

### TALKING POINT:

#### HOW DOES MATHS ANXIETY AFFECT MATHEMATICS LEARNING?

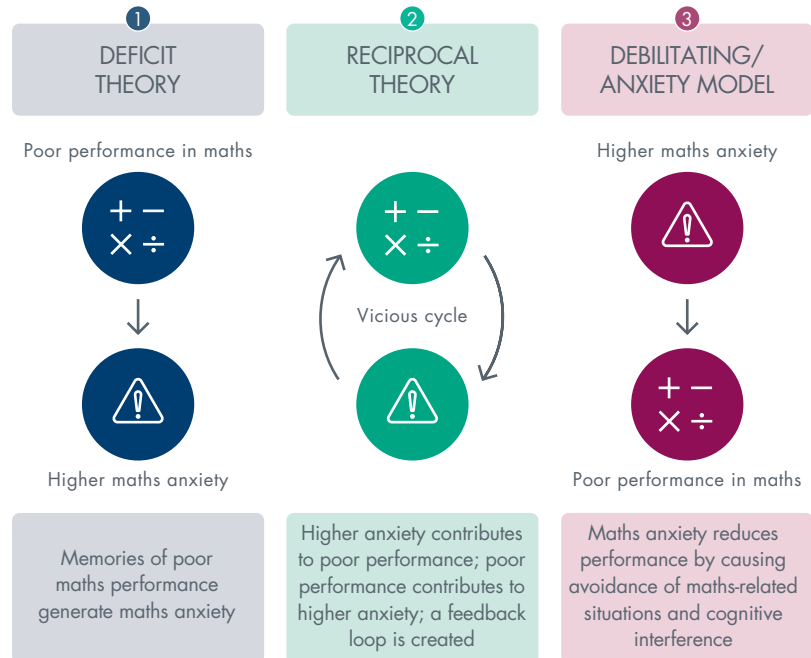
'For someone who has math anxiety, the anticipation of doing math prompts a similar brain reaction as when they experience pain — say, burning one's hand on a hot stove'

**Sian Beilock**

'interventions are easier and less painful if they take place before mathematics anxiety has set in'

**Ann Dowker**

### THREE POSSIBLE THEORIES ON MATHS ANXIETY AND MATHS PERFORMANCE



Adapted from ideas in Carey et al (2014)

### IN SUMMARY

- Maths anxiety is associated with poor maths performance and the two could form a feedback loop
- Maths anxiety may be both mental and emotional; intervention should consider both aspects
- Maths anxiety appears to affect a significant proportion of school and university students at all ages, as well as adults; girls report it more than boys
- Maths anxiety affects working memory; addressing the anxiety and providing strategies to control it may be effective
- Teachers who experience maths anxiety may transmit it to pupils
- Use of manipulatives when planning may help to reduce maths anxiety for teachers

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Maths anxiety is defined as a 'debilitating emotional reaction to maths' by the Nuffield Foundation<sup>1</sup>; other experts suggest it has both a cognitive and an affective dimension<sup>3</sup>. Maths anxiety correlates with measures of more general anxiety, but cannot be reduced to either general anxiety or text anxiety<sup>3</sup> and is not simply a proxy for low mathematics ability<sup>7,12</sup>. There is a negative correlation between maths anxiety and performance on maths tests<sup>2</sup>, which has been explained by maths anxiety causing both avoidance of mathematical tasks and disruption of working memory<sup>2,3</sup>. Researchers do not currently agree as to which theoretical model might explain the link between maths anxiety and maths performance (see infographic) – whether the link is one-way, or a cycle.<sup>4</sup>

**IMPLICATIONS:** Pupils with maths anxiety may avoid maths tasks and experience cognitive disruption, which could form a feedback loop with poor maths performance

Maths anxiety may have both a cognitive and affective dimension; intervention should consider both aspects

