CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

34562

Project Title

The Impact of Emotion on Memory

Abstract

Objectives/Goals

Arousal-biased competition theory states that emotional arousal has an enhancing effect on memory for high priority information. However, there is a lack of understanding on how emotional arousal affects various processes of memory differentially. Pattern separation is a process of memory that allows people to identify similar information as similar, but not the same. Previous research has suggested that emotional arousal enhances pattern separation abilities, but there has been no indication as to whether that interaction occurs during encoding or retrieval. Here, we examined the differential effects of emotional arousal at encoding and at retrieval on pattern separation abilities.

Methods/Materials

Healthy younger adults viewed paired slideshows of images. The first slideshow required them to identify images as belonging indoors or outdoors and served as the encoding procedure. The second slideshow required them to identify images as either "new," "similar," or "same." Emotionally arousing images were added to either the encoding slideshow, the retrieval slideshow, or neither.

Results

Accuracy in identifying similar images increased for blocks that included emotional arousal at encoding compared to blocks that did not include emotional arousal. However, misidentification of similar images decreased in blocks that included emotional arousal at retrieval compared to blocks that did not include emotional arousal.

Conclusions/Discussion

Emotional arousal differentially influenced the encoding and retrieval processes.

Summary Statement

This study aimed to establish the timeframe at which emotional arousal impacts the pattern separation process for high priority information.

Help Received

Worked in Dr. Mara Mather's Emotion and Cognition Lab at the University of Southern California under Allison Ponzio, Doctoral Candidate