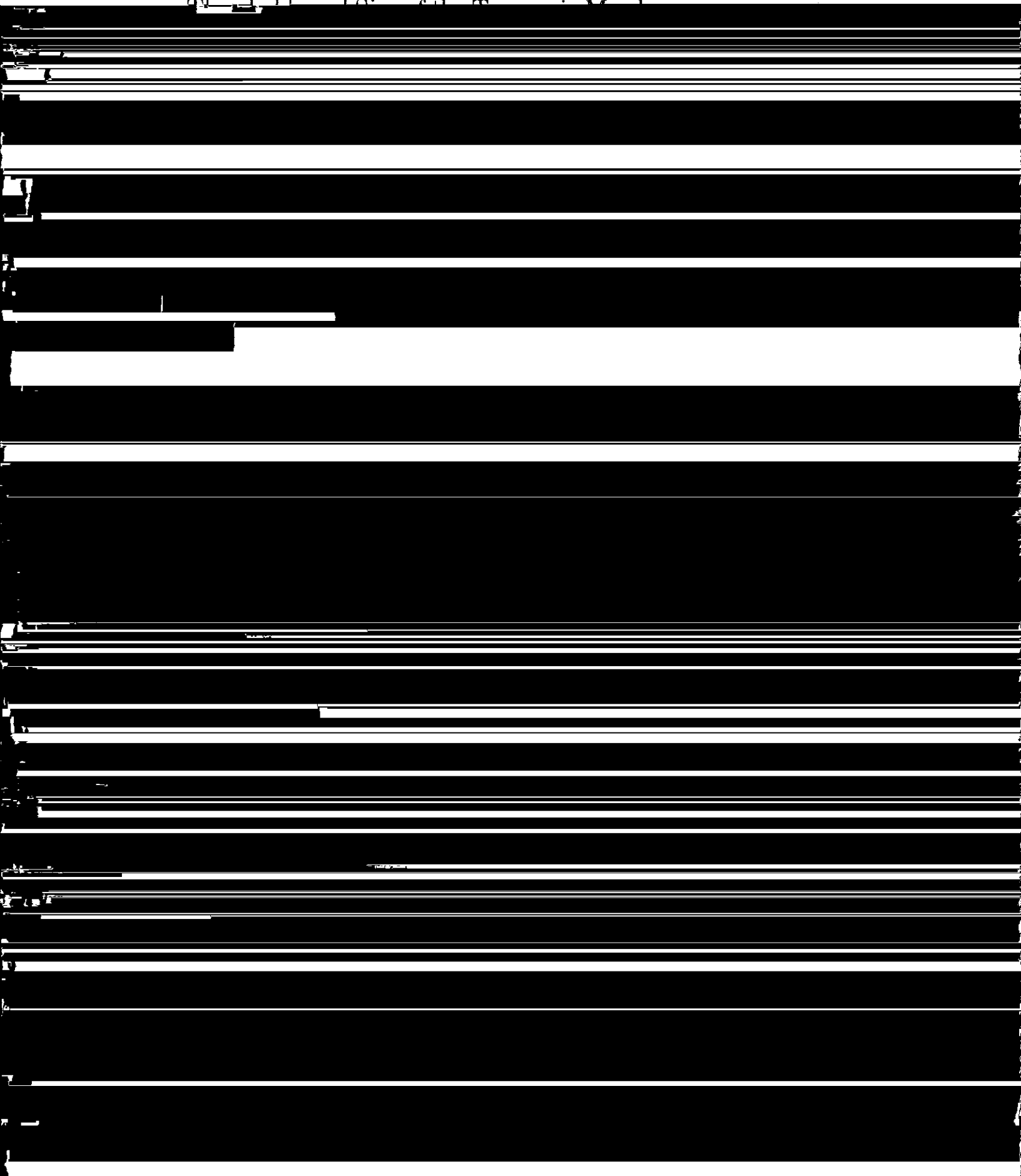


Hearing in Large and Small Dogs: Absolute

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aural distance, a determination of high-frequency limits in large and small dogs offers the opportunity to determine whether high-frequency hearing varies with interaural distance within a species. In

Behavioral Apparatus

The three smaller dogs and the Pointer were tested in a cage constructed of ½-in. (1.27-cm) hardware cloth attached to a wooden frame (90 × 65 × 65 cm). Four water spouts and associated supplies

of the observing spout could be varied forward or backward so that each dog had to place its entire head (and ears) through the center opening in order to reach it.

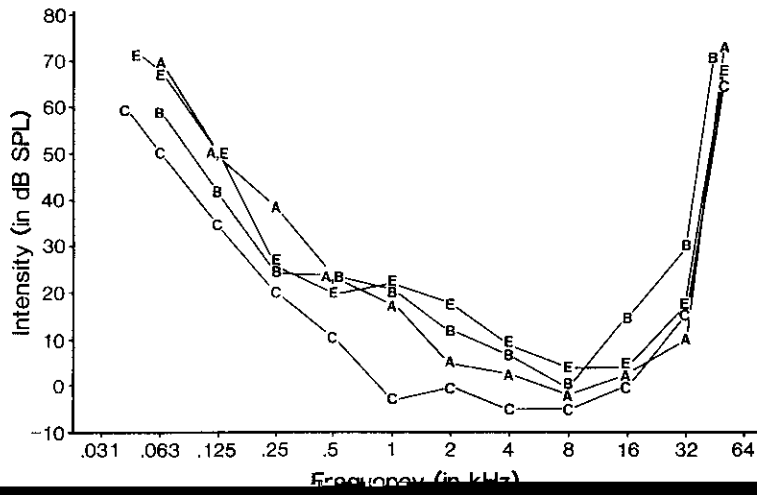
The Saint Bernard was tested in a cage similar to

Once a dog had learned the two-choice procedure by tracking the visual cues (usually one to three sessions), auditory training was begun. This stage consisted of turning on a train of tone pulses (.2 sec on, .1 sec off) on those trials in which a left

each threshold was briefly retested to ensure that it had not changed.

mediate in size to the other two animals'. Thus, it appears that the tympanic membranes of dogs show significant variation

Anatomical Procedure



and tend to be more absolutely sensitive to sound than small animals (e.g., H. Heffner & Masterton, 1980; Khanna & Tonndorf, 1980; P. J. 1988). It is related to interaural distance. This relation is illustrated in Figure 4 in which interaural distance is represented by maximum Δt and high-frequency hearing limit is f_{HL} .

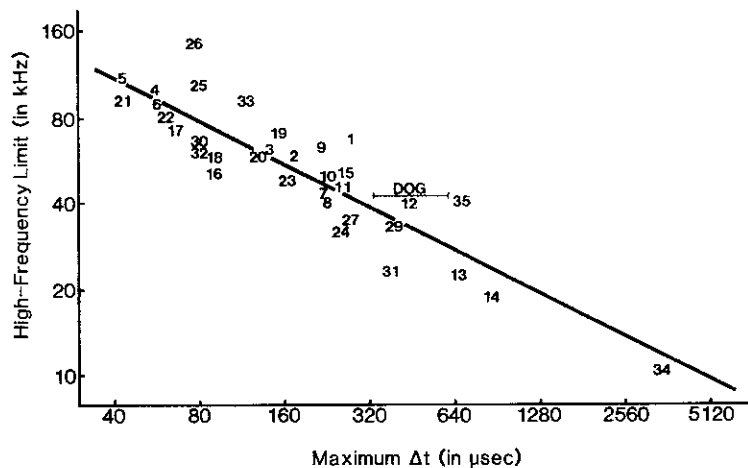


Figure 4. Relation between interaural distance (maximum Δt) and the 60-dB high-frequency hearing limit. (Horizontal line indicates range of interaural distances for dogs. The high-frequency limits were obtained from published behavioral audiograms, which were determined in air except as noted. Values for maximum Δt were derived from measurements made by the author. 1, opossum [*Didelphis virginiana*; Ravizza, Heffner, & Masterton, 1969a]; 2, hedgehog [*Hemiechinus auritus*; Ravizza, Heffner, & Masterton, 1969b]; 3, tree shrew [*Tupaia glis*; H. Heffner, Ravizza, & Masterton, 1969a]; 4, horseshoe bat [*Rhinolophus ferrumequinum*; Long & Schnitzler, 1975]; 5, little brown bat [*Myotis lucifugus*; Dalland, 1965]; 6, big brown bat [*Eptesicus fuscus*; Dalland, 1965]; 7, slow loris [*Nycticebus coucang*; H. Heffner & Masterton, 1970]; 8, potto [*Perodicticus potto*; H. Heffner & Masterton, 1970]; 9, bush baby [*Galago senegalensis*; H. Heffner, Ravizza, & Masterton, 1969b]; 10, owl monkey [*Aotus trivirgatus*; Beecher, 1974a]; 11, squirrel monkey [*Saimiri sciureus*; Beecher, 1974a]; 12, dog [Masterton, Baker, Goshaly, & Leck, 1965; Stebbins, Green, & Masterton, 1967]; 13, mouse [*Peromyscus maniculatus*; Masterton, 1969a]; 14, guinea pig [*Cavia porcellus*; Masterton, 1969a]; 15, rabbit [*Lepus sylvaticus*; Masterton, 1969a]; 16, cat [*Felis catus*; Masterton, 1969a]; 17, pig [*Sus scrofa*; Masterton, 1969a]; 18, sheep [*Ovis montanus*; Masterton, 1969a]; 19, cow [*Bos taurus*; Masterton, 1969a]; 20, horse [*Equus caballus*; Masterton, 1969a]; 21, dog [*Canis familiaris*; Masterton, 1969a]; 22, dog [*Canis familiaris*; Masterton, 1969a]; 23, dog [*Canis familiaris*; Masterton, 1969a]; 24, dog [*Canis familiaris*; Masterton, 1969a]; 25, dog [*Canis familiaris*; Masterton, 1969a]; 26, dog [*Canis familiaris*; Masterton, 1969a]; 27, dog [*Canis familiaris*; Masterton, 1969a]; 28, dog [*Canis familiaris*; Masterton, 1969a]; 29, dog [*Canis familiaris*; Masterton, 1969a]; 30, dog [*Canis familiaris*; Masterton, 1969a]; 31, dog [*Canis familiaris*; Masterton, 1969a]; 32, dog [*Canis familiaris*; Masterton, 1969a]; 33, dog [*Canis familiaris*; Masterton, 1969a]; 34, dog [*Canis familiaris*; Masterton, 1969a]; 35, dog [*Canis familiaris*; Masterton, 1969a].

ear (e.g., Dallos, 1973; Khanna & Tonndorf, 1969; von Bekesy, 1960), it seemed appropriate to determine the degree of its variation in dogs. As was previously noted, the area of the tympanic membrane of dogs

membrane, some difference in sensitivity related to size might have been observed. However, a distinction may be made between the sensitivity of the *ear* (defined as all structures from the tympanic membrane

Heffner, H. E., Ravizza, R. J. & Masterton, B. Hearing
in primitive mammals: III. Tree shrew (*Tupaia*
glabris). *Journal of Auditory Research*, 1969, 9, 1-7. (a)

virginianus). *Journal of Auditory Research*, 1969,
9, 1-7. (a)