The acoustics and functions of paralinguistic clicks in English

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This paper will discuss the physical properties as well as functions of paralinguistic clicks in English. Clicks are unconventional speech sounds that appear phonemically in extremely limited distribution (Maddieson 2011). Clicks are much more widespread as non-phonemic, paralinguistic phenomena, performing, among others, certain logical or emotive functions (Gil 2011). As such, clicks can also be found in English, where they are attributed with a number of different semantic roles (e.g. *tut-tut* for expressing irritation, *clock-clock* for imitating hoofbeats). Although phonemic clicks have long been an object of linguistic inquiry (e.g. Sands 1991; Ladefoged and Traill 1994), paralinguistic clicks have received relatively little attention. In addition, the majority of studies dealing with the paralinguistic usages of clicks rely on anecdotal observations of the researchers, with little or no empirical support for their claims (e.g. Jones 2003; Gil 2011). Finally, there appear to be no studies detailing the acoustic properties of paralinguistic clicks. The present study attempts to remedy this situation by providing empirical data on the acoustics and usage of non-phonemic clicks in English.

The primary aim of the present study is to provide empirical evidence to the anecdotal observations found in the literature. Eight native speakers of English agreed to take part in a production experiment in which their use of paralinguistic sounds was recorded in a soundproof room. There were 10 different stimuli, consisting of the name of a function, e.g. expressing irritation, and an example context in which it may occur. Each stimulus appeared three times in a trial in a randomised order. The participants' task was to respond to the stimuli shown on a computer screen by producing non-word sounds which best fit the situation. A total of 389 sounds were recorded, out of which 353 click tokens were chosen for the analysis proper. The spectral and temporal properties of the tokens were measured using the Praat software (Boersma and Weenink 2012) and the tokens were categorised into seven types ([⊙], [⊙ʷ], [ǀ], [ǁ], [ǃ], [ǃ¡] and [ǂ]) based on their qualitative and quantitative properties. The participants' responses were paired with one of the seven click types used in order to reveal the distributional pattern of the clicks. In addition, mean values of the centre of gravity (COG), duration and burst rise time were calculated for the seven click types. The results reveal that the paralinguistic clicks display considerable differences in both temporal and spectral properties in comparison to their phonemic counterparts. What is more, there is evidence to believe that the paralinguistic clicks with high COG, i.e. bilabial, dental and alveolar clicks, are primarily used for expressing emotions, whereas clicks with a low COG, i.e. the flapped alveolar, palatal and lateral clicks, much more often perform onomatopoeic functions.

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