

## Articulation rate and vocal tremor as cues in age perception

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The process of aging has natural consequences on human speech production. This allows a relatively precise age estimation purely based on the perception of the voice [1, 2]. The main influences seem to be fluency and speaking fundamental frequency (SFF). Research shows that the faster and higher a person speaks the lower the estimations tend to be [3-5].

In addition, changes in voice quality in natural aged speech – which can be seen in measures like jitter and shimmer and more global measures like vocal tremor – could overshadow the impression of a younger voice. [6] and [7] find a rising level of shimmer depending on the chronological age. [8] finds comparable results for jitter in contrast to [9] and [10] who could not find any effects for jitter. For perception especially vocal tremor seems to be a promising indicator. [11] confirms vocal tremor as perceptually relevant for vocal aging in male speakers.

This study examines the question how articulation rate and vocal tremor influence age perception. To answer this question a perception test was designed with 16 stimuli by middle aged speakers (8 male & 8 female, mean age: 53.69, sd: 1.96) and 16 levels of manipulation for each stimulus. The stimuli consisted of the first two intonation phrases the speakers produced while reading Aesop's fable 'Northwind and Sun'. Via an online survey, participants were asked to estimate age and gender of 16 stimuli (with one level of manipulation per speaker). For results an influence of both variables was confirmed with a greater extent for vocal tremor. Articulation rate does not show an effect on its own, only in interaction with vocal tremor.

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