P300 EVENT RELATED POTENTIALS FROM RAT BRAIN TO CUES FOR REINFORCEMENT AND NON-REINFORCEMENT

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Abstract

The P300 Event Related Potential (ERP) is a time-locked, averaged EEG to task-relevant stimuli. Previous research in our laboratory has shown that the P300 ERP is elicited in rats in response to the presentation of a conditioned reinforcer (1). More recently, we found that the P300 ERP is also evoked in rats in response to the presentation of a non-reinforcer (2). In the present study, we investigated whether the P300 ERP is evoked in rats in response to the presentation of a conditioned reinforcer and a non-reinforcer. The rats were divided into three groups: Group 1 received a conditioned reinforcer (food pellet), Group 2 received a non-reinforcer (air puff), and Group 3 received no reinforcer. The P300 ERP was recorded using a 64-channel Electroencephalogram (EEG) system. The results showed that the P300 ERP was evoked in rats in response to the presentation of both the conditioned reinforcer and the non-reinforcer. These findings suggest that the P300 ERP is evoked in rats in response to the presentation of both conditioned reinforcers and non-reinforcers.

Rationale Goals

The purpose of this experiment was to investigate the role of task-relevant stimuli in the P300 event related potential (ERP). The P300 ERP is a time-locked, averaged EEG to task-relevant stimuli. Previous research in our laboratory has shown that the P300 ERP is evoked in rats in response to the presentation of a conditioned reinforcer (1). More recently, we found that the P300 ERP is also evoked in rats in response to the presentation of a non-reinforcer (2). In this study, we investigated the effect of the presentation of both a conditioned reinforcer and a non-reinforcer on the P300 ERP in rats.

Experimental Design

The rats were divided into three groups: Group 1 received a conditioned reinforcer (food pellet), Group 2 received a non-reinforcer (air puff), and Group 3 received no reinforcer. The P300 ERP was recorded using a 64-channel Electroencephalogram (EEG) system. The results showed that the P300 ERP was evoked in rats in response to the presentation of both the conditioned reinforcer and the non-reinforcer. These findings suggest that the P300 ERP is evoked in rats in response to the presentation of both conditioned reinforcers and non-reinforcers.

Methods

Subjects

Seven experimentally naïve male Sprague-Dawley rats were used in this experiment. The rats were housed in individual cages and maintained on a 12:12 light-dark cycle with ad libitum access to food and water.

Apparatus

The behavioral testing was conducted in a custom-built apparatus that consisted of a start box, a goal box, and a runway. The apparatus was equipped with an overhead video camera for monitoring the rats' behavior. The rats were trained to run through the runway and receive a food reward at the goal box.

Materials

The rats were implanted with a chronic EEG electrode to record brain activity. The EEG electrodes were attached to the skull using dental cement. The EEG data was recorded using a NeuroScan EEG acquisition system and software.

Procedures

The rats were divided into three groups: Group 1 received a conditioned reinforcer (food pellet), Group 2 received a non-reinforcer (air puff), and Group 3 received no reinforcer. The P300 ERP was recorded using a 64-channel Electroencephalogram (EEG) system. The results showed that the P300 ERP was evoked in rats in response to the presentation of both the conditioned reinforcer and the non-reinforcer. These findings suggest that the P300 ERP is evoked in rats in response to the presentation of both conditioned reinforcers and non-reinforcers.

Results

The results of this experiment showed that the P300 ERP is evoked in rats in response to the presentation of both a conditioned reinforcer and a non-reinforcer. These findings suggest that the P300 ERP is evoked in rats in response to the presentation of both conditioned reinforcers and non-reinforcers.

Conclusion

The results of this experiment showed that the P300 ERP is evoked in rats in response to the presentation of both a conditioned reinforcer and a non-reinforcer. These findings suggest that the P300 ERP is evoked in rats in response to the presentation of both conditioned reinforcers and non-reinforcers.

References

