

DEPARTMENT OF EXPERIMENTAL PSYCHOLOGY



Aphasia Research

Kate Watkins
Professor of Cognitive Neuroscience
Speech & Brain Research Group

Tutorial Fellow
St. Anne's College



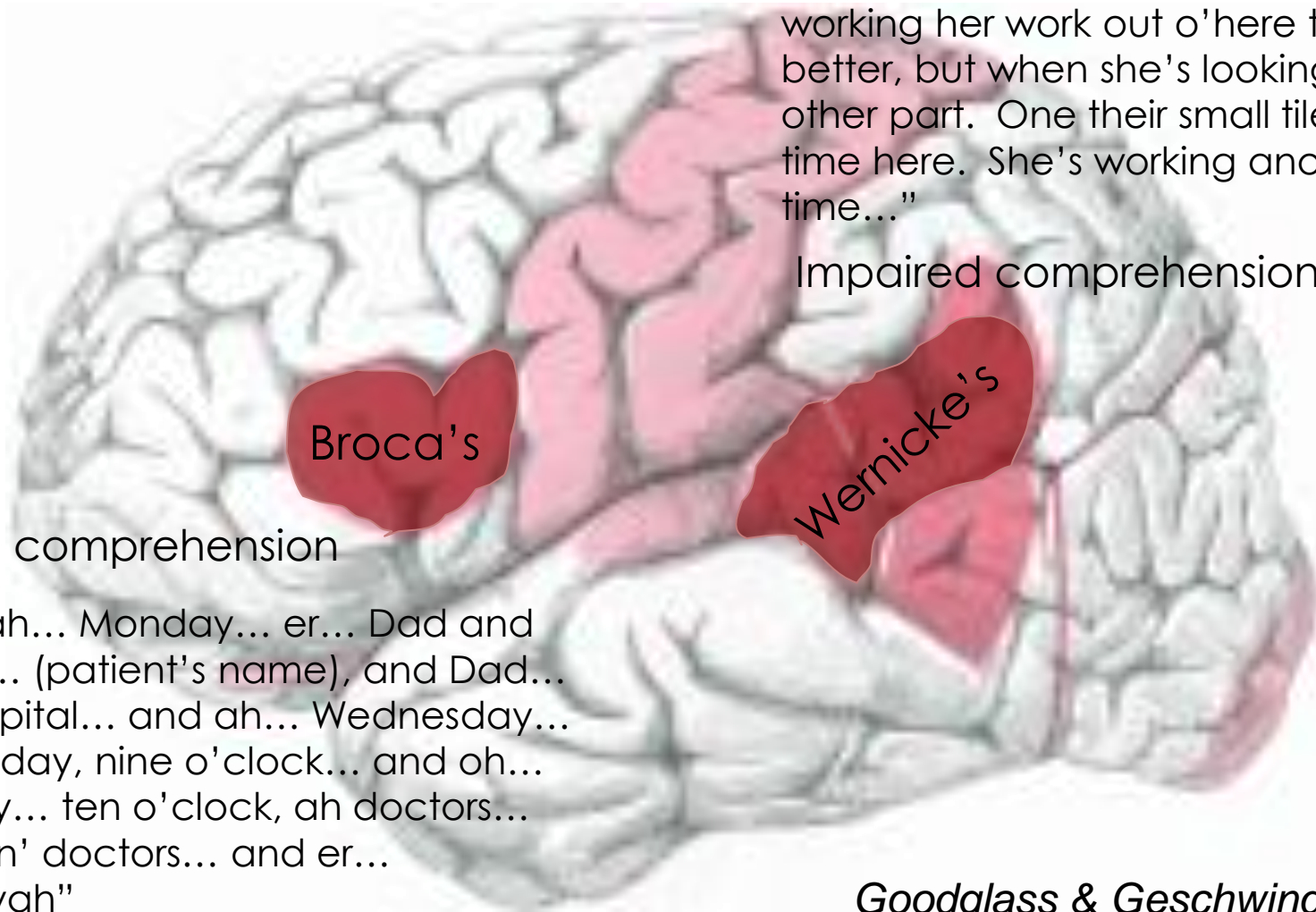
Aphasia

- 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

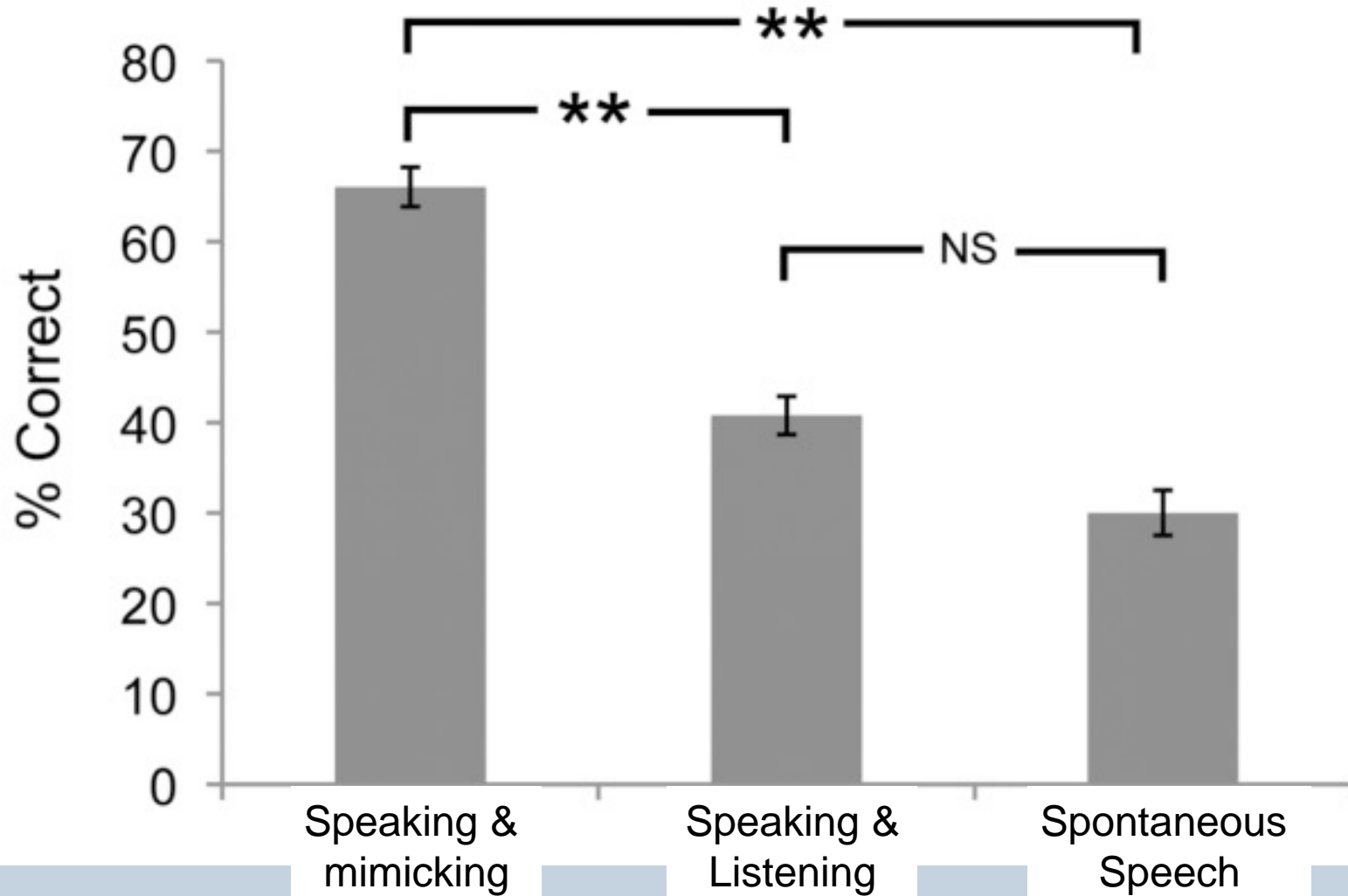


Training sentence repetition

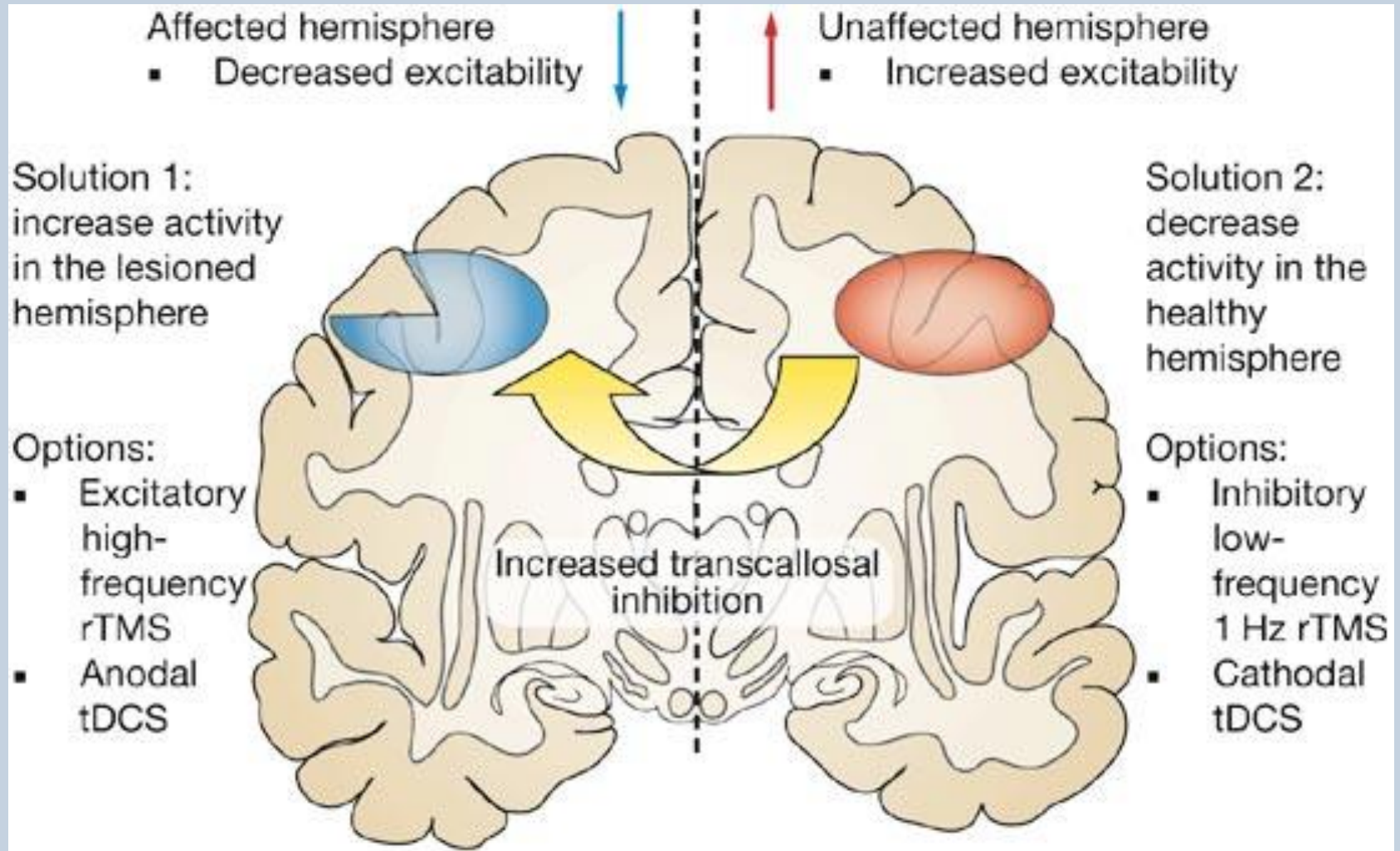


Speaking in unison

Fridriksson et al., 2012

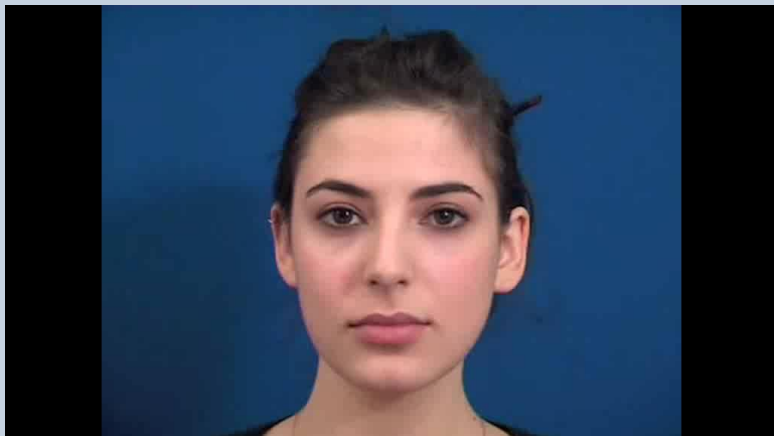


Balancing hemispheres with brain stimulation



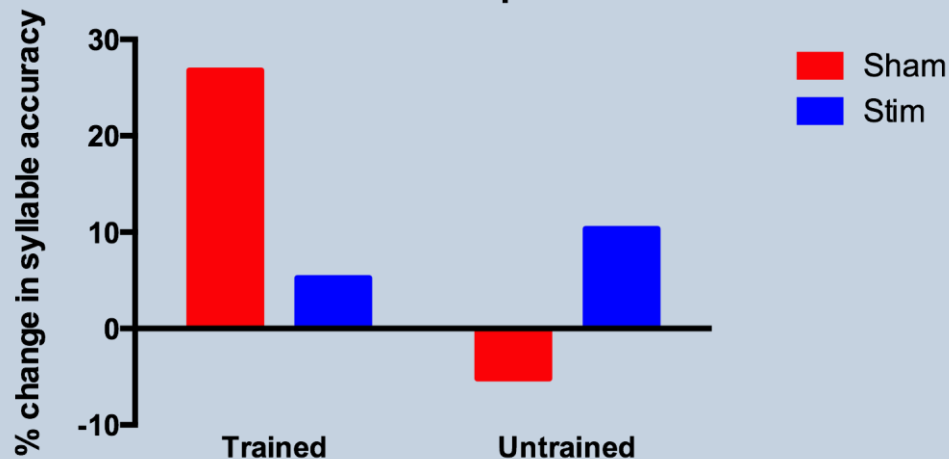
Two patients

Listen.....Say

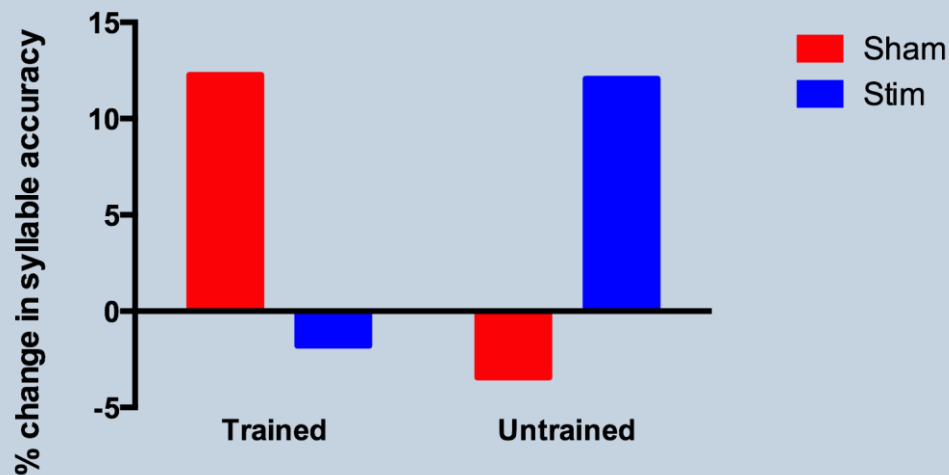


“The clown had a funny face”

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

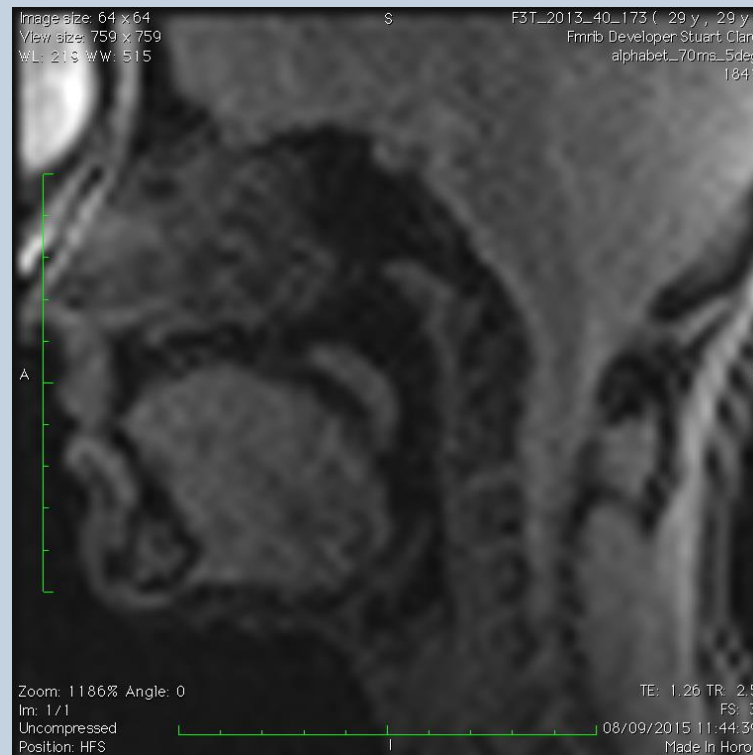
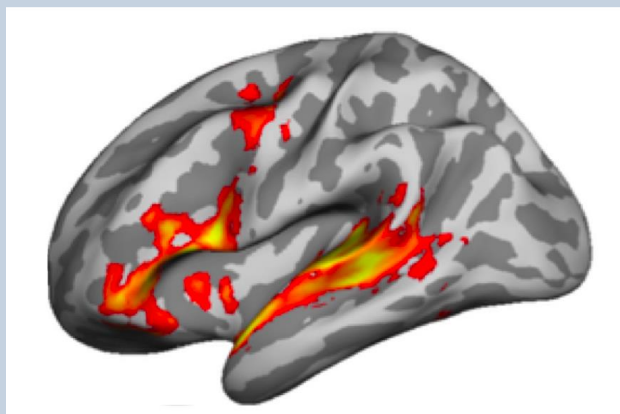
Thank you

Robyn Cary



Jennifer Chesters
Riikka Mottonen
Lisa Bruckert

Speech & Brain Research Group



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