

Emotion recognition impairments after right-hemisphere stroke – an important factor for long-term outcomes?



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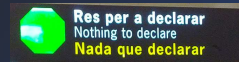
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RH stroke is closely associated with emotion recognition impairments

- Emotion recognition impairments are common after RH stroke (prevalence near 50%), and more common after RH than LH stroke (e.g., [Spalletta et al., 2001](#))
- RH lesion status is better predicted by difficulties in emotional prosody recognition than by evidence of neglect ([Dara et al., 2014](#))
- Caregivers most frequently report the stroke survivor's apparent loss of empathy as one of the "top 5" problems after RH stroke ([Hillis & Tippet, 2014](#))



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The case for a link to stroke outcomes

- Emotion recognition impairments are associated with poor social support (e.g., [Posse et al., 2002](#); [Knox & Douglas, 2008](#))
- Social support is a key determinant of
 - health ([Uchino, 2006](#))
 - mortality ([Berkman & Syme, 1979](#); [Holt-Lunstad et al., 2015](#))
 - functional status ([Newsome & Schulz, 1996](#))
 - likelihood of institutionalization ([Steinbach, 1992](#))
 - quality of life ([Newsome & Schulz, 1996](#))
 - stroke recovery ([Eslinger et al., 2002](#); [Glass et al., 1993](#); [Tsouna-Hadjis et al., 2000](#))



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Participants

Inclusion criteria:

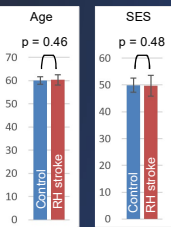
- Age > 30
- RH stroke(s) > 1 year prior to testing

Exclusion criteria:

- Neurological diagnoses or major medical conditions (other than stroke)
- (pre-stroke) non-independence
- Stroke affecting the LH
- Inability to comply with study procedures
- Only MRI-eligible participants completed the fMRI part of the study

RH stroke survivors			
	Black	White	Asian
♂	5	5	1
♀	5	2	7
	10	7	18

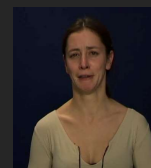
Controls			
	Black	White	Asian
♂	7	6	1
♀	6	3	9
	13	9	23



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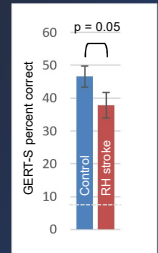
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Geneva Emotion Recognition Test



14 "emotions", 3 trials each = 42 trials

(Schlegel & Scherer, 2016, *Behavioral Research Methods*)



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Activity Card Sort

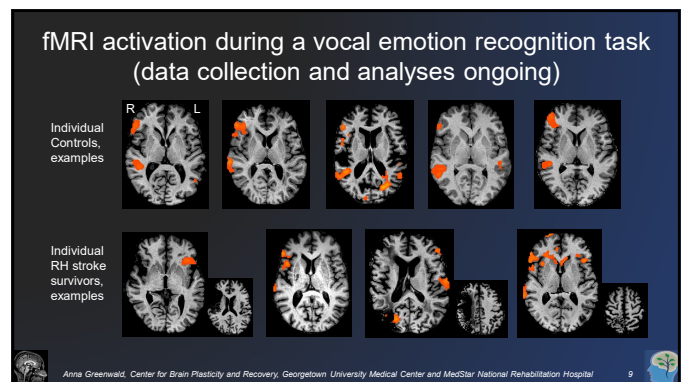
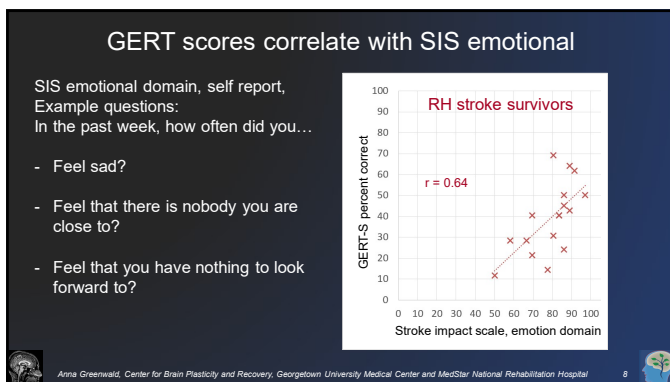
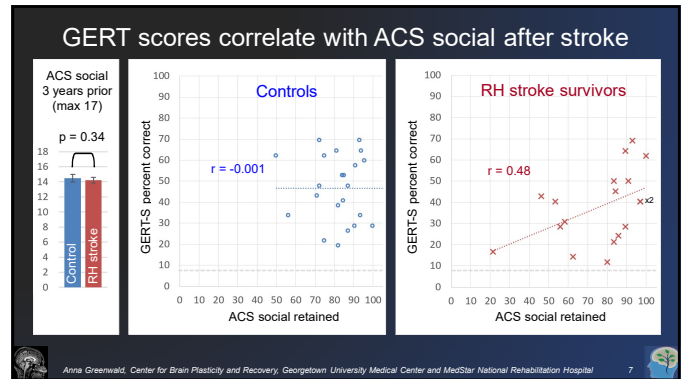
(Baum & Edwards, 2008, AOTA Press)

→ What did they do prior to stroke?
→ What of that are they doing less or not at all anymore?

Examples of social activities (total N=17):

- Family gatherings
- Talking on the telephone
- Dating/Spending time with friends

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Summary of our pilot study – fMRI data

- Activation for a vocal emotion recognition task is right-lateralized in controls
- Some RH stroke survivors show activation in homotopic areas of the LH

→ These LH areas may be potential targets for interventions aiming to improve emotions recognition after stroke, e.g., by combining behavioral training with neurostimulation

Young adult group activation (left)

and individual Control activation example (right)

Example RH stroke survivors

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