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Blink-related momentary activation of the default mode network while viewing videos.

Nakano T, Kato M, Morito Y, Itoi S, Kitazawa S.
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Recommendations:

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Score:

10 Apr 2013 | Controversial, Interesting Hypothesis, New Finding

The default mode network (DMN) is the name given to an extensive set of cortical areas whose activation is suppressed during task performance and increases at rest. The function of DMN has proved difficult to study experimentally because experimental tasks generally deactivate it. Nakano et al. have instead used an elegant approach via a spontaneous human behaviour: blinking. While watching videos, people generally blink at moments of low excitement. Using functional magnetic resonance imaging (fMRI), the authors noted that blinking caused a brief activation of the DMN and a corresponding deactivation of the 'dorsal stream' frontoparietal areas associated with attending to stimuli. Importantly, these effects did not occur when visual input was prevented by replacing the video with a black field. This study suggests that attention involves an ongoing reciprocation between a stimulus-oriented attentional network and a disengagement from external stimuli, associated with the default mode network. Disengagement from current focus is known to be an important aspect of cognitive attentional processing because it frees the brain from immediate stimulus control and offers the opportunity for flexibly switching attention. This study provides a novel and convincing analysis that disengagement involves the DMN. It, therefore, provides important clues regarding the role of DMN in regulation of behaviour.

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Disclosures
None declared

Comments:

No comments yet.

Abstract:

It remains unknown why we generate spontaneous eyeblinks every few seconds, more often than necessary for ocular lubrication. Because eyeblinks tend to occur at implicit breakpoints while viewing videos, we hypothesized that eyeblinks are actively involved in the release of attention. We show that while viewing videos, cortical activity momentarily decreases in the dorsal attention network after blink onset but increases in the default-mode network implicated in internal processing. In contrast, physical blackouts of the video do not elicit such reciprocal changes in brain networks. The results suggest that eyeblinks are actively involved in the process of attentional disengagement during a cognitive behavior by momentarily activating the default-mode network while deactivating the dorsal attention network.

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