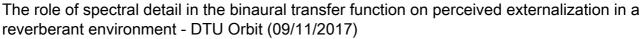
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The role of spectral detail in the binaural transfer function on perceived externalization in a reverberant environment Individual binaural room impulse responses (BRIRs) were recorded at a distance of 1.5 m for azimuth angles of 0° and 50° in a reverberant room. Spectral details were reduced in either the direct or the reverberant part of the BRIRs by averaging the magnitude responses with band-pass filters. For various filter bandwidths, the modified BRIRs were convolved with broadband noise and listeners judged the perceived position of the noise when virtualized over headphones. Only reductions in spectral details of the direct part obtained with filter bandwidths broader than one equivalent rectangular bandwidth affected externalization. Reductions in spectral details of the reverberant part had only little influence on externalization. In both conditions, externalization was not as pronounced at 0° as at 50°. To characterize the auditory processes that may be involved in the perception of externalization, a quantitative model is proposed. The model includes an echo-suppression mechanism, a filterbank describing the frequency selectivity in the cochlea and a binaural stage that measures the deviations of the interaural level differences between the considered input and the unmodified input. These deviations, integrated across frequency, are then mapped to a value that corresponds to the perceived externalization.

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