

Definitions

Maths Anxiety

- "feelings of tension and anxiety that interfere with the manipulation of numbers and the solving of ordinary life and academic situations" Richardson and Suinn (1972).
- "an emotion that blocks a person's reasoning ability when confronted with a mathematical situation" Spicer (2004).

Statistics anxiety

- "Statistics anxiety (SA) is the specific feelings of anxiety students experience when they encounter statistics, for example, gathering, processing, and interpreting data." (Cruise et al., 1985)

Defs.

Maths Anx MA blocks ability to manipulate no's

Stats Anx SA → encountering stats
Imp! Hard to avoid at Uni!

Neuroscience of Maths Anxiety

- **Very recent research** (2012-2015) using brain scanners (fMRI) have shown that maths anxiety has measurable effects on **brain function**.
- We summarise 3 of these findings by explaining what happens in the brain when someone **experiences** maths anxiety.

MA & brain

fMRI shows MA effects brain function

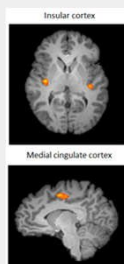
1: "Maths hurts my brain"

- Thinking about maths actually activates the **regions of the brain associated with pain**.

BUT

- Actually **doing** mathematics does **NOT** activate these **pain regions**.

[Lyons & Beilock, 2012]



Neuro finding 1

Thinking about maths feels painful

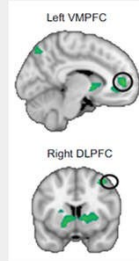
BUT

Doing maths doesn't

2: "I just can't think about maths"

- Maths anxiety eats away at your working memory (WM) because the brain is too busy **worrying** about maths **rather than doing** maths.
- This makes maths **seem** harder than it really is.

[Young et al., 2012]

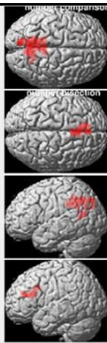


Finding 2 | MA → worry, reduces WM & ability to do maths

3: "I can't get started" / "I just can't switch onto maths"

- Like an engine, the brain has an 'idling state' when it isn't focusing on a task. This **turns off** when you focus on doing something.
- Maths anxiety **prevents this 'idling' state from switching off**, making it hard to focus on maths.
- Students may feel like they "**don't know where to start**" to solve a problem.

[Pletzer et al., 2015]



Finding 3 | MA → stops brain focusing on maths task

"don't know where to start"