Introduction

Recently, there has been increasing interest in a subgroup of older individuals who present with mild, but highly specific memory complaints (i.e., mild cognitive impairment). Although not demented, these individuals have slightly abnormal memory relative to others their age – in the context of intact cognitive abilities and activities of daily living [1]. In line with their memory complaints, these individuals also display reduced volumes in brain areas known to be important for memory, such as the hippocampus and entorhinal cortex. To date, little attention has been directed to a nearby brain area, the amygdala, which plays a prominent role in emotion and emotional arousal. A variety of studies have suggested that the amygdala appears to enhance memory by modulating hippocampal activity for emotionally arousing materials [2]. Thus, findings that memory is better for emotionally arousing material than for bland information have been attributed to the role of amygdala in learning and memory.

The overall focus of the present study is to evaluate the role of the amygdala-hippocampus in emotional memory by examining the relationship between amygdala-hippocampus structural integrity and emotional memory performance in a group of older individuals who show age-associated mild memory impairments. We particularly want to learn whether the memory performance of individuals with mild cognitive impairment benefits to the same extent as normal peers by emotionally arousing materials. This is an important issue since (a) one of the procedures for aiding memory performance depends strongly on the motivational and emotional significance of the information to be remembered; and (b) the hippocampus, entorhinal cortex, and the amygdala are early targets of age-related changes that affect memory performance in older adults. If we can better understand the basis of some of the memory difficulties experienced by these older adults, perhaps we can better design memory improvement strategies based on this form of memory.

Experimental

All scans are being collected using the Siemens 3T Allegra scanner within the McKnight Brain Institute with MR technician’s assistance. Volumetric analyses of the hippocampus, entorhinal cortex, and whole brain are obtained as well as single voxel spectroscopy of the amygdala and the anterior 2/3 of the hippocampus are to be obtained, when possible. Metabolites of interest include Creatine, Choline, myo-Inositol and NAA. Cr/ NAA ratios will be calculated using Area Under the Curve algorithm.

Results and Discussion

To date, a total of 12 participants have completed the investigation. Data collection is still in process and final results are not available for review or discussion.

Conclusions

Not Applicable.

Acknowledgements

Not Applicable.

References