Interrelations between Age, Gender and Prosodic Correlates in the Charisma Assessment of German Speakers

Oliver Jokisch[1], Viktor Iaroshenko[1], Michael Maruschke[1], Hongwei Ding[2]

[1]Institute of Communications Engineering, HfT Leipzig, Germany
[2]School of Foreign Languages, Shanghai Jiao Tong University, China
jokisch@hftl.de, iaroshenko@hftl.de, maruschke@hftl.de, hwding@sjtu.edu.cn

This survey was stimulated by various studies in the field of voice attractiveness, which deal with the perceptive and instrumental assessment of speakers in different languages including a voice-based (beside other features) analysis of a speakers' charisma [2][3][6][8]. Although some relevant, mainly prosodic factors of influence have been found, previous research was usually dedicated to the comparison of a few speakers only, e.g. in [6]. In contrast, the classification tasks on a sufficient amount of speakers have involved sets of large feature vectors without considering the influencing factors in detail.

In [5], we created a small database of German speakers to systematically analyze typical boundary conditions in the perceptive charisma assessment – such as age and gender (cf. [7]) of both, speakers and evaluators. Furthermore, we surveyed the correlation between our perceptive results and prosodic correlates, suggested in previous studies [1][4][6]. The database contains 84 speech samples of 14 German politicians (7 females and 7 males, aged from 38 to 69 years). The samples were extracted from publicly available YouTube videos, sampled at 44.1 kHz, 32 bit, stereo. Beyond we tested the influence of the playback time on the assessment with sample durations from 1 to 29 seconds.

The 84 samples and 6 repetitions (for validating the intra-rater reliability) were presented to 20 listeners, aged between 19 and 64 – all of them native speakers of German, who evaluated the perceived charisma value on a 5-point MOS scale. Our preliminary results suggest that males generally receive higher charisma assessments. The potential correlation with the speakers' age seems more complex. In our limited database, speakers above 60 achieve a mean score of 3.17 vs. 2.74 in the age group of 50-60 and 2.96 (younger than 50). The playback duration has a significant effect – with a mean assessment of maximal 3.10 for a duration interval of [21s, 25s) and minimal 2.84 for the interval of [1s, 6s). These results are used to roughly correct assessments by a linear factor. With regard to the tested prosodic correlates such as pitch and articulation rate, we confirmed the findings of earlier studies on voice preference and charisma.

To demonstrate the potential implementation of our findings, we prototyped the Android software "CharismApp" involving a simple user interface, baseline settings and algorithms. The signal analysis includes inter alia pitch detection and allows for a self assessment and estimation of charisma values, based on the user settings and some simple hypotheses.

In future (voice-based) charisma experiments, we will rather enlarge the speaker database than including more specific speakers such as politicians, managers or actors, who are usually associated with a higher charisma than common people.

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