

## 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)

## 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.

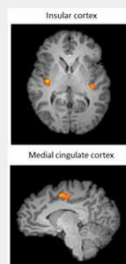
### 1: "Maths hurts my brain"

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

**BUT**

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

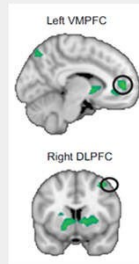
[Lyons & Beilock, 2012]



## 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]



## 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]

