



University of  
**Southampton**

# Exploring maths anxiety and maths teaching anxiety in teachers and trainee teachers

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# Projects

## Project A

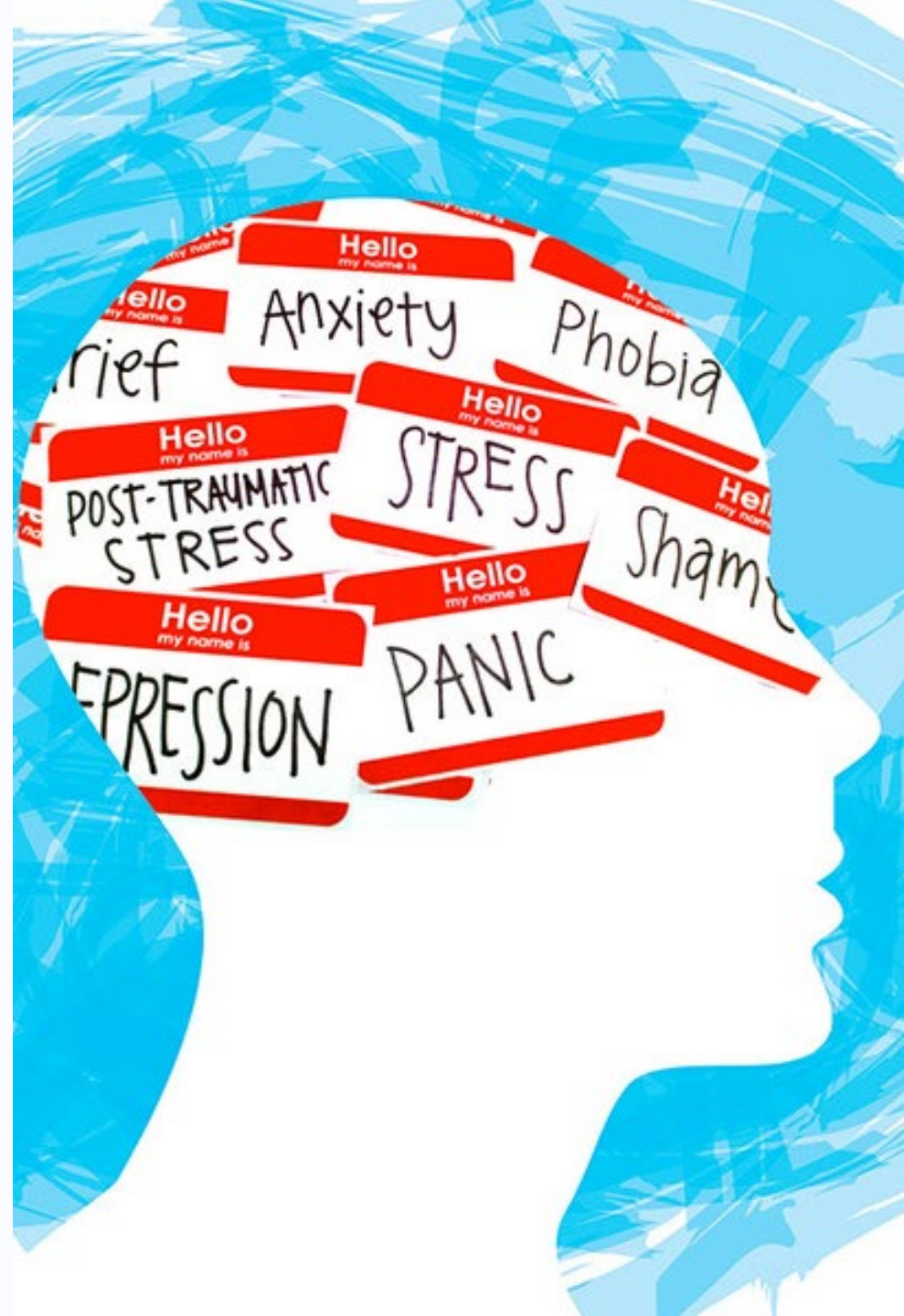
- Survey of 296 trainee teachers (secondary mathematics and primary), undergraduate and postgraduate in England
- Focus on maths anxiety, maths teaching anxiety and preparedness to teach

## Project B

- Semi-structured interviews with six secondary teachers of mathematics with a range of backgrounds from across the UK
- Focus on feelings towards teaching

# Themes

- **Personal history**
- Preparedness
- Explaining mathematics
- **Maths anxiety & maths teaching anxiety**
- External pressures



I just wanted people to have a better experience than what I had. Because I didn't enjoy it.

I was always frightened of getting answers incorrect and did have maths anxiety. This has encouraged me to be more aware of potential pupil anxiety in the classroom.

I remember my high school maths teacher laughing at me when I asked a question and then shouting at me when I subsequently refused to ask him questions again.

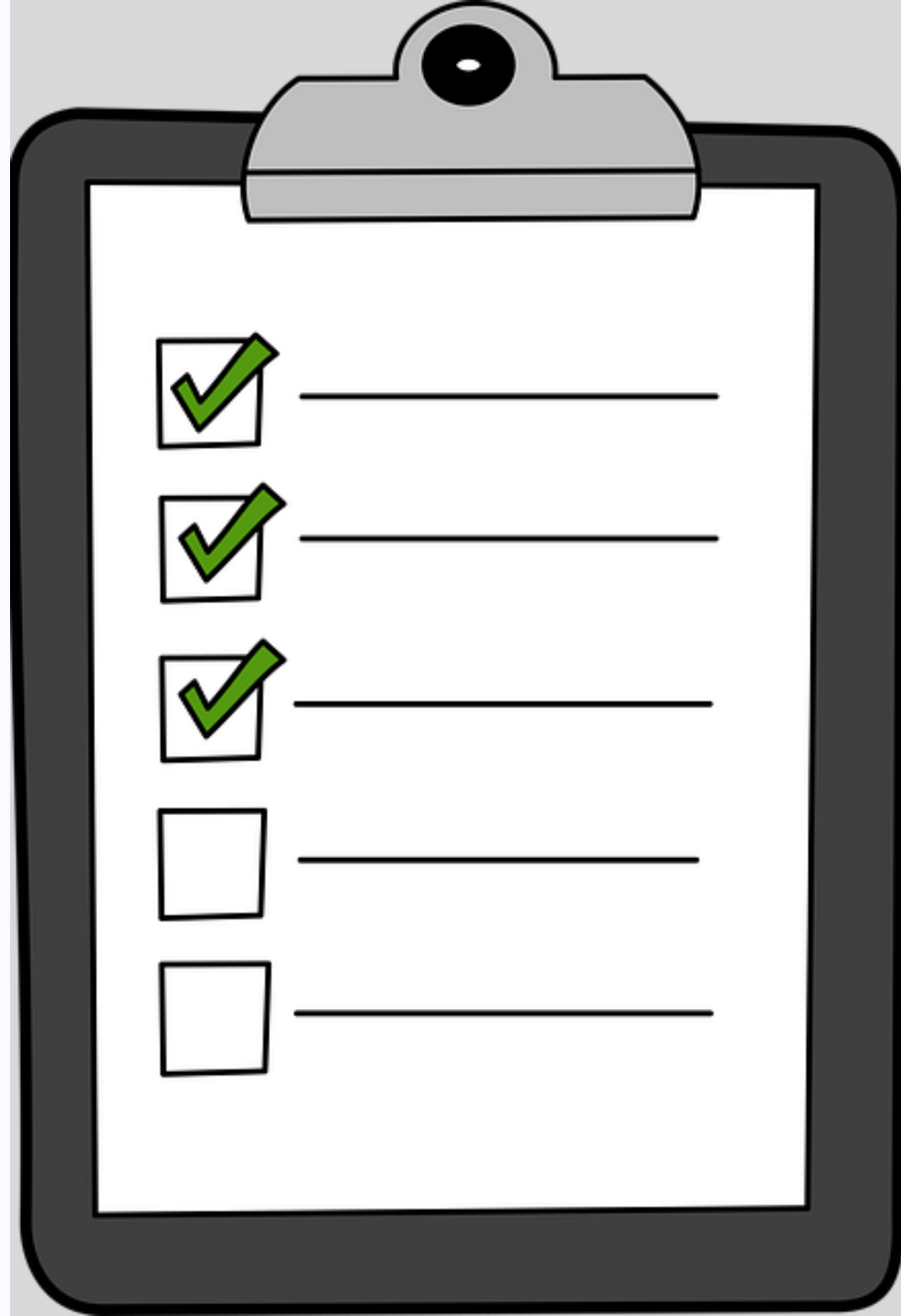
I hadn't been taught maths properly in years 3-4 because we didn't have a proper class teacher and this affected my confidence and ability.

# Personal history

- Negative associations with mathematics rooted in poor childhood experiences
  - Impact of their own learning needs
  - Teaching out of specialism at secondary level
  - Intrinsic and extrinsic motivations for becoming a teacher of mathematics
- Participants in both studies reported negative personal experiences with mathematics, impacting on their attitudes towards mathematics
  - Our work underscores the lasting emotional and cognitive impacts from experience as a learner of mathematics and the importance of high quality teachers of mathematics

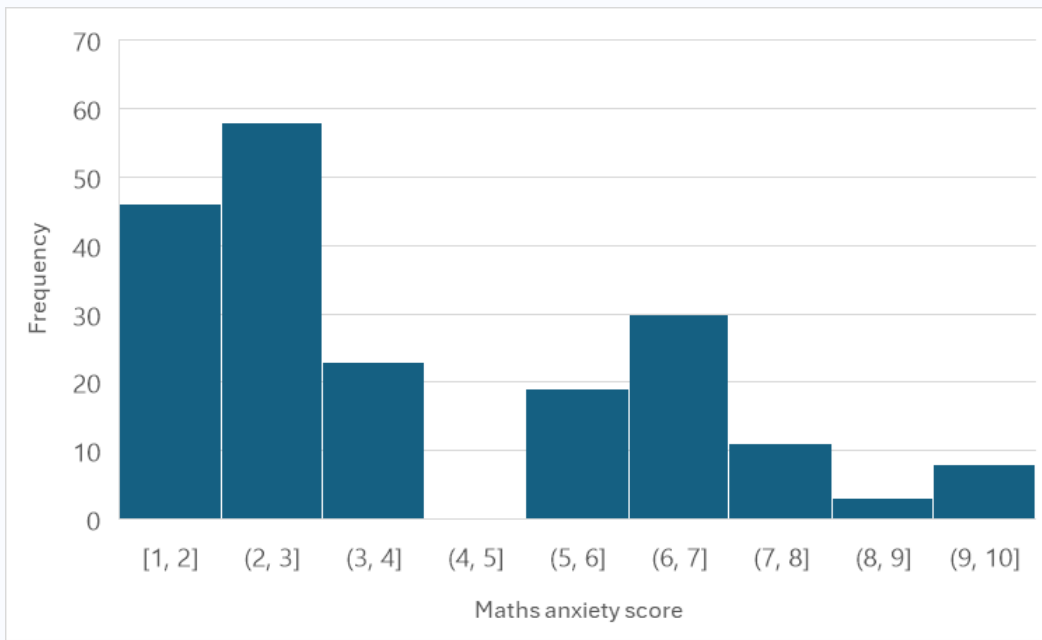
# Recommendations

- Promote positive experiences of mathematics across age groups to foster passion for mathematics, build confidence, improve wellbeing, and increase the availability of intrinsically motivated new teachers.
- Invest resources in supporting non-specialist mathematics teachers in secondary schools to develop them into specialists.

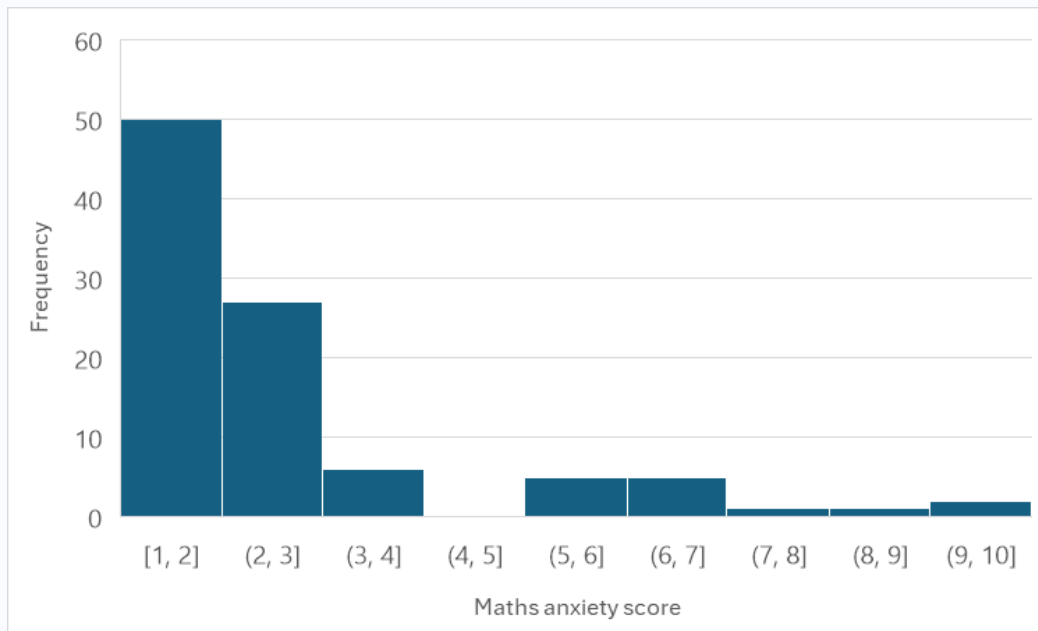


# Maths anxiety and maths teaching anxiety

- ***Maths anxiety*** – ‘uncontrollable feeling of tension and anxiety which affects cognition and disables people from being able to manipulate numbers or solve mathematical problems’ (Skye and Hunt 2022:3)
- ***Maths teaching anxiety*** – the feelings of tension and anxiety that occur when teaching mathematics (Peker, 2009)



Maths anxiety score  
for primary trainee  
teachers

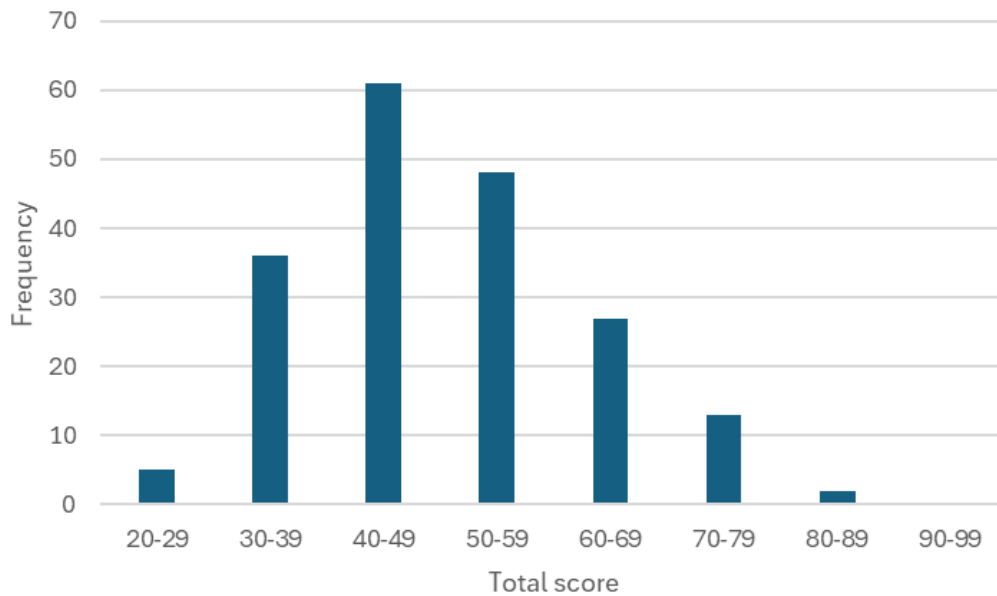


Maths anxiety score  
for secondary  
trainee teachers

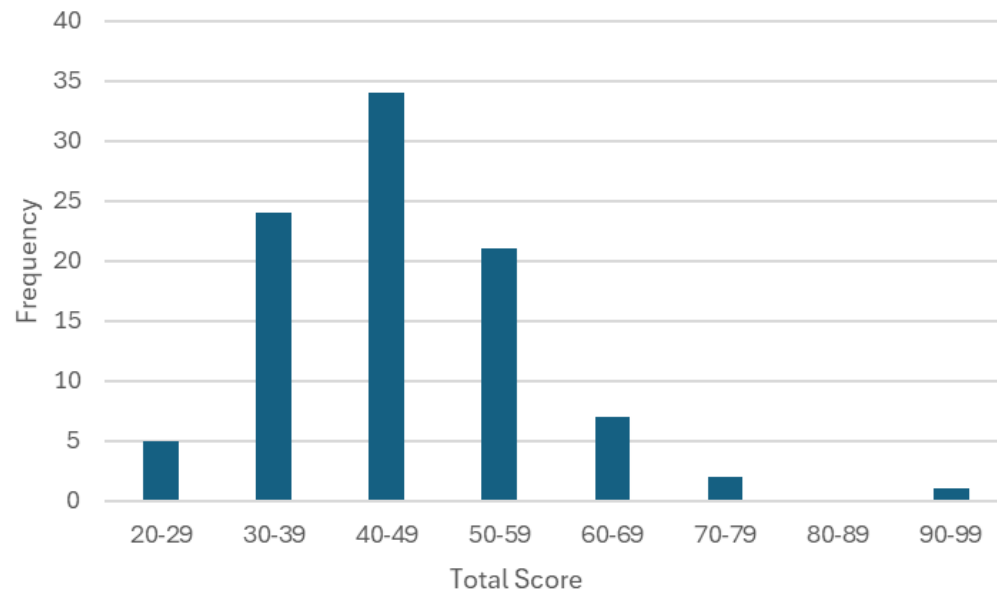
# Maths teaching anxiety scale (Hunt & Sari) – pupil directed factor

| Question  | Secondary mean | Primary mean |
|---|----------------|--------------|
| The thought of not being able to motivate pupils to learn mathematics bothers me.                       | 3.33           | 3.20         |
| The thought that students find mathematics too abstract concerns me.                                    | 2.89           | 3.15         |
| The thought that pupils will not meet curriculum/school targets in mathematics worries me.              | 3.20           | 3.53         |
| The thought that pupils will not pay attention to what I am teaching in mathematics lessons worries me. | 3.46           | 3.36         |
| I worry that pupils in my mathematics classes will fail their assessments.                              | 2.85           | 3.19         |
| Differences in pupils' prior knowledge worries me when preparing for mathematics lessons.               | 3.33           | 3.26         |
| I worry that pupils will answer mathematics questions incorrectly.                                      | 2.07           | 2.53         |

|  |      |      |
|--|------|------|
| At the end of my mathematics lesson, I erase the content on the board so that colleagues can't see.  | 1.69 | 1.83 |
| I wait for breaks impatiently when I am in mathematics lessons.  | 1.65 | 1.90 |
| I am afraid to go beyond the content of mathematics textbooks.   | 2.23 | 2.52 |
| I avoid talking about mathematics teaching with other teachers outside the classroom.  | 1.66 | 1.99 |
| I avoid classroom discussion in case pupils pose difficult mathematics questions.  | 1.55 | 1.84 |
| I get uneasy knowing that the next lesson is mathematics.  | 1.51 | 2.01 |
| I feel nervous when another teacher or trainee observes my mathematics teaching.   | 2.47 | 2.94 |
| I feel uncomfortable when one of my colleagues comes to my classroom during a mathematics lesson.  | 2.04 | 2.47 |
| I worry that I won't be able to answer a question whilst teaching a mathematics lesson.  | 2.45 | 2.77 |
| Thinking about how to make use of tools/materials that I don't know how to use in the mathematics classroom makes me feel anxious.               | 2.51 | 2.63 |
| The thought of using concrete tools (e.g. geometry boards, pattern blocks, tangrams, fraction bars) in mathematics lessons worries me.           | 2.25 | 2.44 |
| I feel uneasy when pupils don't understand mathematical concepts and I have to find/think about alternative methods or strategies to teach them. | 2.24 | 2.76 |



Maths teaching  
anxiety score for  
primary trainee  
teachers



Maths anxiety score  
for secondary  
trainee teachers

# In-service teachers

- One type of anxiety can eclipse the other
- When pedagogical content knowledge was lacking explanations of mathematics concepts ‘unravelled’
- Having personal ability in mathematics does not necessarily mean that you are able to teach it well
- Peer support is important, but lack of time was a barrier to peer discussion between teachers
- Less experienced teachers focused more on their own role than pupils’ learning

# Recommendations

- Ensure that mathematics subject leaders and ITE providers are knowledgeable about maths anxiety and maths teaching anxiety and promote an open and supportive culture in which such issues can be discussed
- Provide support, including peer support, for non-specialist teachers of secondary mathematics
- Offer targeted interventions to trainee teachers who experience maths anxiety and maths teaching anxiety to address these, especially for those training to teach at the primary level.

