



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

Sasha Brietzke & Meghan L. Meyer
Psychological and Brain Sciences, Dartmouth College



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

Studies 1a-3

Please rate how well you believe the following traits apply to you across various time intervals.

Not at all | Relaxed (6 MONTHS AGO) | Extreme

Not at all | Social (1 YEAR INTO THE FUTURE) | Extreme

Not at all | Grateful (TODAY) | Extreme

Not at all | Please move the slider to the number 60 | Extremely

Past Trial | Future Trial | Present Trial | Attention Check

Study 1b

future self 3 months | present self 3 months | past self 3 months | present self 9 months | future self 9 months | present self

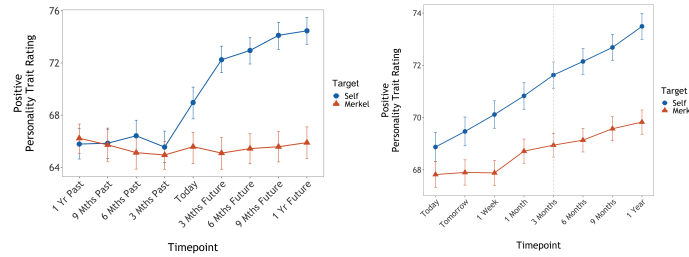
Study 4

Self: Future: 3 Months (Charming 1, Clever 2)

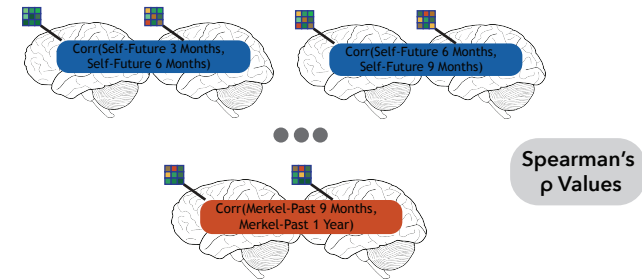
Merkel: Past: 6 Months (Self-centered 1, Bossy 2)

Self: Today (Happy 1, Insecure 2)

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

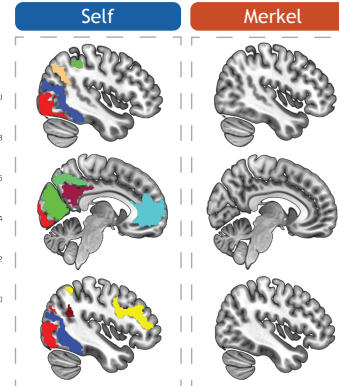
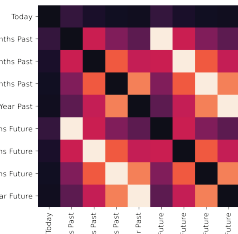


STUDY 4: SELF-SPECIFIC ROI COMPRESSES SELF REPRESENTATIONS ACROSS TIME

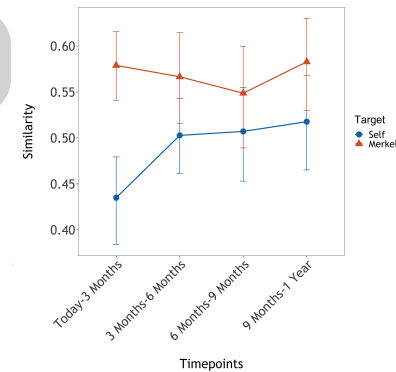
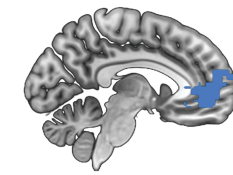


STUDY 4: TEMPORAL SELF COMPRESSION EFFECT FOUND IN DEFAULT NETWORK

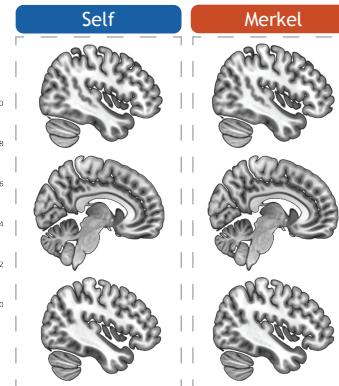
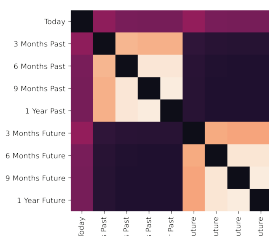
Logarithmic Model



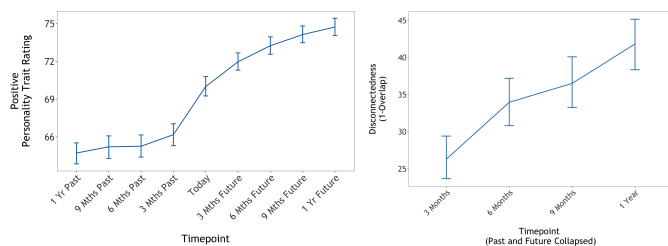
Neurosynth Derived MPFC ROI



Sigmoidal Model



STUDY 1: SELF EXHIBITS A COMPRESSION EFFECT 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 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).