

Is noise reactivity reflected in auditory response variables, including those that measure cognition, in dogs? Initial Findings

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Abstract

Noise reactivity and noise phobia are anxiety- and panic-related conditions in dogs that may affect up to 50% of dogs across their lifetime. Affected dogs show a range of signs of distress including trembling, freezing, panting, social withdrawal, pacing, salivating, and escape behaviors. Noise reactivity and phobia have been shown to be comorbid conditions, and their presence may increase the risk and severity of other anxiety-related conditions. Anxiety disorders may interfere with dogs' abilities to perform problem-solving tasks or to interpret information that could be useful in such tasks, including tasks involving or affected by noise. The extent to which noise reactivity or phobia is related to auditory dysfunction or impairment is not known. In this study, we asked whether known noise reactivity in dogs was reflected in any of several measures of auditory function: the brainstem auditory-evoked response, auditory middle-latency response, and mismatch negativity. Most noise-reactive dogs in this study were mildly affected (mean anxiety intensity rank [noise] score 17.65, maximum = 64). Comparison of the major auditory measures of dogs who were noise reactive with those of dogs who were non-noise reactive revealed a significant difference in only one variable of the brainstem auditory-evoked response test, right ear wave-V (RE-V) (Welch's $t = 2.55$, $df = 22.41$, $P < 0.02$). Auditory middle- and late-latency responses were present in all dogs that allowed for the completion of this test, providing initial evidence of higher order auditory-cognitive function. Behaviorally, the group of noise-reactive dogs was significantly different from the group of non-noise-reactive dogs with respect to their ability to undergo this testing: 5 of the 17 noise-reactive dogs were too reactive to undergo or complete the test but none of the 14 non-noise dogs were unable to undergo and complete testing. This study suggests that the underlying pathology resulting in

noise reactivity may not influence auditory middle-latency response or mismatch negativity related variables, but the study should be expanded to a larger and more severely affected population of dogs.

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