

Abstract Submitted
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Interaural Coherence and Localization¹ ERIC PEPIN, University of Dallas — In a study of the relationship between interaural coherence and localization ability, two experiments were performed. Both made use of a 1/3 octave band of low frequency sound and a 1/3 octave band of high frequency sound. Stimuli with coherences ranging from 0.2 to 0.8 were created in three recording environments using a KEMAR and digitally altered to eliminate interaural level differences (ILD). The environments had short, medium, and long reverberation times. The coherences were measured and were accurate to one significant figure. Experiment 1 had two goals: to determine the relationship between interaural coherence and the ability to localize using interaural time differences (ITD) and to determine if localization ability was dependent only on coherence. The relationship between coherence and localization was tested in a headphone lateralization experiment in which psychometric functions were generated. The functions revealed a linear relationship, with the ability to localize high coherence sounds breaking down quickly at small ITD. Within standard error, ITD localization appeared to be dependent only on coherence. In Experiment 2, a 3-down 1-up staircase method was employed to determine how opposing ILDs affected ITD localization. When the task could be completed, the threshold values were linearly related, however, the ability broke down at large ILDs. Both experiments provide a linear description of interaural coherence and localization, with thresholds being sharp deviations from these trends.

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