for ratings based on the clmm model. Error bars represent 95% confidence intervals.