Always on my mind: The role of the dmPFC in responding to social feedback from potential romantic partners

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INTRODUCTION

Socio-affective motivations impact how we change our beliefs about other people.

Dating is a particularly salient motivational context.

The dmPFC responds to social information, but it's not known how it responds to social feedback.

How does social feedback motivate how we (a) reactivate and (b) represent others in the dmPFC?

METHODS

Participants: 30 (17 F, 23 straight), ages 18-29

Stimuli: 16 dating profile videos created with hired actors

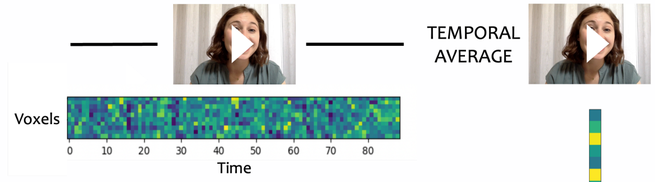
Participants watched two videos each of eight dating profile targets matched for sexual orientation during fMRI.

Participants received feedback from the target between the two videos.

Target assessment

Target feedback	Pos	Neg
Pos	Pos-congruent	Pos-incongruent
Neg	Neg-incongruent	Neg-congruent

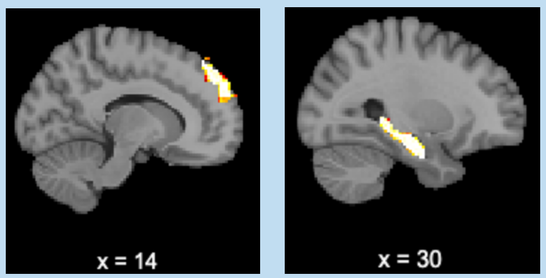
Feedback congruence with participant assessments was manipulated to create four feedback conditions.



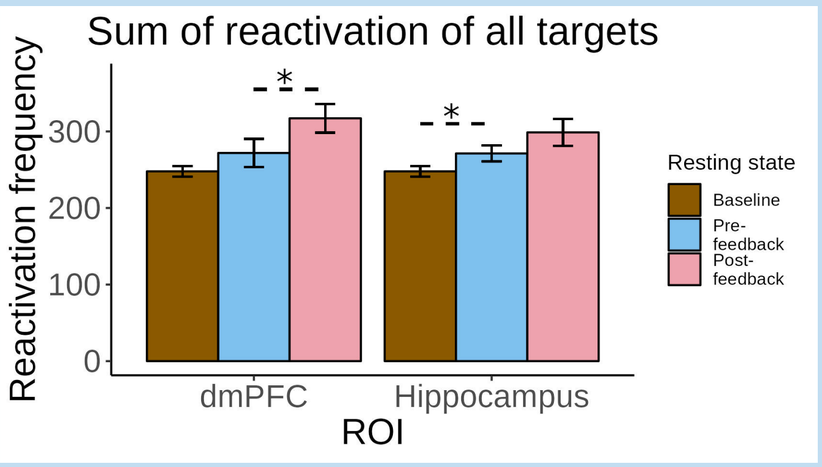
Neural templates: Neural activity was temporally averaged over the length of the video to create a 1D pattern.

Reactivation: TRs during Rest 1 and 2 were categorized as reactivations if the spatial similarity with the neural template was above the similarity during baseline rest.

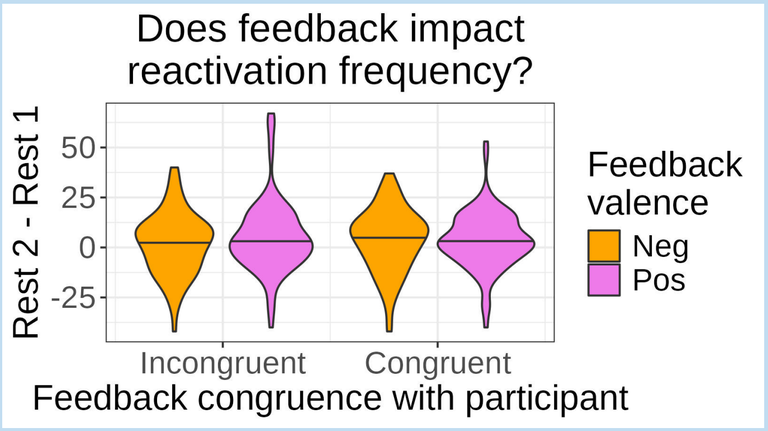
RESULTS



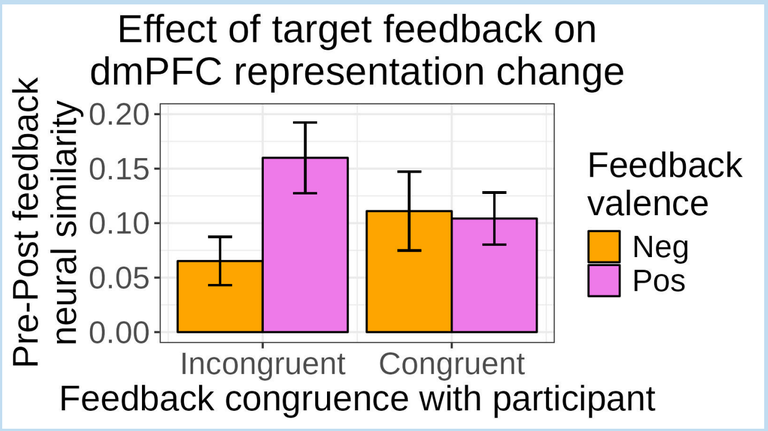
dmPFC ROI from Jimenez & Meyer (2024). Hippocampus ROI from Freesurfer.



Reactivations in the Hippocampus increased relative to baseline (B = 15.38, p = 0.005), while reactivations in the dmPFC increased in response to feedback (B = 30.14, p = 0.03).



Neither feedback valence nor feedback congruence impacted the change in reactivation frequency for specific targets.



dmPFC representations change more in response to negative feedback than positive (B = 0.09, p = 0.02), but is not significantly dependent on feedback congruence (B = -0.09, p = 0.16).

CONCLUSIONS

In the dmPFC, *how often* we think about someone was motivated by social feedback *in general*.

How we think about someone was motivated by feedback *valence*.

Future directions: Temporal ISC; linking reactivation to memory performance; individual motivation

SEE MORE

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REFERENCES

1. Jimenez & Meyer, 2024; 2. Hassabis et al., 2014; 3. Tamir & Thornton, 2018; 4. Schneck et al., 2019; 5. Schapiro et al., 2018