Associative learning changes multivariate neural signatures of working memory load William XQ Ngiam, William Thyer, Will S Epstein, Henry M Jones, Darius Suplica, Edward Awh

A 'theory map' of visual working memory (Ngiam, 2023)



Does associative learning (chunking) change multivariate neural signals of working memory?

Predicted

set size 2

-250

Training Pre-training (four random colors, 160 trials) and post-training (two pairs, 160 trials) until response 1000 msec 250 msec Training (four pairs, 600 trials) 100% pairing until response 1000 msec 250 msec

Recall accuracy improves during and following training, indicative of associative learning



0.95-

C 0.85-

0.65

0.55-

Trial condition

— 4 Ungrouped

2 Ungrouped

— 4 Grouped

500 750 1000 1250 1500 1750

Time from stimulus onset (ms)









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Trained the mvLoad classifier to decode the 2 random and 4 random conditions,

The 4 paired condition does shift towards the 2 random condition but does not

Because the 2 random colors were shown to one side, it may be decoded by a

Associative learning changes multivariate signatures of working memory load.

Our results suggest a reduction in the number of pointers being assigned, and an additional independent signal for long-term memory recruitment.