



Pattern Separation and Pattern Completion of Eye Gaze Fixations

Radrigo Chiquet*

Department of Ophthalmology, University of Missouri, Columbia, US

DESCRIPTION

Pattern separation and pattern completion are commonly studied in humans using economic identification tasks such as the economic similarity task. In this task, participants identify similar decoys and repeating elements from a series of images. The inability to distinguish lures correctly is thought to reflect the tendency of pattern separation failure and pattern completion. Recent studies disagree with this view and suggest that poor encoding, rather than pattern completion, is responsible for the occurrence of false positives for similar lures. In two experiments, participants completed a continuous recognition task version of MST while collecting eye movements and fMRI data. Reproduced the finding that fixation is important in the predictive accuracy of studies in bait trials, but in both experiments, target bait similarity is a much stronger predictor of accuracy in bait trials. Finally, we had found that changes in fMRI activation in the hippocampus significantly correlated with the number of gazes during the study of correct but incorrect mnemonic discrimination decisions in controlling target bait similarity. Our results predict that eye movements during encoding predict subsequent changes in hippocampal activation, while mnemonic discrimination performance is more affected by target bait similarity than simply poor encoding and shows that it is better explained by the pattern completion process. Pattern separation and pattern completion are computational processes involved in mnemonic identification, or very similar memory identification. Pattern separation allows similar memory traces to be encoded in as different ways as possible, leaving different memories different. In contrast, pattern completion is the process by which partial or degraded

cues lead to the acquisition of memory traces. In extreme cases, the completion of the pattern can lead to catastrophic interference. This is because all similar memories can be retrieved in one capture queue. At MST, participants look at the pictures to show if each item was previously seen. Some images are repeats of previously presented items (targets), while others are very similar but not the same (bait). The mnemonic identification performance in MST relies on a hippocampal-dependent pattern separation process. However, it is unclear whether the mnemonic distinction failed due to the completion of the pattern or due to other processes such as poor encoding. In previous studies, eye tracking was used as an implicit measure of memory encoding while participants completed MST. Bait items misidentified as "old" are less fixed than bait items correctly identified as "similar" during a study episode, and in addition to completing the pattern, there is also poor coding or coding failure. It suggests that it may be the cause of the false alarm response. Other recent studies on monitoring eye movements in partial cues memory tasks have since challenged this finding. Participants with reduced novel clues tended to focus on the area displayed when viewing similar items.

Previous studies have shown a relationship between eye movement gaze in encoding and subsequent hippocampal activation, so the more gaze in the study, the greater the hippocampal activation in search. A decrease is expected. More fixation is associated with greater repeat suppression, but this factor has not been manipulated in previous studies, so it is unclear whether this effect is modulated by target bait similarity.

Correspondence to: Radrigo Chiquet, Department of Ophthalmology, University of Missouri, Columbia, US, E-mail: radrogochiquet02@gmail.com

Received: 05-Jan-2022, Manuscript No. JOII-22-15795; **Editor assigned:** 07-Jan-2022, PreQC No. JOII-22-15795 (PQ); **Reviewed:** 20-Jan-2022, QC No. JOII-22-15795; **Revised:** 24-Jan-2022, Manuscript No. JOII-22-15795 (R); **Published:** 01-Feb-2022, DOI: 10.35248/JOII.22.3.105.

Citation: Chiquet R (2022) Patten Separation and Patten Completion of Eye Gaze. *J Ocul Infec Inflamm.* 3: 105.

Copyright: ©2022 Chiquet R. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.