

20. Psychoacoustics and Behavioral Measurement of Sound Perception

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Nearly everyone has had some experience with behavioral testing of their hearing, at least casually. Those measurements are based (sometimes loosely) on rigorous, psychophysical testing methods that have been developed to assess hearing sensitivity to sound. Animals also can be trained to “tell” us what they hear if the experimenter uses carefully controlled “animal psychophysical” methods, and response mechanisms that are appropriate to the animal under test. This section describes these methods and how they are used in many different animals. We will discuss what characteristics of sound perception can be measured behaviorally, how animals differ in their auditory perceptions, alternative methods of measuring auditory thresholds, and comparative data on masking, frequency selectivity, loudness perception, and temporal auditory processing. Research will also be described on how animals perceive more complex sounds, such as human speech and animal vocalizations. The day will end with group practicum activities that will illustrate how behavioral measures are made and how the measures depend on the methodology selected.