

An investigation of the rhythmic acoustic differences between normal and shouted voices

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This study aims at investigating rhythmic characteristics of shouting and comparing them to normal speech. There have been a number of studies examining segmental characteristics (Traunmüller & Eriksson 2000) in high vocal effort speech which revealed considerable differences between the two conditions; however there has been little research in prosodic, and especially, rhythmic characteristics of shouted speech. We expect that shouted speech will exhibit distinctive rhythmic characteristics as the control over the articulators varies a lot.

Ten, gender balanced, Zurich German speakers have been recorded producing semi-spontaneous utterances in both normal and shouted modalities. By semi-spontaneous, we mean that the researchers had control over the sentence structure of the utterances while at the same time keeping the data ecologically valid (Post & Nolan 2012). Following the methods described in Kainada and Baltazani (2013), we have created 15 pictures that the participants will have to describe. The material was divided in three equal groups, each containing 15 utterances, depending on the lengths of the utterances. The structure of the sentence was controlled by instructing the participants to always name the subjects displayed in the picture.

Well-established rhythm metrics (ΔC , %V, rPVI-C, nPVI-V, VarcoC, VarcoV, deltaPeak, VarcoPeak. Ramus et al., 1999, Grabe & Low, 2002, Dellwo, 2006, Dellwo et al., 2012a) were employed to measure the temporal characteristics of the shouted voice and the normal voice. Manual segmentation and labelling have been carried out by the research assistant together with the investigators based on the criterion described in Dellwo et al. (2012a, 2012b, 2012c).

Our preliminary findings indicate an effect on speech rhythm regularity. Additionally, between-speakers variability appears to be significant in shouted voice, as we have found in our previous research on normal voice (Dellwo et al. 2012a, Leemann et al. 2014).

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