What Makes Brains Different? Individual Differences Factors Explain Shared Activity Patterns During Message Processing

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Two People Can Have Very Different Reactions to the Same Message

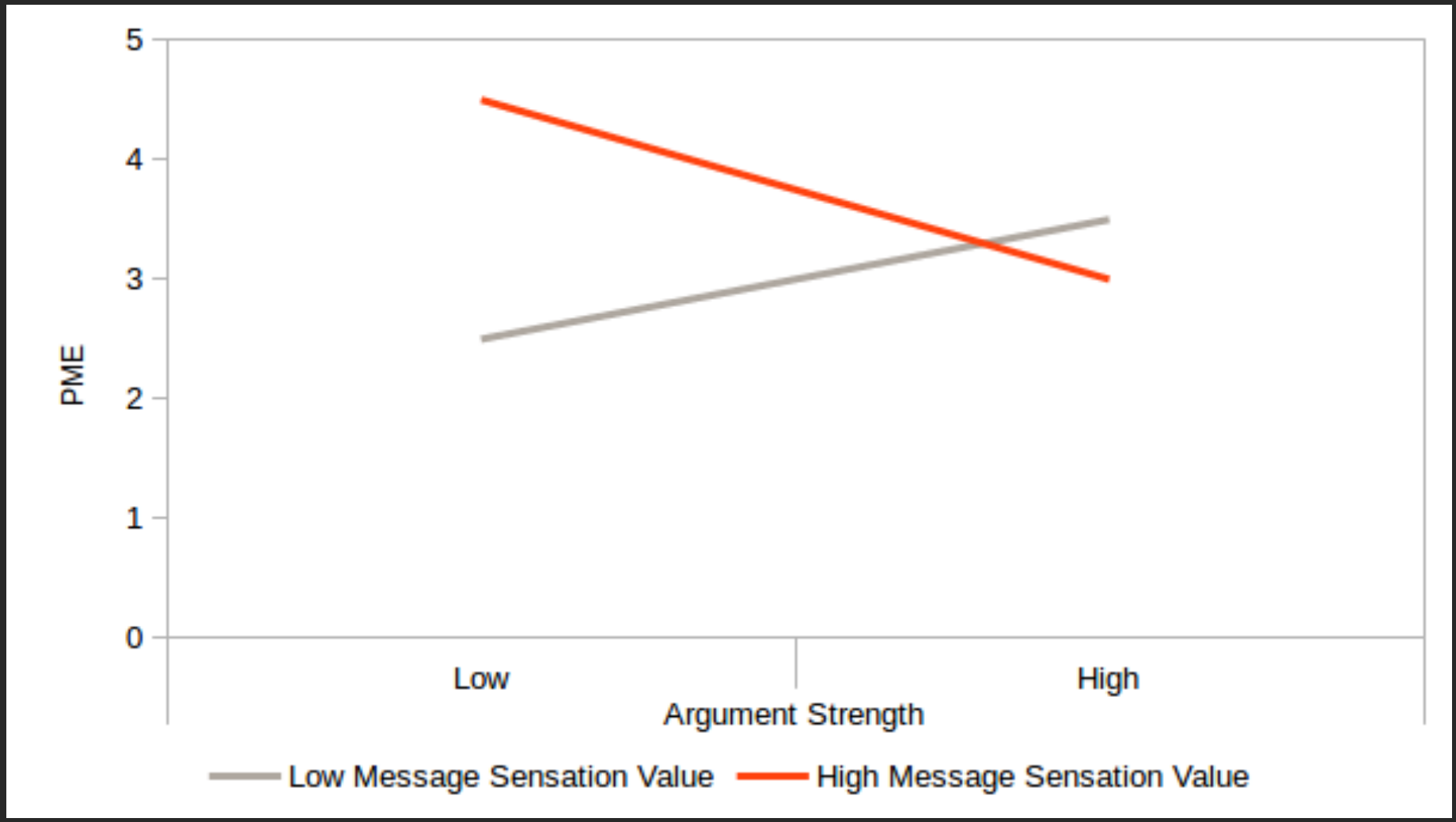
Factors That Shape Message Processing

Elaboration Likelihood Model (Petty & Cacioppo, 1986)

- Message Sensation Value (MSV)
- Argument Strength (AS)
- Individual Differences (e.g., issue involvement)

The MSVxAS interaction contributes to perceptions of message effectiveness (PME)

Weber et al., 2013, *Commun Monogr*



Weber et al., 2013, *Commun Monogr*

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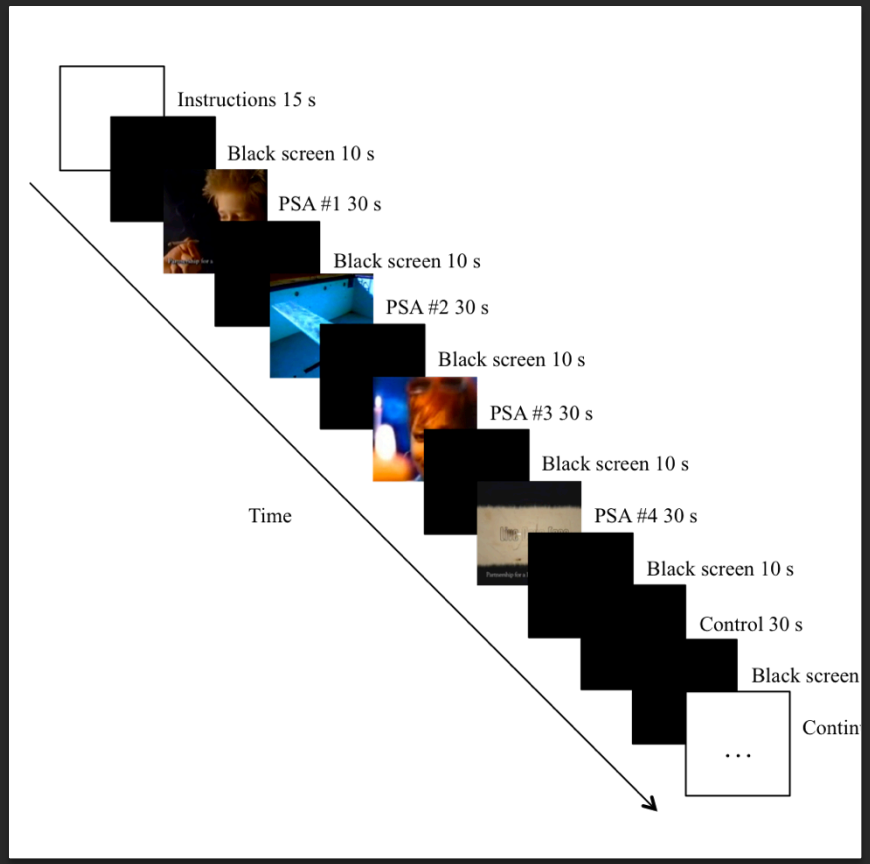
- 32 PSAs; crossed in terms of message sensation value (MSV) and argument strength (AS)
- 28 participants; half high-risk, half low-risk
- Focused on MSV×AS interaction across groups

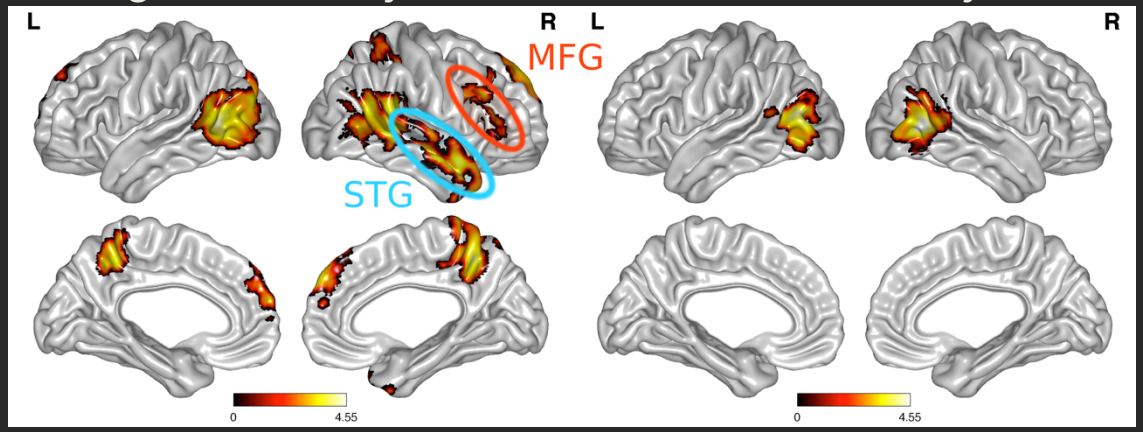


Weber et al., 2014, *Commun Monogr*

- Differences between groups are observable in brain activity
  - Both in group-level maps (left) and OoS prediction accuracy (right)

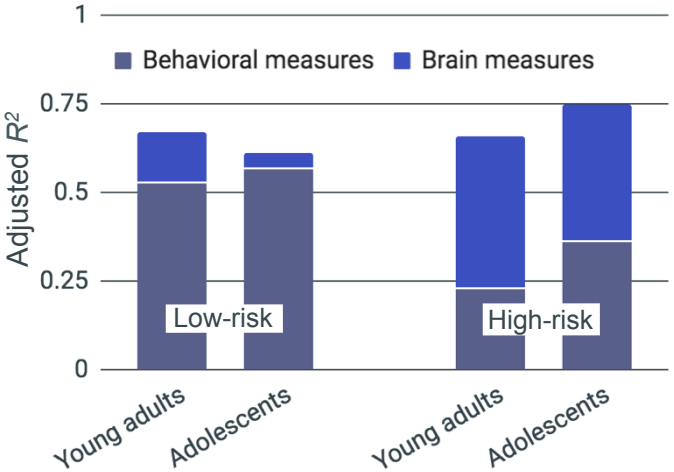
MSVxAS > Active Control

High-Risk Subjects | Low-Risk Subjects



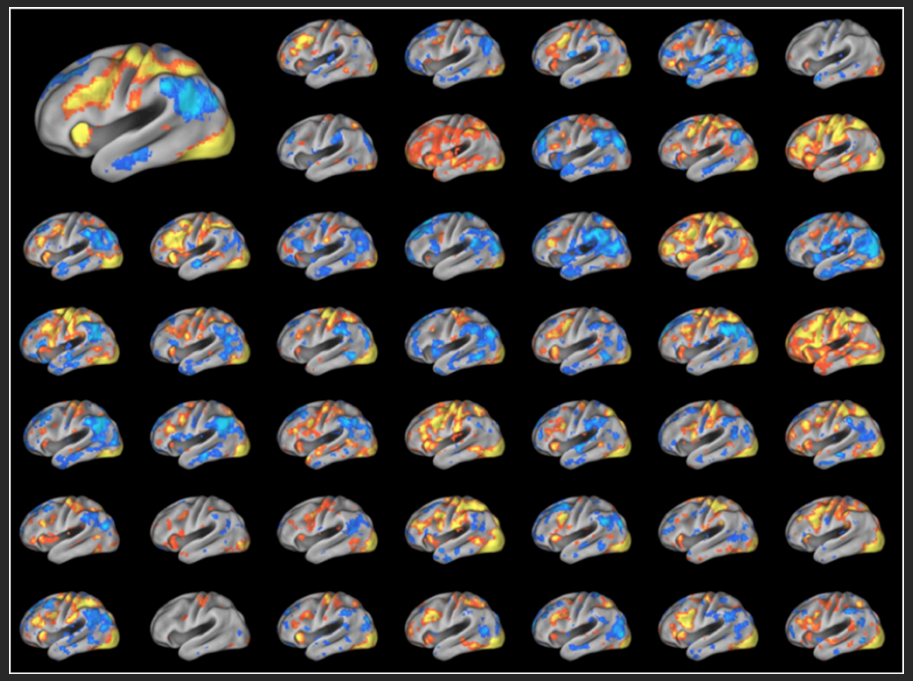
Cluster corrected, $z > 2.3$, $p < .05$

Prediction Accuracy



Miller et al., 2012, *NeuroImage*

- Individual differences in brain activity are widespread
  - Differences are not random, but can be explained by, e.g., demographics, states, traits, or behavior
- Analyzed via spatial similarity analysis



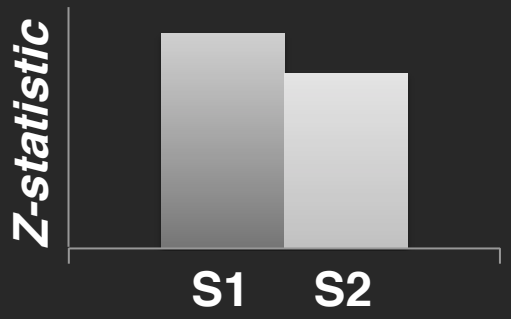
Dependent Variable

Make ROIs

- A Priori
- Exploratory
- Confirmatory

Extract Each S's MSVxAS SPM

Calculate Euclidean Difference For Each Pair of Subjects For Each ROI



Independent Variables

Pairwise Similarities (Absolute value of the difference between values):

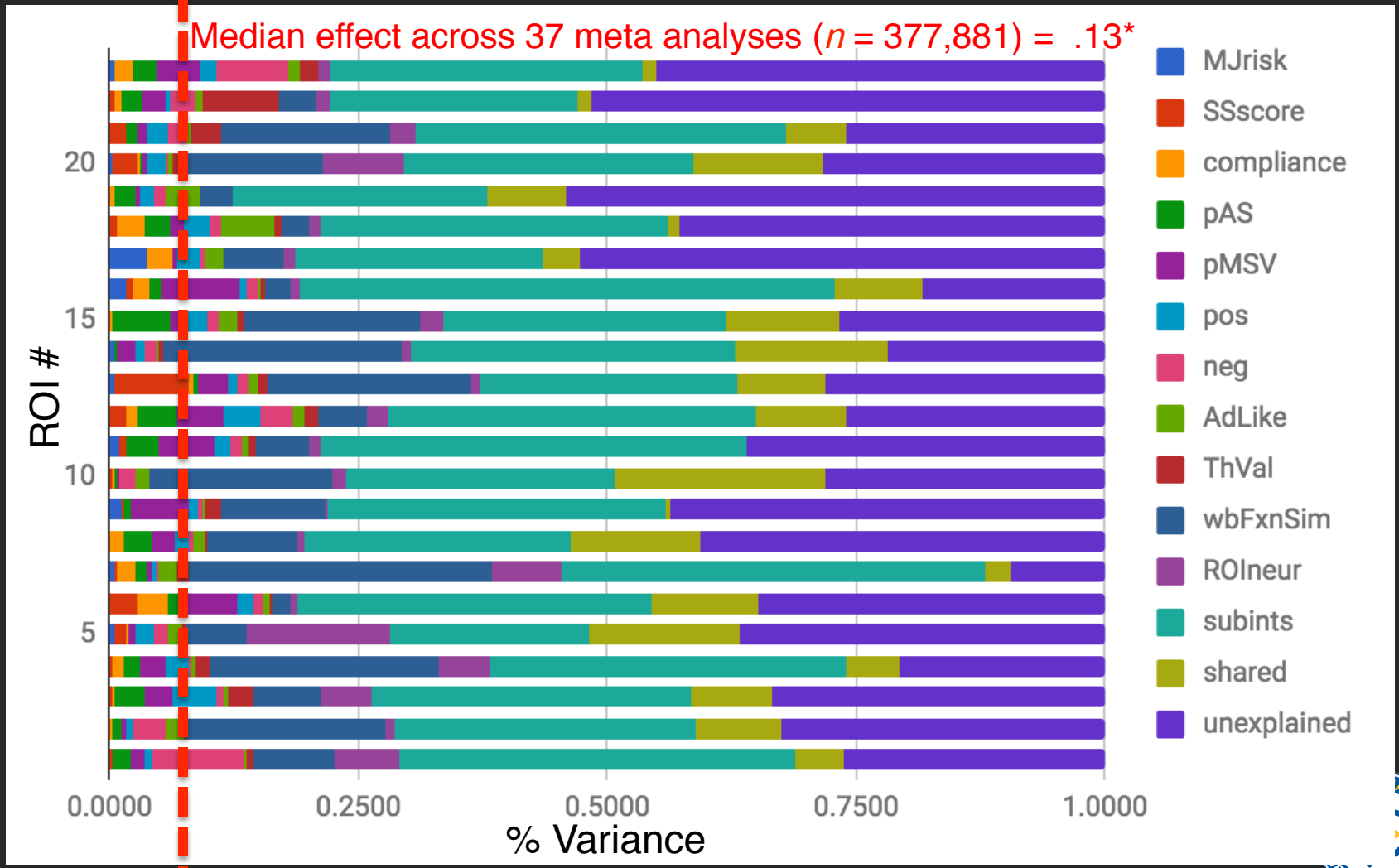
1. Neural Measures (e.g., structural/functional similarity)
2. Intrinsic Measures (e.g., sensation seeking, drug risk)
3. PSA Related Measures (e.g., thought valence, pMSV, pAS)

Procedure

Build a regression model for each ROI

Results reported as ΔR^2 in each ROI for each variable

Results: Turner et al., (in preparation)



*Raines, et al. Ann. Int. Commun. Assoc. (2018)

A Path Forward

- This looks like signal
- Explanation for inconsistent activations across the persuasion network
- May assist in increasing brain as predictor accuracy
- Provides new avenues for message tailoring

Contributors

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