

Poster #9**Amy Belfi****PhD Candidate, College of Medicine****Neurology****Title of Research:** Damage to the Medial Prefrontal Cortex is Associated with Abnormal Music-Evoked Autobiographical Memories**Other Authors:** Daniel Tranel, PhD**Introduction/Purpose:**

Autobiographical memories – memories about events from one’s life – are crucial for maintaining a sense of self and preserving close relationships with others. Unfortunately, autobiographical memory is impaired in patients with neurological conditions such as Alzheimer’s disease. Notably, environmental cues, such as music, can improve autobiographical memory retrieval. However, the neural mechanisms underlying this phenomenon are unknown. Previous research has suggested that the medial prefrontal cortex (mPFC) is an important region underlying music-evoked autobiographical memories (MEAMs). Here, we aim to investigate whether the mPFC is critical for this process. We predict that patients with damage to the mPFC will have impaired MEAMs.

Experimental Design:

We studied patients with damage to the mPFC, brain-damaged comparison participants with brain damage outside the mPFC (BDCs), and normal comparison participants (NCs). Participants listened to 30 randomly-selected songs that were popular during their lifetimes. As a control task, participants viewed 30 pictures of famous faces of individuals who were famous during the same time period as the songs. After each stimulus, participants described any memories that were evoked. Memories were transcribed and coded to quantify memory vividness.

Results:

There was a significant interaction between group and condition. In NCs and BDCs, music-evoked memories were significantly more vivid than face-evoked memories. In patients with damage to the mPFC, music-evoked memories were not more vivid than face-evoked memories.

Conclusions:

Our findings are the first to show that the mPFC is a critical region for music-evoked autobiographical memories. Importantly, the mPFC is relatively preserved in Alzheimer’s disease. Therefore, our findings help explain how music can facilitate memory retrieval in patients with Alzheimer’s disease. Our results both further understanding of the neural mechanisms underlying MEAMs as well as support the use of music as a treatment for memory disorders.