Design and Construction of a Sound Activated Treat Dispensing Machine for Dogs Triggered by High Intensity Auditory Stimuli of 103 dB as a Counterconditioning System

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Approximately 50% of dogs suffer from anxiety caused by high-intensity sounds (Grigg., et al., 2021). This is why this project worked on the design and construction of a treat dispensing machine for dogs triggered by high intensity auditory stimuli of 103 dB that works as a counterconditioning system. The earlier mentioned sounds are the main non-controllable cause of stress in these animals. With the goal of alleviating anxiety in dogs, this machine implements a counterconditioning system by providing treats to help create a positive relationship with stress factors. In addition, this device eliminates the primary limiting factors of consistency and cost regarding the counterconditioning method. By integrating a sound sensor into an electric circuit connected to a microcontroller board, it was possible to adjust the sensitivity of the sound sensor and program the reaction of the motor using the input data provided by the sensor. The machine starts the activation process once it registers the 103 dB value, determined by using as a reference the average decibel level that surpasses the safe sound zone for dogs (85 dB) and the ideal ambient sound level for dog hearing (45 dB–55 dB) (Coren, 2022). Once the tests were executed, a high accuracy of activation was registered for the activation decibels (in reference to the desired 103 dB), along with consistent activation results when considering both constant sound tests and short interval sound tests, also testing the 2 hours of inactivity set to limit the amount of treats dispensed to the dog.

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