

Pause-internal phonetic particles in speech communication

Poster Submission

This project focuses on pause-internal phonetic particles (PINTS) in speech communication, such as breath noises and tongue clicks. Due to PINTS largely being ignored in phonetic analysis, there is no clear establishment of categories or their communicative behavior. While the contributions of pauses and chosen PINTS in encoding and decoding of syntactic-prosodic breaks is largely unexplored, we believe PINTS are strongly associated with these processes. We hypothesize that some PINTS shift attention to upcoming material. Additionally, we believe the production and perception of speech fluency is affected by pauses and potentially PINTS, thereby having implications for speech research on: non-native speakers, fluency disorders, simultaneous interpretations, and cognitive diseases like dementia. Furthermore, breath noises have a strong chance of signaling individuality via idiosyncratic acoustics (Trouvain, 2010) and therefore have applicability to speaker identification. Speech synthesis could potentially benefit greatly from the inclusion of natural human pausing structure, as it almost never includes breath noises (Trouvain & Möbius, 2018). The inclusion of breath noises in synthesized speech could enhance processing and perceived naturalness.

At a macro level, this project intends to fill the research gaps on production and perception of PINTS. There is a lack of unified transcription and inventory for PINTS, therefore, a schema and taxonomic classification of PINTS will be developed throughout this project. Additionally, production experiments will investigate the relationship between breath acoustics and kinematic behavior, and perception experiments will investigate processing speed and retention accuracy for informational tasks. Importantly, these experiments will be conducted with the usage of natural and synthetic speech, incorporating both, new experimental data and taking advantage of previously annotated speech corpora. This 3-year ongoing collaborative effort aims to investigate and contribute to the following areas: pauses in general, breath noises, tongue clicks, pauses in synthetic speech, pause modeling and implementation, and acoustic breath noises with kinematics.

Trouvain, J. (2010). Affektäußerungen in Sprachkorpora. Proc. Elektronische Sprachsignalverarbeitung, Berlin, 64-70.

Trouvain, J. & Möbius, B. (2018). Zu Mustern der Pausengestaltung in natürlicher und synthetischer Lesesprache. Proc. 29. Konferenz Elektronische Sprachsignalverarbeitung (Ulm), 334-341.