

DEPARTMENT OF EXPERIMENTAL PSYCHOLOGY



# Aphasia Research

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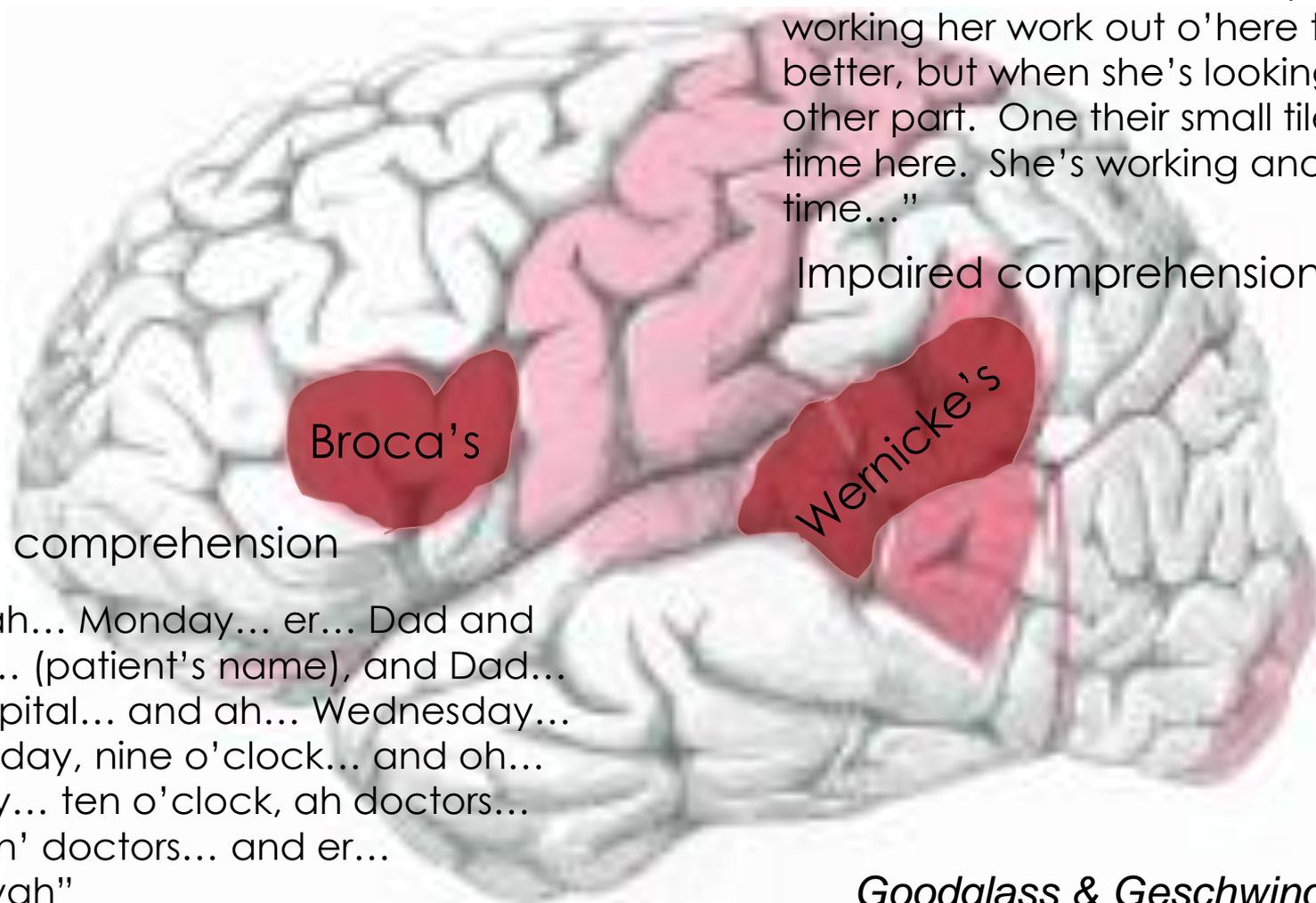
# Aphasia

- Communication disorder caused by brain damage or disease
- Can be sudden onset (e.g. after a stroke) or show gradual decline (e.g. degenerative disorder)
- Can affect speech, reading and writing & sign language

# Aphasia

- Affects about 350,000 people in the UK
- One in three people will have aphasia after a stroke
- Most common if the stroke has affected the left side of the brain
- Can affect children, young adults but most commonly older adults

# Types of aphasia



“Well this is... mother is away here working her work out o’here to get her better, but when she’s looking in the other part. One their small tile into her time here. She’s working another time...”

Impaired comprehension

Broca's

Wernicke's

Normal comprehension

“Yes... ah... Monday... er... Dad and Peter H... (patient's name), and Dad... er... hospital... and ah... Wednesday... Wednesday, nine o'clock... and oh... Thursday... ten o'clock, ah doctors... two... an' doctors... and er... teeth...yah”

*Goodglass & Geschwind, 1976*

# Recovery

- Recovery can take many years
- Mechanisms of recovery
  - Recovery of function – restitution
  - Reorganisation of function
  - Compensation (good and bad)
- Three phases
  - Acute – one to two weeks after stroke
  - Sub-acute – up to 4 months after stroke
  - Chronic – more than 4 months
- Recovery after acute phase due to neuroplasticity
  - Brain stimulation could enhance these neuroplastic effects, making learning more efficient or prolonging effects

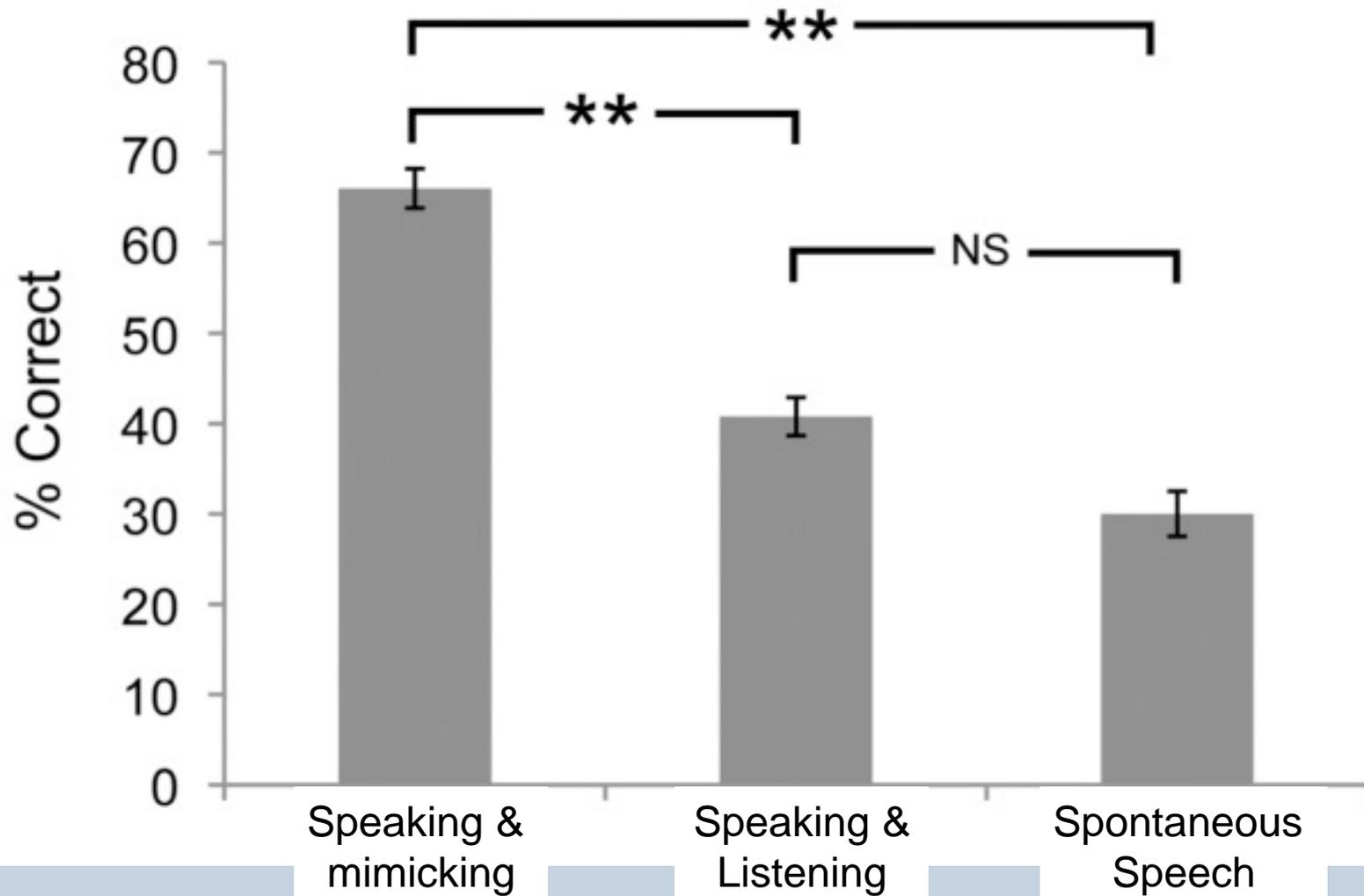


# Training sentence repetition

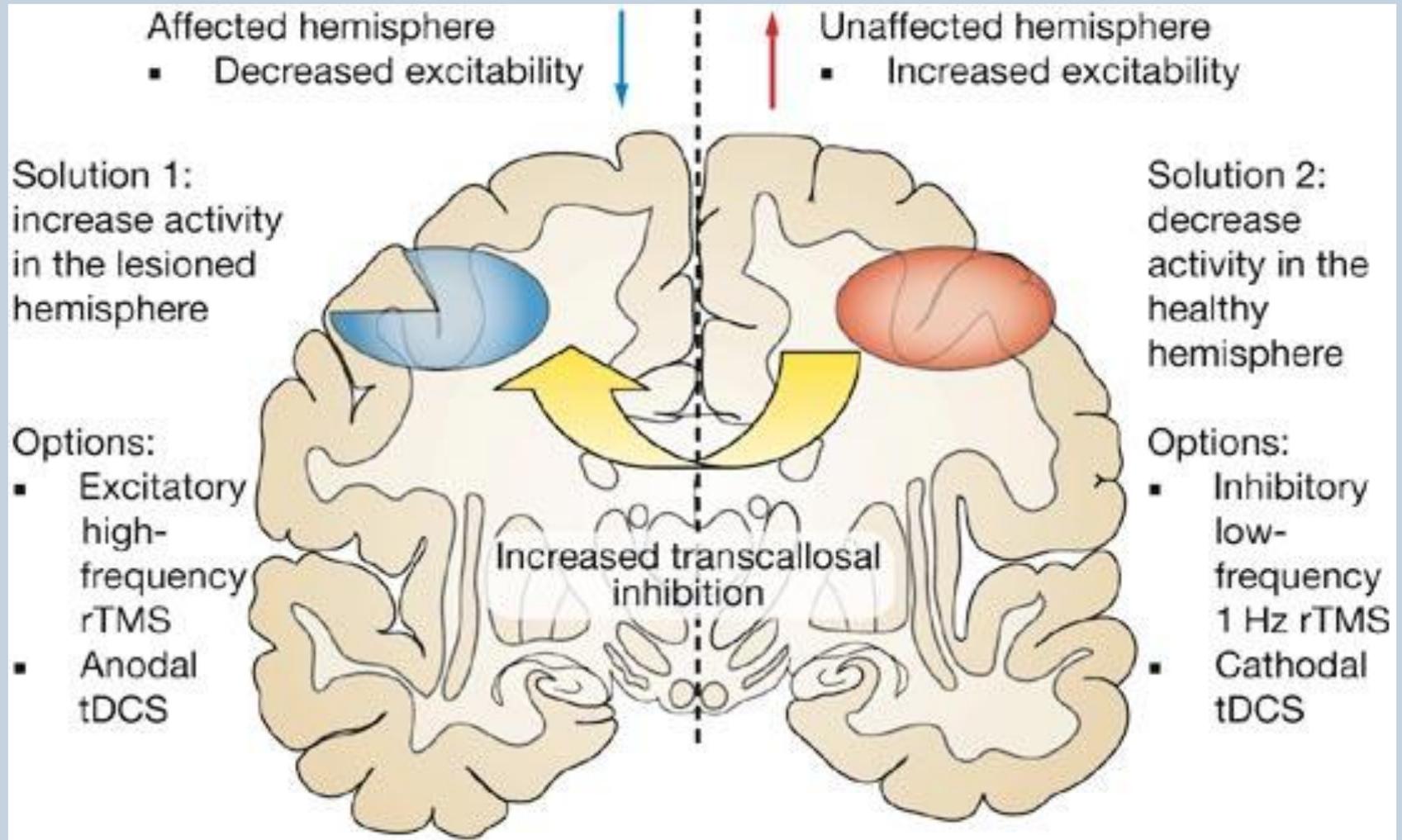


# Speaking in unison

Fridriksson et al., 2012



# Balancing hemispheres with brain stimulation



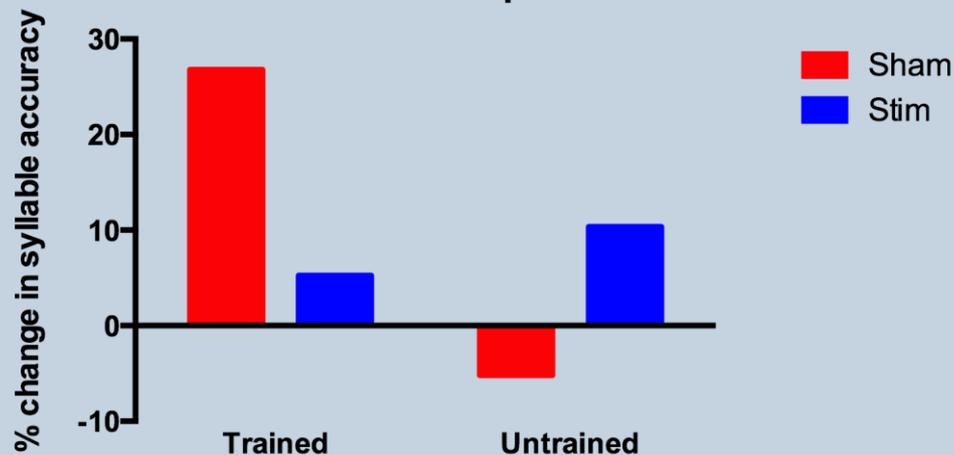
# Two patients

Listen.....Say

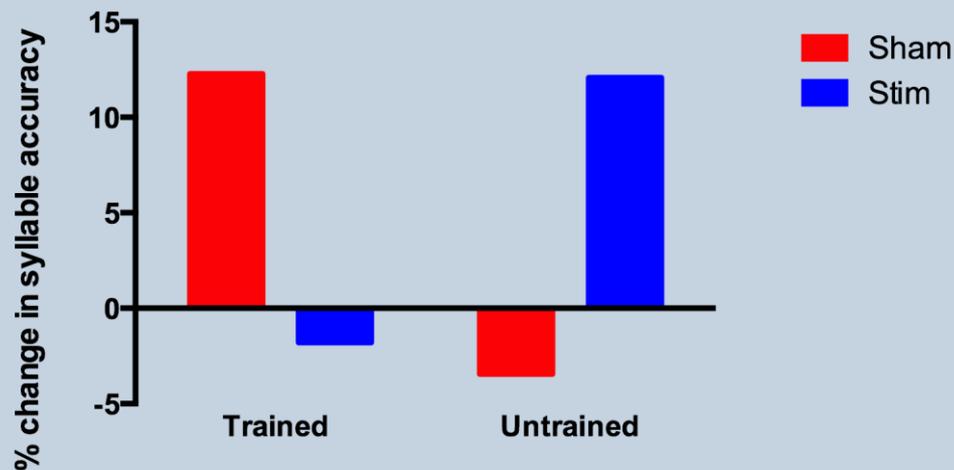


“The clown had a funny face”

### F1: Sentence Repetition



### M2: Sentence Repetition



# Summary

- External cueing – both visual and auditory – can improve speech fluency (not just in aphasia)
- Single session of brain stimulation showed potential for increasing the effect to untrained sentences
- Multiple sessions may be more effective
- Sentences need to be more complex and more engaging
  - Perhaps tailored to individual patient's needs

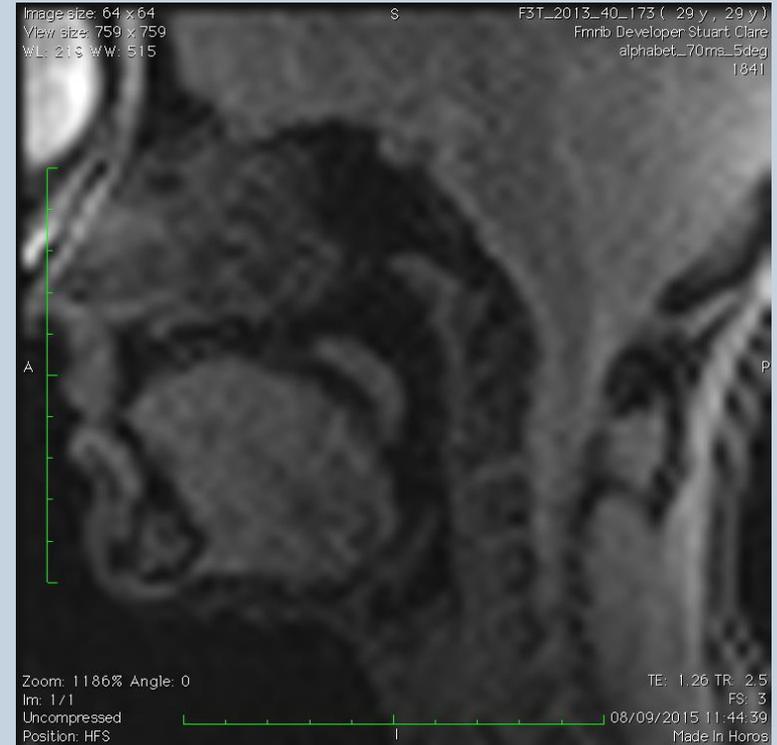
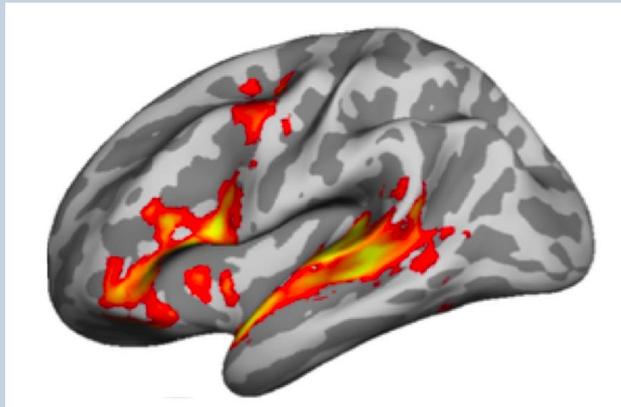
# Thank you

Robyn Cary



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Speech & Brain Research Group



<http://www.psy.ox.ac.uk/research/speech-brain-research-group>