

Validating and Evaluating the Disconnectome Symptom Discoverer

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Background

- Stroke is the third most common cause of death and disability worldwide
- 20% to 80% of stroke survivors suffer from post-stroke cognitive impairment (PSCI)
- Accurate prediction of PSCI could support more personalised treatment
- Prediction models must generalise to independent samples to be clinically useful

Aims

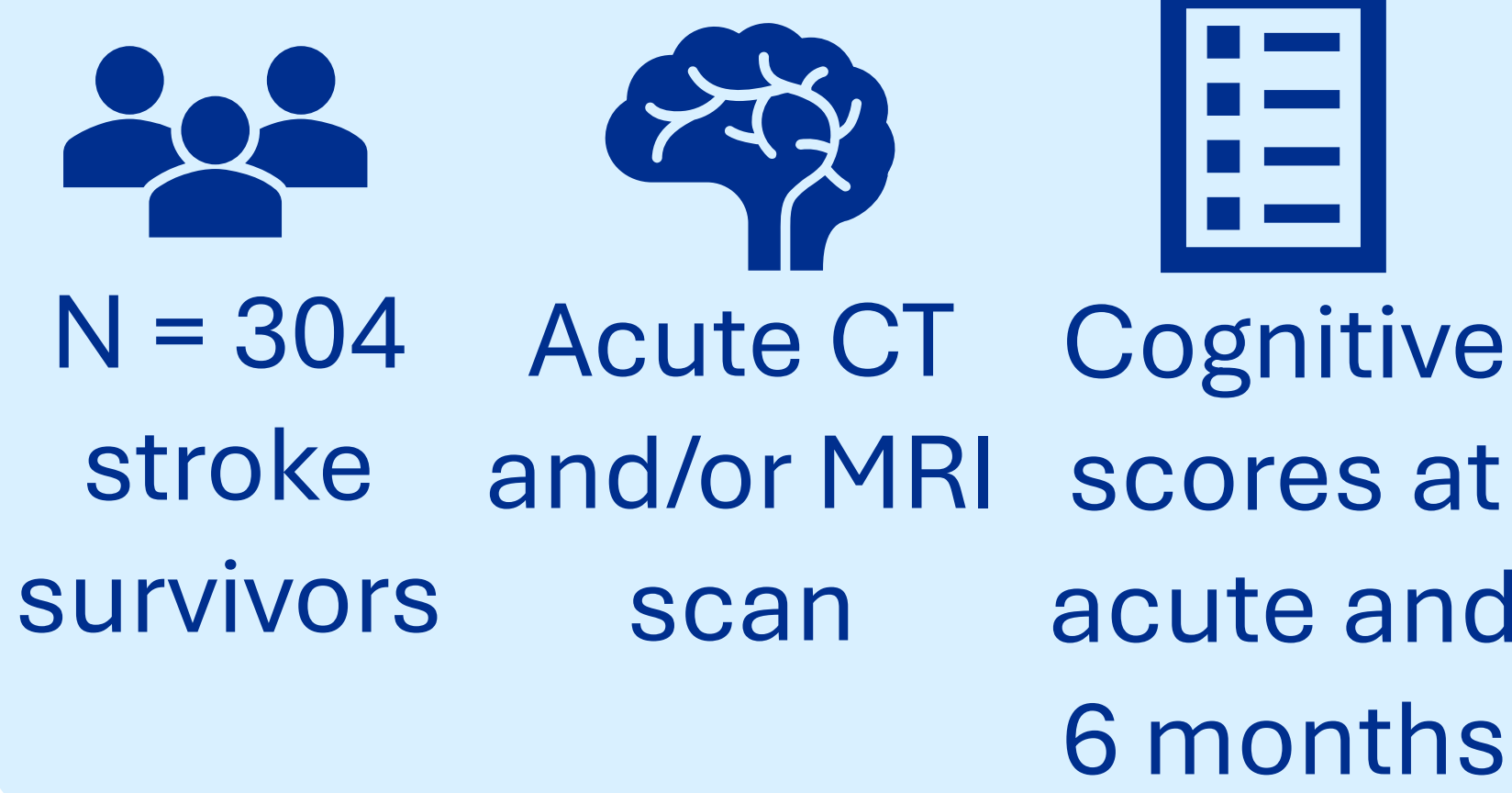
- Does the Disconnectome Symptom Discoverer (DSD) generalise to a clinically representative independent sample?
- Which factors may influence the predictive accuracy of the DSD?

Conclusion

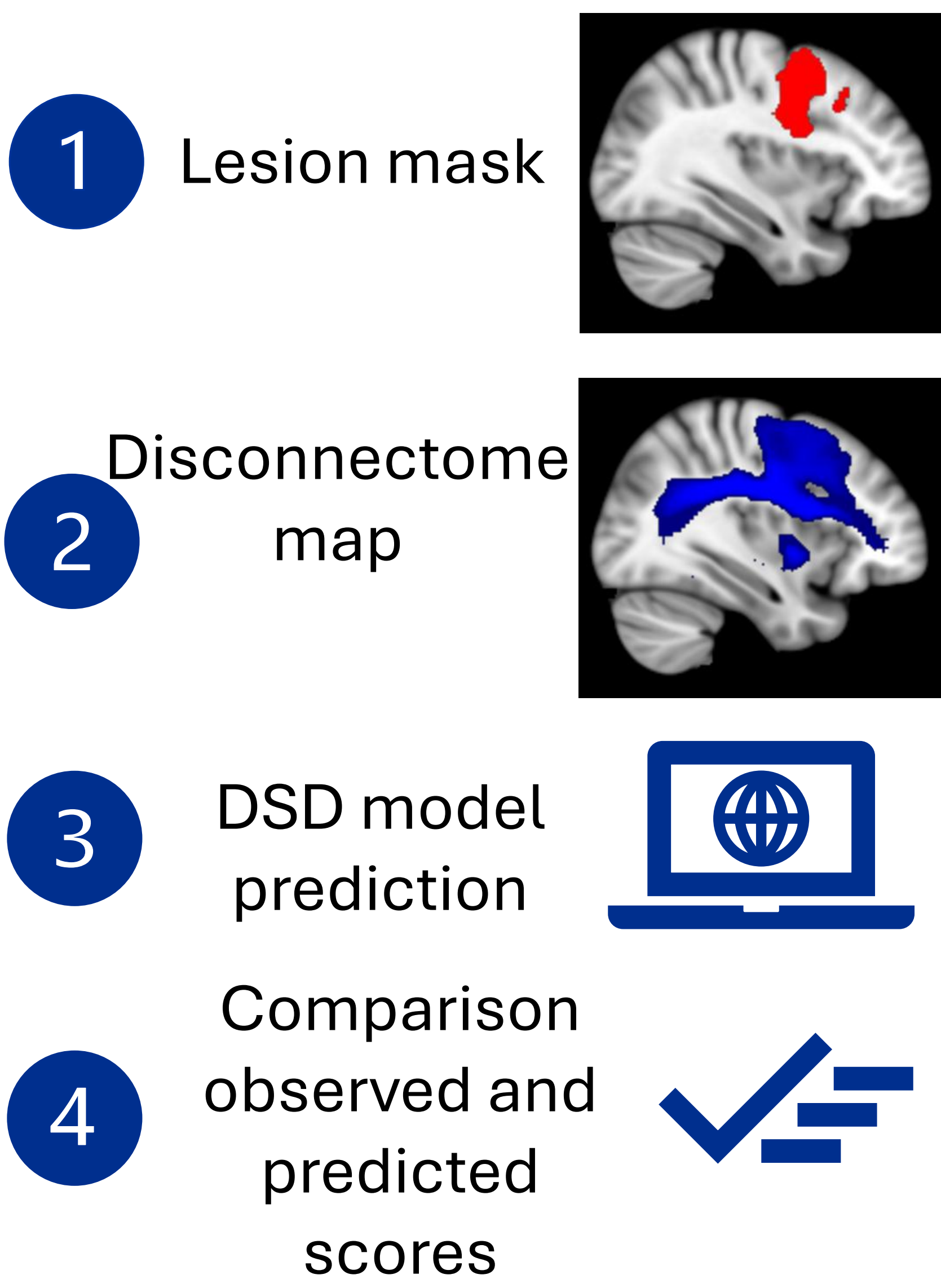
- Limited generalisability:
 - Only at acute timepoint
 - Lower accuracy
 - Limited clinical relevance
- Some modulating factors

Methods

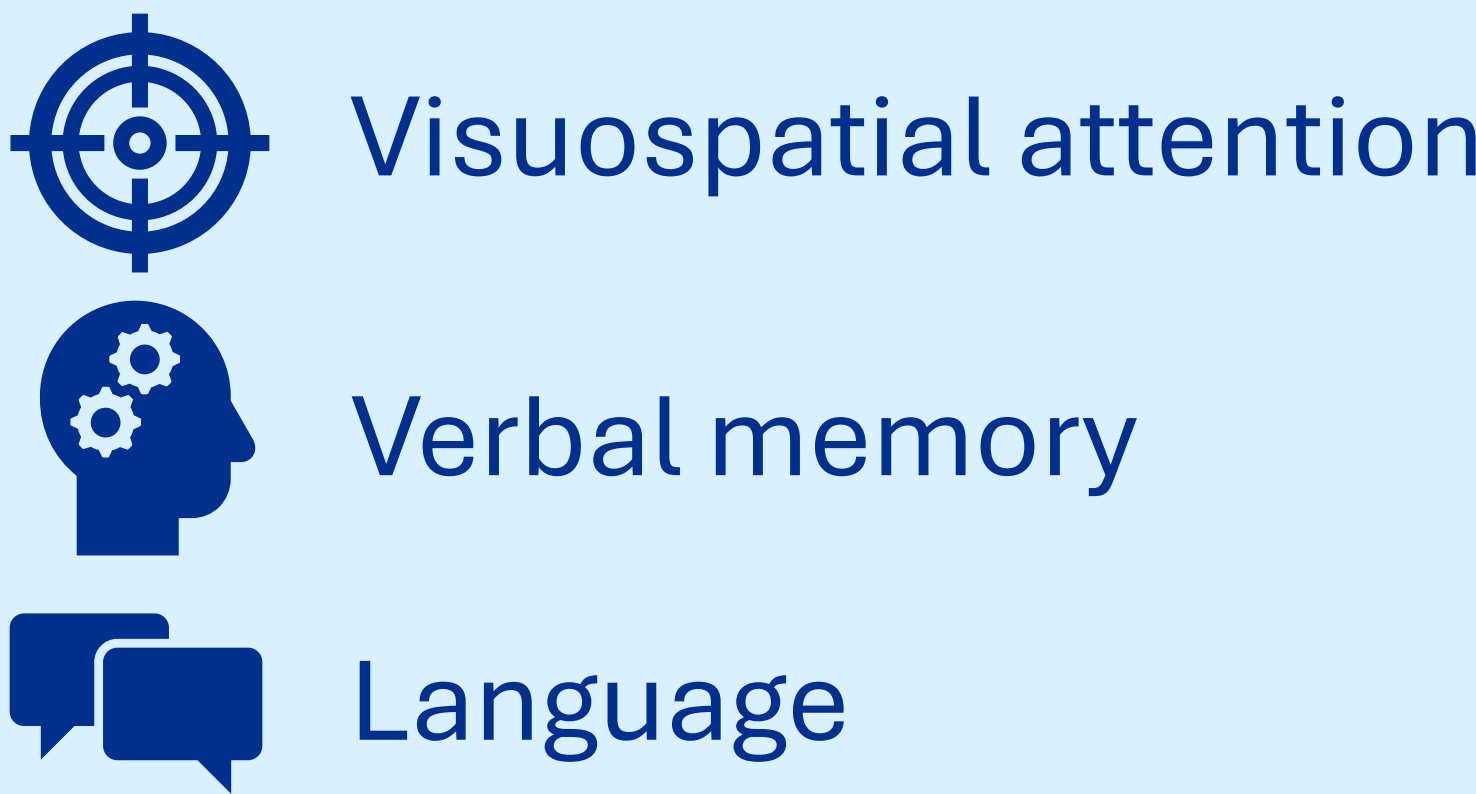
Sample: OCS-Recovery



Prediction Workflow

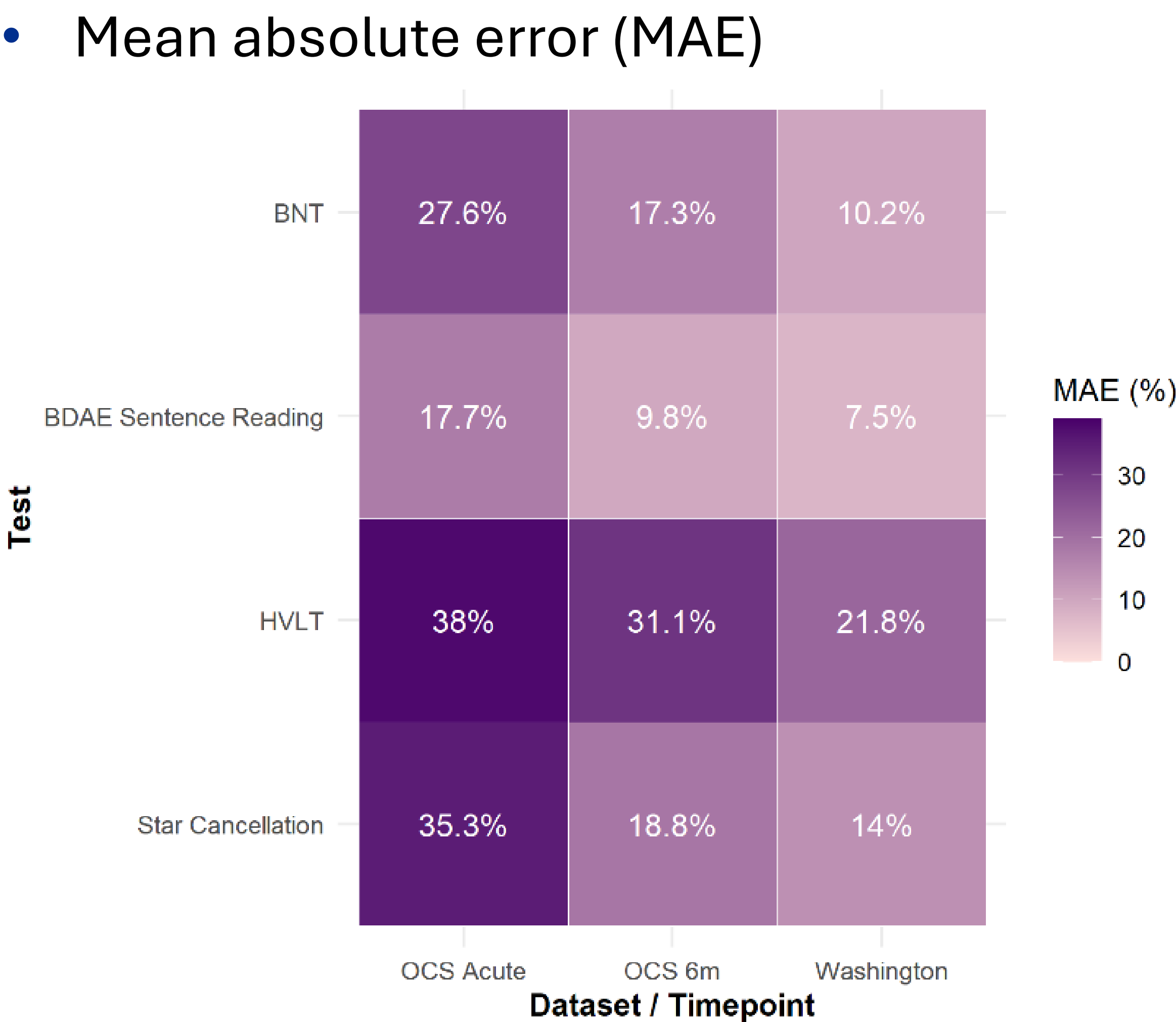


Cognitive Domains



Results

Individual-Level Prediction Accuracy



Relative Prediction Accuracy

- Pearson correlations between observed and predicted scores

Test	OCS Acute	OCS 6m	Washi ngton	PLOR AS 1y	PLOR AS 5y
<i>Visuospatial attention</i>					
Star Cancellation	-0.08 (p = 0.17)	-0.05 (p = 0.36)	0.51 (p = 0.22)	—	—
<i>Verbal memory</i>					
HVLT	0.13 (p = 0.02)	0.07 (p = 0.20)	0.35 (p = 0.03)	—	—
<i>Language</i>					
BNT	0.26 (p < .001)	0.12 (p = 0.03)	0.35 (p = 0.02)	0.31 (p < 0.001)	0.00 (p = 0.86)
BDAE Sentence Reading	0.38 (p < .001)	0.14 (p = 0.01)	0.41 (p = 0.003)	—	—

- Fisher's r-to-z transformations:
 - Acute: no significant differences, but generally smaller magnitude
 - 6 months: all significantly lower, except BNT

Modulating Factors

- Linear mixed-effects regression (LMM):
 - Total prior atrophy, timepoint
- Sensitivity analysis: stroke recurrence

References

Hope et al. (2024). *Brain*.
<https://doi.org/10.1093/brain/awad352>
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