Divorce, Evil, and the Regime of Terror

Personal Characterisations of Mathematics in the Lives of Mature Students

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Context

- Practitioner in Higher Education (HE)
- Investigation of the existence of mathematics anxiety among mature students in Irish Higher Education Institutions (HEIs)
  - Universities (Uni)
  - Institutes of Technology (IoT)
- Sequential mixed methods research design (quan -> QUAL)
- Life story interview, culminating in personal theme or characterisation of mathematics in mature students' lives

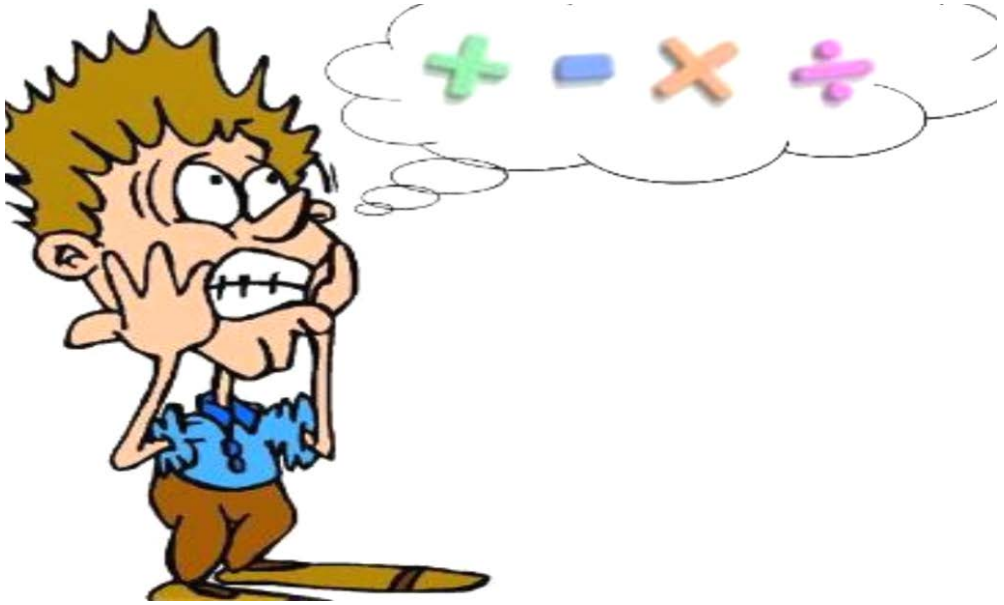
The Mature Student

- Irish context: Adult learner (≥ 23 years)
- White Paper on Adult Education (2000)
- Diverse profiles; different challenges and backgrounds to traditional students, but high motivation (Lynch, 1997; O'Donnell & Tobbell, 2007)
- Positive contribution to programme of study (Brady, 1997; Kelly, 2006; HEA, 2011)
- Dislike of mathematics exists (Fitzmaurice et al., 2014)

Service Mathematics

- Mathematics is a component of study, but not the main discipline of study (Gill & O'Donoghue, 2008)
- An increasing number of students entering undergraduate programmes are required to take service mathematics (Lawson et al., 2003)
- The need for mathematics support for mature students outside of lectures/tutorials is motivated by a fear of mathematics (Fitzmaurice et al., 2014)

Mathematics Anxiety



"feelings of tension and anxiety
that interfere with
the manipulation of numbers
and the solving of mathematical
problems in a wide variety of ordinary
life and academic situations"

Richardson & Suinn, 1972

Mathematics Anxiety Rating Scale (MARS), Mathematics Anxiety Scale – UK, or equivalent tests

Sequential Mixed Methods Research Design

(Mertens, 2015)

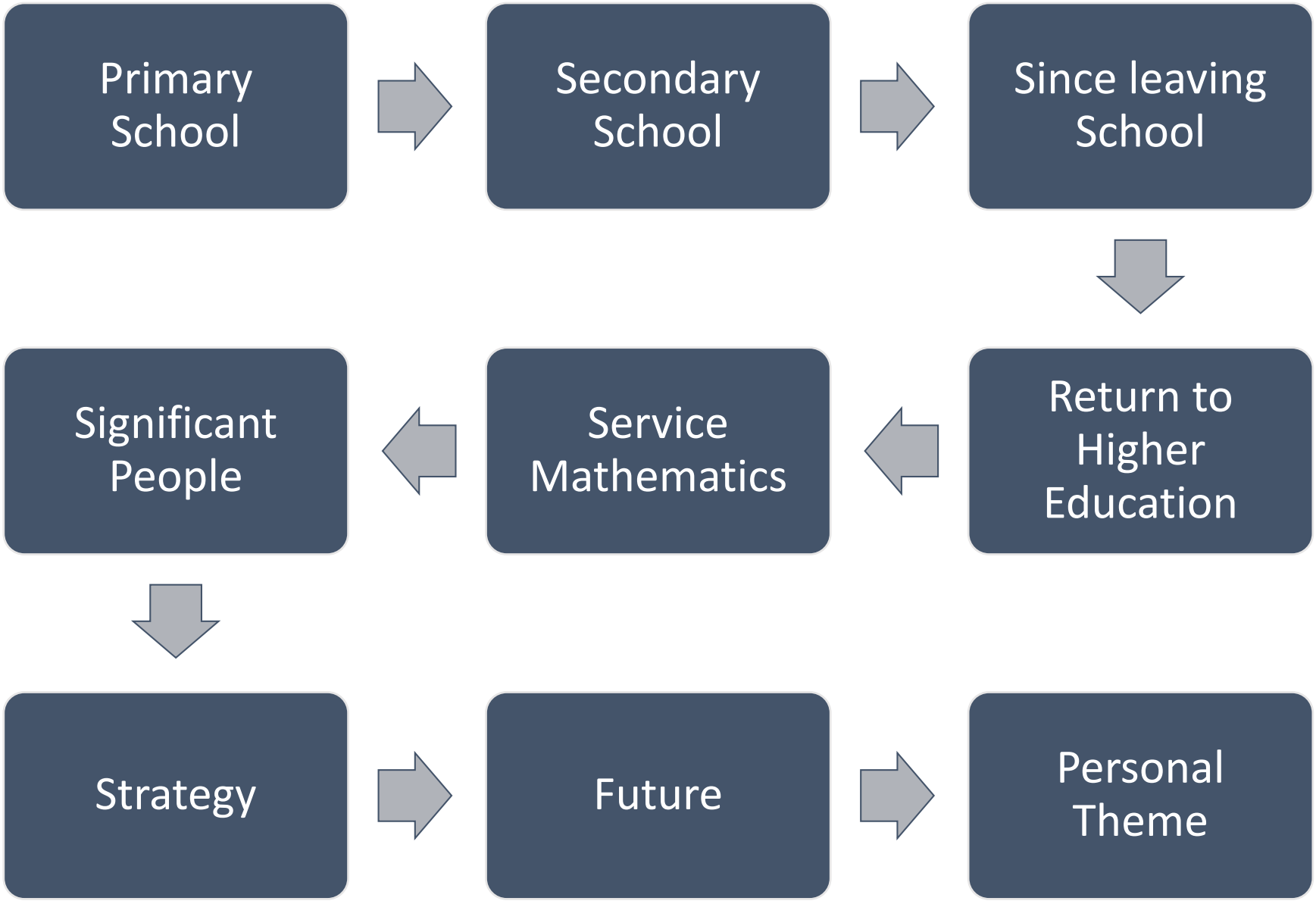
Phase One
quan

- Survey (n = 107 Mature Students)
- Questionnaire with Biographical Questions and MAS-UK Scale (Hunt et al., 2011) with possible range 23 to 115

Phase Two
QUAL

- Interview (20 participants from Phase One)
- Adapted Life Story format (McAdams 1993)

Interview Topics (adapted from McAdams's Life Story Framework)



Personal Theme or Characterisation

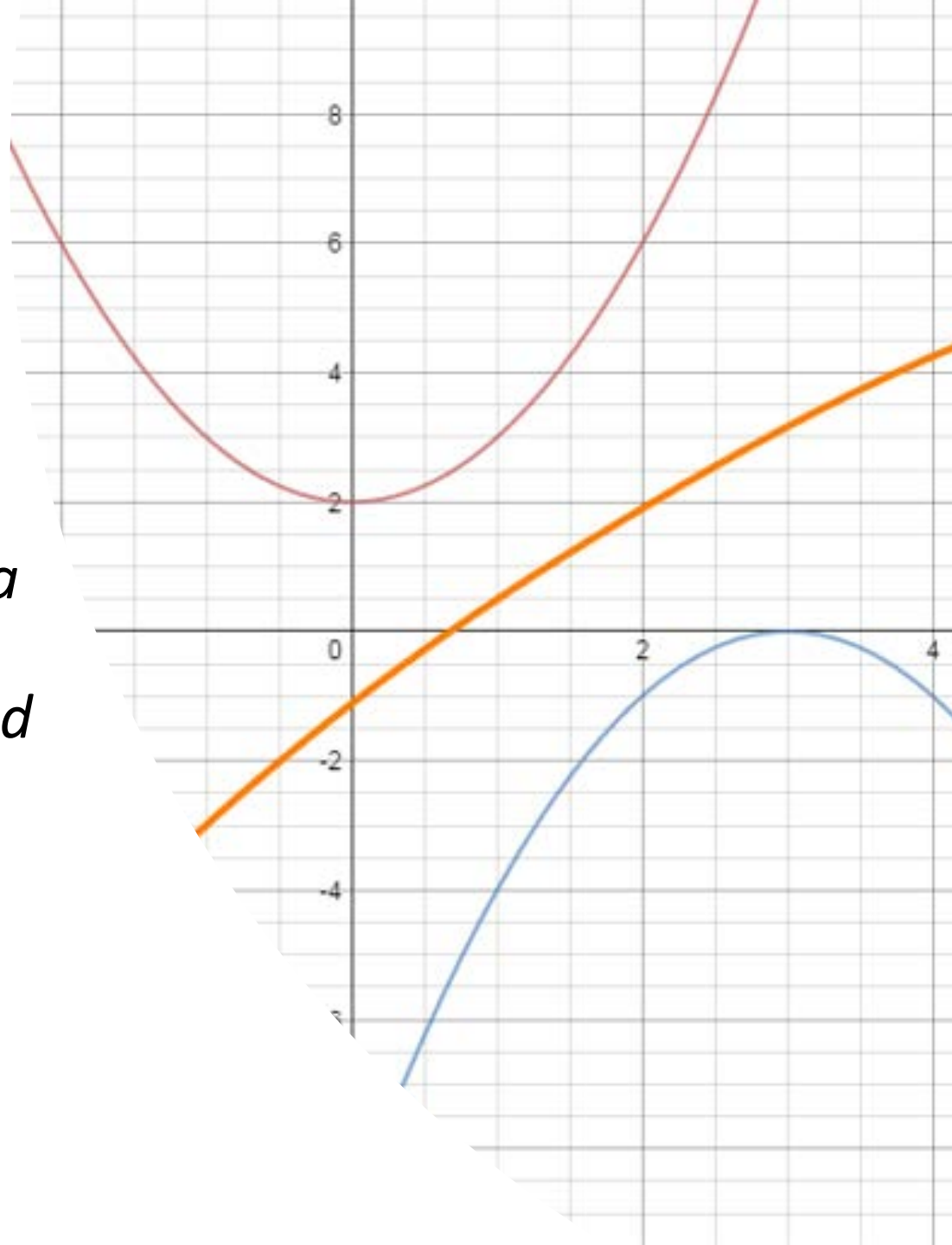
- McAdams (1993): an overall theme for the life story
- Theme for overall mathematics life story: considering the mature student's life story with mathematics, how might they now characterise their relationship with mathematics, and what theme would they ascribe to it?
- Variety of responses:
  - Universal significance of mathematics
  - Clarity of mathematics
  - The journey with mathematics
  - Symbolic
  - Feelings

Mature Student #1: Neo

- *Neo, age 35, engineering student (Uni)*
- *Needed to ask lots of questions about mathematics at school*
- *Dropped out of school at age 15*
- *Manual labourer, worked on building sites*
- *Exposed to engineering decisions, but could not contribute*
- *Returned to HE after doing one-year access programme*
- *Heavy reliance and engagement with mathematics support facility*
- *Low mathematics anxiety score (29)*

Divorce

“It was like a marriage that broke up and got back together. I took it for granted for a while when I was younger, and then we parted terms and it wasn't amicable. … I had a divorce. And we missed each other, and after a few rendezvous with other areas of my life, we got back together, [and are] looking forward to a bright and prosperous retirement together, so it's onward and upward.” (Neo)



Mature Student #2: Ken

- *Ken, age 46, mechanical engineering student (IoT)*
- *Enjoyed school mathematics, but from fourth year (high school, UK) a heavy focus on algebra without relevance*
- *Sometimes gets lost in classes because he cannot get it first time.*
- *In mathematics examinations, questions can be vague, and that throws him. He wonders if that is done deliberately by the lecturer.*
- *He focuses on sub-questions with high marks.*
- *He admits it is the smaller details that trip him up.*
- *Low mathematics anxiety score (31)*

A Necessary Evil

“It’s a necessary evil … I’ll get to a certain level in maths and that will be it, and I don’t think I’ll ever be totally comfortable with it. It will always frustrate me and I’ll always be wary of certain aspects of it, because I don’t understand it. … A necessary evil: I do it, I do what I can with it, but I’m never going to be a shining star.” (Ken)

A Regime of Terror

- *Jon, age 50, Humanities student (Uni)*
- *Suffered physical abuse at primary school for getting mathematics wrong.*
- *Missed six months of first year at secondary school due to illness, and never caught up with mathematics.*
- *Has avoided mathematics as much as possible in his life, but had to do statistics in his undergraduate programme, and succeeded.*
- *Moderate mathematics anxiety score (59)*

A Regime of Terror

“I’ve developed a liking for numbers, I really have, but in early years my god, … [for most of primary school] I lived under a regime of terror. There was incidents within those years … if you got the slightest thing wrong, you got beat. … And I suppose it wouldn’t be fair to say the maths was terrorising me, it was the system terrorised me. And maths is the catalyst, the thing that’s causing me all my problems, you know. So I just avoid it.” (Jon)

Positive Characterisations/Themes

- Universal significance and logic
- Clarity
- Understanding and ‘getting’ it, the “Eureka moment”
- A gel that binds [the coursework] together

Negative Characterisations/Themes

- Fear
- Maths not liking you
- Maths is not my friend
- The inaccessibility of maths
- Trying to make sense of maths
- A struggle

Contrasting Characterisations/Themes

- Love/hate
- Wonder and frustration
- A begrudging respect

Other Characterisations/Themes

- Missing out on the ideology
- Mount Everest
- Something parked there
- A means to an end
- A challenge

Observations

- Mature students demonstrate a perseverance and resilience with mathematics
- Significance of mature student's experiences in primary and/or secondary school
- Impact of negative experiences on confidence and self-esteem
- Importance of mathematics support services to mature students
- Affording students the space to talk about their experiences of mathematics

Thank you

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