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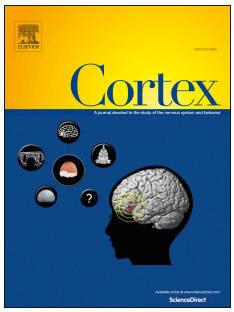

Ignoring versus updating in working memory reveal differential roles of attention and feature binding

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Title: Ignoring versus updating in working memory reveal differential roles of attention and feature binding
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Abstract: Ignoring distracting information and updating current contents
are essential components of working memory (WM). Yet, although both require controlling irrelevant information, it is unclear whether they have the same effects on recall and produce the same level of misbinding
errors (incorrectly joining the features of different memoranda). Moreover, the likelihood of misbinding may be affected by the feature similarity between the items already encoded into memory and the information that has to be filtered out (ignored) or updated into memory.
Here, we investigate these questions. Participants were sequentially presented with two pairs of arrows. The first pair of arrows always had to be encoded into memory, but the second pair either had to be ignored (ignore condition) or allowed to displace the previously encoded items (update condition). To investigate the effect of similarity on recall, we
also varied, in a factorial manner, whether the items that had to be ignored or updated were presented in the same or different colours and/or
same or different spatial locations to the original memoranda. By applying a computational model, we were able to quantify the levels of misbinding. Ignoring, but not updating, increased overall recall error as
well as misbinding rates, even when accounting for the retention period. This indicates that not all manipulations of attention in WM are equal in
terms of their effects on recall and misbinding. Misbinding rates in the
ignore condition were affected by the colour and spatial congruence of relevant and irrelevant information to a greater extent than in the update condition. This finding suggests that attentional templates are used to evaluate relevant and irrelevant information in different ways during ignoring and updating. Together, the results suggest that differences between the two functions might occur due to higher levels of
attentional compartmentalisation -or protection -during updating compared
to ignoring.