THE ROLE OF THE PREFRONTAL CORTEX, AMYGDALE, AND HIPPOCAMPUS IN TRACE AND CONTEXTUAL FEAR CONDITIONING

Mica Christensen, [John Churchwell and Raymond Kesner]
Department of Psychology

The goal of this study was to examine the role of the medial prefrontal cortex (mPFC) and the amygdala in fear conditioning. Two groups of animals would be given chemical lesions to the amygdala, and mPFC while two control groups would be given sham lesions to these regions (n=48). The animals with mPFC lesions were run on fear conditioning trials which consisted of a 32 second (s) tone and then 10 s of a stimulus free period followed by a shock. The following day the rats were placed into the same conditioning box where no tone was played and no shock was administered. The third day, the rats were placed in a neutral box where the tone was played for 32 s followed by an 8s trace. The amount of freezing that occurred was coded in 8 s intervals. While the data has not been completed for the amygdala lesions, the mPFC lesions indicated that the rats learned the freezing response rapidly on day one. These animals also showed significant freezing to the context on day two as well as to the tone and trace period on day three. These findings indicated that the mPFC does facilitate acquisition as our hypothesis suggested.