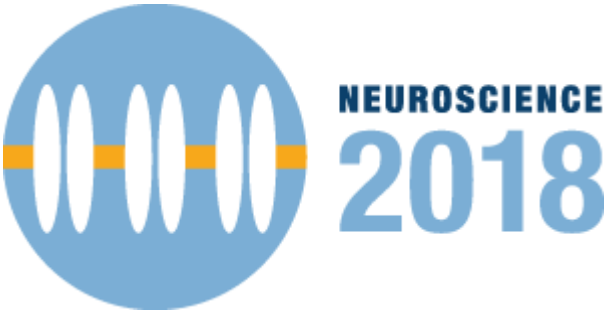

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Separation of items from their context observed via fMRI pattern analysis of item-method directed forgetting

AUTHOR BLOCK: *Y.-C. CHIU[1,2], T. H. WANG[3], D. M. BECK[1,2], J. A. LEWIS-PEACOCK[3], L. SAHAKYAN[1,2];
[1]Psychology, Univ. of Illinois, Champaign, IL; [2]Beckman Inst. for Advanced Sci. and Technol., Champaign, IL; [3]Psychology, Univ. of Texas At Austin, Austin, TX

Abstract:
Context-change theory of list-method directed forgetting (DF) proposes that changes in context associated with to-be-forgotten items is a mechanism for successful forgetting (e.g., Sahakyan & Kelley, 2002). Context processing has been investigated in list-method DF paradigm, including a recent study that used multi-voxel pattern analysis (MVPA) of fMRI data to show that people can intentionally forget previously experienced events by changing their mental representations of contextual information associated with those events (Manning et al., 2016). To date, there has been no comparable investigation in the item-method DF paradigm. The purpose of the current study was to directly examine the role of context information in an item-method DF study using MVPA of functional imaging data. Specifically, we hypothesized that, as in list-method DF, the modification of context information plays a role in the intentional forgetting of individual items. In the first phase, participants viewed trials consisting of a negative or neutral word. Critically, we “tagged” the mental context during this encoding phase by presenting task-irrelevant scene images between trials (Gershman et al., 2013). This led participants to form incidental associations between items (words) and the encoding context (scenes). The studied words (but not the scenes) were then presented again in an item-method DF phase, where each word was followed by an instruction to either forget or remember the word. fMRI pattern classifiers were trained (from a separate localizer task) on activity in the ventral visual stream to identify activation patterns associated with words and scenes. These classifiers were then applied to data from the DF phase to provide a measure of item and context processing. Preliminary results indicate that after a forget instruction, the amount of item information (classifier evidence for “word”) dropped below the pre-cue period, and was markedly lower than after remember instructions. This may reflect deactivation of the to-be-forgotten item. Context information associated with the studied words was reactivated before the DF instruction (i.e., an increase in classifier evidence for “scene”). Interestingly, after a forget instruction the amount of context information increased relative to the pre-cue period and it was stronger than after a remember instruction. Together, this selective decrease in item information and increase in context information may reflect the

active unbinding of an item from its context. Taken together, this study provides the first demonstration of the differential processing of item and context information in item-method directed forgetting.
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Nanosymposium Information (Complete):
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Is the submitting author of this abstract also a senior author?: No
Is the first (presenting) author of this abstract a high school or undergraduate student?: None
Religious Conflict?: No Religious Conflict
Additional Conflict?: No
Do you think the research described in your abstract tells a story that is ready to share and would be of interest to the media? Press activities for the annual meeting will begin in November 2018.: Unsure

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