Up-regulatory nature of voluntary control of visual long-term memory encoding

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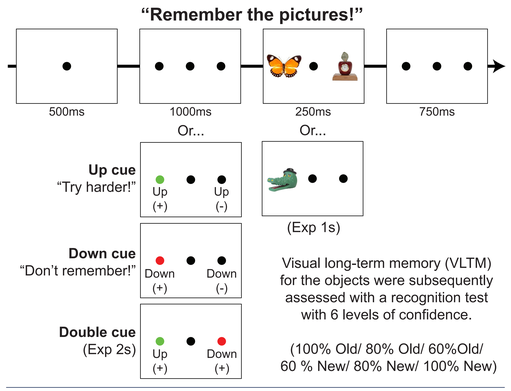
Research Question

Our visual long-term memory can hold virtually infinite amount of visual information (e.g., Brady et al., 2008). Despite its unlimited capacity, not every visual inforamtion we encounter seems to be encoded.

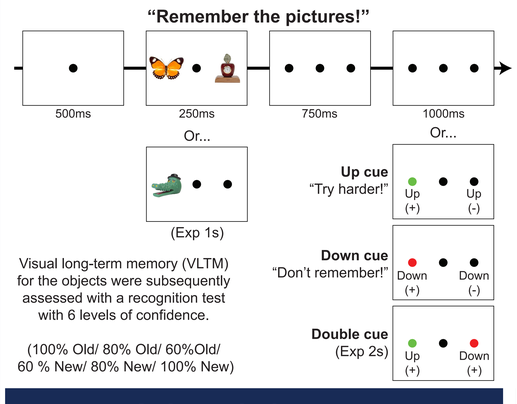
Can we voluntarily control what gets encoded (*up-regulation*) and what does not get encoded (*down-regulation*) into our visual long-term memory?

Method



Visual long-term memory (VLTM) for the objects were subsequently assessed with a recognition test with 6 levels of confidence.

(100% Old/ 80% Old/ 60%Old/ 60 % New/ 80% New/ 100% New)



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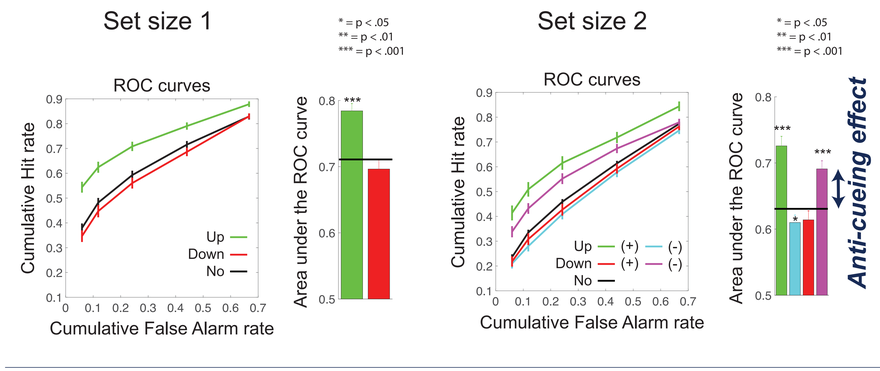
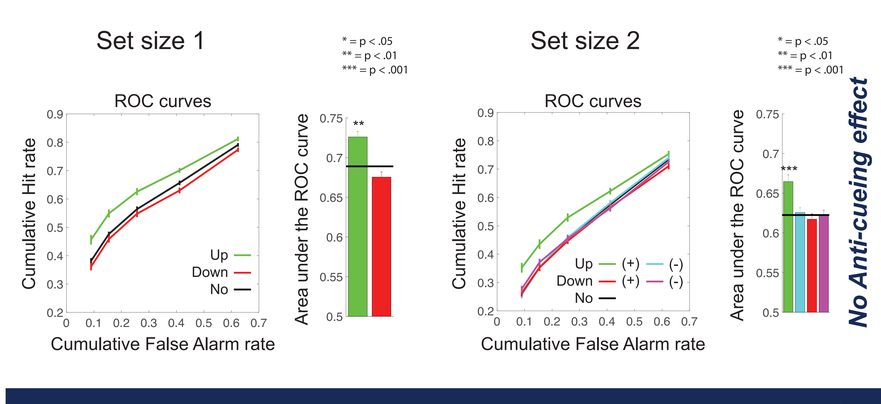
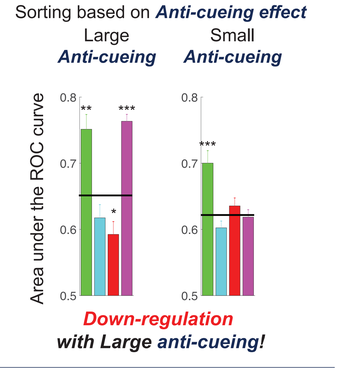
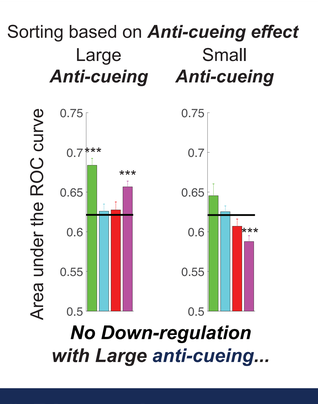
Up-regulatory nature of voluntary control of VLTM encoding



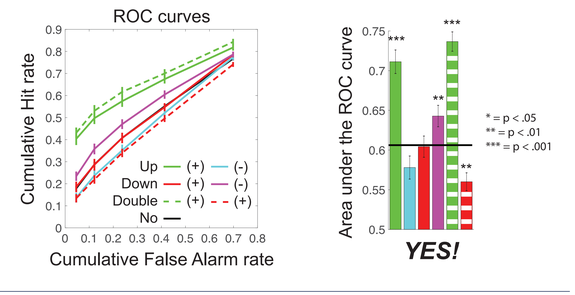






Indirect down-regulation via up-regulation

Can we cause reliable ***down-regulation*** of VLTM encoding through voluntary ***up-regulation*** of accompanying items?



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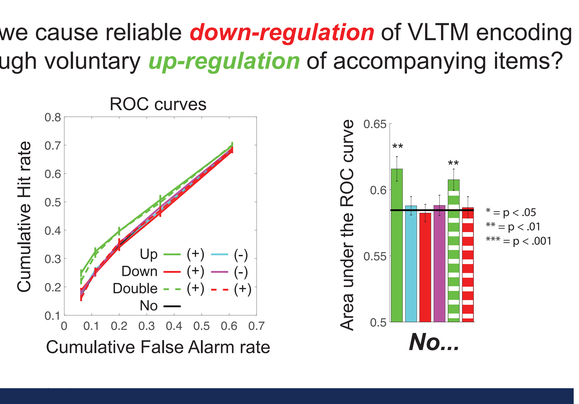

Acknowledgement

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Summary & Discussion

Voluntary down-regulation of VLTM encoding was at least more difficult, if not impossible, than volunatary up-regulation.
Those who successfully down-regulated the encoding of the cued items up-regulated the encoding of accompanying no-cue items.
Coupling a to-be-up-regulated item with a to-be-down-regulated item elicited reliable down-regulation of VLTM encoding for the to-be-down-regulated item.
This effect however was specific to precue paradigms, thus suggesting ***perceptual biasing*** as the underlying mechanism of the indirect down-regulation of VLTM encoding.