Self-representations across time become indistinguishable with distance from the present

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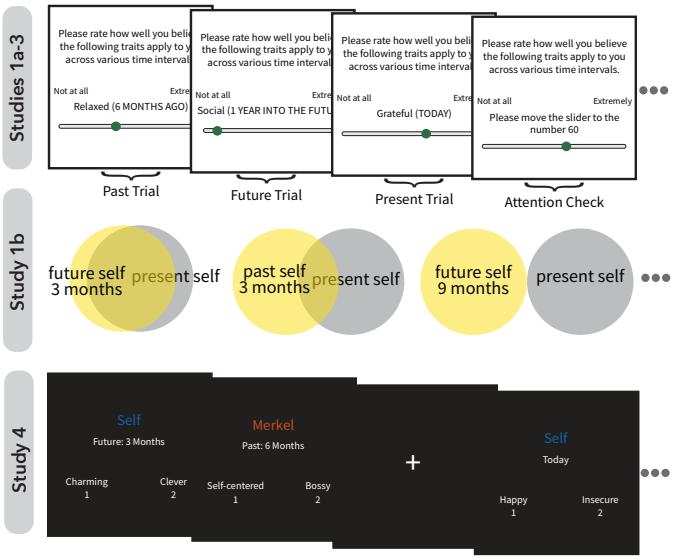
INTRODUCTION

• A basic principle of perception is that as objects increase in distance from an observer, they also become logarithmically compressed in perception (i.e., not differentiated from one another), making them hard to distinguish [1]

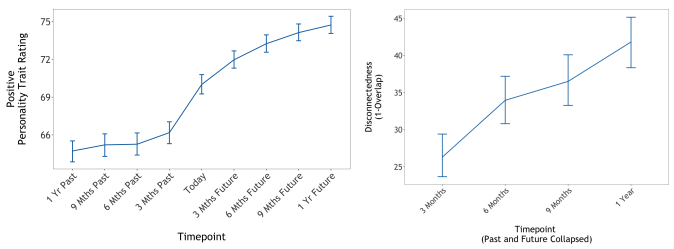
• Social psychology research has found that thinking about future and past selves are associated with more abstractions [2]

• **Hypothesis**: **self representations across time** are similarly **compressed**, or become increasingly indiscriminable with distance from the present

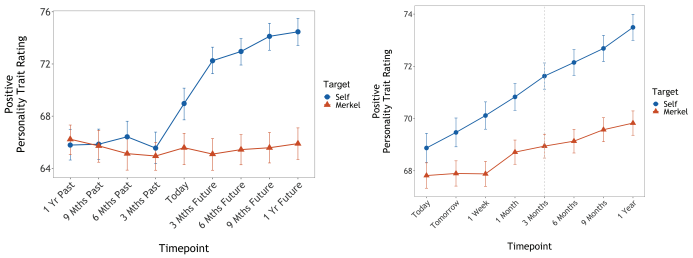
STUDY METHODS



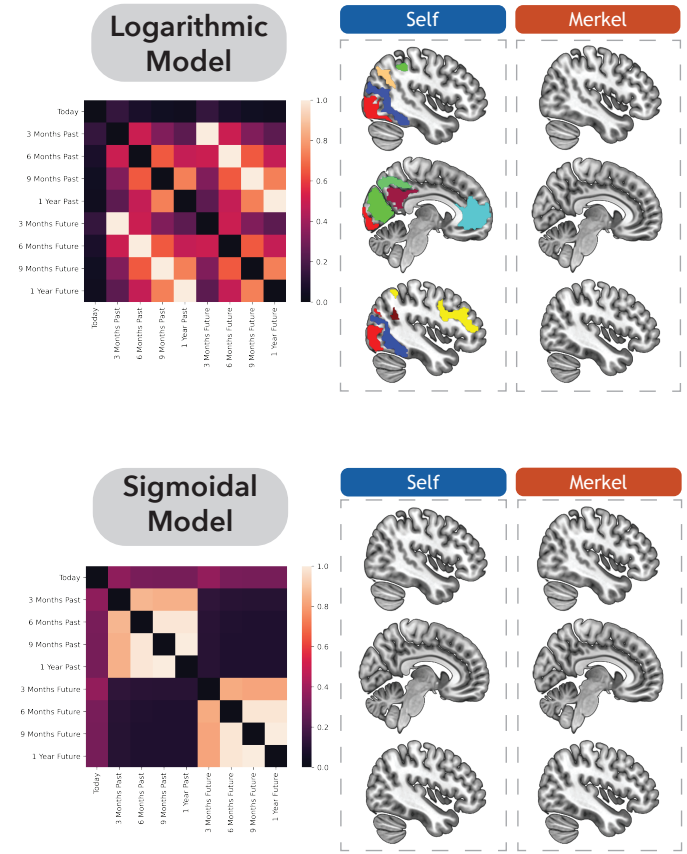
STUDY 1: SELF EXHIBITS A COMPRESSION EFFECT ACROSS TIME



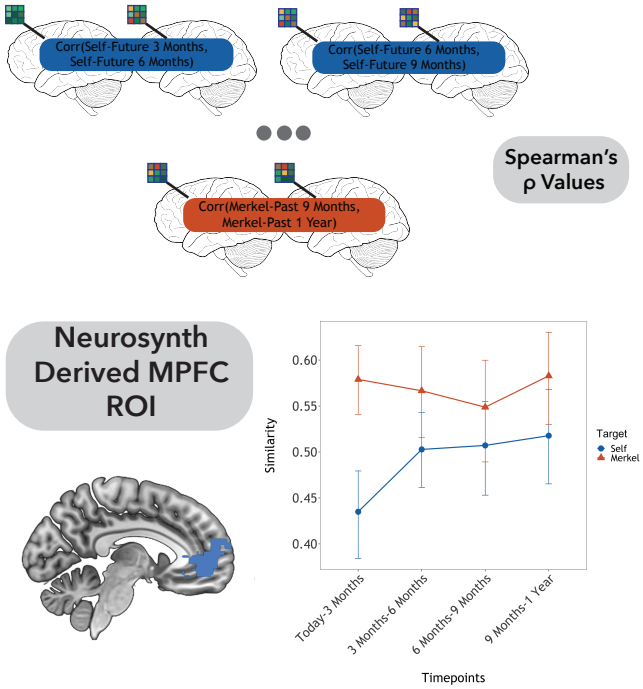
STUDIES 2 & 3: COMPRESSION EFFECT IS PREFERENTIAL TO THE SELF AND SCALE INVARIANT



STUDY 4: TEMPORAL SELF COMPRESSION EFFECT FOUND IN DEFAULT NETWORK



STUDY 4: SELF-SPECFIC ROI COMPRESSES SELF REPRESENTATIONS ACROSS TIME



DISCUSSION

• Across four studies, we found evidence suggesting temporal self-perception abides by the Weber-Fechner principle: perceived changes in self are **logarithmically compressed** such that the farther in distance from from the present self, the less discriminable they become

• Our findings help explain some of the counterintuitive ways people treat their temporally distant selves (delay discounting)

• Self-knowledge may be stored separately from other representations, but the organization of that knowledge abides **domain-general** principles such as temporal compression

References

[1] G. T. Fechner, "Elements of psychophysics, 1860" in Readings in the History of Psychology, W. Dennis, Ed. (Appleton-Century-Crofts, 1948), pp. 206-213.
[2] Y. Trope, N. Liberman, Construal-level theory of psychological distance.: Psychol. Rev. 117, 440-463 (2010). Correction in: Psychol. Rev. 117, 1024 (2010).

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