

Title: The Differences Between True and False Memories in the Brain
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Introduction:

Distinguishing true from false memories has serious implications for eyewitness testimony but few studies to date have examined the neural basis of false memories using complicated stimuli such as events. In the current study we used fMRI to investigate brain activation associated with remembering events that were only imagined.

Method:

On day one of the experiment participants watched a slide show of an event that included photographs of event actions and descriptions of actions that participants imagined. Two days later participant memory was tested. Action statements were presented and participants indicated if they saw the action on day one and gave a confidence rating (vivid, just familiar). We used fMRI to compare areas of brain activation while participants were remembering actual and imagined events and whether their individual imagery ability (VVIQ: Vividness of Visual Imagery Questionnaire) influenced false memory rates and areas of corresponding brain activation.

Results:

We found that similar brain regions are activated during the retrieval of true and false memories (when a participant imagines an event but falsely remembers it as a slideshow photograph). The rate at which participants report that they vividly remember an imagined event is correlated with activation in certain areas of the brain. Participants with higher imagery abilities were more likely to say that they vividly remembered imagined events as photographs, ($r=.294, p<.05$).

Discussion:

Based on our findings, we suggest that true and false memories feel phenomenologically similar, and that imagery ability can lead one to have vivid memories of imagined events that are mistaken for true experiences. These findings suggest that guided imagery used for therapy and police questioning is detrimental to true recollection.