

# Left-right errors

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# Read this from NY Times, 2001!

- Two neurosurgeons were suspended by a Brooklyn hospital pending investigations. Dr. Rene Kotzen, 44, who performed the operation, and Dr. Mike W. Chou, 37, whose lawyer said he prepared the patient but was not present for the surgery, were suspended a day after the procedure to remove a potentially fatal blood clot.

# And.....

- While tests showed that the patient was suffering from a clot on the right side of his brain, the operation was first performed on the left side. When the mix-up became apparent, the opening was closed and the surgery was performed on the right side.
- That operation was apparently successful. Mr. Walsh [*the patient*] spoke briefly "Yeah, it's weird," he said. "I don't know much. They're still investigating. All I know is my head hurts."

# Oops!

- Instances such as this are rare, fortunately [1 in 112,994].
- But they do happen, despite the potential consequences and records show even more incidences of wrong-side reporting
- The National Practitioner Data Bank recorded 5940 WSPEs (2217 wrong-side surgical procedures and 3723 wrong-treatment/wrong-procedure errors) in 13 years [*Seiden and Barach, 2006*].

# Demographic issues

- Gender
  - Males perceive themselves as more competent
- SES
  - Occurs in ‘even adults of superior intellect’
- Handedness
  - Mixed evidence, training helps everyone
- Dyslexia
  - Potentially relevant

# Cognitive processes

- Mental rotation is lateralised to right hemisphere
- L-R discrimination lateralised to left hemisphere
- Men show greater lateralisation of visuo-spatial processing than women
- So a bit complicated to explain in terms of lateralisation as processes may be opposed

# Distracters

- Noise that is unpredictable, from an unknown source can distract
- But noise [e.g. music] can mask or attenuate unpredictable noises
- Noise can increase arousal and increase performance...but it can have a fatigue effect
- Daytime fatigue & tiredness predictive of increased failure in cognitive tasks

# This study

- Approached by a concerned ophthalmic surgeon concerned mainly about reporting errors
- Wanted to look at whether the music often played during operations, or others talking, acted as distracters, as well as who is more likely to make these sorts of errors



# Hypotheses

- L-R judgement abilities affected by
  - Music
  - Self-rated tiredness levels
  - Sex, dyslexia and handedness
  - Whether respondents clinically trained [with some L-R discrimination work]

# The study

- Difficult to test, as in any assessment 50% chance of getting it correct!
- Set up a series of faces from 4 angles and asked people to say if arrow pointing to L or R
- 106 photos, every 3 seconds
- Tested 178 people- mix of medics, dental students and a non-clinical control group
- Conducted some interviews







# Results

- Not always clear because of relatively small numbers of left-handed [16] and dyslexics [9]
- No significant differences music or non-music, although no-music may be better
- No difference found L or R handed
- Dyslexia music group better than the mean
- Both left-handers and dyslexics judge their own ability as lower

## Results [cont]

- Tiredness related negatively to correct responses for non-music only
- In regression analyses, self-rated ability and self-rated tiredness were only real predictors
- Medics scored better than dental or non-clinical
- Interviews:
  - Distracters- some music good, some bad
  - Cognitive strategies
  - Attribution of error

# Discussion

- Tiredness a major issue, especially in non-music situation
- Our ability to detect when tiredness is affecting performance is 'moderate at best'
  - Unaware of personal mental fatigue at the time
  - But reasonable judgement of own performance afterwards
- For those who prefer it [may include dyslexics], music less of a distracter than other noises



# So what is the conclusion?

- Combination of distracters, not one
  - Internal [thoughts] as well as external
- L-R discrimination is an automatically processed judgement.. and often occurs this way when few cognitive resources are available or low concentration
- Train people to improve their L-R judgements [like Newcastle medics do]
  - Heuristics and strategies
  - Extra pre-operative checks to approve site
- **AND .. we need more data to extend our research!**

# Thank you for listening

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