

DO ADULTS AND CHILDREN WITH DYSLEXIA ENJOY WORD LEARNING?

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MAQUETTE



LEARNING WORDS FROM CONTEXT

Old people sometimes lose their **cyche**

Anna had lots of beautiful long **cyche**

IN ADULTS, WORD LEARNING IS INTRINSICALLY REWARDING



Increased ratings of
pleasure

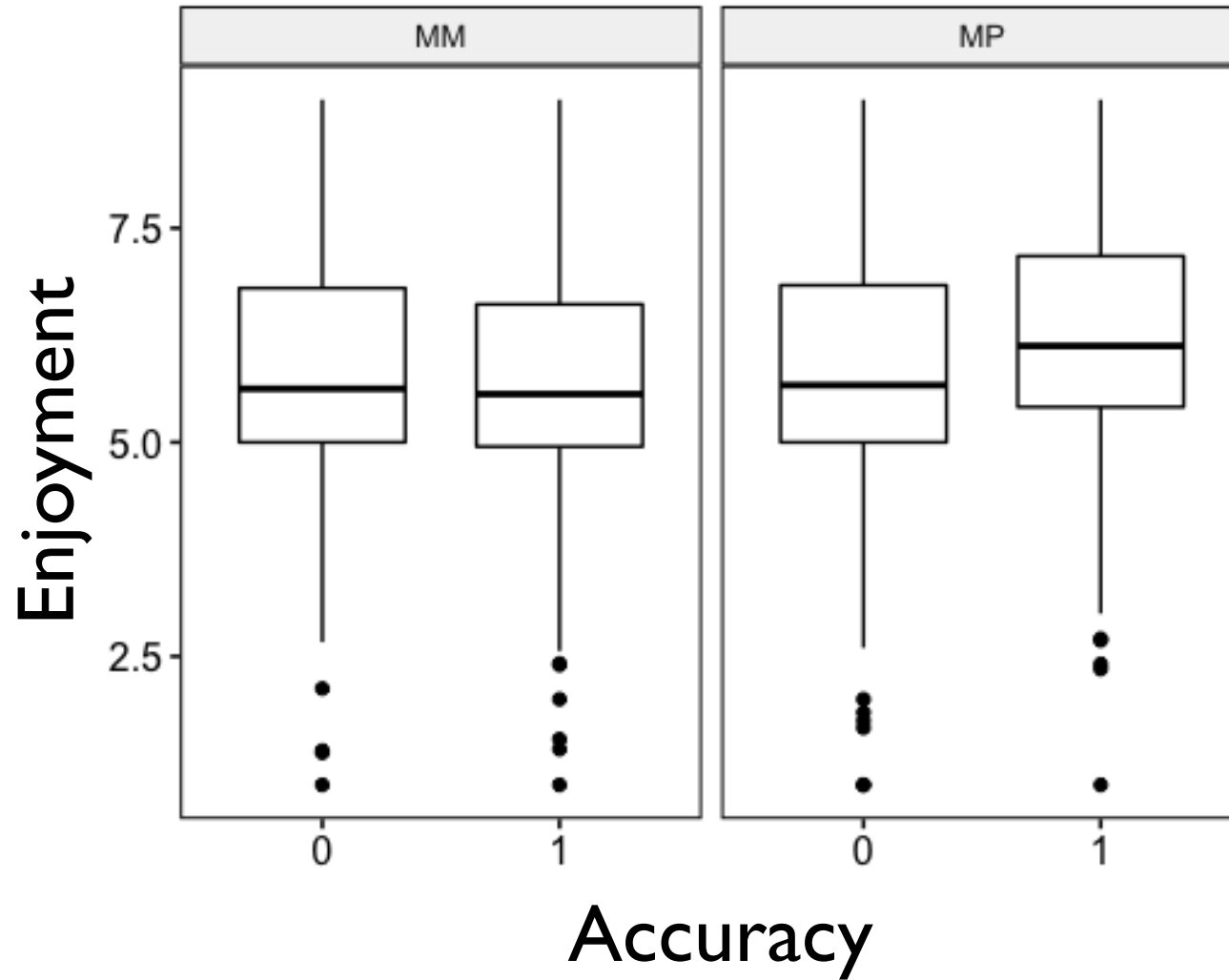


Brain activity in the
ventral striatum and
ventral tegmental area



Learning enhanced on
dopaminergic precursor

Type*Accuracy: $F(1,346) = 85.47, p < .001$

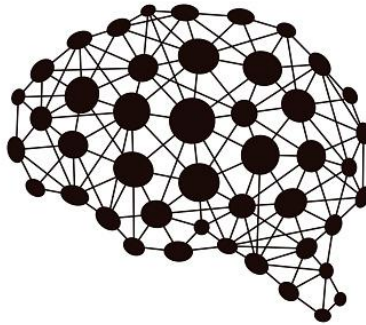


ADOLESCENTS
ALSO FIND
LEARNING NEW
WORDS
INTRINSICALLY
REWARDING

INTRINSIC REWARD FUELS **MEMORY** FOR WORDS



Remembered words have
higher pleasure ratings



Connectivity between
reward-memory areas of
the brain increased



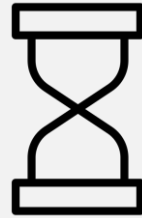
Learning enhanced on
dopaminergic precursor

DYSLEXIA AND WORD LEARNING

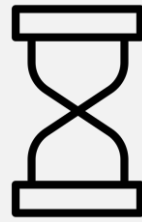
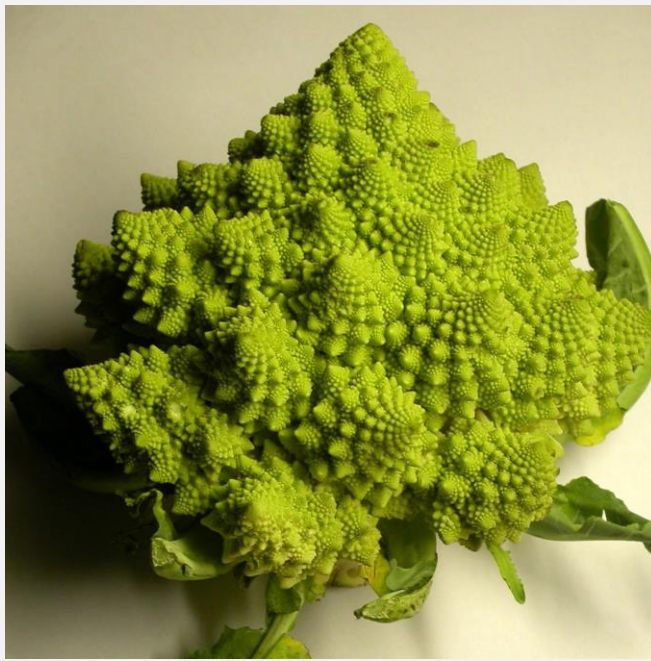
DYSLEXIA AND WORD LEARNING

- Children with reading and language disorders struggle with word learning – especially learning new phonological forms
- From about age 8, we primarily learn through reading
- **Do those with dyslexia, who struggle with reading, enjoy word learning?**

MAQUETTE

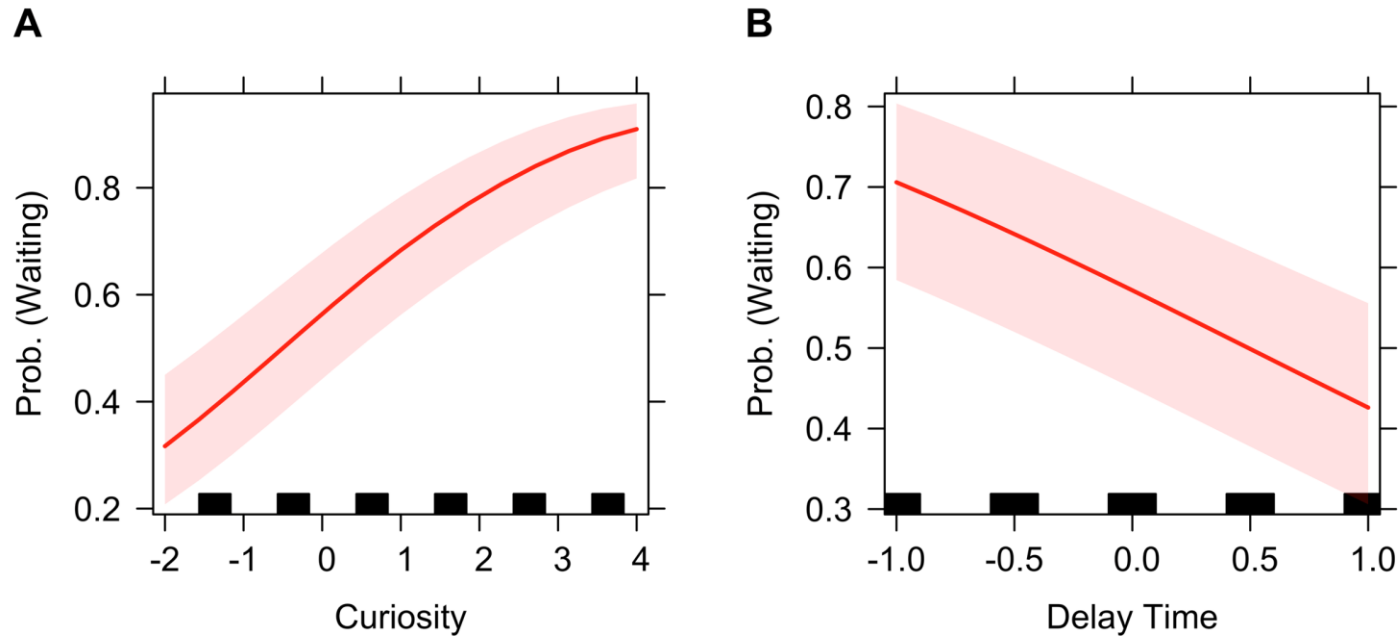


A small-scale model, built as an
example

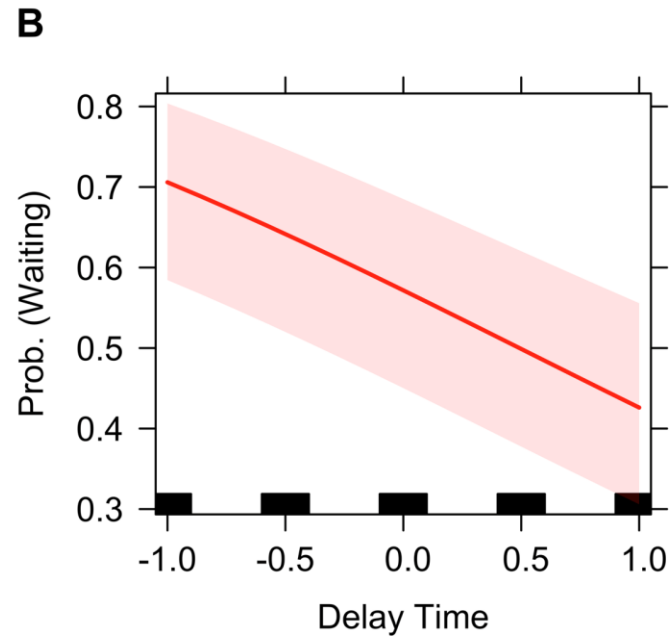


Romanesco broccoli

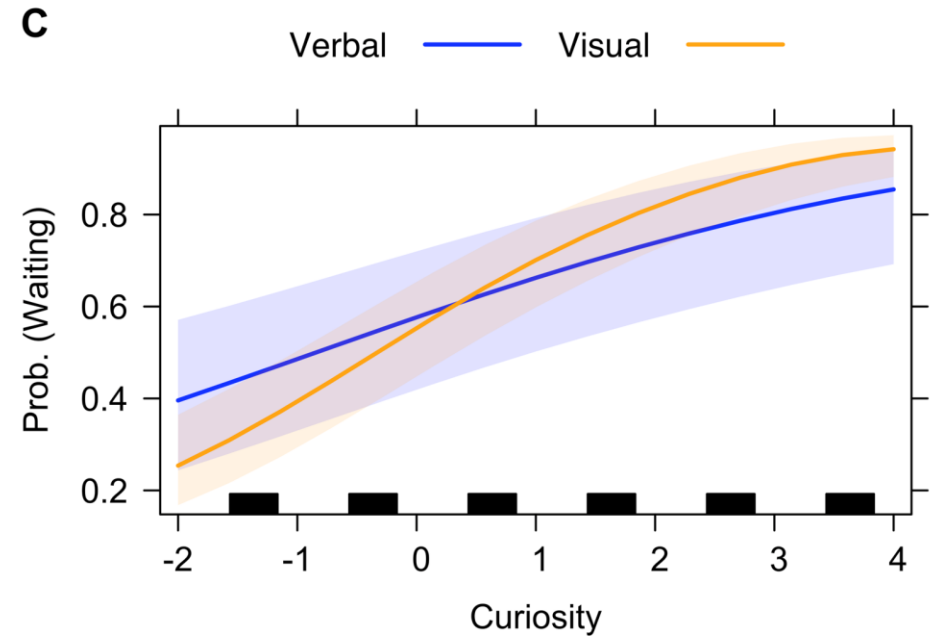
CURIOSITY PREDICTS WAITING



$p=.009$

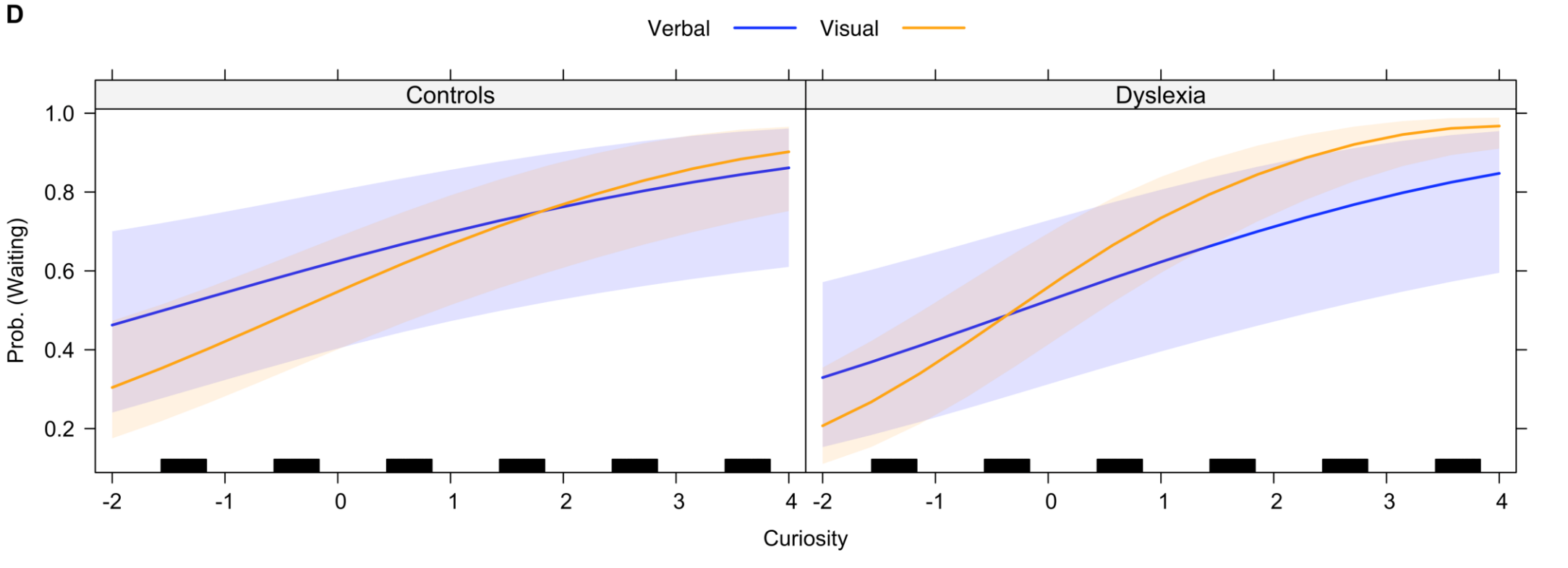


$p=.005$

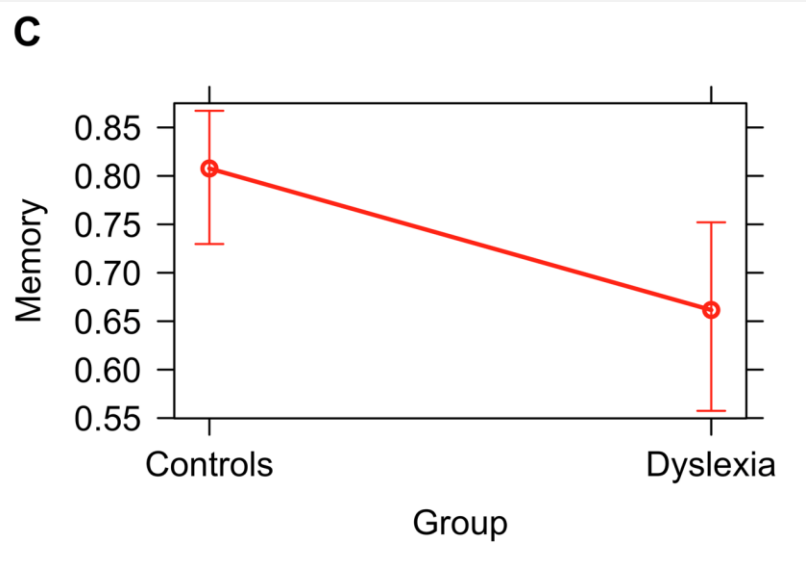


$p=.03$

GROUP DIFFERENCES

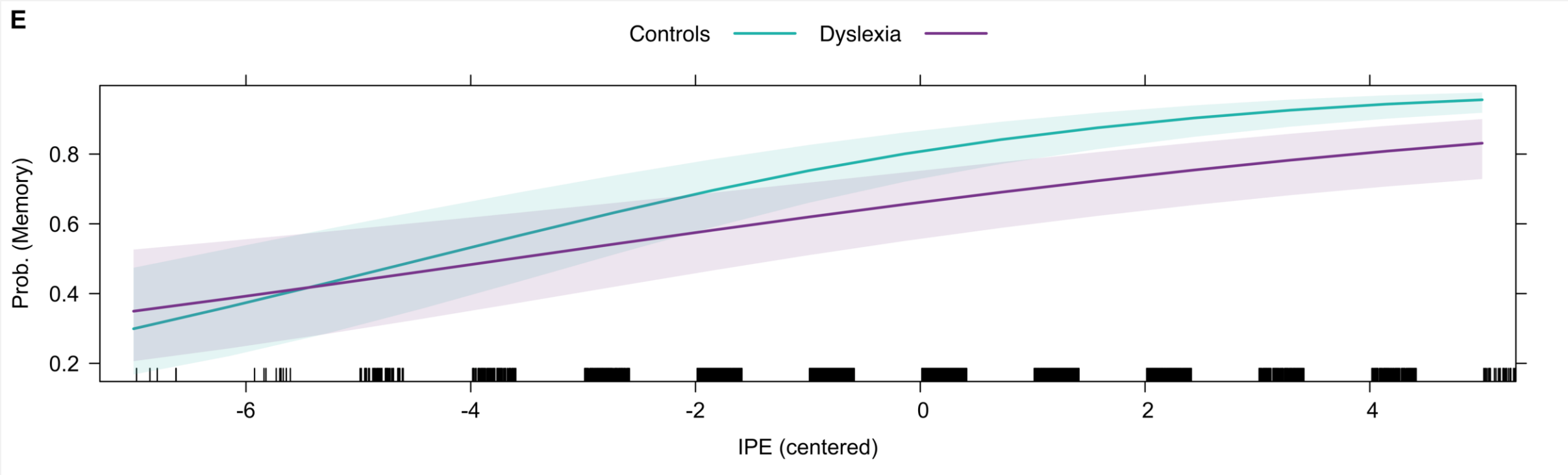


GROUP, CURIOSITY, AND INFORMATION PREDICTION ERROR PREDICT MEMORY



P=.008

IPE-MEMORY RELATIONSHIP IS WEAKER IN DYSLEXIC ADULTS



P=.007

Garvin & Krishnan (2021), QJEP

LEARNING WORDS FROM CONTEXT

Old people sometimes lose their **cyche**

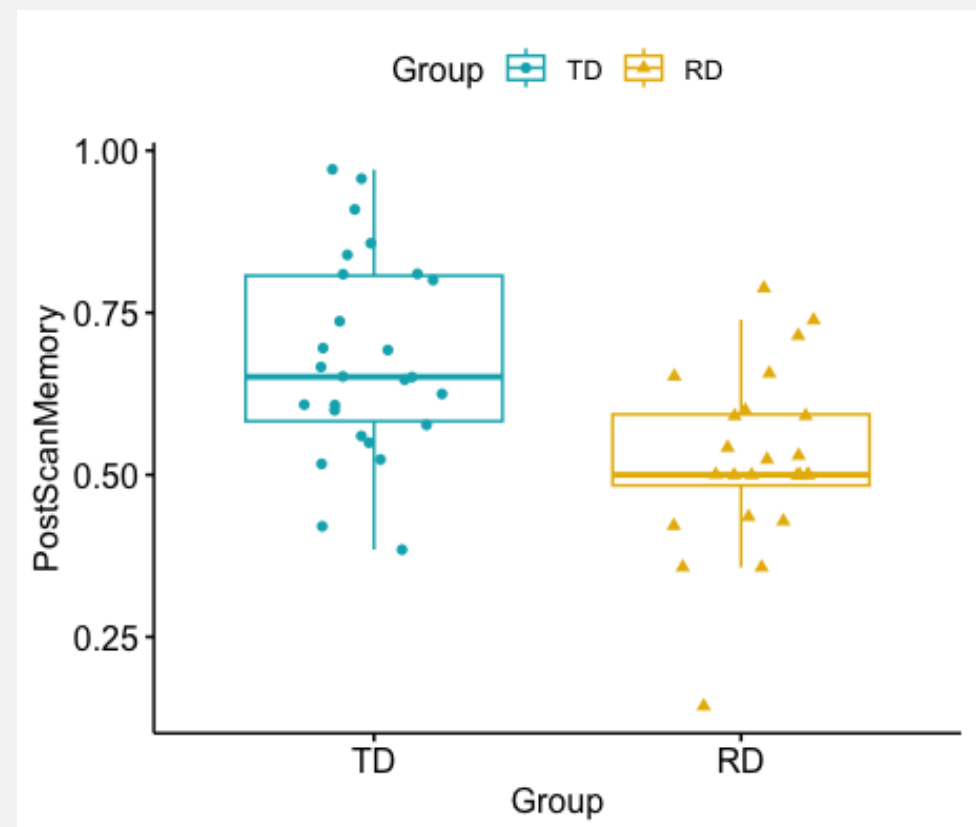
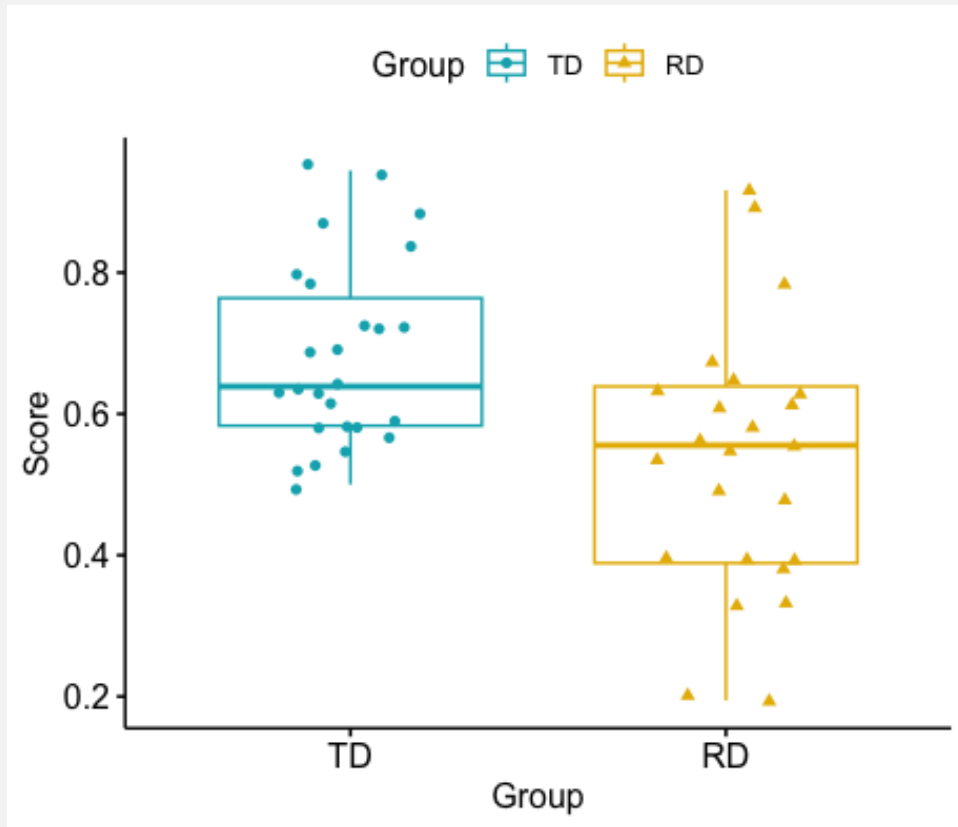
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MRI SCANNING

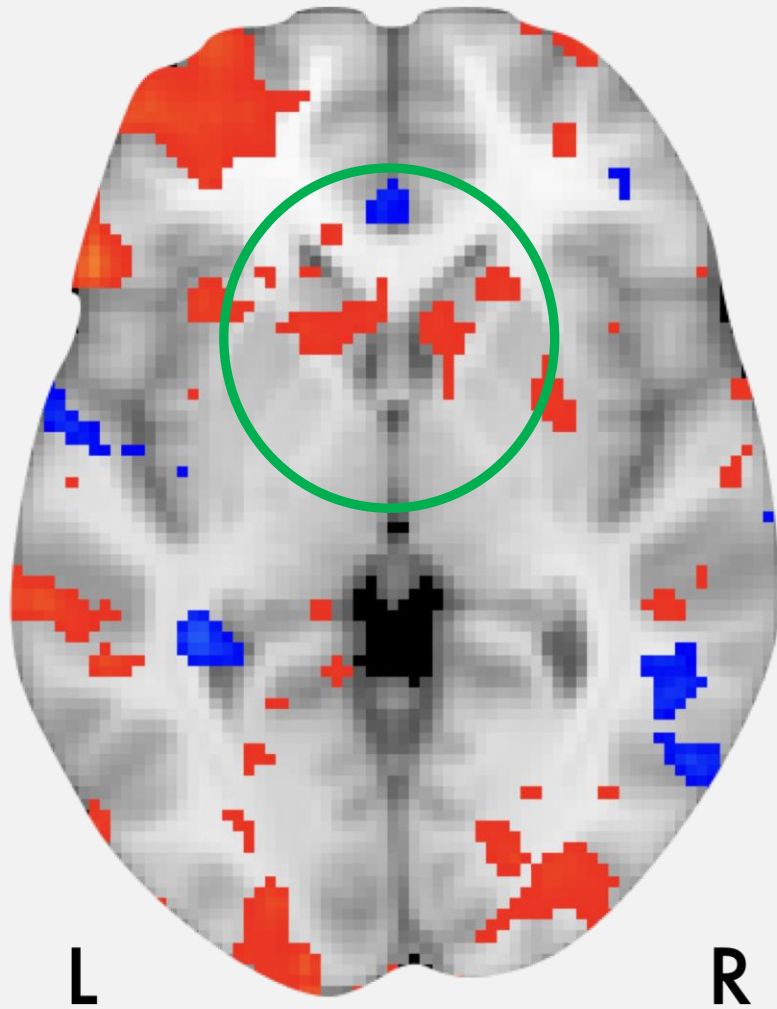
- Dyslexia N=25
- TD N=25



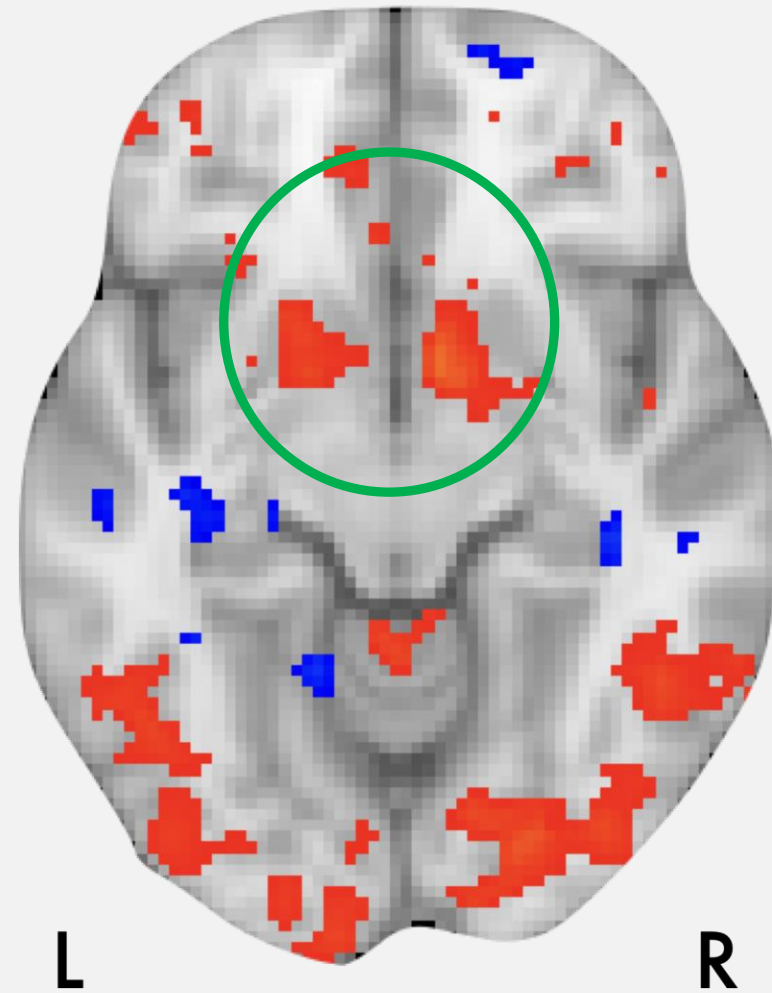
LEARNING IS REDUCED IN CHILDREN WITH DYSLEXIA



A. Word Learning



B. Monetary Gambling



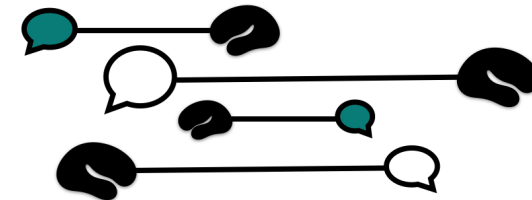
TAKEAWAYS

- Word learning is intrinsically rewarding
- People will take on costs to learn words
- The relationship between IPE and memory is altered in dyslexia
- We are now using neuroimaging to understand brain responses during learning

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N-CoDe Lab

Neuroscience of Communication Development



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