

Video Article

Auditory Discrimination Learning in Mice: Differential Conditioning in a Shuttle Box Task

Kurt Simone¹, Stein Wolfgang¹
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Correspondence to: Kurt Simone at simone.kurt@uni-ulm.de

URL: <http://www.jove.com/video/2222>

DOI: [doi:10.3791/2222](https://doi.org/10.3791/2222)

Keywords: shuttle-box, auditory discrimination learning, go/no-go, mice, sound discrimination, amplitude modulation, pure tone, small rodents, behavioural task,

Date Published: 6/15/2015

Citation: Simone, K., Wolfgang, S. Auditory Discrimination Learning in Mice: Differential Conditioning in a Shuttle Box Task. *J. Vis. Exp.* (), e2222, doi:10.3791/2222 (2015).

Abstract

Auditory discrimination learning is a powerful and fast way to test the capability of an animal to perform learning and memory tasks, for example after pharmacological treatment or genetic manipulation. Here we describe an auditory discrimination learning paradigm for mice that can easily be adapted to other rodent species. It has been demonstrated in a number of studies that rodents are able to learn a simple sound discrimination task within a few days of training. In the learning paradigm presented here, mice learn to discriminate different pure tones (7 kHz vs. 12 kHz). They are required to cross a hurdle in a shuttle box go/no-go task if one of the sounds is presented and to stay on the same side during presentation of the second sound in order to avoid an aversive foot shock. We demonstrate the use of the shuttle box, the training procedure and possible pitfalls during the training. In addition, we explain definitions typically used in behavioral learning tasks and demonstrate how to construct a learning curve. Possible applications are discussed with particular emphasis on the impact of the shuttle box discrimination learning paradigm on genetic studies and the fact that in such an apparatus mice show significant learning success within only 2 to 4 days of training.

Video Link

The video component of this article can be found at <http://www.jove.com/video/2222/>

Disclosures

No conflicts of interest declared.