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Sound Localization, Use of Binaural Cues and the Superior Olivary Complex in Pigs

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Abstract. Noise localization thresholds and the ability to localize pure tones at 60° separation were deter-

large prey animals. However, pigs are members of the

Stimulus Duration

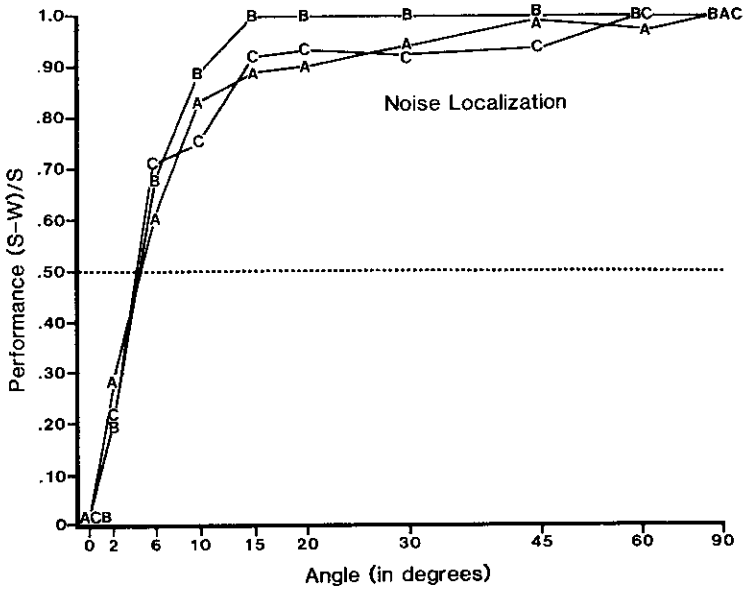
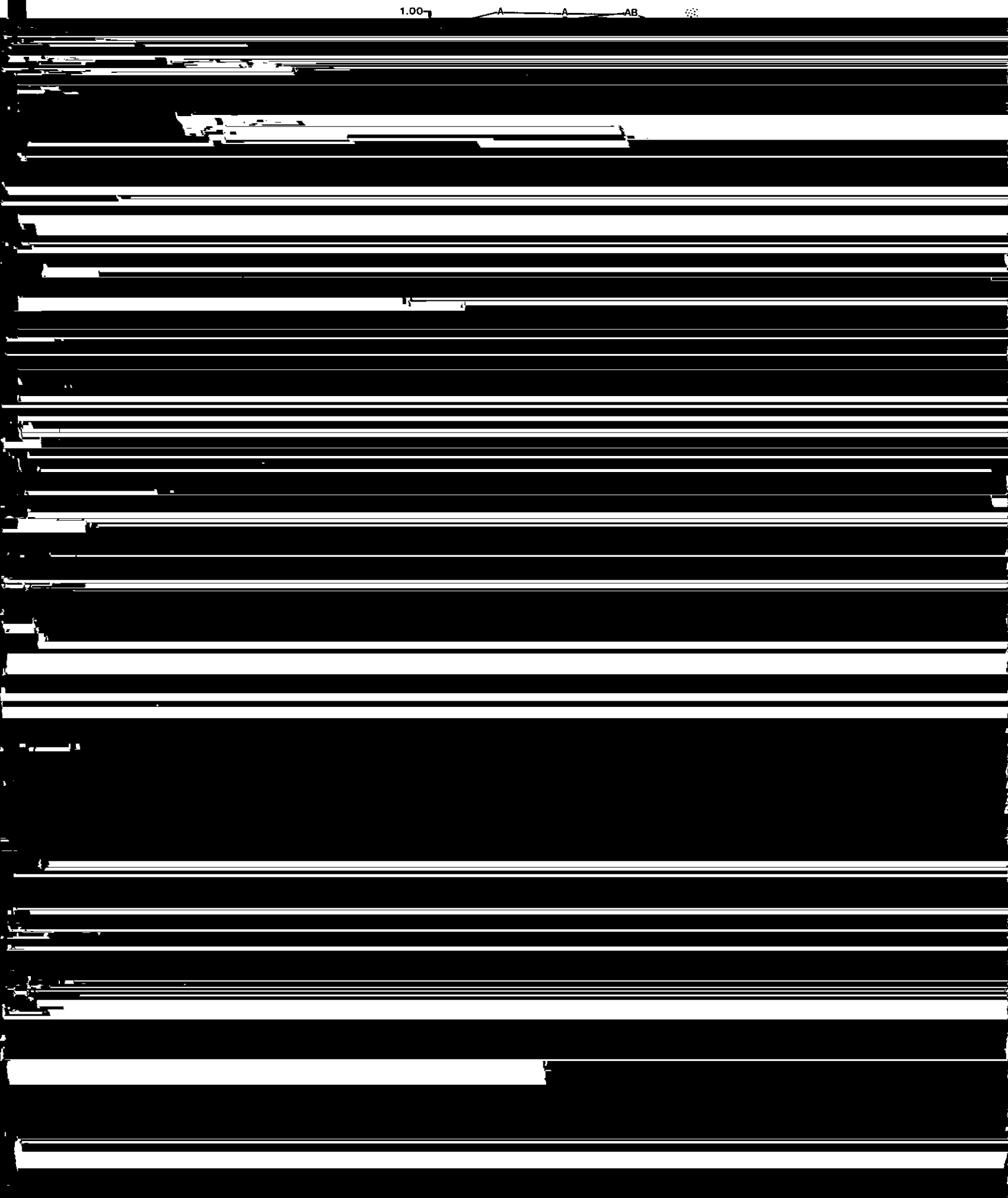


Fig. 2. Sound localization performance of three pigs using a single burst of broadband noise (100 ms duration). Note good performance at angles of azimuth as small as 10°, 50% detection threshold at 4.5° and close agreement among animals. A, B and C represent individual animals. Dashed line indicates 50% detection. A score of 1.0 indicates perfect detection, and a score of 0.0 indicates random performance (for further explanation see Psychophysical Procedures).

Pure-tone localization was examined at a fixed angle of 60° for

(i.e. one trial every 7 s). Each trial was either a 'safe' trial during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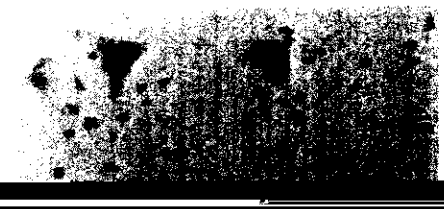
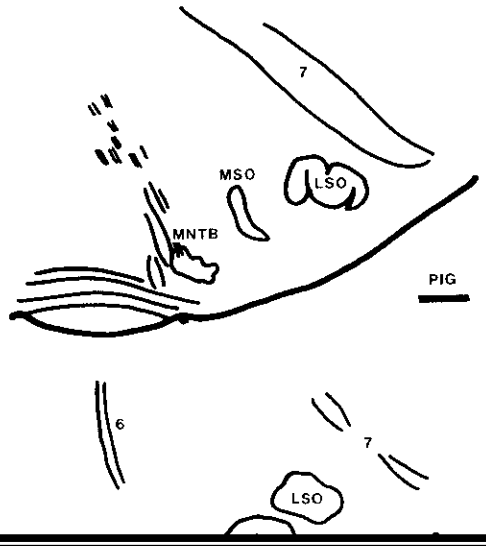


Discussion

Localization Acuity

The 4.5° sound localization threshold of pigs is smaller than that of most mammals [for recent reviews, see ref. 11, 14]. Indeed, with an interaural distance between that of humans and horses, and the large interaural differences in time and intensity that result, good acuity might be expected. But by having such good acuity, pigs are notable among hoofed mammals as all three of the other hoofed mammals examined to date (horses, cattle, goats) are poor localizers despite their large interaural distances [9].

In seeking the source of selective pressure for this unusual feature of pigs, several unique features of the lifestyle of pigs may be relevant. For example, pigs



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