

Comparison of binaural microphones for externalization of sounds - DTU Orbit (08/11/2017)

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Ubiquitous availability of media content through portable devices like media players and smartphones has resulted in an immensely increased popularity of headphones in recent years. However, while conventional stereo recordings usually create a good sense of space when listened to through loudspeakers, the sounds tend to be perceived inside the head (internalized) when headphones are used for listening. A more natural perception in headphone listening with sounds being perceived outside the head (externalized) can be achieved when recordings are made with dummy head microphones or with microphones placed inside the ear canals of a person. In this study, binaural room impulse responses (BRIRs) were measured with several commercially available binaural microphones, both placed inside the listeners' ears (individual BRIR) and on a head and torso simulator (generic BRIR). The degree of externalization of speech and noise stimuli was tested in a listening experiment with a multi-stimulus test. No influence was found for the stimulus signal, but the externalization scores were found to be lower for 0° incidence. With all microphones, relatively high externalization scores were achieved, and for all but one microphone, individual BRIRs resulted in slightly better externalization than generic ones.

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