Mental Toughness in Education: Engaging with Mental Toughness practices within a school setting.

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A Research & Development Project Submitted for the MSc in Learning & Teaching 2019

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Mental Toughness in Education: Engaging with Mental Toughness practices within a school setting.

Table of Contents

Chapter 1: Introduction

Mental Toughness (MT) is well documented in sports psychology (Clough et al., 2002; Jones et al., 2007), however, one can argue that the educational setting for the typical GCSE student covers a parallel climate. Students experience the stress of building towards a single event (the exam), that requires long-term commitment (Key Stage 4 years) with management and control of distracting factors; confidence in their ability to succeed in an environment competing against others; constantly being challenged and pushing themselves (learning something new) for a reward where they will ultimately hit their target or fall short. Since the overhaul of the curriculum in 2016, secondary school students are put through more rigorous assessments as increased weight is placed on written examinations and are altered away from coursework (Weale, 2018).

MT, specifically in an educational setting, has only recently been academically developed with evidence suggesting MT to be a strong indicator for success academically, financially and socially (Lin et al., 2017a; Lin et al., 2017b; St Clair-Thompson et al., 2015). One of the issues surrounding MT, and other non-cognitive attributes, is the accessibility of implementation. Most effective psychological interventions target a small number of students and require considerable time and effort. In this study, I aim to try and build upon the current research and create and implement a sequence of lessons that would allow accessibility across a year cohort; without adding additional work to teachers or the need to remove students from timetabled lessons.

Before moving further, I do not want to create a fantasy that this will stop the need for personal intervention, or, that this strategy will be the most effective. An issue

with psychological intervention is the scaling strategy for a wider audience where the message gets lost. As a result, the aim of my study becomes: even if not the most effective, is there value in engaging groups of students in discussions regarding MT?

The rest of this introductory chapter gives background to the study, my own personal context and explanation of the choice of title; what issues will be addressed and proposed solution to the issues providing a rationale for my research questions.

Chapter 2 critically reviews the literature on the current understanding of MT within education. This review will allow me to evaluate my own conceptual understanding and move forward appropriately in developing an intervention for my students. In this chapter, I will be looking to identify and understand the development and current definitions of MT – with a focus on an educational setting; the relation found between MT, academic achievement as well as student development and the current research on designing and implementing psychological interventions.

Chapter 3 will explain the methodology used in this study and the phases through which this study progressed. The study involved an identification of the issue within my school, using McGeown's Mental Toughness Scale for Adolescents (MTS-A) along with Steve Oakes' VESPA Model across a year 10 cohort. The intervention spanned three cycles. Each cycle had an objective, increased sample size, and evaluation in preparation for the next cycle. By the end of the study, the sequence of lessons was being implemented to a year 8 cohort across 3 tutor groups involving 89 participants. In this chapter, I will also address the change of direction with the study i.e. why the identification was done with year 10 yet implemented with year 8.

In Chapter 4, I present and discuss my findings, their relation to my educational context and also the wider purpose they can have in aiding further development in this

study. The research questions will be answered in two sections: RQ1 will be answered following the findings from the quantitative data in the identification stages of the study, whilst, RQ2 and RQ3 will be answered at the end of the chapter after all of the findings have been discussed.

The final chapter will conclude the study; I will add my own personal conclusion and address the study's limitations and the potential next steps in developing MT in education.

1.1 Background to this project and choice of title

I am currently in my third year as a mathematics teacher, I attended the same school during my GCSE and A-level years; my teaching hours are solely focused on Key Stage 4 and 5 and I have maintained my tutor group throughout my time teaching at the school, who are currently year 10. Before starting this study, I have always considered myself 'mentally tough' due to my family upbringing and I believe it to be a major contributor to my relative success throughout my life academically, but also when dealing with personal challenges and opportunities that come my way. My interest in developing this area originates from informal conversations with my students and staff about the consistent attitudes to challenging tasks and their commitment to their future selves; as a collective staff body in my tutor team, it was agreed that we want to improve MT and that it is a barrier to students' success and participation in lessons. In part 2 of my MSc degree, it gave me the opportunity to formally investigate some of these barriers in high-prior-attaining students of the previous year 10 cohort. I found that students did not visualise success or strive for their own personal development and had a low self-concept, an issue which could be seen in rural education through their lack of experience to adversity (Burnett, 2018). In my school,

MT is not a term that is used; the PE Department use the term "Resilience" – as a contributor to sporting success. To address this, I began looking for activities to improve attitude and commitment among other attributes. In my search, I read Clough's 4C Model of MT (Clough, 2002) and further developed my knowledge of MT within education.

Whilst the idealistic view is that I sit down with each individual student and they become mentally tough to educational challenges and demands, I know I am only a part of these students' lives, and have my own life to live. Studies have shown how small scale interventions can improve students' psychology, however, this is time consuming, and for myself, would involve removing a club/after school/ teaching time in order for it to be successful – I don't want to help a minority of students, I want to be able to assist all students. I want to answer the following question: Can Mental Toughness be developed in tutor time?

1.2 Issue to be addressed

In the early 2000's, Berkowitz and Bier raised that the focus on grades had taken priority over the focus of character development (2005). Seven years later, the All Party Parliamentary Group published a paper on social mobility, it found that one of the challenges for (social and education) policy in the UK was to recognise that social/emotional skills underpin academic and other successes and that these can be taught (2012). Damian Allen, Director of Children's services wrote: 'Not only can we, in many cases, enhance a young person's performance; these particular skills are useful for just about everything else that person is going to have to do in life' (Strycharczyk, 2014, p.55)**.** Emphasis has swung towards non-cognitive interventions, not only because of their published successes but, due to the impact they can have to raise student

attitudes towards future interventions, which apply more cognitive elements of student learning. This was investigated by Chamorro-Remuzic & Furnham (2004) who evaluated that, where cognitive ability reflects a student's educational potential, it is the personality traits/attributes that influence their academic outcome due to the attitudes and behaviour to learning.

By the time students reach secondary school, psychological attributes, such as MT, are seen as an expectation that we assume students have embedded in their terminology and are psychological skills that the students are able to access. Whilst this may be the case with some students, this is simply an ideal (Yeager & Walton, 2011). It has been estimated, that a student's psychological state contributes 50 per cent of an individual's performance, but on average, only 5 per cent of the time is spent optimising performances through mental training (Clough & Strycharczyk, 2012, p.22).

In modern teaching, teachers are not only teachers of their subject specialism but are mentors, psychologists, and life developers. The social mobility paper was published in 2012, since the overhaul of the curriculum in 2016, the emphasis that MT contributes to success is found in McGeown's work: 'It would be expected that the mentally tough would prosper in an exam heavy system, such as that adopted increasingly in the UK.' (McGeown et al., 2016, p.103).

My school's Ofsted inspection in 2017 illustrated a concern with the teaching of PSHE and the use of tutorial within the school (Ofsted, 2017). With the issues addressed above and the next steps for my school, it provides an area where I can implement my intervention, learn and satisfy my own personal curiosity surrounding MT, support my students and be beneficial for my school's improvement.

For my study to be successful, before I can begin to implement strategies, I need to ground my study in theory. The questions that I need to answer before pursuing are:

- What does it mean to be Mentally Tough?
- What are the advantages of being Mentally Tough in an educational setting?
- What is the Mental Toughness of my students? – This generates RQ1.
- How can Mental Toughness be improved?
- What are the barriers to implementing Mental Toughness interventions?

1.3 Clarity of this assignment.

Firstly, in this assignment it is not the intention to imply that 'everyone needs to be mentally tough', each individual is unique and are positioned across a spectrum of MT – each holds their own benefits and weaknesses. Society needs a mix of the mentally sensitive and mentally tough to thrive. However, from the definition of MT, as discussed in Chapter 2.1, those who are tougher are better able to deal with high-pressure environments; consequently, they tend to do better in areas of assessment such as: at school, at work and at competitive sports (Clough & Strycharczyk, 2012).

Unfortunately, today's society favours the mentally tough, not only in education but as well in later life (Marchant et al., 2009). An important message from Peter Clough who founded the 4C Model of MT:

> 'We can show that mentally tough individuals can function better in the world as it is today; this does not mean they are 'right'. Sensitive individuals have much to offer, however they seem seldom to be in a position to offer it. We find it hard to think of a senior politician who is not tough. Similarly, most leaders in business and sport are mentally tough. Those in charge set the parameters. This is often not done with malicious intent; rather most of us find it difficult to see the world from other perspectives. These are not designed to necessarily change the 'core person' but allow them to prosper in a potentially hostile environment.'
>
> (Clough & Strycharczyk, 2012, p.279)

Whilst there is an academic debate among the impact psychological interventions have, which is discussed in the literature review, as a teacher, I want to give my students the best possible chance of creating a life they are happy with; realising their potential for whichever field they choose in the society put in front of them.

Secondly, this study is not presenting MT as the sole answer to 'Why are students underachieving?' Everybody is a complex individual with different psychological states that affect their actions and reaction in situations, however, as discussed in Chapter 2, there is enough and growing evidence to suggest that the Mentally Tough characteristic can positively influence a student's future – not only in terms of academic outcome but as well in later life.

Chapter 2: Literature Review

The literature review covers two key areas. Firstly, discussing MT as a construct and its significance in an educational setting. The second area explores the development and implementation of non-cognitive attributes.

2.1 What does it mean to be Mentally Tough?

MT was first coined by Loehr in the mid-1980's to explain sporting prowess, in his study they defined MT as "the ability to consistently perform towards the upper range of your talent and skill regardless of competitive circumstances" (1986). As MT has developed, variations of its model have emerged (Clough et al., 2002; Coulter et al., 2010; Golby & Sheard, 2006), whilst an interesting read in the similarities and variations between their models, I will focus on Clough et al.'s 4C Model due to its

'simpler, yet relatively comprehensive approach' which has been applied in previous education studies (McGeown et al., 2016, p.101).

Where Loehr's focus was on the relationship between stress and sporting success, numerous competitive and pressured environments exist outside of sport (Gerber et al., 2013b). Kobasa studied the relation between stress and illness developing the term 'Hardiness' (1979). A hardy individual was someone able to cope better in stressful situations due to their perception of a situation and action taken (Maddi, 1991). Kobasa wrote that these decisions were down to three interrelated components:

> (a) the belief that they can control or influence the events of their experience,
> (b) an ability to feel deeply involved in or committed to the activities of their lives,
> (c) the anticipation of change as an exciting challenge to further development
> (Kobasa, 1979, p.3).

Unlike Hardiness, MT does not represent an effective coping mechanism, rather, MT allows individuals to proactively seek out personal growth; where MT can be seen 'as a buffer between stressful life events and illness' (Clough, 2008, p.209).

Clough, Earle, and Sewell studied three coaches, one executive and eight athletes about what they determine defines MT (2002). From the results, they found four over-arching dominant themes: commitment, challenge, control (life control and emotional control) and confidence (confidence of ability and interpersonal confidence) and defined MT as managing our thinking to perform at optimum levels irrespective of prevailing circumstances. Using this model, MT can be seen as an 'umbrella term' where each component needs to be looked at separately (Lin et al., 2017b; McGeown et al., 2016). I will also compare the academic literature to a study carried out by McGeown et al. (2017) with how these terms are interpreted by adolescent students.

2.1.1 Commitment

Kobasa defined commitment as the individual knowing their goals, values, and decision making to 'support an internal balance' (1979, p.4). It is necessary to recognise Kobasa's definition in the development of the 4C Model, specifically the focus on goals and appropriate decision making; however, the definition is limited through its sole-purpose, the prevention of illness. In later years, Maddi et al. uses the definition as the tendency to involve oneself in (rather than experience alienation from) whatever one is doing or encounters (Maddi et al., 1982); this broader definition allows application to an educational setting where a student's decision making is for self-development – evolving implicitly from Kobasa's original definition. In Maddi's definition, we can apply how students identify and give meaning to new situations – to take the initiative in the environment rather than passively accepting it. A student who has high commitment is likely to need less prompting to complete tasks, will be more likely to complete tasks, and maybe more autonomous in their learning in general (McGeown et al., 2016).

McGeown et al. defines confidence as 'the perseverance and ability to carry out a task successfully, despite problems and obstacles' (2016, p.96), this implicitly draws attention to key aspects of commitment through its reference to other non-cognitive attributes (perseverance, grit and resilience) which influence, and can aid, the commitment of an individual. Perseverance is the 'determination to master a skill or complete a task' (McGeown et al., 2017, p.200), a definition parallel to that of commitment. The inclusion of 'problems and obstacles' includes Putwain et al.'s study on resilience (2013). Putwain et al. suggests for an individual to persevere, they need to be able to adapt effectively in situations of adversity or stress. Academically, this could mean coming from a disadvantaged background or, everyday pressures such as poor

test results which requires 'everyday resilience' or 'buoyancy' (Martin & Marsh, 2008). This definition additionally links to the model's origin of hardiness, where stress is a determining factor for change or continuation with a task. What McGeown et al. definition also shows is that components of MT are interlinked and not mutually exclusive.

McGeown's (2017) study found that students' commitment fluctuated between subjects, due to accessibility or engagement. Academically this attributes commitment to have links with expectancy-value theory (Wigfield & Eccles, 2000) as an element to intrinsic motivation to the task. The decision of whether these components are stable or ever-changing is discussed in 2.1.5.

2.1.2 Challenge

Challenge is often related to difficulty. Challenge, as a component of MT, is the perception that change is normal and that anticipating change provides incentives from growth rather than a threat to security (Kobasa et al., 1982). While Kobasa is concerned with illness and security of the individual's health, in relating to an education environment, McGeown et al. uses 'security' to mean 'see new situations as opportunities for self-development, rather than as threats'; in this case, students are empowering themselves to not only take on a challenging lesson tasks but to take on approaching available opportunities (2017, p.197). Students who are not afraid and seek out challenge, will likely set higher aspirational targets, thus having greater opportunities to academically achieve.

This definition allows a clear distinction as a psychological trait between challenge and confidence; a student confident in their ability (defined later) will be more likely to tackle a more difficult task. Whereas, someone who scores highly on

challenge will seek out the opportunities outside of the lesson to develop their knowledge further than the classroom walls (Berkley, 2014).

2.1.3 Control – Life Control and Emotional Control

It is a reasonably understood concept that the more an individual believes their actions can influence a situation, the more likely they are to feel that they can make a difference. However, understanding control has been proposed in different ways whether as a personal need or drive, within motivation theory (Bandura, 1977) or an individual difference in the need to exert authority (Burger & Cooper, 1979). Kobasa's view of control refers to the ability to feel and act as if influential of various contingencies of life (Kobasa et al., 1982).

In Kobasa's study, they use Averill's model of control where a stressful event is seen as an on-going life plan, 'using knowledge, skill, and choice, thus influencing how situations are appraised' (Clough & Strycharczyk, 2012, p.27). In Clough's research, he found two distinct categories defining control: life Control, the concept that individuals believe that they are able to have a significant effect over the factors that influence their behaviour, performances and their future (St Clair-Thompson et al., 2015); and emotional control as an individual's ability to regulate their emotions to an appropriate intensity and the extent of which they are revealed to others (McGeown et al., 2017) – this is not the same as not having these emotions nor that they are not emotionally sensitive (Clough & Strycharczyk, 2012, p.52). Clough's model uses simpler language than that of Averill's model where the language of 'decisional control', 'cognitive control' is replaced with life control and 'coping skill' is replaced with emotional control. This language has more appeal for non-academics and therefore suitable in discussion with a student audience (Gerber et al., 2013b).

Within education, the skills encompassing control will likely provide advantages on academic success; e.g. students high in life control will organise their workload effectively. In addition, these students are expected to feel more empowered about their actions and therefore set higher aspirations. This will consequently contribute to the students' level of commitment (McGeown, 2017). When discussing challenge, I started by declaring that challenge is not about task-difficulty. The concept of life control in MT has strong ties with Wiener's Attribution Theory (1972) and the decisions these students take. A student who has high life control would attribute feedback to their effort and that it is within their control to improve (Schunk, 1987); whereas, someone at the opposite end of the spectrum, will result in placing blame on external factors i.e. difficulty and luck or hold a fixed-mindset (Dweck, 2017). Adolescents identified the responsibility of becoming more autonomous as they grow up and correlated control to their decision making (McGeown 2017, p.203). This autonomy is captured by Self-determination theory (Deci & Ryan, 2000) where autonomy, confidence, and control facilitate motivation to learn.

2.1.4 Confidence – Interpersonal Confidence and Confidence in Abilities

Confidence is not a component of hardiness; however, Clough deemed confidence as a key factor in an individual's mental toughness due to his initial study (2002). In education, confidence is necessary because students who perceive themselves competent are likely to engage in more challenging learning activities (Boggiano et al., 1988), however, this is not always the case (Berkley, 2014) and that confidence influenced the other components of the MT framework.

Defining confidence, similar to control, has been a discussion of academic debate where some simply call it a 'catchword', such as Bandura who prefers 'self-efficacy' (1977). Bandura writes that where confidence is nondescript and refers to an

unspecified strength of belief. Self-efficacy refers to the belief in one's agentive capabilities to produce given levels of attainment. Confidence, as defined in MT, encompasses more than just self-efficacy. The term self-esteem, related to pride and acceptance in one's strengths and weaknesses (Clough & Strycharczyk, 2012), Clough recognises this reflection needs to be accounted for when evaluating confidence. In the 4C Model, confidence, similar to control, is split into two sub-categories: confidence in ability and interpersonal confidence. Rather than defining confidence, both these categories are written as spectrums: confidence in abilities is 'a measure of self-esteem, identifying the extent in which you feel worthwhile and in need of external validation' and interpersonal confidence is 'the extent to which we are prepared to assert ourselves and our preparedness to deal with challenge and ridicule' (Clough & Strycharczyk, 2012, p.83).

Therefore confidence will be defined in this study, as the belief one has the intellectual toolkit to complete a particular task but, also be able to maintain their position when receiving comments, criticism or oral challenges to the task – this task by definition is not defined and therefore is not to be assumed as an academic problem. In all other attributes, McGeown's study has been directly in answer to an educational setting. Students interpret interpersonal confidence as being beneficial to both educational and personal development, for example adjusting to new environments/contexts, such as work, higher education (2017, p.205). It is important to note students identified themselves that these traits have benefits beyond that of their immediate future and education.

2.1.5 How can Mental Toughness be defined?

As written above and in Kobasa's description of Hardiness, the components of MT are not mutually exclusive; this is agreed among adolescents' perceptions, in

McGeown's focus groups, 'engaging in challenge was, for some, based upon confidence in their abilities' (p.206) as well as emotional control affecting a student's commitment (p.202). Whilst, components of MT are not mutually exclusive, the components are statistically independent (Perry et al., 2013). McGeown summarised her findings in agreement with Gerber (2013b) that Mental Toughness provides a language that students and teachers can share more readily.

A discussion that is academically debated was also raised by students of how the 4C components are perceived. In McGeown's study, students had varied perceptions, raising the idea of whether these attributes were domain-specific (Guay et al., 2010) or a stable trait (Clough et al., 2002; McGeown et al., 2017). This detail goes against Clough's initial view that these attributes should not be domain-specific, that this is a 'selective approach' by the student rather than representing their limitation (Clough et al., 2002). Whilst some students did not waiver across domains (i.e. subjects), some admitted varying their attribute output depending upon circumstance – it is not disguised that students' attitudes to learning vary across subjects (Stankov et al., 2014). Through my teaching practice, I favour McGeown's opinion: in practice, whether a student chooses to increase their selective level or whether their mental toughness increases, the practicality for myself as a teacher results in a 'stronger' student (2017).

2.2 What are the benefits of being Mentally Tough?

For many young people, adolescence is a time where they are vulnerable to significant level of stress (Byrne et al., 2007), which if not coped with constructively, can lead to symptoms of mental ill-health (Hoek et al., 2009). In developing the MT model for adolescents and education, the research evaluated stress as 'detrimental' to academic performance, school engagement and attendance (McGeown et al., 2017,

p.202). The Hardiness model, which strongly led to the 4C model, focused on this aspect of stress. When constructing the 4C Model, Clough (2002) defines the components influencing low anxiety levels, which studies have shown are associated with greater academic attainment (Owens et al., 2008). In a study on students at vocational schools, perceived stress and symptoms of depression negatively correlated with their MT (Gerber et al., 2013a). In a following study, Gerber et al. (2013b) found a similar relation among high school and undergraduate students where MT associated with lower perceived stress and depressive symptoms.

A study involving 114 students in UAE, found a significant relationship between MT and attainment in all subjects assessed, except English (St Clair-Thompson, 2014). A majority of subjects involve recall of information, a skill better equipped by mentally tough individuals who are able to suppress irrelevant information (Dewhurst et al., 2012); in English, and potentially other subjects e.g. Art, this process is not fundamental to their attainment and therefore not significant. A more recent study by St Clair-Thompson et al. (2015) assessed which components of MT were contributors to student attainment. Using the MTQ48, she found commitment ($r=0.23$) control of life ($r=0.23$) and total mental toughness ($r=0.22$) were positively correlated to the student's attainment, significant to $p<0.01$; whereas confidence and control of emotion were not contributors. The results of this study will be the primary comparison when comparing the results of my school so, for ease of access, results from this study can be found in Appendix 2.

There is a significant link between absence and achievement across Key Stage 2 ad 4 (Department of Education, 2016b). St Clair-Thompson et al. (2015), with adolescent students, evidence supporting previous research by Crust et al. (2012), on university sport students, that mental toughness affected not only attainment, but

attendance and drop-out with '[emotional control] and confidence in abilities were significantly related to attendance' (p.891). This would be expected, those students who felt in control and confident will find it easier to manage the demands of school. Although both Crust and St Clair-Thompson agreed that a correlation between mental toughness and attendance exists, Crust additionally found interpersonal confidence as a significant factor to attendance due to its value for a sense of belonging; this could be due a difference in participants as Crust's study is sport orientated. This was not found in the UAE Study or Lin et al. (2017a) where no significant correlation was found between mental toughness and attendance. Lin et al. explains this due to a 'ceiling effect' as attendance levels were set and mandatory to the students taking part (2017a, p.186).

St Clair-Thompson et al. (2015) study is important for four reasons: how recent the study is, the study was done in the UK, the size of the study and the participants involving adolescents in an educational setting. The second study found that MT not only affecting students' academic achievement but also their attitudes towards education. The study revealed an inverse relationship between MT and students' counterproductive behaviour; the most frequent aspect for counterproductive behaviour was control of life, a significant predictor of three subtypes of behaviour: cognitive, hyperactivity and ADHD – control of life was second to commitment for oppositional behaviour. Whilst life control appeared to have the most influence, multiple components of MT had significant negative correlations at $p<0.01$. The third study St Clair-Thompson carried out was looking at the student's relationships. As expected from their definitions, relationships were closely linked to both sub-components of confidence. 'Challenge, [emotional control], [life control], and each aspect of confidence were significantly related to self-perceptions of social acceptance' (p.900).

Interestingly, confidence also encouraged social engagement. Students were more likely to interact with those who scored high on interpersonal confidence whilst for a task, were more likely to interact with those who scored high on confidence in abilities.

As a teacher, I look to improve students' progress through school, it is important that students are being prepared for their next stage. A study involving undergraduate students presented all components of MT to be positively associated with their education and personal-emotional adjustment (St Clair-Thompson et al., 2017).

> 'More specifically: commitment and life control significantly predicted academic adjustment; life control and interpersonal confidence predicted social adjustment; and commitment, emotional control, and confidence in one's abilities predicted personal-emotional adaptation.'
>
> (Lin et al., 2017b, p.6)

Beyond education, Gucciardi et al. (2015) found that one's MT, due to their ability to cope with stress, directly related positively to supervisor-rated work performance across 497 employees. Whilst Gucciardi uses a different model of MT, Marchant et al. (2009), testing on the MTQ48, found higher MT associated with a higher likelihood of working in senior managerial roles across the United Kingdom. Lin et al. (2017a) support this claim by measuring participants MT to their income as a measure of life satisfaction. When age and gender were controlled, participants with higher levels of total MT achieved higher income levels (p.181). However, Lin et al. in response to her study, and that of Marchant et al., raises that it is not clear whether a) mental toughness allowed the participant the managerial position or, b) the managerial position created an environment where the participant became increasingly mentally tough (2017b).

As discussed in Chapter 2.1, MT is a construct which branches to other non-cognitive attributes. Where studies show evidence to suggest a correlation where these

attributes benefit education and later life, subsequently, it can be said that they also embed the need for MT. For example, Horsburgh et al. (2009) found a significant positive correlation between MT and conscientiousness, which is known to be a good predictor of academic achievement (Bauer & Liang 2003).

2.3 Can Mental Toughness be developed?

Academics debate whether MT is: inherited or developed, a characteristic or trait, ever-changing or constant.

Horsburgh et al. (2009), using a sample of twins, found a strong genetic component whilst Clough et al. reported a positive correlation between MT and grey matter tissue volume in the right frontal lobe; both studies found a genetic link, however, neither study excluded the influence of environmental factors (as found in Coulter et al., (2010)). Gucciardi et al. (2009) study evaluating MT suggests MT as a collection of experiences and inherent values, attitudes, emotions, and cognitions influencing how we appraise both negative and positive events and stressors. This is supported by previous research on the influence other people have in developing one's psychology (Bowers et al., 2011; Goldstein et al., 2005). The link of MT and experiential learning was evident by Lin et al. (2017a) who found age has a significant effect on MT and its components – where age could be used as a predictor of overall MT. These studies provide further evidence that MT is malleable and sensitive to life events, paving the way for developing interventions to improve mental toughness.

Whilst it would be abrupt to declare MT as nature or nurtured, previous psychological interventions have shown that non-cognitive attributes can be developed and are malleable by targeted training (Blackwell 2007; Gordon 2012; Paunesku et al., 2015). Importantly, this concept is agreed by students; McGeown concluded her study

by stating that students identified a range of environmental features attributing to their MT and therefore 'not perceived as "internal", but could be nurtured' (2017, p.206). This raises more academic debate as Clough et al. (2002) would argue that the MT components should not be domain-specific and that this is not representing "true commitment". If this is the case, it differentiates MT from other non-cognitive attributes found to be domain-specific, such as motivation or resilience – which is seen as a process rather than a trait (Rutter 2008). Whilst Clough may feel calling MT a mindset (as found in St Clair-Thompson, 2014) as an 'injustice to a far more complex picture' (p.209), there is an agreement that this idea promotes the evidence that MT can be developed through psychological training (Strycharczyk & Clough, 2014).

In a sporting context, Crust and Azadi (2010) reported that mentally tough individuals were more likely to use psychological strategies, each of which can be recognised as being able to be taught or developed e.g. relaxation, positive self-talk, and emotional control. A comment that I find myself consistently returning to is: are we making students more mentally tough or, just giving them tools to mimic what comes naturally to those who already have them (Berkley, 2014)? For me, the answer is "does it matter?" Evidence and interventions have shown that MT positively correlates with student development – beyond academic attainment and achievement – and that through careful intervention can be developed. Whilst this debate continues, it holds an academic standpoint rather than practice; beyond the difficulty of assessing a psychological intervention, as it is difficult to precisely analyse how these interventions operate on student psychology (Ross & Nisbett 1991).

2.4 How can Mental Toughness by developed?

MT in education is still very much in its infancy. In 2.2, we discussed MT as a significant contributor to academic outcomes and in 2.3 identified that 'mental toughness is both "caught" via environmental influences and "taught" through training' (Weinberg, 2011, p.3); there is a 'lack of empirical support' of intervention in the literature which has set out to improve MT in a manner accessible within current school frameworks (Lin et al., 2017b, p.12). This problem stems further than just MT: 'For all the discussion of non-cognitive factors in recent years, there has been little conclusive agreement on how best to help young people develop them' (Tough, 2016, p.5).

Lin et al. (2017a) ends their study with suggesting commitment and confidence are more malleable than other components, and that these should be maximised for an effective intervention program across achievement contexts (p.183). In another approach, McGeown (2017) suggests emotional control should be targeted due to the current nature of intervention being on anxiety control and exam-specific (p.207). As this study develops, it will be the results of RQ1 that decide the direction of the intervention however, both these authors raise valuable information on the current views of effectively implementing MT strategies.

In both books, in developing MT (Clough & Strycharczyk, 2012; Strycharczyk & Clough, 2014), similar to those put forward by Crust and Azadi (2010), they identify procedures that lead to improved MT. Whilst not all are going to be used in this study, with the direction from Oakes and Griffin's VESPA Model (Chapter 3.3), some of these strategies will be used in generating my intervention. Following Lin et al. (2017b), Clough and Strycharczyk do not reference literature of interventions that have successfully used the strategies put forward in their books.

To understand the importance and value of the non-cognitive interventions, I will be looking at two studies. Blackwell, Trzeniewski and Dweck (2007) have become well known for highlighting the need for psychological intervention alongside academic study. Whilst Paunesku et al. (2013), using the same strategy, wanted to tackle the scalable problem around mindset interventions.

Blackwell and colleagues investigated how students' theories of intelligence shaped their interpretation and response to setbacks over a set of eight workshops, the workshop lessons taught students that the brain grows with effort. Over the eight workshops, the students displayed a sharp increase in math achievement, an effect not shown by a control group who attended a workshop on study skills (Blackwell et al., 2007). This study represented the importance and effect psychological interventions can have; how over a short period, tackling self-reinforcing recursive processes, that psychological interventions can work (Walton & Cohen, 2011). The study, promoting growth mindset, encapsulates components of MT – adapting a students' confidence impacting life control and future commitment to challenging tasks.

Studies have shown the validity of psychological interventions however, the majority are small scale studies. Implementing these strategies into the school curriculum becomes unachievable due to cost and time (Bryk et al., 2011, p.130) or, the original message of the intervention gets lost in the scaling stages (Yeager & Walton, 2011). Most psychological interventions revolve around personal delivery and therefore target a minority of students – usually the underachieving (Yeager & Walton 2011). Paunesku et al. (2013) aimed to remove this barrier in a study involving 1,594 students in 3 geographic areas using 'broad samples' and 'minimal researcher input'. The intervention, similar to Blackwell et al. (2007), displayed intelligence as something that can grow when working on challenging tasks. The result was promising, through two

forty-five minutes interventions 'students were significantly more likely to earn satisfactory grades in core academic classes after the intervention' (p.790). This study has shown that delivering intervention on non-cognitive attributes did not always have to be personal or small scale.

Both these studies show that students' non-cognitive attributes can change through well-structured intervention. Whilst Blackwell et al. study used smaller sample sizes and was over a longer timeframe, Paunesku et al. has shown that appropriately designed intervention can have the desired effect. Precursory to the success of the intervention, Paunesku et al. recognises that resources and academic environments influence the results. The rationale behind an intervention must be iterated and reiterated through the academic establishment, this in turn will enable it to be used consistently and become embedded, otherwise, such opportunities may be ineffective if absent (p.791). This message leads me to my next section of how these interventions should be implemented.

2.5 How should a psychological intervention be implemented?

Psychological interventions work on different principles of academic interventions. Yeager & Walton (2011) have shown that large problems can be solved through small reforms and can have a powerful effect; these interventions work within the context of existing structures to make them more effective. Psychological interventions change students' mindsets to help them take greater advantage of available learning opportunities, i.e. seeking challenge (Yeager & Walton, 2011; Yeager et al., 2013).

A well timed-intervention can improve students' relationships, experiences and performance and thus improve their development through school (Yeager et al., 2013).

An intervention should focus on 'key educational junctures' such as 'beginning of the academic year' or 'important transition' as at these times the students' recursive processes become challenged with the new environment and become re-evaluated (Yeager & Walton, 2013, p.287). Yeager et al. (2012) recognised, to implement a successful psychological intervention, you must first begin by understanding what school feels like to the student. This identification determines whether the aim is to increase forces that promote behaviour or, to remove barriers that restrain desired behaviour for learning (Yeager & Walton, 2011).

In any intervention, especially psychological, purposeful practice is needed from the student to embed the new intervention into routine (Berkley, 2014) and therefore an element of self-reflection is needed from the student to take on-board the message being given (Crust & Clough, 2011). The idea of self-reflection leads to the teacher-role for this approach to become more of a 'coach' – primarily to increase awareness and a sense of personal responsibility (Whitmore, 2002); an aware student is more likely to elicit a change in their behaviour and, ideally, improve. The power of coaching, specifically for MT, has been shown in Green et al. (2007) where coaching increased 'cognitive hardiness' and hopefulness in high school students (p.24). The difference with Green's study is again the size (56 participants), which were split further into smaller groups during the intervention. This does raise a potential barrier to my intervention.

Teachers understand the importance of non-cognitive attributes however, may not know the best ways to bring positive change for their students. Well-intended practices can sometimes do more harm than good (Yeager et al., 2013, p.65). If students believe that teachers are conveying the messages as needing help, or an extended

workshop, this could potentially undo the effects of the intervention (Sherman et al., 2009).

2.5.1 Concerns with psychological interventions with larger participant numbers

When interventions are scaled up, the specific activities are scaled rather than the focus being on the student experience (Yeager & Walton, 2011). Where the scale does not incorporate the theoretical underpinning required to be successful, the intervention becomes just another "going through the motions" – The intervention needs to come from the student. This was discovered in Hulleman and Harackiewicz (2009). Students were tasked with generating reasons why schoolwork was relevant to their lives. When low-expectation students were promoted to do this themselves, it led to a 0.8 (out of 4.0) gain in student success. What Hulleman and Harackiewicz incorporated was for students to structure the exercises to generate meaning to them; students personalised the intervention to generate an intended experience in the way that is most relevant to them. Similar to Blackwell et al. and Paunesku et al., each intervention enlisted students to actively participate in or, generating the intervention itself (Lewin, 1952).

As lessons will be delivered at the same time, the intervention involves removing myself as the distributor of the lessons. Labaree (1998) discusses the "duchy" of teachers when the classroom door closes and its impact in delivering reform. Any educational intervention that requires teachers in a closed setting, their classroom, is affected by this realism. By structuring the lessons where students or teachers personalise the exercises themselves, teachers become facilitators rather than focal or a psychological expert. If done appropriately, well-managed classrooms can provide personally meaningful intervention to diverse students and thus be successful (Yeager

& Walton, 2011). With these opportunities for nonobvious, subtle changes, Yeager recommends, when dealing with psychological intervention to approach with 'humility and with rigorous, step-by-step evaluations. Qualitative methods may supplement experimental methods in these evaluations' (Yeager & Walton, 2011, p.291).

2.6 Summary of Findings and Research Questions

From evaluating the literature, it has deepened my understanding of MT, what MT means to students and also the direction my study needs to take in developing an effective intervention. The literature agrees that MT positively impacts students' experiences at school, as well as in later life.

While I aim to approach as many students as possible, it only raises the barrier of instrumenting change within the student's psychology – taking into consideration a class of typically 30 students. Chapter 2.3 has identified that, whilst genetics may give an advantageous start in one's mental toughness, through targeted training, MT is malleable; however, the positive nature of the implementation may cause confrontation if this message is not echoed or similar to students' experiences up to now.

The time scale and schedule for the intervention is crucial. Students go through various stressful events during their time at secondary school – both academically and personally. I have chosen to focus my MT study on Year 10 because it will support their preparation for Year 11, following Yeager and Walton (2013) advice as preparing for an important transition.

The literature also addresses the teacher's role in these interventions. Whilst this barrier cannot be completely removed, it will be important to collaborate with the members of staff involved to ensure they are confident and aware of the "message"

wanting to be broadcast to students and the possible pitfalls as addressed by Yeager et al. (2013).

The literature identifies the importance of identification, by doing questionnaires, the act of data collection can be used to encourage students to reflect upon their mental toughness and identify their strengths and weaknesses (St Clair-Thompson, 2014). In developing the intervention lessons, whilst the typical personal approach cannot be taken (i.e small groups), a personal approach can still be developed as shown in the previous studies examined. I will be able to develop a structured activity that allows students to imprint their mental toughness and views onto the lessons, enabling them to self-assess and evaluate themselves (Yeager et al., 2012).

The literature has enables me to reflect on the questions that this study should answer. Firstly, I need to ascertain the school's MT needs. As MT encompasses 6 components, the identification process will allow a direction for the intervention in which components within my educational context need addressing. Secondly, for students to actively engage with the lessons, students will need to want to participate and therefore their perceptions to non-cognitive intervention need to be assessed. Thirdly, whilst theoretical barriers to psychological interventions have been addressed, the practicality and barriers found for this intervention will allow insight for further development in whether it can be established into the school curriculum. These three questions generate the research questions I intend to answer with this study:

- RQ1: How does the Mental Toughness of my school relate to previous studies, primarily, St Clair-Thompson's (2014) study?
- RQ2: What are the perceptions to non-cognitive interventions in my school?
- RQ3: What barriers were found in implementing the intervention?

Chapter 3: Methodology

3.1 Context and rationale for design frame choice

Due to being short-staffed within my subject department, implementing new intervention within mathematics did not seem appropriate. Through this study, I aim to develop an understanding of the attitudes held by my students; through collaboration from colleagues and participants involved, develop and implement a pastoral approach to developing MT. These various explorations into students' concepts and attitudes around MT suited the approach of practitioner action research defined by Piggot-Irvine in Cohen et al. (2018).

> 'A collaborative transformative approach with joint focus on rigorous data collection, knowledge generation, reflection and distinctive action/change elements that pursue practical solutions' (p.248).

Justifications to use an action research approach is explained further:

- Works best on problems that they have identified themselves.
- Become more effective when they are encouraged to examine and assess their own work and then consider ways of working differently.
- Help each other by working collaboratively.
- Help each other in their professional development by working together.

(Ferrance 2000 in Cohen et al., 2018, p.441)

Within this assignment, Point 1 and 2 were delivered in Chapter 1 whilst I will explain the collaborative aspect later in this chapter.

The literature above typifies my reasoning for action research in this study. In explaining my methodology, I will be using McAteer's (2013) structure for methodology of carrying out action research through a five-step process: Identifying the research question; finding out about the present situation; identifying changes that can be made; evaluating the effects of such changes; revising the original question as a consequence of the findings of the research (pp. 32-3). So far, the overall aim and

research questions of the study have already been outlined. McAteer's second step marries well with RQ1.

3.1.1 Ethical Considerations

Ethical Considerations is 'a matter of principled sensitivity to the right of others' (Cavan, 1977, p.810). In line with MSc at Oxford, The CUREC 1A ethical approval checklist was used to identify potential ethical issues and the steps to be taken in addressing them – this was approved by the university ethics committee.

I acquired headteacher consent (Appendix 1). Pupils were not subject to any research processes that went beyond usual practice, for instance outside of the school day – however, interviews were conducted where students were taken out of subject lessons. I allowed students to self-determine whether they took part in the study. Participants were made aware of the risks and benefits of being involved in the research and therefore, could make an informed decision about their participation (Howe and Moses, 1999).

As each stage of the methodology for this study is explained, I will cover the ethical considerations that were addressed and their effects.

3.2 Finding out about the present situation

As discussed in the literature, it is important to identify the situation to generate meaningful change. To generate intervention for year 10, it would be logical to use their cohort in generating this data. Whilst all students will have different upbringings and are unique, they are progressing through the same educational institution; therefore, connections could be inferred that MT across year 10 will reflect the trajectory in lower years as they develop through the school. Due to the amount of data to be collected, a

quantitative approach was used for ease of use in calculating averages and deviations (Cohen et al., 2018).

3.2.1 Instruments to be used

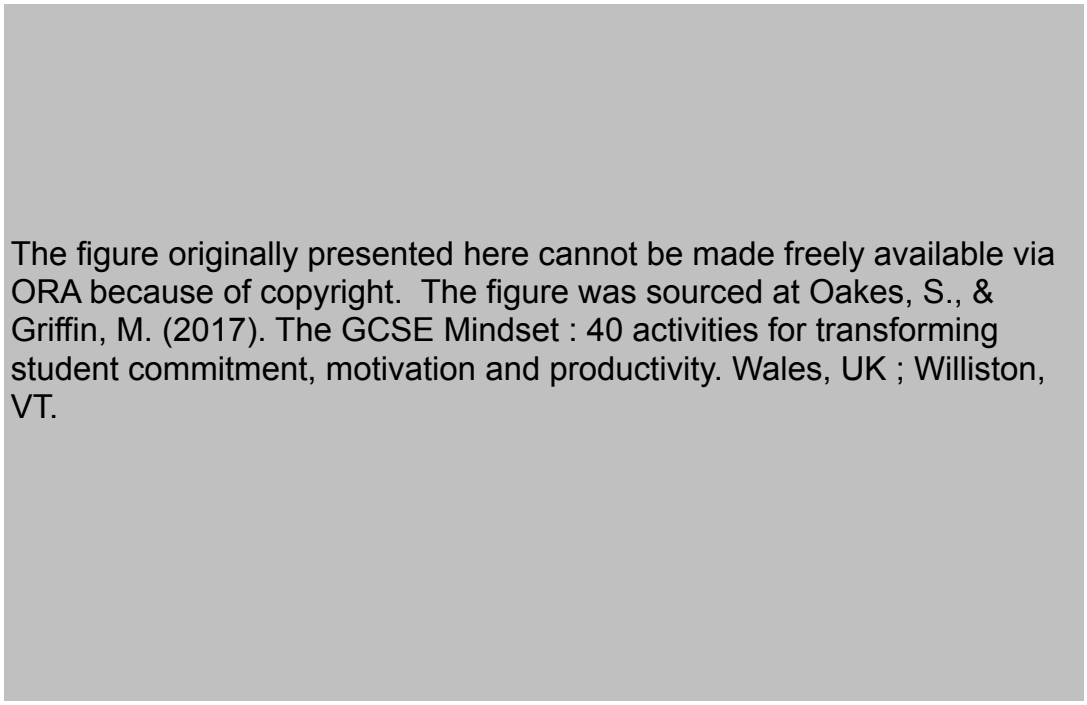
As there are different models of MT, different measures have too been designed. I have mentioned Gucciardi (2009) study which used MTI (Mental Toughness Inventory) and, more commonly used in education, the MTQ-48 (Mental Toughness Questionnaire – 48 questions) developed by Clough (Perry et al., 2013). The MTI would not be suitable as Gucciardi follows a different model of MT.

In preparing this study, I wanted to use MTQ-48, as this measure has been used in previous research looking at MT in education (e.g. St Clair-Thompson, 2014). There are two main considerations with using the MTQ-48. Firstly, the questionnaire targets athletes and the workplace – not education; secondly, the test was created and designed for an adult population. The test has not been measured or scrutinised for an adolescent population. With this dilemma, I spoke to a PhD student who brought to attention The Mental Toughness Scale for Adolescents (MTS-A) (Appendix 4) developed by McGeown, St Clair-Thompson and Putwain (2018). The structure of MTS-A follows the same design framework and model as the MTQ-48 targeting adolescents in education. Due to its recent publishing, the MTS-A has not been used frequently in educational research.

Participants respond to statements using a Likert scale of 1 to 4. Similar to the MTQ and MTI, the MTS-A relies on self-reporting. This, whilst cannot be avoided, needs to be recognised that 'self-reporting is susceptible to socially desirable responding and biases in self-representation' (Lin et al., 2017b, p.11); specifically, student-reported MT has previously related to their general psychological well-being

(p.158). To address this, a second reference point will be used, the tutors. Student data will be compared with the tutors of the cohort to see whether there is a significant difference between staff perceptions and student self-perceptions.

A second concern of the MTS-A questionnaire was the openness of the questions to interpretation within a limited Likert scale. To ensure the data collected is valid, a second test was used – Vision, Effort, Systems, Practice and Attitude (VESPA) Test by Oakes and Griffin (2017) (Appendix 5). The connections between VESPA and this study are explained further in 3.3. With a focus on attitude, these two tests should have a positive correlation in results due to the attributes being tested as evident in fig 1. The VESPA test asks 28 questions categorised in each of its 5 sections against a Likert Scale of 1 to 5.



Once the MTS-A was determined to be a valuable measure of MT, the results of the Overall Mental Toughness and individual components were measured against student data (achievement, attendance and behaviour) for the Autumn term. Achievement of the student will be measured against their Progress 8 (P8). P8 is 'the

difference between their actual Attainment 8 result and the average result of those in their prior attainment group' (Department of Education, 2016a, p.3). While previous studies have used attainment, P8 is the primary measure in my educational setting. Attendance will be measured as a percentage, where 100% equates to no absences. The behaviour will be measured by positive and negative points, awarded by their teachers as per school policy.

3.2.2 Data Collection

The questions were administered on paper copies in accordance with the students' regular exam procedures. The results were collated and responses were translated to an excel document. Where a student had given two values, the median of the two was taken.

Example:
Answer: '2 or 3' or '2/3'
Score given: 2.5

All documents used in this study were password-protected on a school laptop. Once uploaded, the paper copies were shredded.

With the data collected, the mean of the relevant columns generated each component score as well as an Overall Mental Toughness and VESPA score. Using data provided within the school, these components were then used to find correlations in whether mental toughness influenced these academic measures. Results discussed in Chapter 4.1.

3.2.3 Ethical Consideration and Delivery

The tests were administered as paper copies during December. This decision allowed academic data to have cumulated over the term and avoided high-stress

academic events, i.e. tests, which may affect students' responses. Being aware of how sensitive the data would be in relation to MT I ensured that I explained, in an assembly to Year 10, the clear expectations of participation and reassured students about data protection. Students, therefore, could decide on their participation. For those who were not present in the assembly, before administering the test an oral and visual message was passed to tutors to be read out and displayed on the board (Appendix 3).

No student was forced to take part in the questionnaires. Students who did not wish to be a part of the study were told to leave their name blank and did need to complete them. By not leaving their name, correlations could not be made between their mental toughness and academic data. Any questionnaires with no name were immediately shredded.

In preparation for the intervention lessons, students were asked at the end of the VESPA questionnaire for participation in the focus group to discuss the interventions, during and at the end of the study. Only students who circled that they were willing were chosen for the interview process. (Appendix 5)

Overall, 128 students took part in the questionnaire and 76 (59%) were willing to take part in the focus group stages.

3.3 Identifying changes that can be made

As mentioned in Chapter 1, from the school's most recent Ofsted report (2017), PSHE and the tutorial programme were targeted as next steps for the school's improvement. Following the readings of the literature, the activities purposefully avoided being exam-related or, being teacher-led. To generate the activities, I searched for activities building non-cognitive attributes. There were two stages of collaboration in this assignment: firstly, in choosing the activities, they were presented to tutors to

decide which were deemed most appropriate for our cohort. Second, at the end of cycle two, working with the year 10 focus group, adapting the intervention to suit a younger cohort (year 8) to meet the needs at Key Stage 3 – discussed in 4.2.1.

3.3.1 Generating the Lessons

The lessons developed came from: 'The GCSE Mindset: 40 activities for transforming student Commitment, Motivation and Productivity' by Oakes and Griffin (2017) who designed the VESPA Model.

The VESPA Model followed the methods I aim to implement, an 'actionable' and 'workable' set of activities that aid students to develop strategies and embed them to their repertoire of tools (Oakes and Griffin, 2017, p.16). This design encapsulated Berkley (2014), developing skills that mentally tough students may have developed, as Crust and Azadi (2010) wrote, with strategies above mentioned by Clough & Strycharczyk. The activities also allow implementation recommended by McGeown et al. where lessons support student autonomy in managing their own emotions through positive student-staff relationship – students do not feel targeted.

Component	Definition	Literature	Who
Vision	They know what they want to achieve.	emphasis on 'stickability' to a long-term goal	Duckworth (2016)
Effort	They work hard and put in many hours of proactive independent study.	Academic Perseverance', performance on most tasks depends on effort	Heckman and Kautz (2012)
Systems	They organise their learning resources and their time.	academic challenges related more to a lack of organisation than ability	Hassanbeigi et al (2011)
Practice	How they are practising	'Deliberate Practice'. How they are using their time when learning;	Stafford and Dewar (2014)
Attitude	They have a growth mind-set and respond constructively to setbacks.	Confidence', 'Emotional Control', 'Academic Buoyancy', 'Growth Mindset'	Clough (2002), Martin and Marsh (2008), Dweck (2017)

Fig 2: Overview of the VESPA Model – created from Oakes and Griffin (2017, pp.19-28)

VESPA is an acronym where each component incorporates the current research of non-cognitive attributes in education – see fig 2. For this study, I am focusing on those activities which relate to MT – Attitude.

Attitude is built upon four subcomponents. Already discussed, confidence in abilities and emotional control are both components of the 4C model supported by Lin et al. and McGeown as components that should be focused for intervention. Attitude also encompasses two further attributes, Academic Buoyancy (Martin & Marsh, 2008) and Growth Mind-Set (Dweck, 2017). Both these attributes have been discussed in defining the components of the 4C Model – Academic Buoyancy in commitment and growth mind-set in life control. With MT seen as an umbrella term, it is expected to find these components interlink with other non-cognitive attributes. Studies try to examine non-cognitive skills in isolation, however, 'there is no conclusive evidence' that an individual attribute 'facilitates attainment across all domains' and that encompassing these together may be beneficial in promoting student achievement (Gutman & Schoon, 2013, p.4). With the progress made by Oakes and Griffin, specifically on attitude, it would be sensible to use appropriate activities and adapt them to support my educational setting following the data found in RQ1.

When structuring the intervention, cycles allow the sessions to be evaluated, adapted and re-trialled. To ensure there was enough time in the duration of the study, the intervention's duration took the length of a short term (6 weeks) to not be broken by school breaks. The intervention consisted of an introductory activity, four lessons and a focus group to analyse the intervention. The VESPA model offers seven attitude activities which were demonstrated and discussed to the other tutors before a conclusion was made about using three from the VESPA model (Appendix 6). For the first session, it was agreed that the first lesson should enforce the message of efforts impact on brain

growth – linking to Blackwell et al. and Paunesku et al. studies. These activities were developed into tutor time lessons lasting 25 minutes and again shared with colleagues to agree on desirable impact.

The study had three cycles, the purpose of each cycle is displayed in Fig 3. Cycle one involved my tutor group and myself implementing the intervention; the purpose of this was for me, as a researcher, to visualise the intervention in practice. Any conversation or amendments made during the lessons could be noted and added to the lessons before being handed to other tutors. Cycle two, assessed student perceptions of the intervention when being delivered by other teachers. From the feedback from cycle two (mentioned in 4.2.1), the intervention moved to year 8 and was adapted to suit a year 8 cohort. In this cycle, both teachers and student focus groups were asked to evaluate the intervention as an implementable accessible strategy for improving MT to conclude the study.

Stage	Participants	Reason	Method	Result	Outcome
Preliminary	Year 10 cohort (n=128 students, 3 tutors)	Identification	Quantitative Data using MTS-A and VESPA.	Interpersonal Confidence and Emotional Control identified as lowest components.	Intervention needs to target Interpersonal Confidence and Emotional Control
Discussing and Generating Resources	researcher and year 10 tutors (n=5 + researcher)	Verdict on presented data and generating the intervention lessons	Collaboration with Pastoral team using 'Attitude' Activities	4 activities suitable for a year 10 cohort	Lessons to be implemented
Cycle 1	Researcher's tutor group (Group A n=29)	Testing practical application of lessons.	Researcher delivery and professional judgement to assess	Lessons encouraged good facilitated conversation. Notes of questions for discussion	Ready for cycle 2 with amended notes.
Cycle 2	2 tutor groups (Group B = 27, Group C =28)	Assessing ease of use by other teachers from student perceptions	Qualitative focus group assessment involving 5 students	A useful intervention, suitable for a younger cohort, more interaction required.	Collaboration to make adaptations to the interventions to suit a year 8 cohort, discussed in Chapter 4.2.1
Discussion	Researcher and year 8 tutors (n=4 + researcher)	Sharing of resources and tutors volunteering support	After school meeting	Tutors willing to be involved and resources shared	3 tutors willing to assess the resources with their tutor groups
Cycle 3	3 tutor groups (Group D = 28, Group E = 29, Group F = 29)	Final assessment of the resources	Qualitative approach using focus groups from each tutor (n=3) and tutor feedback	Discussed in Chapter 4	Discussed in Chapter 4

Fig 3: The process of this study

3.3.2 Ethical Consideration

Where students had the choice of being involved in the data collection, students did not have the option of removing themselves from the tutor time sessions. As in Appendix 1, the nature of research does not go beyond the normal practice of school procedures and therefore, with permission from the headteacher, students were to partake in the lessons as regular procedures. It cannot be denied that the subject can be a sensitive topic if not carefully facilitated by the teacher, therefore when presenting the resources to the teachers, terminology that could be harmful or possible points of concern (e.g. targeting mentally sensitive students or student backgrounds) were announced. In this process, teachers were allowed to comment on any issues that they feel may arise with their tutees. To ethically source the quantitative data, the year 10 cohort were aware of the intervention; the year 8 cohort were unaware that the lessons were part of a study and therefore a 'stealthy approach' (Yeager & Walton, 2013) could be used by the tutors to see how students would react if the intervention was part of the curriculum.

3.4 Evaluating the effects of such changes

Due to the study's implementation, it would be unreasonable to expect significant changes in students' mental toughness. With the breadth of scale of MT and the MTS-A using a Likert scale 1 to 4, the expectation would be unrealistic for a student to gain a score within the time period of the intervention, therefore a post-test was deemed unreasonable. Instead, a qualitative and interpretivist approach was used to explore student perceptions; more in-depth knowledge can be gained and through discussion, personal experiences can be identified (Cohen et al,. 2018) to address RQ2 and RQ3.

3.4.1 Method of data collection

As shown above in fig 3, cycle two and three involved focus groups. The choice of doing group interviews enables the participants to reach a consensus or, to challenge each other and engage in a way that is not possible in a one-to-one, adult-child interview (Houssart & Evens, 2011). For staff interviews in cycle three, an informal conversational interview approach was used where the discussion was much more open referring to what the tutors had observed in their lessons when delivering the intervention. Whilst preference would be to discuss with the students both before and after the intervention, due to school commitments, this became difficult to uphold. At the end of each interview, students had the opportunity to share any other opinions or points of view.

Due to the change in target participants in cycle three and repetition in the structure of lessons, the decision was to use the same questions at the end of both cycles. This would add a layer of comparison between the similarities and differences of the impact the intervention had on students split between year 8 (Key Stage 3) and year 10 (Key Stage 4).

With permission from students and staff participants, interviews were recorded and transcribed so that accuracy of terminology can be used when analysing and evaluating the discussions.

3.4.2 Interview Questions

An interview guide approach (Patton, 1980, p.206) was used. Topics were specified at the start and the sequence of questioning was shared. This allowed the students to understand the focus of the interview and also concentrate their answers on the purpose of the study without limiting their responses (Arksey & Knight, 1999). As

the study was exploring MT practices, keeping the questions open was important, I wanted to give students the ability to relate the questions to their personal needs within MT (Cohen et al., 2018) as well as encourage conversation helping mediate the power dynamic between interviewer and interviewee. With the interviews focusing on discussion and collaboration, it encourages an atmosphere of 'research with, rather than research on' reducing the possibility of students feeling victimised or targeted (Lewis & Porter, 2007, p.224). Each interview had 5 key questions (Appendix 7).

The first two questions were to settle students into the interview whilst gaining information about students' past experiences and perceptions surrounding MT. It was consciously chosen not to ask for the 'definition of mental toughness'. For students, the definition can connote formality and create a barrier of terminology (Johnson & Christensen, 2008), the concept students hold is much more valuable for the intervention. For students who may find it difficult to answer, the wording allows students to give scenarios, which can then be summarised. These questions will also give an indication to the current interventions in school and how students interpret elements of MT and how they are affected by them.

Question 3 and 5 addressed the intervention and whether further investigation and implementation of these strategies should be encouraged within the school. The questions brought the opportunity to reveal aspects of the students: firstly, whether their concept of MT had changed or developed; secondly, whether the intervention had left an effect on the student, as mentioned by Yeager et al. (2013); thirdly, encouraged the feedback of barriers and potential of the intervention – whether to enforce a positive message or adapt the lessons to remove a barrier to the intervention. The answers provided evidence of whether the intervention should be further developed. In cycle two this resulted in adapting the intervention in preparation for cycle three, whilst in

cycle three allowed evaluation of the intervention and steps for further development should the intervention be carried forward.

As addressed in the literature, it is important to understand the student (Yeager &Walton, 2011). If the student does not want the intervention, they are not going to get the full potential out of it; this was asked directly in question four. By raising this question after discussing the intervention, the question will reference the intervention whilst not restricting students to suggest alternative options should, in their opinion, there may be more effective strategies. If there are barriers to the intervention before its delivery, this conversation will allow discussion and possibly reveal changes needed to be made to address this issue.

Whilst the debate in the literature addresses that MT is influenced by various factors, 'shown', 'implemented' or 'discussed' did not convey the same connotations that the intervention displayed. Using the word 'taught', students identify the word with lesson time and may even gain conversation about students' position with whether MT can be developed as mentioned in Chapter 2.3.

3.4.3 Participants

The data collected from cycle two and three emerge from the interactions of the group, hence the dynamics of the group are important; I wanted the students to feel comfortable with those around them as this would promote honest discussion (Denscombe, 2014).

For cycle two, I wanted to accurately represent the targeted audience for the intervention (Cohen et al., 2018). 5 students were chosen where their components spread between 1 standard deviation from the mean. This encompassed 67.6% of the student responses. Where possible, the mean results of the focus group are

representative of the mean components of the cohort. Due to the nature of small group discussions, participants are exposed and responding through speech, this can cause discomfort for students with low interpersonal confidence; similarly, students who had an overall MT score of less than 2.11 did not want to take part in the focus group stages, this affected the focus group averages. The information for these students can be found in Appendix 8.

In cycle three, and the change of cohort, there was no hard data on MT available in deciding students to partake in the interview. With the identification stage of the study and cycle two complete, the focus of cycle three was the participation and perception of the intervention in practice. I did however, want a representation of MT in the cohort. Focus groups were decided by tutor group as different tutees would have had different experiences due to teacher delivery (Yeager & Walton, 2011). Students were chosen based on their tutors practical wisdom and verified using the MTS-A at the start of the interview. Three focus groups each containing three participants were used – their information can be found in Appendix 9.

Students have been anonymised and replaced by pseudonyms. The student is represented by three characters: cycle of the intervention/tutor group/letter. For example, 3Da was a student used in cycle three – therefore year 8, in tutor group D of the study, same as 3Db and 3Dc. For ease of reading, the letter of student correlates with their overall MT score on the MTS-A in comparison to the rest of that focus group, 'a' being mentally tough.

In cycle three, teacher feedback was also requested. Whilst presented to all three tutors, due to family commitments, tutor 3F could not be involved. The interview process took a very similar structure to that of the students: Question 1 remained the

same, Question 2 was not asked, Whilst Question 3, 4 and 5 were adapted to suit the participant for example:

Question 3: "Do you think the four lessons made students think about mental toughness or their mental toughness differently? Whether yes or no, why?

3.4.4 Ethical Considerations and Delivery

For cycle two, students were selected following their responses in the initial quantitative testing and consenting to be a part of the focus group. Students used in cycle three did not have the same chance. In both cycles, once the students for the focus group were determined, students were spoken to individually to confirm their involvement. Following this agreement of participation, both students and staff were asked to respond to the introduction questions (Appendix 7) to relay that they consent to be involved in the focus group and audio recordings for transcription. Due to the nature of a focus group, whilst no names would be used for this study, it was shared that I could not prevent other participants from speaking about what was said during the discussions and calling the participants by name. It was also presented that whilst I am a teacher at the school, I am a researcher studying to complete their masters. With this, students could make an informed decision on their participation.

The interviews took place during a free period in my timetable. Staff members who were teaching the participants were notified in advance of the reasoning I would be requesting the students from their lesson. Once confirmed that this was acceptable, students were notified that they would be collected from their lesson. The interviews took place in my classroom and lasted between 23 and 42 minutes. Once finished, students were returned to their teaching class.

Chapter 4: Findings and Analysis

As described in the methodology the data was collected using both quantitative and qualitative measures. Firstly, quantitative data was used because of the large sample size to answer the first of my research questions; secondly, qualitative data was used for a more in-depth analysis of the evaluation of the lessons and their effect. Key notes and quotations from the interviews were transcribed.

Before going onto the findings, analysis and results of this study, I would like to remind the limitation this study had with representing potentially 'mentally sensitive' participants. Whilst the study is valuable and the results allow discussion, please have in the forefront that not all students were represented in this study.

4.1 Quantitative Data Collection and Evaluation

4.1.1 Results from the MTS-A and VESPA Questionnaires

In total 128 students took both tests allowing a comprehensive view of the typical cohort at my school. In my methodology, I raise the concern about the openness to interpretation of the MTS-A questionnaire using the VESPA Questionnaire and teacher answers to validate the results. My hypothesis is if these two tests are reliable, they should have a positive correlation due to the non-cognitive attributes they are testing, particularly when testing attitude against overall mental toughness. The results found a moderate positive correlation between the student's overall mental toughness and overall VESPA score ($r=0.4685$, $p<0.00001$). When focusing on the attitude component of VESPA, the r-value rose to 0.7019 showing a strong positive correlation that these tests are reliable over the non-cognitive attributes being tested. A higher correlation was not expected as these tests are not testing for exactly the same attributes. The correlation between each component of the VESPA and MTS-A is

recorded in Appendix 10. With this validation, I am confident that the MTS-A has provided accurate information and can be used to assess my school.

As expected and discussed in the introduction, when sampling the whole cohort, the components of MT for the students spread across the spectrum provided. Using the data collected, a mean and standard deviation for each component was generated to assess the component(s) needing to be addressed within my school.

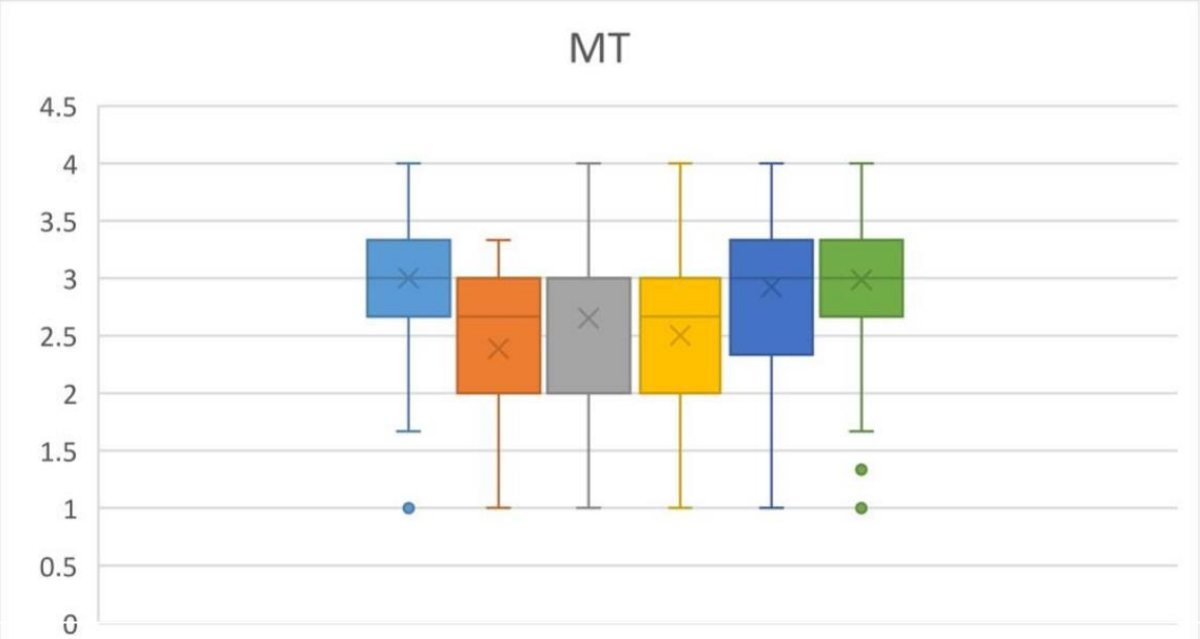


Fig 4: Mental Toughness of the year 10 cohort. Components Left to Right: Challenge, Interpersonal Confidence, Confidence in Abilities, Emotional Control, Life Control,

Mental Toughness Components	Student Self-perceptions	
	Mean	Standard Deviation
Challenge	3.0000	0.5187
Interpersonal Confidence	2.3855	0.6407
Confidence in Abilities	2.6522	0.5847
Emotional Control	2.5014	0.7056
Life Control	2.9246	0.5990
Commitment	2.9884	0.6036
Overall MT	2.7420	0.3981

Fig 5: Mean and Standard Deviation of MT components

Results show interpersonal confidence, emotional control and confidence in abilities are the lowest scoring components on MT. Whilst all components have a standard deviation greater than 0.5, the overall mental toughness of the cohort remain fairly consistent, 2.742 ± 0.3981. Comparing the deviations shown in Fig 5, it gives further evidence that every student is unique with strengths and weaknesses. For example, where one student is strong in interpersonal confidence, they are weak in emotional control whilst another student could be vice versa, or with different components, resulting in a similar overall mental toughness. Students who are recognised as outliers are 1.5 x (interquartile range) above or below the 3rd or 1st quartile respectively. These students would be expected to be those who access personal intervention within the school.

Mental Toughness Components	Student Self-perceptions		Staff perceptions of Student MT	
	Mean	Standard Deviation	Mean	Difference
Challenge	3.0000	0.5187	2.3889	-0.6111
Interpersonal Confidence	2.3855	0.6407	2.1667	-0.2188
Confidence in Abilities	2.6522	0.5847	2.6111	-0.0411
Emotional Control	2.5014	0.7056	2.1111	-0.3903
Life Control	2.9246	0.5990	2.6667	-0.2580
Commitment	2.9884	0.6036	2.6667	-0.3217
Overall MT	2.7420	0.3981	2.4352	-0.3068

Fig 6: Comparing Student self-perceptions to Staff perceptions of Student Mental Toughness

When comparing students' self-perceptions against the perceptions held by the cohort's tutors, a pattern emerges. In all components, the teacher perceptions were lower than those held by the students. Not including challenge, deemed significantly different (p=0.0325), all components had a similar degree of difference (mean= 0.3068) however, insignificant when tested using a T-test. A Mann-Whitney U Test to check for a difference in ranking, a U value of 9 was generated for a critical value of 5 (p=0.05) giving an insignificant result. Therefore, whilst there is a common difference between

tutor perceptions and student self-perceptions, the ranking of the components and significant of difference was not found – interpersonal confidence and emotional control remained lowest scored whilst commitment and life control remained high. Student self-perceptions represented challenge to be the highest scoring component with the smallest deviation, teacher perceptions disagreed. One teacher, 2B, explained this approach when completing the MTS-A:

*"I think, they think its good to try challenging things, and that they need to challenge [*themselves*] to improve. They get engaged but they don't stick to it. They take on the challenge but when it gets difficult, stop. So is that really challenging themselves?"*

The response from this teacher appears to coincide with the students' commitment rather than challenge. It can be inferred that the student believes that challenge is good but does not carry out challenging tasks to the expectation held by teachers due to their commitment – a disparity between belief and execution. Whilst all components scored less, the results, except commitment, being insignificant shows that, in my educational setting, tutors understand their students' mental toughness – removing the barrier of disparity in opinions held by staff and students (Yeager et al., 2013). The finding could explain students' low self-perceptions on confidence in abilities. If they are not completing and pursuing the challenging task, they, therefore, are not getting the intrinsic reward or extrinsic praise for completing the task (Mujis & Reynolds, 2011).

4.1.2 Comparing MTS-A to academic outcomes

Following the steps taken to assure reliable results, the MTS-A data was then used to measure against other academic outcomes: attendance, academic achievement by P8 score and positive and negative behaviours. For each academic outcome tested, a test of correlation was done to assess whether MT had a positive effect for students in education – with 'positive effect' a negative correlation is expected between MT and negative behaviours in line with St Clair-Thompson's Study. The results are recorded in

fig 6: significant at 0.146 (p=0.1) and 0.174 (p=0.05) for a two-tailed test. At the 5% significance level, control – both emotional and life – and overall mental toughness positively correlated with student's P8 score in their progress towards their targets; interpersonal confidence appears to correlate positively with negative behaviour.

Components of MT	Academic Measures			
	Attendance	P8	Positive	Negative
Challenge	0.0305	0.1156	-0.0967	-0.0526
Interpersonal Confidence	0.0276	-0.0102	-0.0484	**0.2067**
Confidence in Abilities	0.1196	0.0567	-0.0849	0.0117
Emotional Control	**0.1567**	**0.1896**	0.1049	-0.0829
Life Control	**0.1507**	**0.1779**	-0.1131	-0.0249
Commitment	0.1181	0.1417	-0.0043	-0.1384
Overall Mental Toughness	**0.1601**	**0.1751**	-0.0533	-0.0175

Fig 7: Correlation of MT components to academic outcomes

4.1.3 Answering Research Questions 1

In this study, measures have been taken to accurately measure the cohort and identify their needs. Chapter 4.1.1 identified the MTS-A as a valuable measure whilst 4.1.2 checked student scores against academic measures. From the introduction, I am not dictating that MT is the sole answer, however, results in Fig 6 suggest that MT, or components of MT, does affect educational outcomes.

Student Achievement

Finding in this study agree with previous research that MT correlates to student achievement, in particular, St Clair-Thompson's study (2015) also found life control and overall mental toughness significant factors in student achievement. Whilst there were similarities, the nature of data collection may have affected the results. Emotional control was strongly correlated to a student's P8 score, meeting their target grade,

whilst St Clair-Thompson's study measuring against attainment, grades achieved, was unrelated.

Student Attendance

Once more, in my analysis emotional control has the strongest correlation of the components of MT which was not found in St Clair-Thompson's study. Using a significant level of 5%, no component of MT is measured to have a significant correlation. Similar to the discussion of Lin et al. study, school policy prevents low attendance (below 95%) and therefore my results may have suffered from the 'ceiling effect' mentioned. It is interesting to note, whilst insignificant, the ranking of components life control measured highest followed by confidence in abilities and commitment which all revealed significant with $p<0.05$ within St Clair-Thompson's study.

Behaviour

Using the MTS-A, the data shows that MT was not a significant contributor to student behaviour except for one category, interpersonal confidence on negative behaviour ($r=0.233$). This result goes against the findings by St Clair-Thompson et al. Whilst St Clair-Thompson's breaks counterproductive behaviour into categories, commitment, life control and interpersonal confidence all had significant negative correlation to counterproductive behaviours ($p<0.01$), and therefore, expectation should be that these behaviours combined would also be significantly negatively correlated.

It cannot be avoided that interpersonal confidence was found significantly positively correlated to negative behaviours ($p<0.01$) however, had the lowest mean score of any component for student self-perceptions. Interpersonal confidence is to be

able to hold your own when receiving comments, criticism or oral challenges to the task, if not used constructively, could potentially cause an issue if this is not paired with emotional control; although in this study I do not have data to support my claim. Negative behaviours in this study is not restricted to the classroom setting. These actions may take place outside of the classroom and students may not be constructively asserting themselves rather than approaching a situation negatively, in terms of behaviour, to defend themselves from ridicule or challenge – in this context I do not believe this to be an 'academic challenge'.

Next Steps

Following the data collection and analysis, my educational context has shown a similar trend to that of previous studies. Whilst closer inspection is needed to study the relationship between MT and behaviour, the information provided allows next steps to be taken towards constructing the intervention. Evaluating the cohort, interpersonal confidence and emotional control scored lowest in both student's self-perceptions and tutor perceptions. This finding boosts implementing activities that are supported by Lin et al. where confidence is 'more malleable' than other components and, McGeown suggesting the need for schools to do more for students' emotional control due to the currently implemented exam-specific intervention. Concerning academic measures, emotional control, life control and overall mental toughness contributed significantly to both students' attendance ($p<0.1$) and progress 8 scores ($p<0.05$) – more than any other component.

With these results, it supports the use of the activities targeting attitude in the VESPA Model – specifically control and confidence. How the lessons were chosen and generated are mentioned in Chapter 3.3.1.

4.2 Qualitative Data Collection

From Cycle two and three, the designated questions for discussion were the same. As mentioned in the methodology, the questions are open to allow the conversation to take the route more important to the students. I am going to present the results in two stages: firstly, addressing the changes made from the feedback in cycle two, collaborating with the focus group; second, discussing the responses made by both cycle two and three. I will then return to my research questions to be answered in this study. As the data collection is qualitative, an interpretivist approach has been used and therefore an element of potential bias, whilst not intended, needs to be taken into account.

4.2.1 Changes made from Feedback in Cycle 2

Cycle two resulted in two key changes to the lessons' implementation: the age group addressed and adding variation in the activities in each lesson.

The First was prompted by responses to Question 3:

2Bb: *"I think a lot of us have got into this position of working too hard and now to get out of this position, back to healthy schedule thingy, it's really difficult; which is why when people talk about 'resilience' the response is: 'help me get out of the position I'm in rather than telling me what to do if I was in the correct position'".*

This student's comment has identified that this form of intervention is inappropriate at year 10. It didn't meet the needs they are currently facing. 2Bc, after listening to the response continues:

"*In year 7 and 8 it should be taught like this, and then in year 10,* [when] *we don't have the time to do the kind of thinking and 'what kind of person am I?' for these to be*

effective, it needs to be more practical. With small things you can do to get you in to the green zone then let's say if you are always feeling in the red zone." – referring the lesson 4.

Here the student evaluated the responses previous to terminology raised in lesson 4 and, from the further discussion; we concluded that Year 8 would be an appropriate cohort for the needs the intervention addresses. This decision was achieved by looking at the major developments undertaken by students across year groups.

2Bb: "*In year 7 you're learning about the school and basically being welcomed to the new environment, there is so much going on so year 7 is too early"*

2Cd: "*Year 8 is a good time because you have settled in the school and you are preparing for your GCSEs. Then you could re-cap it during the GCSE years."*

This was also approached when speaking to members of staff at the end of cycle three.

3D: "[later years] *their habits are pretty solidified aren't they, so something like this* [for year 8] *to get them thinking about it without it being exam driven and dealing with stress is needed.*"

This notion responds well with the studies found in the literature. Whilst unintended, the intervention being presented by other members of staff may result in a conversation about the exams which St Clair-Thompson mentioned is already overwhelmed on students. The target audience has also been addressed, moving to an educational transition from Key Stage 3 and 4 would promote change, as mentioned by 3D and (Yeager et al., 2012).

The Second major change to the intervention was the delivery, prompted during conversation in question 5:

2Ba: "*it certainly got me more involved in tutor time, like you can see why you are doing it. It's still a PowerPoint with information"*.

In constructing the lessons, they needed to be available and accessible not only to the students but also for teachers who have not researched MT and its potential risks and factors. For ease, a set of slides with notes can be used by many people at once. What I had not taken into account is that for most of their tutor time sessions, students follow this procedure of lesson structure; whilst in isolation engaging, in action, this repetition of a familiar procedure affected 2Ba's potential engagement. Following this comment and further discussion, each lesson was reviewed with the focus group to come up with ways that would make the lessons a) more engaging/accessible b) aid the ease for student discussion without impeding the message or purpose of each lesson.

The result of this collaboration:

Lesson 1: An empty table would be printed out for all students. Rather than facilitating a discussion on the board, it would allow students to discuss amongst themselves. Removing the teacher as centre of attention.
Lesson 2: Sentences to be printed and cut up where students would then place them in categories of their choosing without being explicit about what the categories are.
Lesson 3: no change
Lesson 4: at the end of the lesson having the table completely filled where they can have it as a resource and point of reference should they need to structure their thoughts. This was due to the writing took considerable time away from the time for discussion.

Whilst the discussion was the key element in student's developing and self-reflecting on their mental toughness, interpersonal confidence was the lowest scoring element of students in year 10. These changes allowed students who were not confident in speaking, the ability to have personal reflection whilst still listening to the discussion around the class:

2Bb: "*sometimes I would be writing things down and* [they] *would just be like, right, we're moving on; something like this would allow me to have my notes… even if you don't want to be involved in what everyone is talking about."*

These changes appeared to have a positive effect on the interventions implementation. Whilst the first change will be discussed in the next section, the second change appears to have allowed students to feel more confident in the discussions allowing further opportunities for students to reflect:

In Answering Question 5,

3Ec*: "The discussions in small groups worked really well, because you could talk to your friends and you almost get to understand them better and where they are coming from and then you can see what they are doing and be like 'oh this is what I'm doing' and you didn't always have to do it in front of the class. "*

3Ea: "Yea, and in bigger groups I probably would've just hid away so I didn't get picked."

Teacher 3D also relayed this implementation:

"Y*ear 8 is a funny year, when they are sat together they don't really want to openly talk, because it is quite a sensitive topic when you think about it and its' quite a personal thing. But when I went to speak to them individually, in their smaller groups when others were talking, I tended to get a different angle with the student. I think that I lot of it was taken away. I know from some of their faces it was taken away and maybe even brought up later. Just not something they would willing discuss as a class with others in the room*."

The overall effect of the intervention for the year 8 cohort, from the focus groups is discussed at the end of 4.2.2.

4.2.2 Discussion points from the Intervention, Cycle 2 and 3.

By changing the direction of the study from cycle two to cycle three targeting year 8, whilst it hinders assessing the impact of the intervention, it allows a comparison and discussion between the similarity and differences between these two years groups. Question 1 and 2 revealed students' previous interactions and concepts of mental toughness.

Students in year 10 related mental toughness to how someone deals with stress as encompassed in Clough's definition and model.

2Bc: *"Mental Toughness is the ability to cope with change and setbacks and cope with whatever happens to you. It means you can do things and deal things without it setting you back",* later adding, *"it's not about avoiding setbacks but being able to deal with them and learn from them without them stopping you."*

2Ca: "*It's the resilience thing. Being able to keep control of your emotions to keep going and not allowing yourself to like implode under pressure."*

Whilst students of year 8 gave much shorter answers and buzzwords:

3Fa: "*Staying resilient"*

3Fc: "*When you pretend to be happy when you're not."*

3Dc: "*If you are mentally tough, you are more positive about the things going on, otherwise you are quite negative."* When asked to explain further:
"learning…trying…giving up… or not giving up."

Here it is evident that year 8 students' concepts of MT are coming from external sources, when asked to expand or explain, a limited answer was given – as with 3Dc, only 3Da expanded their answer. What is interesting from these student definitions, particularly students 2Bc, 3Fc and 3Da are that they attribute MT to the component that they scored lowest on – emotional control. A similar conclusion could be said for 3Dc due to the connections confidence and control has on positivity (Smith et al., 1987). This difference between students responses across year groups further evidences the need for the intervention at an earlier stage in students' development for students' to understand their mental toughness.

The definitions students give will be contributed to the experiences students have had in learning about mental toughness, question 2. All year 10 students recalled to past talks done within school and their effectiveness.

2Bb: *"every so often you do resilience or have a talk. It's just constantly pushing the message of if something bad happens, you'll get through it. Sometimes it takes time to bounce back but they are always telling us that we need to keep going no matter how you feel… The focus has swung completely on to the exams, and when students say we are stressed, the tutors just think that it's because of exams when really there are things going on in the background, which aren't terrible, but just adding to the stress."*

The message that the student has taken away from these previous experiences highlights McGeown's (2017) warning. MT is being focused on anxiety control for exams which is stipulated by Yeager and Walton (2011) in chapter 2.5 that this type of intervention and message can 'undermine an intervention's effect…reducing its effectiveness' (p. 284).

Amongst year 8, students related their experiences to primary school or through family. From the nine students involved in the focus groups of cycle three, six students mentioned covering aspects of MT or other non-cognitive attributes during primary school, for example:

3Da: "*We did it a bit in primary, but it was more, 'keep trying', 'don't give up', 'we all struggle sometimes', you need to push yourself to make your brain grow. Not like it has been done here"* – referring to the intervention.

As no students mentioned any interaction with MT during their time at secondary school, it can be inferred that no focused interaction of these attributes has occurred. With this, it may be said from year 10, 2Bb's quote, that the influx of resilience talks focusing exams has overridden previous messages as this became the sole source of conversation about mental toughness. Two students perceived their family upbringing affected their mental toughness. For the anonymity of students, they have not been quoted. Student 3Da spoke about repeated positive messages focusing on effort giving her "*confidence*" whilst student 3Fb spoke about family circumstances which he feels *"what made me less mentally tough.*" These students identify, as with the literature, the importance of peers and family in upbringing in one's mental toughness. This view was shared by a member of staff:

3D: "*I think its very much a personal thing depending on how the student has been brought up, how are things at home. Essentially are you being brought up in a resilient way*"

Where not mentioned in year 10, this could infer that the priorities of how students are impacted change as students get older.

In my methodology, I have already discussed the phrasing of question 3 and the debate in 'teaching' MT. From the groups, year 10 and a student in group 2 (3Ea) begun with asking the question: Can it be taught? This started an interesting conversation on the students' views of Mental Toughness. In year 8, one student raises this and gives his view but this was not discussed further by the other participants:

3Ea: *'I think it would be hard to teach, I think it is something that you could explain "this is why it would be good?" but I think it is something you will find very hard to instil.'*

This response, whilst not proof, shows that the student's view encourages student responsibility as mentioned by Whitmore (2002) where the message is just a message unless the student reflects on their own procedures. This point was shared among two other students, for example:

3Ec: *'I don't think the school can do it all for us because we need to take some responsibility for our actions but maybe it is helpful to aid them along the way.'*

Whilst in year 10, a different conversation was had:

2Bc: *"less taught, but something you pick up, people who have had the negative experiences tend to have learnt to be mentally tougher and be able to bounce back. I don't think it can be taught, but built."*

Here the student shows that again, similar to that of the year 8 students, that MT is not something as easily influenced as a conversation with a teacher but "built" upon through experiences. An interesting response, not discussed or evaluated in the literature is:

2Ca*: "Do [you think] those people who have experienced negative experiences have just become numb to negative experiences?"*

For which is responded,

2Bc*: "it definitely makes them more resilient and more able to deal with it, because they have been there before."*

This is an avenue which, when searching through the literature, has not been discussed but may explain why those who have been through negative experiences may have a higher MT (Middleton et al., 2004), however, referring to student 3Fb, who had suffered negative experiences results this to his mental sensitivity. Unfortunately, as a researcher aiming to improve one's stability under stress situations the discussion ended by:

2Bb: *"but we can't just put everyone through a bad time."*

2Ca: "*in a school, of 1,200 students you aren't always going to get the attention because you simply can't."*

Following the discussion of 'teaching' MT, year 10 as group, agreed that MT was an important part to their development.

2Cd: *"For those who are already happy and comfortable where they are, whilst it may be frustrating for them, to have to kind of sit through lessons, they are in the minority, and they can just sit and they already understand it."*

2Bb: *"It's like with Pride week, I'm already aware of what LGBTQ stands for and the issues surrounding them yet I still have the same lessons. Whilst these lessons are something which would actually be worthwhile for me."*

Whilst the question has no reference to the intervention, it can be inferred both students answered this question in relevance to the lessons implemented; from their answers to Q2, this may be due to it being their only point of reference – as an intervention of this type. 2Bb discusses that topics discussed in Tutor time are not usually academic with a summative test, but developing an awareness of modern society (Life in Modern Britain) or PSHE themes. Lessons are constructed to provide accessibility across a wide range of views and experiences. What the first quotation resembles is that a student who was deemed Mentally Tough in the MTS-A has recognised the value in having this intervention implemented, even though for them, the gradient of progress may be at a lower. Implicitly, the first quotation recognises the act of self-reflection, "*they can just sit and they already understand it*" shows a different mindset between understanding what MT is and the additional action to reflect and improve. The conversation mentioned above also provides evidence for the intervention implemented where MT cannot be taught but guided, in line with the literature review.

Whilst a consensus appeared to emerge in Year 10, this was not the same amongst the year 8 students. In Group 1 and 2, the discussion about teaching MT in schools developed as a conversation about the relationship the students have with their teachers:

3Dc: *"I much prefer talking to someone who I know is there to listen to the things I want to talk about, like that's the reason they are there. They are not going to tell anyone. With teachers, they are there to teach and it's like I don't really want to tell them."*

3Da: *"In primary school you were with the same teacher every lesson every day and I got to know her, like with after school activities like choir and homework club and stuff*

so I do know her pretty well and that's why I trust her more because we as a tutor, we only have our tutor 25minutes a day and 5 minutes on a Wednesday every day."

Neither student in this conversation commented about not wanting MT to be 'taught' or discussed in school. It could be implied that by speaking about the obstacles, they want to have these discussions, however are prevented due to their surroundings. MT can be a delicate topic, especially to those who are lower on the spectrum (Ross & Nisbett, 2001). The barrier both these students raise is the role of the teacher – this is further discussed by year 10 in question 5:

2Cd: *"Another issue with these things is that it singles people out quite a bit and depending on who your tutor is I think will determine the conversations held. In our tutor time, [teacher] was able to sit back and just manage the debate but that is only because we have a good relationship within the tutor group. But it highlights and makes people stand out quite a bit which again, isn't a bad thing, but it needs to be the right environment."*

The 'environment' is not only due to the teacher, in answering question 5:

3Eb: *"For people who are slightly unstable it would be good for them to be with people they trust and be able to share how they are feeling however, for those that are confident or don't care and not listening they kind of ruin that environment and people don't want to open up themselves to those kind of people because it will just make the issue worse."*

These comments recognise two barriers to this intervention: student-teacher relationship and student-student relationship. Unfortunately, this factor cannot be controlled by myself and is the role of the tutor, and their class (Labree, 1988); and might be the

determining factor of whether this type of intervention is successful or potentially harmful (Ross & Nisbett, 2001). Due to the duration as a tutor group, a stronger bond has been created of trust and understanding in year 10; whereas, for students who are still getting to know their tutor or vice versa, this topic may be too personal for conversation resulting in no meaningful discussion. With change 2 implemented before cycle three, although this barrier was not removed, it does reduce the barrier as students felt more comfortable speaking to their friends, mentioned in 4.2.1. One group in year 8 mentions how conversations were made easier by the teacher addressing the class and the topic first:

3Dc: *"we weren't forced to speak up the teacher was like 'if you feel free to talk about what you are thinking, if not just stay and listen'".*

A third barrier to this intervention was the students' sense of autonomy. In group 2, student 3Ec believes that mental toughness is the sole responsibility of the student:

3Ec*: "I don't think this kind of things should be delivered in schools, I think as people grow up they should learn it on the way and that if they need help then can ask a friend or parent or just to help them understand what it is and why it is there."*

Relating to a previous barrier mentioned, the student has prioritised that they would turn for help, where parents and friends are discussed yet teachers do not feature. This again provides evidence for the need and intervention structured as resembled in this study where students take priority of the discussion. The challenge against autonomy brought about a contrast of views among group 3, the transcript can be found in Appendix 11.

This interaction raises previous barriers mentioned and challenges about implementing this type of intervention. Firstly, each student had a different experience with Mental Toughness before entering at secondary school: one student who felt they had already learnt MT at primary school, one who felt unprepared and a third who did not have, or doesn't remember, a conversation about Mental Toughness at primary school – "*...what about those people who weren't taught in primary school? Because I wasn't*". This relates to the previous comment made by 2Bb. Secondly, the challenges students face at secondary school could be supported by this intervention, building a set of tools to prepare for the challenges and "*...situations where you need to be mentally tough…"* ahead, as mentioned in the interaction between 2Bb and 2Bc in 4.2.1 at the end of cycle two. Thirdly, the position of the teacher to role model the intervention. Where 3Fc feels it is unnecessary and threatening her autonomy, this is due to a supportive home as 3Fa explained, however, this is a concern for 3Fb (quotes of family removed for anonymity). Fourthly, in full circle, 3Fc, reveals that her attitudes are that mental toughness cannot be taught – especially in the space of which the intervention was implemented – that it is the experiences that someone goes through that develops their ability to be mentally tough:

"It's a topic you learn throughout your life. You can't just learn it in school."

As implied with this final comment, it addresses a final obstacle raised in this study what should be the length of this intervention? Whilst Yeager and Walton (2011) address how small changes can have large impacts, involving a larger audience affects this (Paunesku et al., 2015). In question 5, all groups in cycle three commented on the length of the lessons and intervention:

3Ec: *"Tutor time is a bit short for a topic as delicate as this."*

3Eb: *"some of the lessons gave us opportunity to discuss but it was too short to allow people to really open up about these topics."*

and

3Db: "*Tutor time is also quite short so you can't always get the information*"

3Da: *"I feel like sometimes the tutor had to rush through the information."*

Interviewer: *"you as a student can't get the information from the teacher or the teacher can't get all the information from the students?"*

3Da: *"like both. It's a conversation that there just wasn't enough time to have."*

Within the parameters of the school day, there are possible reasons: too much content for a year 8 lesson or, discussion in year 8 was different from that of year 10. As mentioned in constructing the intervention, involvement in the study was voluntary and needed to be done alongside the other responsibilities of being a tutor. Should this intervention be implemented into the school curriculum, time would be devoted to the lessons rather than once a week to allow a continuation of incomplete discussions; this would also allow consistency and re-iterations of the message wanting to be delivered as mentioned by 2Ca from cycle two:

"I think it should be done as a longer segment because if it can be expanded to teach more things and like, I'm not going to change my behaviour or my attitude because of what I have seen four times."

Question 5 also allowed a decision on the success of the intervention in its current form and whether it should be further developed. When debating this, I will be

focusing on comments by the mentally sensitive students, as these are the main target for the intervention; full quotes are in Appendix 12.

"*you get to discuss how you are actually doing*", "*these were like discover, we decide how we want to do things*", "*it gave me something to think about…*", "*I recognise it could be valuable for others*". These perceptions indicate firstly, that the intervention was delivered as intended with discussion and students feeling in control. Secondly, that this intervention has the potential to support mentally sensitive students compared to current interventions, which have been '*led*' as described by 3Dc and previously by 2Bb. This is agreed by their tutors:

3E: "*It was nice that I never felt I had to dictate how they should be. I was able to suggest how about this? And there was enough of a discussion, we facilitated it. It has definitely made them think, make them more aware of where they are and reflect – which I don't think they have had the opportunity, or guidance to do before. Whilst around school you sort of, dip your toe in, having this more in-depth discussion is only going to be good for them and their understanding of their own mental toughness*."

Not only did tutors feel that the intervention was successful but had learnt about their tutees in the process:

3D: "*I was surprised actually, to me resilience was something that you carry through but no, the group had very much made their minds that what they are going to be resilient at and how they are going to apply their toughness*."

This insight into the teacher's understanding of their students provides evidence on the debate raised in 2.1.5. The teacher has changed her view from Clough's ideas of 'true commitment' to a mindset taken by the students because of this intervention. Whilst this

was not the intent in the study, it is a bi-product; as a tutor new to their tutor group, this insight into the student psychology will aid not only the relationship with their tutees, but their teaching with a new understanding of student psychology (Yeager et al., 2013).

4.2.3 Answering Research Question 2

The major adaptation of the study moved the intervention from year 10 to a year 8 cohort. This move was supported by staff feedback where the earlier intervention, the better-prepared students will be for future challenges – rather than the short-term fix and recovery. However, where year 10 promoted school influence, the year 8 cohort had mixed views toward non-cognitive interventions – as mentioned by 3Dc, 3Da, 3Ec. As expected, the personal nature of MT caused concern, especially among the year 8 cohort when proposing MT due to the connotation of teacher, school and being 'told' what to do. However, the nature of the intervention of student discovery and discussion for reflection has appeared to settle students to not feel victimised and following the intervention, answering question 5, encouraging its development further and to be continued. The structure and development of the lessons used in this study appeared to engage students in discussing mental toughness as described by 3D post the intervention.

4.2.4 Answering Research Question 3

In the focus group feedback, it highlighted the difficulties represented when personal attributes and mindsets are discussed in larger audiences. Some of which were tackled in the development of the intervention, whilst others either reduced or simply recognised.

Student Perceptions of Intervention

The first barrier to implementing the intervention is students' perceptions about mental toughness intervention. As answered in the second Research Question, if the students are not willing to participate due to their views of the intervention or, as students perceived, take responsibility then the intervention is not going to generate a positive impact. This was a concern for students. The design of the study allowed student subtlety with personal reflection rather than being teacher-led or students feeling victimised due to the collaboration at the end of cycle two. In student responses to the intervention, they resembled this approach sensible in handling the sensitivity of such a topic.

Differentiation and Personal Approach

This leads to the second barrier, the sensitivity of student's mindset whilst balancing with the challenge for personalisation, which is restricted to not alienate other students – or make the participants appear targeted or victimised. Whilst the intervention allows students to personalise the activities, it does raise one of the reasons why small-scale interventions are promoted. As mentioned above, by secondary school, each student has had a different set of learning experiences that have resulted in their current attitudes, which needs to be accounted for. In cycle two, it was raised that for the students who were deemed mentally tough that they have to "*sit through the lessons*" – this is not good enough in today's teaching. In the year 8 cohort with the structure of the lessons, even those deemed mentally tough still reflected on their mental toughness (3Ea) from the activities used in the intervention; therefore, tackling these potential barriers when implemented at the right level for their cohort.

Class Dynamic

A consistently raised concern links student exposure to the class dynamic and the role of the teacher – the affect that the tutor and fellow peers have in the student's engagement to the intervention. This barrier was reduced after the collaboration in cycle two, allowing smaller discussion groups to reduce the role of 'the teacher' to be more facilitating. However, this barrier is not removed. The potential of the class dynamic to be a barrier for this intervention was not fully uncovered due to the tutors taking part voluntarily. By volunteering, it can be expected that tutors have a level of comfort in engaging with these discussions sensibly; which as the literature mentioned, could cause more harm than good if not handled appropriately. For tutors who are new to their tutees, the sensitivity of the topic or behaviour management of the class could cause damaging to a student's mental toughness should this approach be implemented throughout the school and goes beyond researcher's control.

Chapter 5: Conclusion

In this project, I have explored MT in education and begun the proceedings to implement practices to deliver mental toughness effectively as part of the tutor time curriculum. I have also addressed the next steps for mental toughness. In the methodology, limitations and restrictions to this study and their potential effects on the data collection were declared.

From the literature, the decision was made that the activities would allow students to personalise the intervention, relating the exercises to their mental state and therefore, the effectiveness of the intervention was dependent on the engagement the

students had with the lessons. As a result, removing the discussed risk of teacher input and portraying messages that may, whilst intention is good, be harmful to the student psychology.

5.1 Summary of findings

Firstly, as expected, the mental toughness of the school spread across the Likert scale provided in the MTS-A showing that MT is unique to each student and that MT significantly influenced students' academic achievement ($r=0.1751$, $p<0.05$). The data collected showed, in my setting, whilst both elements of control and interpersonal confidence had the lowest mean scores across the cohort, the elements of control were highest in correlation to positive student data: attendance and progress 8 scores (targeted achievement) – highest correlation was emotional control to progress 8 score ($r=0.1896$, $p<0.05$). Against previously literature, in my setting found a significantly positive correlation between a student's interpersonal confidence and negative behaviours in school.

The second research question involved students' perceptions of the intervention. From cycle two, both staff and student perceptions encouraged the implementation of the intervention earlier in student development. Whilst the year 10 focus group and staff agreed that schools should aid students' mental toughness, this was unanimous among year 8. Some students felt that student psychology is personal to the student for them to 'discover' and not the job of the school to 'teach'. By structuring the interventions with the aim of discovery and reflection, lessons allowed students to identify the intervention and come to their own conclusions supporting their independence. For some students who were against school involvement, by incorporating the lessons this way changed students' views, as with the case of student 2Bb and 3Fc.

Within the short duration of the cycles, the focus groups highlighted student concerns in further developing this intervention and the barriers that a large-scale intervention needs to overcome for successful implementation across a whole cohort. First, the perceived position and relationship the tutor has with their students. Whilst tutors are recognised as first point of contact for their tutees, among year 8, students did not all believe an appropriate relationship had been built to engage in a delicate topic with their tutor. Secondly, time and length of the implementation appeared to be the biggest hindrance to students' attitudes towards the intervention; either: they did not believe enough time was devoted to the intervention to have an effect or, the time allowed in the tutor time did not allow students to address all their concerns – reducing the potential benefit for students. Thirdly, the barrier of student autonomy and independence to feel in control of their decision-making and attitudes when trying to improve a student's psychology.

5.2 Limitations of the study

Due to my teaching responsibilities, I was unable to go observe any of the lessons delivered by other tutors. Information about how the intervention was delivered is solely based on the interviewed focus groups post-intervention. Whilst feedback shows that the lessons were effective, further data collection between lessons would allow an analysis of the impact each lesson has, whilst in this study, the intervention can only be evaluated as a whole.

The study aimed to explore the possibility of providing a mental toughness intervention across a cohort. Due to the timeframe, and change from cycle two, an explanatory design was used with an interpretivist approach to analyse the findings from the focus group discussions; therefore, assessment of the intervention was

produced through qualitative discussion to address student perceptions. Due to the qualitative nature of the data collection, comments made which have been analysed must be viewed as subjective. An interpretivist approach, whilst not intended, may reflect my interpretation of what the students are intending to convey.

It has not been possible to measure the exposure any student has had to mental toughness before or during the intervention. Whilst previous encounters have been described, the consequences or impacts of these are unable to be measured, along with the messages and communications the students have had with peers or members of staff beyond that of the intervention.

Due to ethical considerations, mentally sensitive students did not want to be further involved in the study, or, those that could be potentially mentally sensitive did not partake in the questionnaires regardless of the anonymity the study provided. As a result, it could be eluded that the mental toughness results are higher than the actual setting – possibly resulting in the disparity between staff and student results. How this intervention would affect those who are extremely mentally sensitive has not been measured.

5.3 Implications for further study

In progressing with this study, some discussion points were raised but not addressed which would need to be investigated with further study. Chapter 4.1.1 identified a disparity between student perceptions and staff perceptions. Whilst mentioned in the limitations, the significant difference between students' self-perception and staff perceptions of student challenge may result in some of the confrontations in school. Secondly, the positive correlation found between interpersonal confidence and negative behaviours – which goes against the literature in past studies.

Whilst conjectured and raised, no verdict or answer can be given with the data collected.

One area for further development is changing students' perceptions of non-cognitive attribute interventions; in this study particularly Key Stage 3. A student's opinion on this type of intervention will affect in their participation and their malleability to change their approach. Rather than targeting a specific non-cognitive attribute, a strategy encouraging change in students' opinions about non-cognitive attribute intervention will allow further strategies to unlock potential, which may be lost. As found with a few students, not all students saw these attributes as a position the school should be influencing.

Whilst the second barrier of independence was partly addressed in the development of the intervention, the barriers of teacher facilitation is one that needs to be further studied for their effects. In this study, teachers volunteered their time and were actively engaged through curiosity in the topic of MT or for the potential benefit for their students – this would have impacted the experience the students had. Whilst this study has received a positive response from the student focus groups, if implemented, all tutors will be delivering the lessons and, depending on their views of MT and relationship with their class, will alter the experience and progress of their students.

This study has provided the groundwork for how an intervention could be implemented, without victimising students, to be further built upon. A longitudinal study observing a class cohort over a longer duration will allow assessment and evidence to whether the intervention is improving student's mental toughness or,

whether the intervention, whilst perceived well, has no substantial lasting effect on student's mental toughness.

This study has allowed teachers involved and I further understand out students. It has made me more aware of my tutor group, also allows me to take what I have learnt into my subject lessons with a new understanding of students' mindsets and decision making. Further, this information and data can be shared among staff to bridge the gap between student mental toughness and staff perception. Further, this study will be shared with the Senior Leadership Team to evaluate and discuss the implementation of this programme following the positive student perceptions and increase the involvement of collaboration with older years. In structuring the intervention for the Year 8 cohort this involvement has had a positive effect on the intervention.

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Appendix

Appendix 1 – Letter of Consent for completing the study

Appendix 1.1 – Letter of Consent to the Headteacher

UNIVERSITY OF OXFORD
DEPARTMENT OF EDUCATION

15 Norham Gardens, Oxford OX2 6PY
Tel: +44(0)1865 274024 Fax: +44(0)1865 274027
general.enquiries@education.ox.ac.uk www.education.ox.ac.uk

Director Professor Jo-Anne Baird

[redacted]

Dear [redacted]

I am writing to enquire about conducting research in school this academic year. As you know, I am studying for the Master's in Learning and Teaching at Oxford University, supervised by Gabriel Stylianides. In my final research project: 'Mental Toughness in Education: Engaging with Mental Toughness practices within a school setting.' I will explore whether students' mental toughness can be improved through a series of tutor time activities targeted at a whole cohort.

The research will be completed in stages. Firstly, I intend to evaluate the mental toughness of the school, using the year 10 cohort as my sample. Secondly, following the results of these findings, I intend to construct and deliver a series of lessons during tutor time to see whether students' mental toughness can be influenced without personal intervention or removal from lesson time. To do this, I will be using Oakes and Griffin VESPA Model – focusing on 'Attitude' to guide the construction of the lessons. The lessons will target the year 10 cohort as I am a tutor however, should the lessons prove more effective targeted elsewhere, I will come forward to declare any changes made. I have already spoken to [redacted](Head of Year 10) about using this time.

By participating in the research, the school would be contributing to a project that will identify the connection between mental toughness and their academic performance as well as exploring strategies that can benefit our students. This will benefit our current year 10 cohort

but for future years can be amended and inserted into the tutorial programme amongst the Key Stage 4 cohort.

I hope to conduct this research between January and May 2019. Students will complete two questionnaires about mental toughness (MTS-A and VESPA) before receiving a 25minutes lesson once a week targeting an aspect of mental toughness. Students will also be invited to discuss the lessons at the end of the intervention.

Oxford University has strict ethical procedures on conducting ethical research, consistent with current British Educational Research Association guidelines. The University also recognises, however, that my study is a piece of practitioner research, and that schools already operate with the highest ethical standards. Therefore only your formal consent as headteacher is necessary, and not that of individual parents or staff. However, throughout the research, students and other teachers will be able to refuse to participate in any research activities at any time.

All participants, including students, teacher and the school, would be made anonymous in all research reports. The data collected would be kept strictly confidential, available only to my supervisor Gabriel Stylianides and me, and only used for academic purposes. It will be kept for as long as it has academic value.

If you are happy for me to proceed with this study, please confirm that using the attached reply form. If you have any concerns or need more information about what is involved, please contact me or my supervisor. Further, if you have any questions about this ethics process at any time, please contact the chair of the department's research ethics committee, though: research.office@education.ox.ac.uk

I look forward to hearing from you.

Yours sincerely,

Thomas Burnett

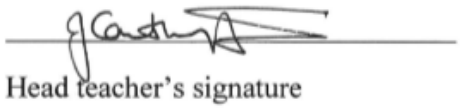
University of Oxford, Department of Education

Appendix 1.2 – Letter of Consent Reply

☐ We do not wish to participate in this project.

☐ We would like to find out more about this project.

☑ We would like to take part in this project.



Head teacher's signature

Please return this form to me.

Thank you for your support.

Appendix 2 – Results from St Clair-Thompson, H., Bugler, M., Robinson, J., Clough, P., Mcgeown, S., & Perry, J. (2014). Study Results

Table 4. Correlations between mental toughness, attainment and attendance.

	Attainment	Attendance
Challenge	.17*	.16*
Commitment	.23**	.19*
Control of emotion	.06	.17*
Control of life	.33**	.29**
Control	.23**	.27**
Confidence in abilities	.06	.22**
Confidence interpersonal	.09	−.11
Confidence	.09	−.10
Total mental toughness	.22**	.22**

*$p < .05$, **$p < .01$.

Table 8. Correlations between mental toughness and counterproductive classroom behaviour.

	Oppositional	Cognitive	Hyperactivity	ADHD
Challenge	−.16*	−.13*	−.11	−.11
Commitment	−.28**	−.22**	−.20**	−.23**
Control of emotion	−.19**	−.11	−.07	.05
Control of life	−.27**	−.24**	−.23**	−.25**
Control	−.26**	−.20**	−.17**	−.16**
Confidence in abilities	−.11	−.04	−.03	−.04
Confidence interpersonal	−.16**	−.17**	−.15**	−.20**
Confidence	−.16**	−.12*	−.10	−.14*
Total mental toughness	−.23**	−.17**	−.14*	−.15**

*$p < .05$, **$p < .01$.

Appendix 3 – Oral and Verbal script for students

Dear Tutors,

Please read this message out to all students before administering the tests.

Dear Year 10,

This message is a repeat of the message passed in assembly for any who may have missed and re-iterating the message.

Mr Burnett is currently studying for his Masters at Oxford and has decided to do his study on Mental Toughness in Education. For his study, he would like to each of you to complete two questionnaires on your opinions of school, mental toughness and your work ethic. Both tests use a number scale answer that will be presented when doing the tests.

With these tests, Mr Burnett intends to generate a set of resources focusing on improving mental toughness in school.

The questionnaires will be used along with school data to generate the relevance of the study. Therefore, on your questionnaires please write your name for verification.

If you do not want to be a part of the data collection, simply do not write your name as this make your test void.

A reminder that are data collected will not be presented to anyone other than Mr Burnett as researcher and any answers given will be anonymous to all other parties.

Following the questionnaires, Mr Burnett may wish to have a focus group to ask questions about your thoughts and opinions on the lessons. If you are willing to take part, please make sure you circle the sentence printed in bold on the VESPA Questionnaire.

MTS-A Test

This questionnaire asks you about your thoughts, beliefs and feelings as a secondary school student. Please answer the questions below. There are no right or wrong answers as every student is different, simply provide the answer that best describes you. If you want to change an answer, please score it out and circle another. Remember the scale is 1 to 4, where 1 is Strongly Disagree and 4 is Strongly Agree.

VESPA

This questionnaire asks you to reflect on yourself as a learner and as a secondary school student. Please answer the questions below. Each student is different and will have different ways they approach education, simply provide the answer that best describes you. If you want to change an answer, put a cross (X) and circle your wanted answer. Remember to double check the scale.

Thank you for your support in Mr Burnett's study.

Appendix 4 – Mental Toughness Scale for Adolescents (MTS-A) – McGeown, St Clair Thompson and Putwain (2018)

Appendix 4.1 Hand out to Students

Name: **Tutor Group:**

Rating: 1= Strongly Disagree, 2=Disagree, 3=Agree, 4-Strongly Agree

Challenge	Score
1. It is always good to try challenging things.	
2. I am happy to try new and challenging tasks.	
3. Challenges bring out the best in me.	
Interpersonal Confidence	
1. I feel nervous around new people.	
2. I feel confident in social situations.	
3. I feel confident speaking in front of others.	
Confidence in Abilities	
1. I believe in my abilities.	
2. In general, I lack confidence in my abilities.	
3. In general, I am confident in my abilities.	

Emotional control	Score
1. My emotions (e.g. anger, sadness, worry) sometimes take control of me.	
2. I find it difficult to stop myself getting angry/upset/stressed.	
3. I am good at managing negative emotions (e.g. anger, sadness, worry).	
Life control	
1. If I work hard, my future can be whatever I want it to be.	
2. I cannot control what will happen in my future.	
3. I feel in control of what happens in my life.	
Commitment	
1. I give up if I am under pressure.	
2. I leave many things unfinished.	
3. When faced with difficulties, I usually give up.	

Appendix 4.2 How to use the MTS-A

Reverse the scores given for:

Challenge: none

Emotional Control: Q1, Q2

Interpersonal Confidence: Q1

Life Control: Q2

Confidence in Abilities: Q2,

Commitment: Q1, Q2, Q3

The mean of the three questions in each component gives you the component score.

The mean of the sum of each component gives the overall mental toughness score.

Appendix 5 – Vision, Effort, Systems, Practice, Attitude Test (VESPA) by Oakes and Griffin (2017, p.216-223)

Appendix 5.1 Attitude Questions and final question for consent

Full Test available from the reference or www.vespamindset.com

	Question	Response Scale				
		1	2	3	4	5
5	I stay calm in difficult situations	Never	Rarely	Occasionally	Frequently	Very Frequently
8	I have a positive view of myself	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
10	I am confident in my academic ability	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
13	I bounce back after facing disappointment or failure.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
20	I look forward to taking tests	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
24	When I take a test, I think about how badly I am doing.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
26	Your intelligence is something about you that you can't change very much	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
27	No matter who you are, you can change your intelligence a lot.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
28	It doesn't matter how hard you work – if you're not clever, you won't do well	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

To help assess the success of the intervention, I want to interview a few students together on their perceptions on mental toughness and opinions on the intervention. Not everyone who offers will be chosen.

Please circle the sentence below if you are willing to be a part of the focus group of students used to interview and evaluate the tutorial:

I am willing to be a part of the focus group.

Thank You for your support.

Appendix 5.2 – How to use VESPA test for Attitude Score.

For questions 20, 26 and 28, reverse their scores by doing six minus the score given by the student.

After finding these reverse scores, find the mean of the nine questions will produce the attitude score.

Appendix 6 – Premise for lesson activities

6.1 Lesson 1 – Brain develops with effort

Imagine having a goal of lifting a heavy weight / wanting to run a marathon / reading a book.

What would happen if:
I went straight to the heavy weight / ran a marathon / read the whole book in one go?
What would happen physically? What would happen mentally?

How would you go about tackling each of these tasks?

What would happen if:
I decided to start lifting weights every day? Running everyday, reading everyday?

What would happen if:
I decided to do it every morning and night and maybe halfway through the day?

	Sport, Reading etc	Learning
What happens if I try to do the biggest/toughest task straight away?		
What happens when I work within my limit (comfortably)?		
What happens when I work at my limit?		
What happens when I work at my limit the whole time/non-stop?		
What happens to your body physically after you have done the activity?		

6.2 Lesson 2 - VESPA GCSE Mindset –

Activity 4: Attitude Activity: Growth Mindsets

(Oakes and Griffin, 2017, pp.48-49)

Scoring and Interpretation

Items 1 and 2 are fixed mindset questions and items 3 and 4 are growth mindset questions. Which mindset did you agree with more? You will be a mixture, but most people lean one way or the other about certain things and at certain times.

What did you learn about yourself? Where do you have fixed mindset thinking and where do you have more of a growth mindset? What could you do to change?

The Language of Mindsets

Finally, we often find that pupils express their attitudes towards learning through the things they say. We've listed fifteen phrases we've heard pupils tell us before now. Sort them into fixed and growth mindset statements. Is there a particular statement you can use to reassure yourself and encourage greater positivity about learning?

1. I've never been good at maths.
2. I just need to get some more practice in.
3. I'm hopeless at this.
4. Maybe if I was cleverer this would be achievable.
5. This doesn't come naturally to me.
6. A couple of hours of intense study and I reckon I can crack this problem.
7. I've just not got a brain for English/maths/science.
8. I'm going to take a break and come back refreshed. I'll make some progress then.
9. I'm not a creative person.
10. Let me have another go at this – I'll get better.
11. I must have missed something. I just need to go back and check I've got this clear in my head.
12. I've not totally understood this yet. I'm going to go over it again.
13. I can't do this. I'll never be able to do this.
14. This topic is impossible. I'm just going to hope it doesn't come up in the exam.
15. _____ is lucky. They're just naturally brilliant bt it. I'm not.

Finally, if you'd like to learn more about growth mindsets, there are some fun videos here: https://ideas.classdojo.com/b/growth-mindset.

2.3 Lesson 3 – VESPA GCSE Mindset –

Activity 12: Attitude Activity: Network Audits

(Oakes and Griffin, 2017, pp.76-77)

12. Attitude Activity: Network Audits

Sometimes it's easy to forget how many people want to help you succeed. Each of us has a significant network of support around us, but it's a natural tendency sometimes to think, 'If I ask for help it must mean I'm failing. I need to do this alone.'

But seeking help just makes everything easier. So don't believe the story that goes, 'One day I'll have to stand on my own two feet. I may as well start now.' As you grow up and face new challenges, there will always be people around you who can help; someone who's done it before and can give you some advice. Nowadays, that help is just a search engine away – you can contact experts in thousands of fields through social media. You could spend a very successful life continually asking for help!

But still the myth persists that we must do it alone. This activity should support you in auditing (that means listing and organising) every single person who could be on your team. And from there, you can decide who you need to help you with some upcoming challenges.

You're the dot at the top and underneath you is a team of people all waiting for the chance to support you. First, make a list of everyone you can think of that fits into the categories above.

- Think of friends you have at school, but also those you might have outside of school, on social media or at other schools.
- Who among your peers has the potential to help you out? Who, a few years older, has gone through this already? Who's an expert on the subjects you're struggling with? Which of your friends has an older brother or sister you could speak to?
- Think about your parents, of course, but also aunties, uncles, cousins and family friends.
- You attend a school where every paid member of staff has a genuine interest in helping you improve. Your first thoughts might be your own teachers, but what about other staff members – librarians, tutors and mentors? All of them will have something to offer.

Once you've made your list, highlight or underline those people you've relied heavily on before. You've hassled them a lot – gone back to them to seek help and advice. Or are there none of these individuals whatsoever? Are you trying to do everything on your own? Are there any layers where you've consulted no one at all? Are there any untapped resources in your network?

Next, list three things you need to get done this month, and for each of the tasks, attach the name of one person who could help you to get it done quicker.

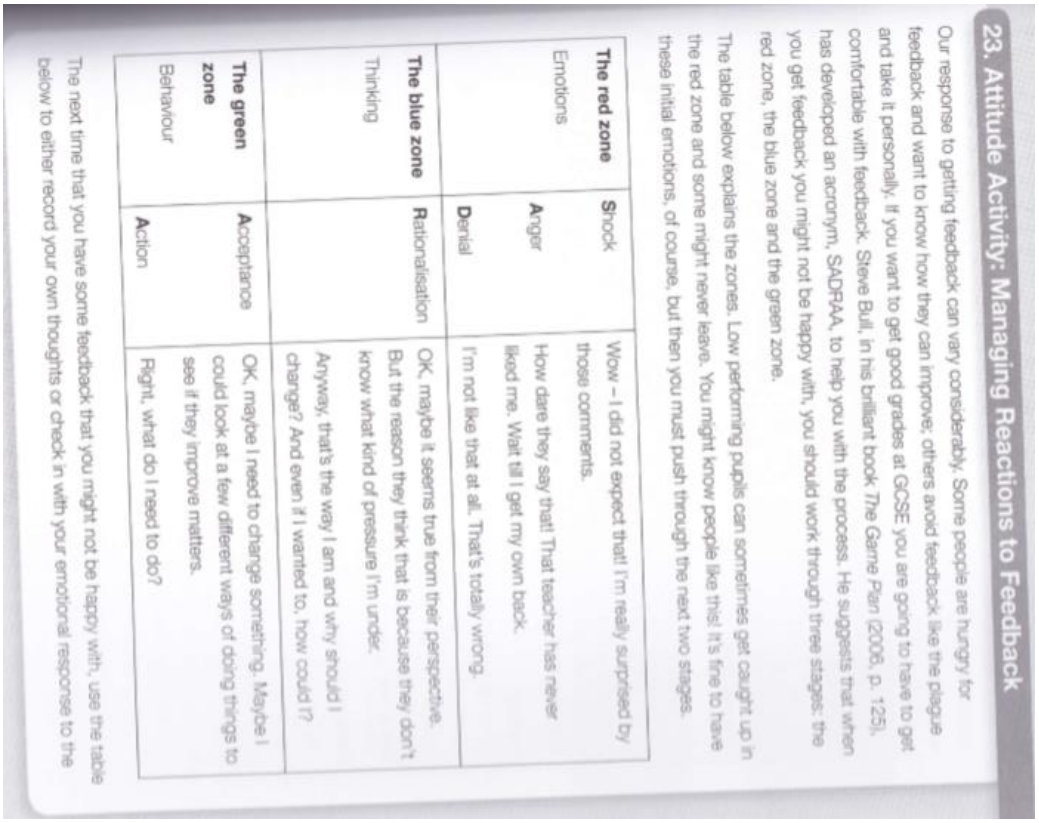
Finally, go and see them!

Note: This works the other way too. What if someone comes asking you for help? Pay it forward. Give the time. Build up an account of goodwill you can draw on when you need it.

2.4 Lesson 4 – VESPA GCSE Mindset –

Activity 23: Attitude Activity: Managing Reactions to Feedback

(Oakes and Griffin, 2017, pp.111-112)



23. Attitude Activity: Managing Reactions to Feedback

Our response to getting feedback can vary considerably. Some people are hungry for feedback and want to know how they can improve; others avoid feedback like the plague and take it personally. If you want to get good grades at GCSE you are going to have to get comfortable with feedback. Steve Bull, in his brilliant book *The Game Plan* (2006, p. 125), has developed an acronym, SADRAA, to help you with the process. He suggests that when you get feedback you might not be happy with, you should work through three stages: the red zone, the blue zone and the green zone.

The table below explains the zones. Low performing pupils can sometimes get caught up in the red zone and some might never leave. You might know people like this! It's fine to have these initial emotions, of course, but then you must push through the next two stages.

The red zone	**S**hock	Wow – I did not expect that! I'm really surprised by those comments.
Emotions	**A**nger	How dare they say that! That teacher has never liked me. Wait till I get my own back.
	Denial	I'm not like that at all. That's totally wrong.
The blue zone	**R**ationalisation	OK, maybe it seems true from their perspective. But the reason they think that is because they don't know what kind of pressure I'm under.
Thinking		Anyway, that's the way I am and why should I change? And even if I wanted to, how could I?
The green zone	**A**cceptance	OK, maybe I need to change something. Maybe I could look at a few different ways of doing things to see if they improve matters.
Behaviour	**A**ction	Right, what do I need to do?

The next time that you have some feedback that you might not be happy with, use the table below to either record your own thoughts or check in with your emotional response to the criticism and see which zone you're in. Then look ahead to the next zone and see what kind of thoughts you might try to have to move yourself through the process more quickly. Ultimately, you'll be much happier if you avoid getting stuck in the red or blue zone!

It might be tricky to get to the green zone, so feel free to leave it a day or so – maybe longer – before completing the final box or considering the ideas you see there.

The zones	Your thoughts ...
The red zone Emotions	
The blue zone Thinking	
The green zone Behaviour	

Appendix 7 – Interview Structure

All: Thank you for taking the time to be a part of my study. In tutor time, along with regular procedures, you have been doing some activities about mental toughness. They were part of a study I am doing for my Masters at University of Oxford. I am looking into whether mental toughness should be implemented as part of the tutor time curriculum and whether it will have a positive impact on students. As mentioned before:

In cycle 2: you have been selected from your responses given in the questionnaires in December.

In cycle 3: You have been nominated by your teacher to answer a couple of questions I have about the lessons and mental toughness.

All: - You don't have to do this, are you all still happy to be involved and that I ask you a few questions?

- Is it okay that I record the interviews so that I can listen to them later and quote you in the study? No names will be used in the study and will be anonymised. The recordings will not be shared and once I have the information I need, they will be deleted.
- As there are (number of participants) of you here, whilst I can give my word that conversations held here will not be mentioned outside of my study or with your name; whilst I can ask, I cannot force or give certainty that another student does not take anything said outside of this room and speaks later about it.
- Finally, please don't feel you have to say nice things about the intervention, whether the lessons were good or bad it still gives me something to write about and depending what is mentioned here may depend whether the school decides to implement something like this in the future, I'd rather you just be honest.
- Is everything clear and make sense? If you would rather leave, that is no problem.

Cycle 3: Firstly, can I ask you to complete this questionnaire; it will be used as how you are identified in the study, rather by name.

All: The questions I would like to ask you are:

Question 1: What does it mean to be Mentally Tough?

Question 2: How have you come across Mental Toughness before?

Question 3: Has the four lessons made you think about mental toughness or your own self in a different way? Whether yes or no, why?

Question 4: Should Mental Toughness be taught in schools?

Question 5: Do you think these lessons have value and are worthwhile? Is there anything you would change? Also, why?

Question 6: is there anything else to do with mental toughness or the lessons you would like to discuss.

Appendix 8 – Cycle 2 Participants

8.1 Participants of cycle 2

Pseudonym	Gender	Overall Mental Toughness	Challenge	Interpersonal Confidence	Confidence in Abilities	Emotional Control	Life Control	Commitment
2Ca	M	2.39	3.00	2.67	2.33	1.67	2.00	2.67
2Bb	F	2.55	2.67	2.00	2.66	2.66	2.66	2.66
2Bc	F	2.66	3.33	2.33	2.33	2.33	2.66	3.00
2Cd	F	3.00	3.00	2.33	3.00	3.00	3.33	3.33
2Be	M	3.17	3.67	3.33	3.00	2.66	3.00	3.33
Mean		2.75	3.13	2.53	2.66	2.46	2.73	3.00

Appendix 9 – Cycle 3 Student Participants

9.1 Participants of Cycle 3 Group 1

Pseudonym	Gender	Teacher perception	Overall Mental Toughness	Challenge	Interpersonal Confidence	Confidence in Abilities	Emotional Control	Life Control	Commitment
3Da	F	Intermediate	3.06	3.33	3.00	3.67	2.33	2.67	3.33
3Db	M	Tough	2.94	3.00	2.33	3.00	3.67	2.33	3.33
3Dc	F	Sensitive	2.39	2.67	2.67	2.67	1.33	1.67	3.33
		Mean =	2.80	3.00	2.67	3.11	2.44	2.22	3.33

9.2 Participants of Cycle 3 Group 2

Pseudonym	Gender	Teacher perception	Overall Mental Toughness	Challenge	Interpersonal Confidence	Confidence in Abilities	Emotional Control	Life Control	Commitment
3Ea	M	Strong	3.06	3.33	2.67	3.00	2.67	3.67	3.00
3Eb	F	Intermediate	3.22	3.00	2.33	4.00	2.33	4.00	3.67
3Ec	M	Senstive	2.50	2.67	1.67	3.00	2.33	2.00	3.33
		Mean =	2.93	3.00	2.22	3.33	2.44	3.22	3.33

9.3 Participants of Cycle 3 Group 3

Pseudonym	Gender	Teacher perception	Overall Mental Toughness	Challenge	Interpersonal Confidence	Confidence in Abilities	Emotional Control	Life Control	Commitment
3Fa	M	Tough	2.72	3.33	2.00	3.00	2.33	2.67	3.00
3Fb	M	Sensitive	2.56	3.67	2.67	2.00	1.00	3.33	2.67
3Fc	F	Intermediate	1.89	4.00	1.67	1.67	1.00	1.67	1.33
		Mean =	2.39	3.67	2.11	2.22	1.44	2.56	2.33

Appendix 10 – Correlations between VESPA and MTS-A Components

	Challenge	Interpersonal Confidence	Confidence in Abilities	Emotional Control	Life Control	Commitment	Total
Vision	0.271**	0.100	0.082	0.055	0.273**	0.256**	0.255**
Effort	0.267**	0.171	0.186	0.135	0.251**	0.333**	0.336**
Systems	0.292**	-0.022	0.111	0.172	0.292**	0.370**	0.302**
Practice	0.404**	0.086	0.126	0.040	0.282**	0.202*	0.275**
Attitude	0.418**	0.384**	0.569**	0.454**	0.440**	0.520**	0.709**
VESPA	0.432**	0.185*	0.280**	0.225*	0.404**	0.441**	0.491**

*p<0.05, **p<0.01

Whilst not discussed in this study, I have given all correlations found as for further research I believe this information to be valuable. For example, evidence suggests the 'systems' has no correlation to their confidence in social interactions (interpersonal confidence) and how a student practices and learns is not related to their emotional control.

Appendix 11 – Group 3 discussing Question 4.

3Fc: "*don't have the chance to be independent*".

3Fb: "*you know how you were taught this stuff in primary school, what about those people who weren't taught in primary school? Because I wasn't*."

3Fa: *"also some people at primary school couldn't understand what mental toughness is then, or what it means."*

3Fb: *"yea, In primary school it's about having fun and you're too young to understand about being mentally tough, even in year 6 you would still be like why are you telling me this because we are only having fun, obviously we are being taught but it's the time of your life when you are having fun in school. Whilst secondary school it's a lot more serious and you almost find yourself in more situations where you need to be mentally tough and that's why it should be kept in tutor."* – using the intervention as a reference.

3Fc: "*because it's our Mental Toughness, I think we should learn how to control it ourselves and not be told how to like deal with it. It should be decided by ourselves."*

3Fb: *"I disagree with that. Because, with mental toughness, it is a difficult thing to understand. And if you are telling people you shouldn't really be discussing it with other people and you should find out yourself, it's a way you can lead yourself in the wrong direction."*

3Fa: *"I think the school should be teaching us because it prepares us for later life and they are the ones who have been here before."*

3Fc: *"No, it's too much to put down in such a short period of time, it's too big a topic that you can't expect us to change because of 4 lessons, it's not just the emotional side but the educational side and the social side and life skills. It's a topic you learn throughout your life. You can't just learn it in school."*

Appendix 12 – Student responses to Question 5

3Fb: *"definitely more engaging than other things we do in tutor time you get to discuss how you are actually doing and feeling and you feel there is actually a benefit for discussing it and getting involved. Sometimes it feels like we are just ticking a box."*

3Dc: *"it just made things logical. Before its always been you need to be resilient, you need to do this and this is why you should do it and you kind of feel, like, don't talk to me like that. Whilst, these were like, discovery, we decide how we want to do things and it just allows me to see what is going on."*

3Ea: *"I used to give up, I still give up, if my computer gives up, I throw it out the window. I don't think it has changed my actions, but, it did give me something to think about, I'm willing to at least contemplate what has happened before giving up."*

3Fc: *"I recognise it could be valuable for others; those who aren't mentally tough and have a low mental toughness will need help."*