

# Do individual differences in cognitive processes link social media use and mental health?

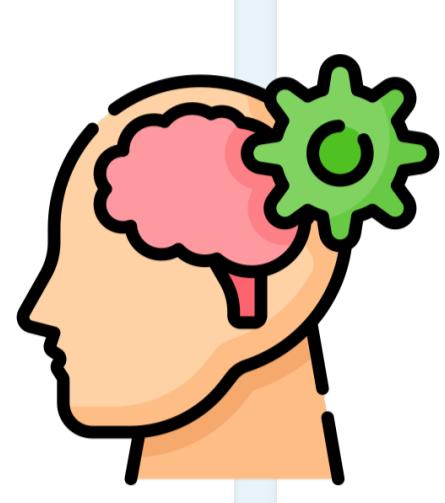
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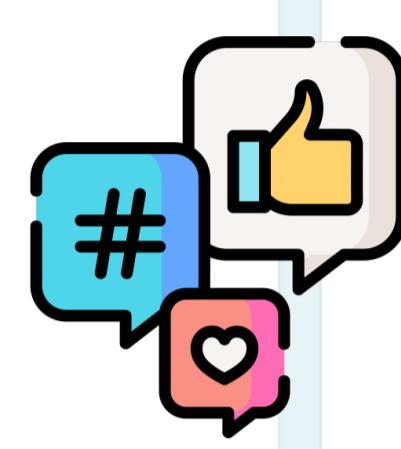
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## Introduction

- Literature on social media use and mental health is inconsistent<sup>1,2</sup>.
- Current literature lacks mechanistic understanding across platforms<sup>2</sup>.
- Attempts to understand heterogeneity mostly focused on macro-level demographic differences<sup>3</sup>.



- Cognition shapes our perception and engagement in social environments<sup>4</sup>.
- Individual differences in cognition may explain heterogeneous effects of social media use.



### Hypotheses:

- Cognitive differences (in e.g., impulsivity, inhibitory control, habitual tendencies) may shape the relationship between social media use and mental health.
- Cognitive factors may constitute factors of risk or resilience for the relationship between social media use and mental health across platforms.

## Secondary Dataset

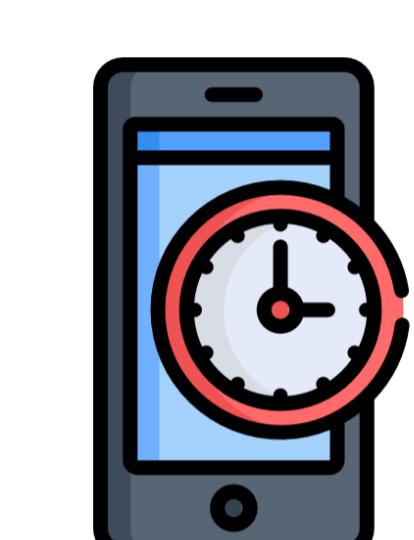
### LCID (Leiden Consortium on Individual Development)

= 511

= 7



- Time on social media spent posting & scrolling
- Mental health and wellbeing questionnaires
- Monetary delay discounting task



Would you rather have:

\$2 now OR \$10 in 30 days

Would you rather have:

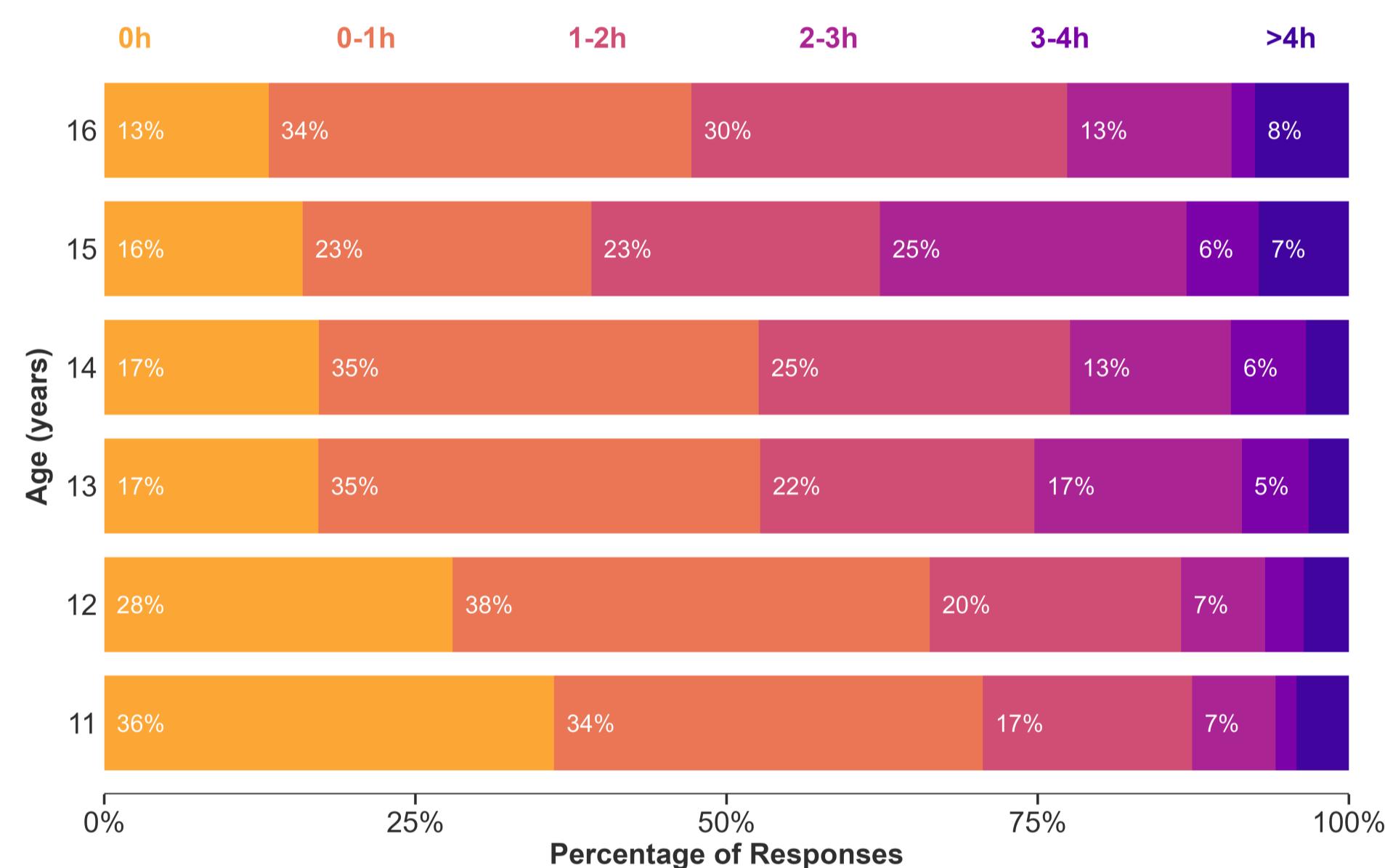
\$5 now OR \$10 in 2 days

Would you rather have:

\$5 now OR \$10 in 30 days

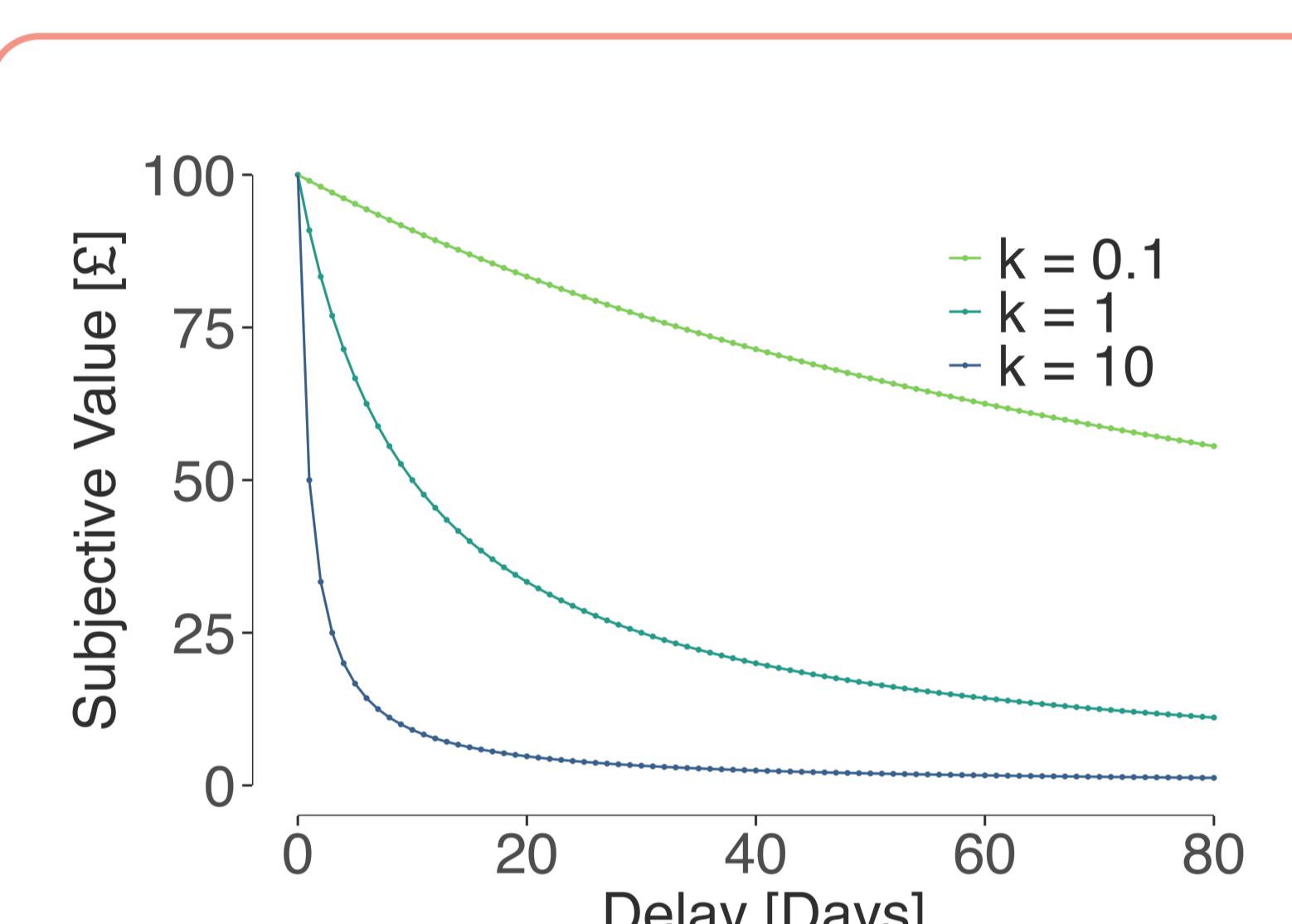


## Social Media Use

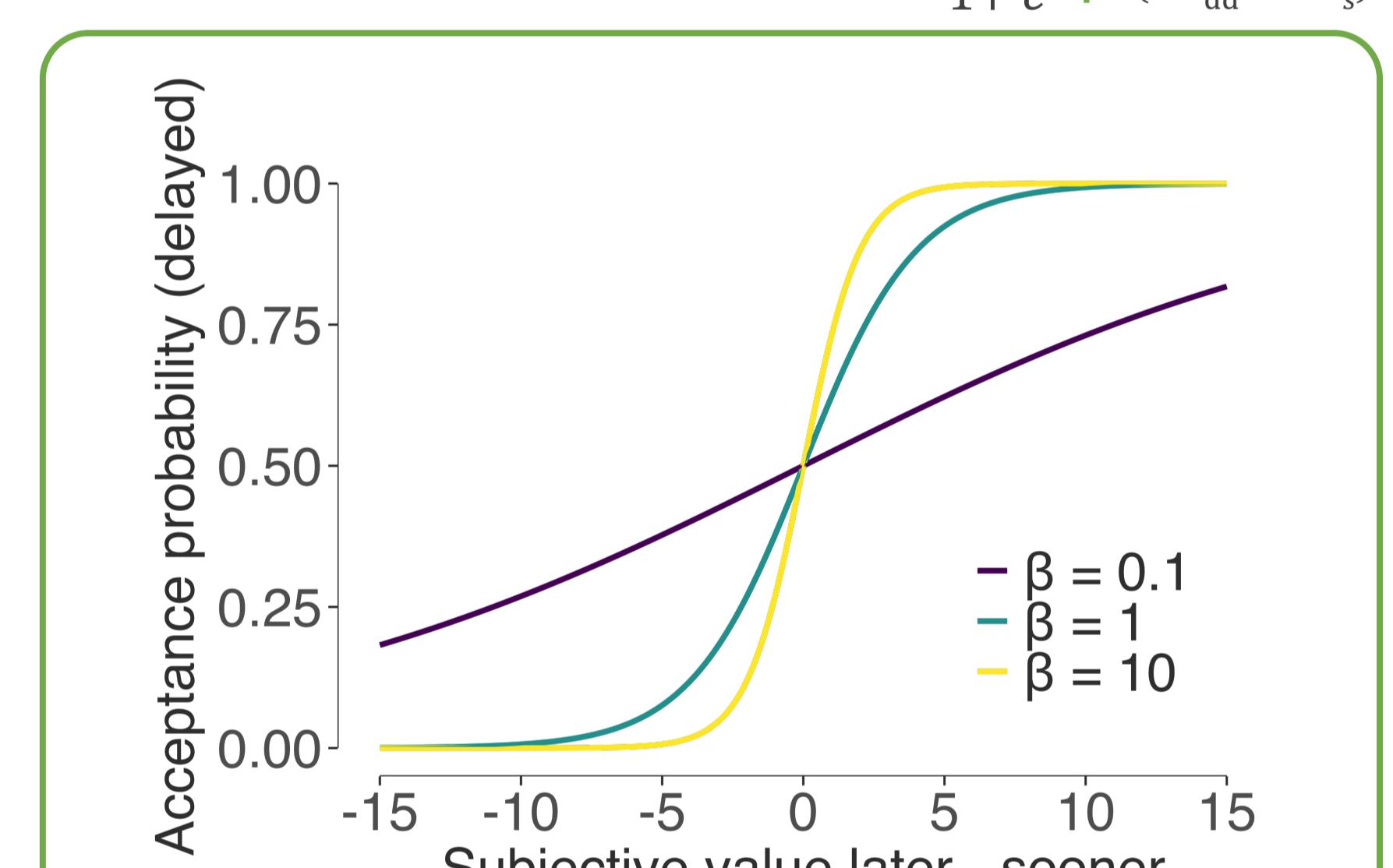


## Computational Model of Monetary Delay Discounting

Subjective value function:  $SV = R / (1 + \kappa \cdot \text{delay})$

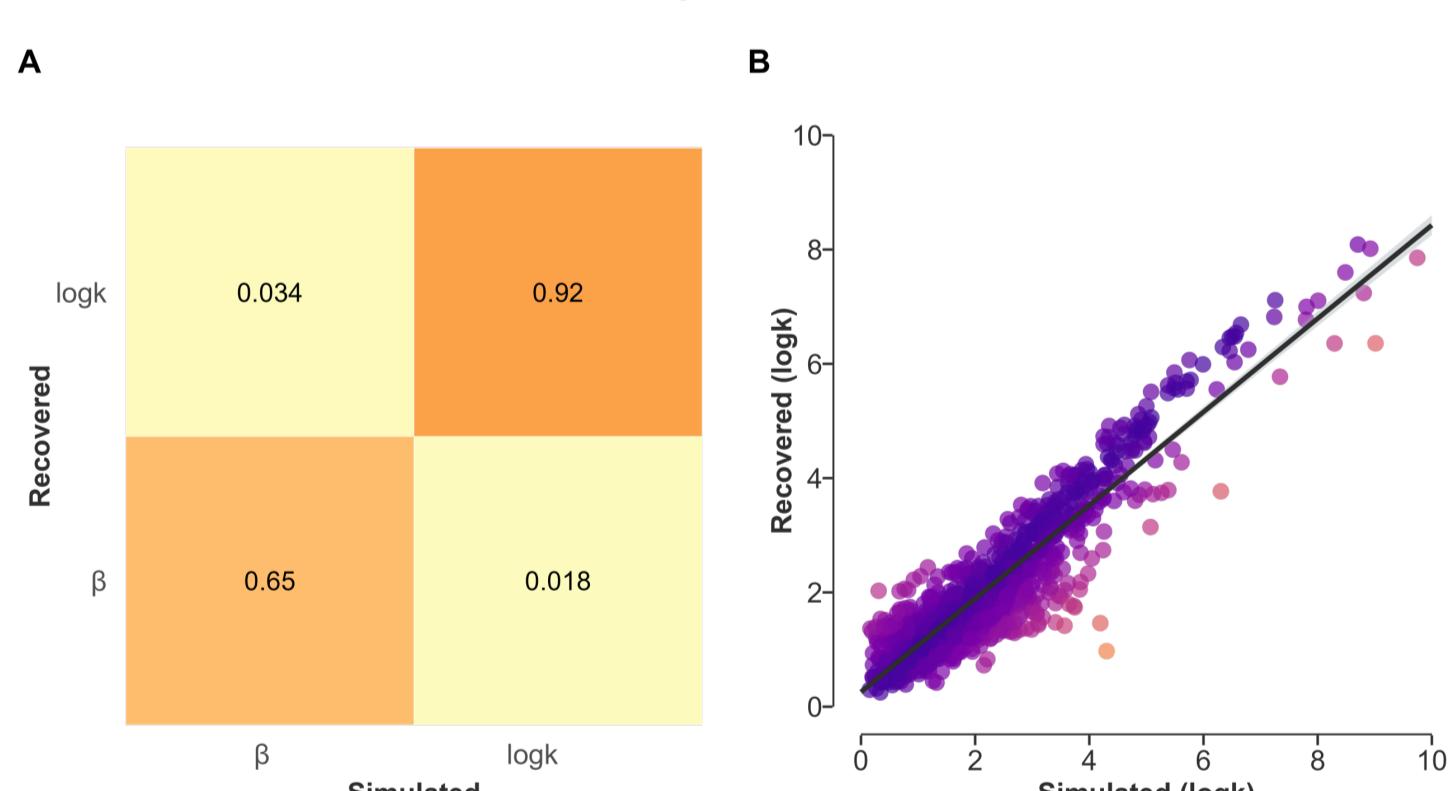


Softmax function:  $p(\text{accept}) = \frac{e^{SV_{\text{dd}} - SV_s}}{1 + e^{-\beta * (SV_{\text{dd}} - SV_s)}}$

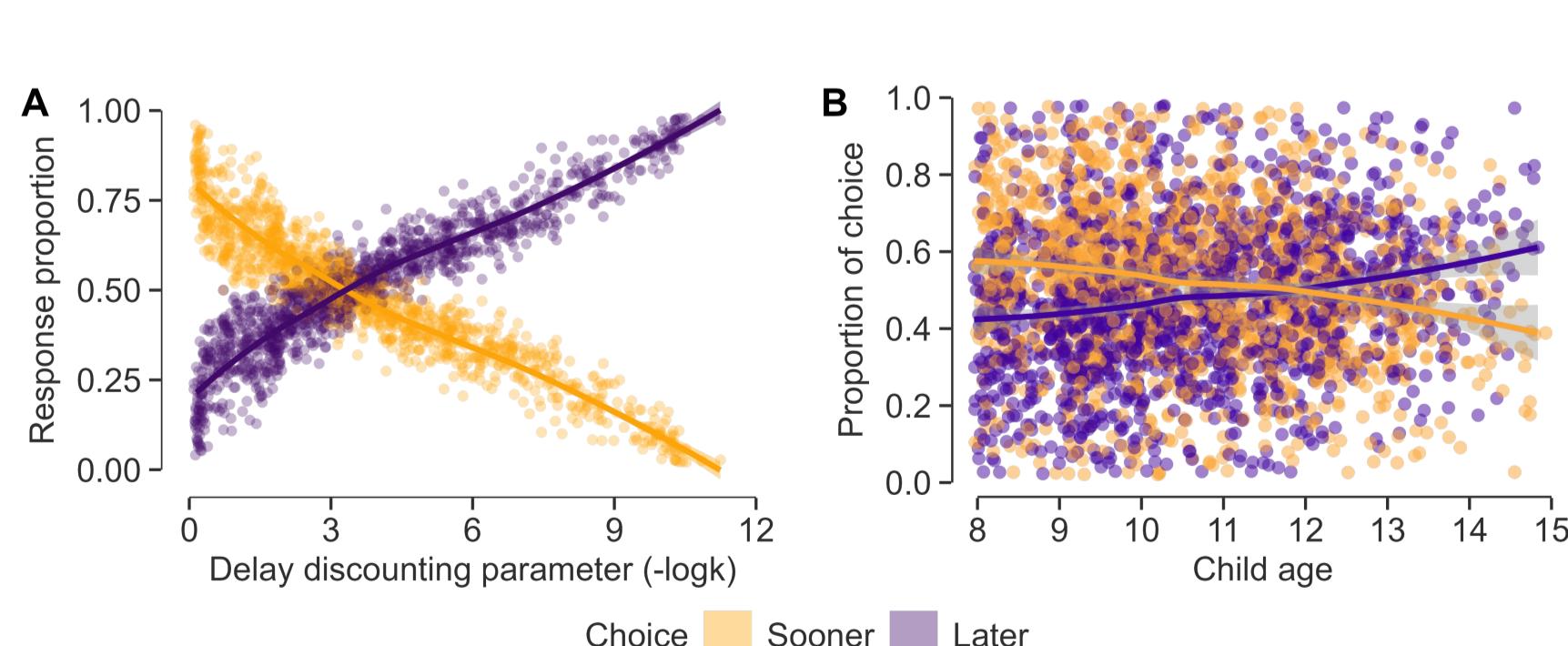


## Model Validation

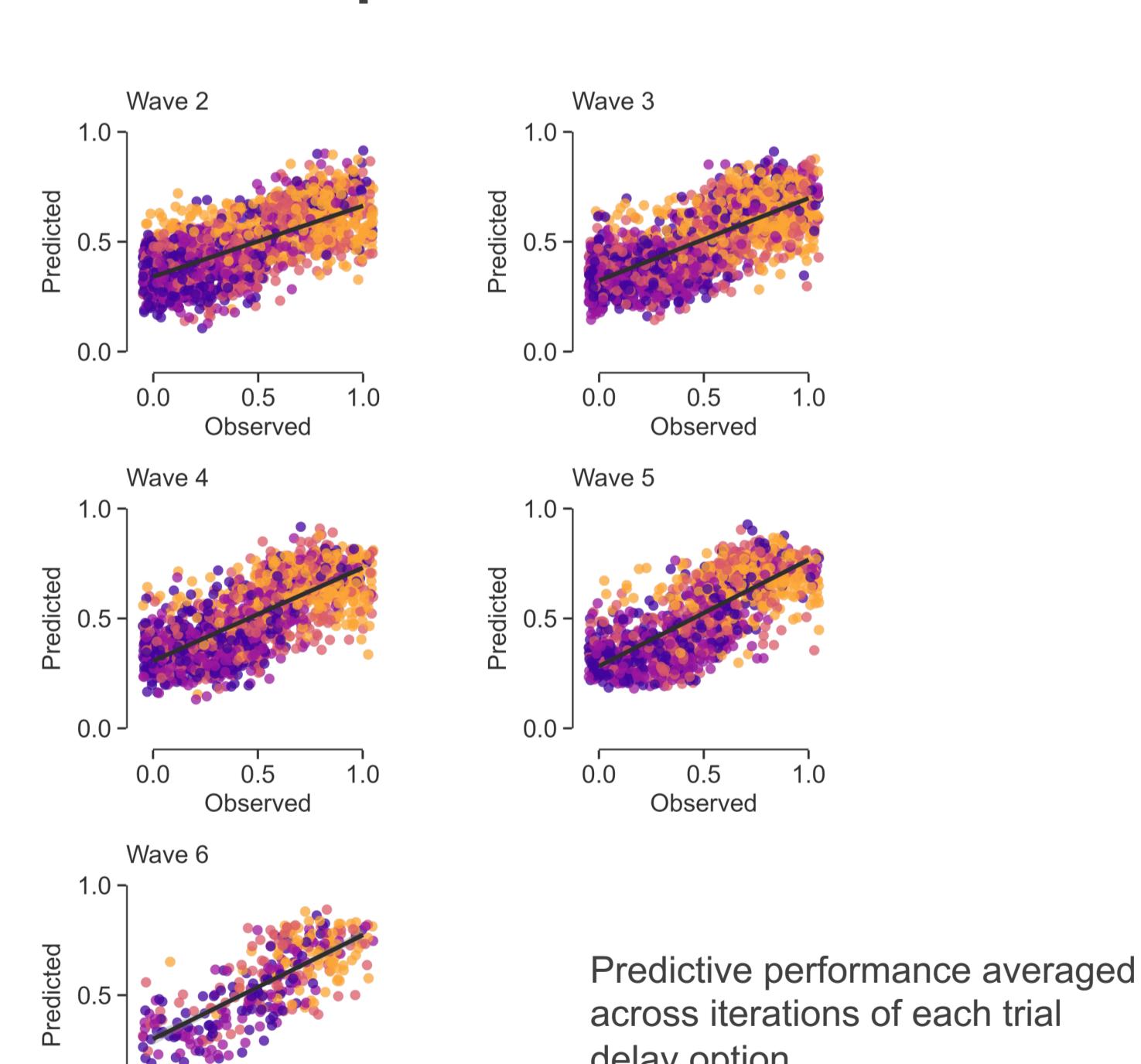
### Parameter recovery



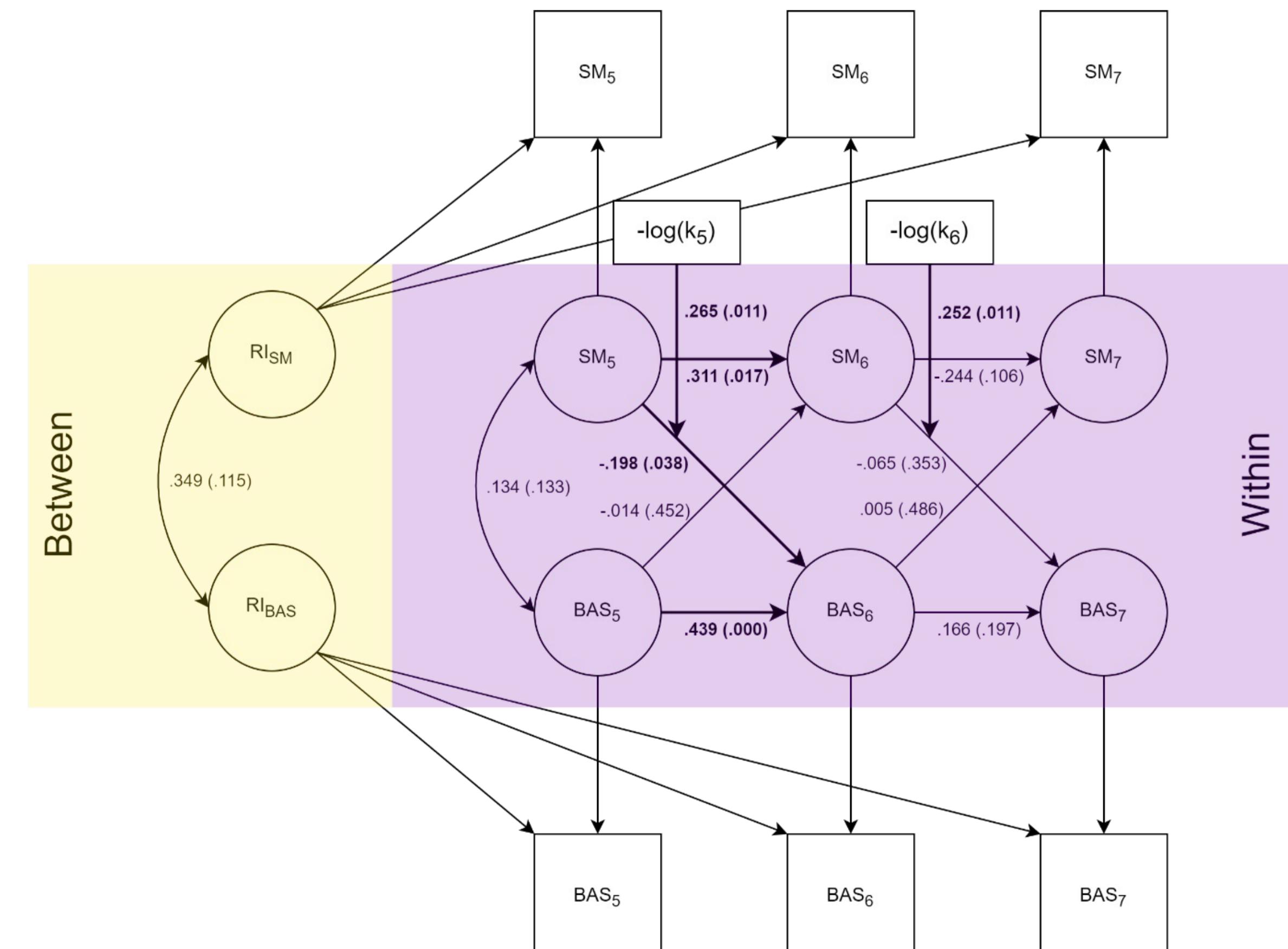
### Task behaviour



### Posterior predictive checks



## Longitudinal Modeling



## Discussion

- Steeper delay discounting was associated with greater reductions in behavioural activation following increases in social media use, an effect that was consistent across measurement occasions.
- Discounting does not moderate various other relationships between social media use and mental health indicators (behavioural inhibition, sensitivity, temperament, strength and difficulties).
- Cognitive processes may shape the effects of social media use on well-being and more nuanced data on social media use as well as more ecologically valid tasks may help better discern noise from signal, both in domain-general and specific contexts.

## Pre-reg



## References

- Nesi et al., Handbook of Adolescent Digital Media Use and Mental Health. Cambridge University Press (2022).
- Orben et al., Mechanisms linking social media use to adolescent mental health vulnerability. Nat Rev Psych (2024).
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- Allen et al., Associations Between Psychosocial Measures and Digital Media Use Among Transgender Youth: Cross-sectional Study. JMIR Ped & Par (2021).