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Mindset, Perseverance, and Learning

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Mindset, perseverance and learning

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Abstract

209 junior school students, ranging from year four to year six, and their nine teachers participated in this study that explored how the psychological factors of growth mindset: the belief in one's ability to learn and succeed, self-control: the ability to resist temptation and remain focused on a goal, and grit: applying passion and perseverance for long term goals, impact junior school students' academic achievement. This study found that growth mindset, self-control and grit can all play a part in helping students to achieve academically in primary schools. The two factors, grit and growth mindset were found to have a direct, significant influence on academic achievement. Grittier students were more likely to outperform their peers in academic achievement. Students with a higher growth mindset were also more likely to outperform their peers. Growth mindset had a significant positive relationship with grit. Although the present study did not find a significant difference in grit based on gender, the structured equation model indicated that boys had a significant direct link to grit, but girls compensated through the significant indirect link to grit via self-control. The present study found a highly positive correlation between self-control and grit. Students with higher levels of self-control were more likely to exhibit higher levels of grit.

Introduction

To thrive in today's rapidly changing, technology driven world, individuals may require a different skill set than in the past. Manual labour and low skilled jobs are gradually being replaced by technology. Many jobs now require analytical and interpersonal skills and the ability to solve unstructured problems (World Economic Forum, 2015, p. 1). The fast-changing nature of the world has caused many students to become anxious and levels of student wellbeing have declined (Oster, Pearson, De Lure, McDonald & Wu, 2017). Addressing these changes

are placing greater demands on education and require us, as educators, to re-evaluate current approaches in education.

Many educational stakeholders recognise the need to better prepare students for the future, improve their wellbeing, and improve students' 21st century skills, but achieving this in practice can be challenging (Barry, Clarke and Dowling, 2017). Current curriculum delivery, assessment and reporting models focus on all students receiving the same prescribed year level knowledge and skills (Department of Education and Training, 2018, p. 28) and often the focus is on academic achievement (Gonski, 2018).

What may be required is a shift in focus. What if we could work to improve student wellbeing and in doing so increase students' academic achievement. A growing body of research has examined how psychological factors, that are key to student wellbeing, influence student's academic achievement. These factors include the way students view themselves, their feelings towards school and their self-regulating behaviours. These attributes have the potential to impact students' experience and achievement in school and improve core academic outcomes such as GPA and test scores (Dweck, Walton & Cohen, 2011). While the inclusion of General Capabilities within the Australian Curriculum has been positive, it is recognised that teachers need more support and training to effectively embed psychological skills in the classroom (Department of Education and Training, 2018, p.27).

Identifying the factors

What are the psychological factors that can influence learning and achievement in the classroom? Current research indicates that student's core beliefs about intelligence, and their belief in their ability to change, can have a powerful effect on motivation, learning and academic achievement (Dweck, 2017, p. 7). These beliefs are called mindsets (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum 2012, p.28) and two distinct mindsets have been identified.

“*research indicates that student's ... beliefs about intelligence, ... belief in their ability to change, can have a powerful effect on ... academic achievement*”

Growth or fixed mindset

A growth mindset is founded on the belief that one's abilities can be developed through effort, training and experience. This mindset can motivate individuals to stretch beyond their current abilities, to learn and overcome challenges along the way (Dweck, 2017, p. 15). On the other hand, individuals with a *fixed mindset* perceive ability and intelligence as unchangeable and a reflection on their self-worth. For them success is more than appearing smart or talented. Success focuses on perfect performance (Dweck, 2017, p. 31). While students with a fixed mindset may avoid challenges and potential failure, those with a growth mindset are more likely to take risks and overcome setbacks. It is a child's mindset that defines the way children perceive themselves which often determines the direction of their learning (Haimovitz & Dweck, 2017, p. 1849). Dweck encourages teachers to create a "growth-mindset-friendly environment" (p. 217) where students are safe from judgement and encouraged to take risks in their learning knowing teachers are committed to their success.

“create a “growth-mindset-friendly environment” where students are safe from judgement and encouraged to take risks in their learning”

Self-control

Self-control is another important psychological factor that can influence learning. Self-control can be defined as the ability to regulate attention, emotion and behaviour in order to resist temptation and achieve an enduring, valued goal (Duckworth & Gross, 2014, p. 319). Longitudinal studies indicate that higher levels of self-control earlier in life are linked with desirable life outcomes including higher academic success (Duckworth & Carlson, 2013; Mischel, 2014), prosocial behaviour (Eisenberg et al., 2009), employment, earnings, savings, and physical health (Moffitt, et al, 2011).

School-age children regularly encounter situations, which call upon self-control. For example, the increased use of technology and internet can mean that young people may become easily distracted whilst failing to maintain sustained focus and concentration (Webster & Ryan, 2014). In this instance, the ability to self-control, and prioritise attention to task, may be the difference between success and failure (Duckworth & Seligman, 2017).

Grit

Whilst self-control is about short-term behaviours and goals, 'Grit' can be defined as "perseverance and passion for long-term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087). Grit requires continuous hard work, persistence in overcoming setbacks and single-minded focus over many years. Gritty individuals persist in their quest to succeed despite setbacks, absence of positive rewards, boredom and slow progress.

Whilst self-control and grit are highly correlated (Duckworth et al., 2007) they differ significantly in nature and achievement outcomes. This means individuals with high levels of self-control may resist daily temptation to achieve a valued goal but may lack passion and long-term perseverance for a single superordinated goal. It is not surprising that self-control is more strongly linked with everyday success while grit is more strongly connected with outstanding achievement that may take many years or even a lifetime to achieve (Duckworth & Gross, 2014, pp. 322-323).

Self-control and grit have been shown to positively influence academic performance (Tangney, Baumeister, & Boone, 2004; Farrington et al., 2012, p.22). Duckworth and colleagues conducted a longitudinal study on a group of military cadets to test the relationship between self-control and grit on grades. The results indicated a stronger relationship between grades and self-control than grades and grit (Duckworth, Peterson, Matthews, & Kelly, 2007).

Can we teach these factors in the classroom?

Growth mindset, self-control and grit can positively influence learning in the classroom, but, are these factors malleable and can teachers grow these factors in students? A growth mindset can be taught through face-to-face workshops (Blackwell, Trzesniewski, & Dweck, 2007) and online programs (Yeager, Romero, et al., 2016). Research indicates that intervention programs have led to significant improvements in academic outcomes, particularly for students facing challenging situations or learning difficulties (Paunesku et al., 2015; Yeager Romero, et al., 2016; Yeager Walton, et al., 2016). Despite the domain specific nature of self-control, research suggests several general teachable strategies to improve self-control in school-aged children (Duckworth, Gendler & Gross, 2014, p. 201). While students possess different innate tendencies to persevere, the degree to which they apply effort in a task varies over time and in different situations (Farrington et al., 2012, p. 23-24). This application is largely dependent upon classroom context, students use of strategies to complete a task, as well as their cognitive skills (Dweck, Walton & Cohen, 2011). Teachers can help students develop academic perseverant behaviours including: persisting in learning activities, completing large projects and overcoming challenges when schoolwork becomes difficult (Farrington et al., 2012, p. 25). Teachers do this by setting high standards and creating learning tasks that require students to stretch beyond their current capacity (Dweck et al., 2011, p. 22).

Duckworth and fellow researchers (2007) suggest that grit is largely a stable personality trait that remains constant throughout time and context. It's

important to note that even though one's inherent tendency to persevere in tasks may be largely unmodifiable; there is sufficient evidence that people can change the "intensity, direction, and duration of their behaviours despite their personalities." (Farrington et al., 2012, p. 24). In particular, research shows that students persevere in academic tasks in various degrees within different contexts. This indicates that academic perseverance, as a set of behaviours can be highly modifiable within a specific context.

In summary, the literature reveals a variety of personal qualities that can enhance learning outcomes in the classroom. In particular, a growth mindset: the belief in one's ability to learn and succeed is an essential quality for academic success and future wellbeing. Secondly, self-control: the ability to resist temptation and remain focused on a goal is shown to be a vital quality for learning and achievement. Thirdly, grit: applying passion and perseverance for long term goals. These qualities have the potential to enhance student learning and are the focus in this study.

Methodology

The aim of this study is to explore how the psychological factors of growth mindset, self-control and grit impact junior school students' academic achievement. A secondary objective is to examine the strategies teachers use to develop these qualities in students. A mixed methods approach using both quantitative and qualitative methods was implemented using a specific sampling.

Sampling

Junior school students from a school in NSW were invited to participate in the study. The sample included 209 students, ranging from year four to year six, and their nine teachers. The school was selected due to its close proximity to the research team.

Data collection

Quantitative data was collected using an online questionnaire in which students responded to items that asked them to reflect on their levels of growth mindset, self-control, and grit. Academic performance was derived from school assessment data.

The Mindset Scale

Growth mindset is defined as the beliefs, attitudes or perception of one's ability to learn which directly impact academic performance (Farrington, et al., 2012, p. 28). The Mindset Scale was adapted from Dweck's Intelligence Mindset Questionnaire (Dvorak, 2014). The scale was designed to measure students' beliefs and attitudes towards their capacity to learn.

Twenty items were included and students responded using a four-point Likert scale.

The Self-Control Scale

Self-control is the ability to actively resist short-term distractions and delay gratification in the pursuit of academic goals (Farrington et al., 2012, p. 21). Essentially self-control is about choosing one activity over another in everyday situations. The Self-Control Scale used in this study was adapted from the 13-item Brief Self Control Scale (Tangney, Baumeister, & Boone, 2004) and students responded using a four-point Likert scale.

The Grit Scale

Grit is defined as "perseverance and passion for long-term goals" (Duckworth et al., 2007, p. 1087). Grit requires continuous hard work, perseverance in overcoming setbacks and sustained focus. The ten item Grit Scale used in this study was adapted from Duckworth and Quinn (2009) Short Grit Scale (GritS) and students responded using a four-point Likert scale.

Academic achievement

Student's academic achievement was measured in three key learning areas: English, Mathematics and Creative Arts. Students' academic results were ranked on a scale from 1 (Limited achievement), 2 (Basic achievement), 3 (Sound achievement), 4 (High achievement) and 5 (Outstanding achievement).

A secondary aim of this study was to investigate the ways in which teachers are working with students to develop growth mindset, self-control and grit. To collect this qualitative data, teachers were asked to respond to questions that explored their knowledge of growth mindset, self-control and grit, and ways in which they were trying to develop these attributes in their students.

Data analysis

Once the quantitative data was collected, and entered into SPSS, a descriptive analysis was performed on the individual items and a correlation matrix used to analyse bivariate relationships. Factor analysis and a reliability test were used to develop the scales. Structured equation modelling was applied to the independent variables using AMOS (Arbuckle, 2014). Qualitative data from teacher questionnaires were analysed to develop themes and depth of understanding.

The findings

So, what did we find? Of the 209 students who participated in the study, 46% were female ($n_f = 97$) and 54% were male ($n_m = 112$) and they were evenly spread across years 4 to 6.

“*academic perseverance, as a set of behaviours can be highly modifiable within a specific context*”

“There was no significant difference in student mindset [self control, grit or achievement] across year levels, but ... Girls reported a higher growth mindset, self control [and] achievement”

Growth mindset

The Growth Mindset Scale was generated to measure student's beliefs and attitudes towards their ability to learn. Principal component factor analysis revealed a single factor with satisfactory reliability (Cronbach's Alpha = 0.73). These items were averaged to form the construct for Mindset and after analysis produced a mean of 3.08 ($SD = 0.31$) with a possible range between 1 (fixed mindset) and 4 (growth mindset). This result indicates that, on average, these students report a positive growth mindset.

There was no significant difference in student mindset across year levels ($F(2, 208) = 1.531, p = 0.22$) but student mindset was significantly influenced by gender ($F(1, 209) = 5.569, p = 0.019$). Girls reported a higher growth mindset ($M_g = 3.13$) than boys ($M_b = 3.03$).

Self-control

The Self-Control Scale was designed to measure student's ability to regulate emotion and behaviour, resist short-term distractions and remain focused on school work. Responses were collected using a four-point Likert scale that ranged from 1 (strongly disagree) to 4 (strongly agree). Principal component factor analysis revealed a single factor with a satisfactory reliability (Cronbach's Alpha = 0.86).

Applying the data to the Self-Control Scale produced an average response of 2.65 ($SD = 0.47$). On a scale that ranged from 1 (minimal self-control) to 4 (high self-control), this result suggests that students agree that they have some level of self-control, marginally higher than the midpoint of 2.5.

Student's self-control measures were not significantly different between year levels ($F(2, 208) = 1.174, p = 0.311$), but self-control measures were influenced significantly by gender ($F(1, 209) = 6.489, p = 0.012$). Girls' levels of self-control were significantly higher ($M_g = 2.74$) than boys ($M_b = 2.57$).

Grit

The Grit Scale was used to measure students' level of academic grit. Similar to Mindset, responses ranged on a four-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Principal component factor analysis revealed a single factor with a satisfactory reliability (Cronbach's Alpha = 0.78).

Applying the data to the Grit Scale produced an average response of 2.73 ($SD = 0.42$). On a scale that ranged from 1 (low level grit) to 4 (High level grit), this result suggests that students report an average level of grit that is just above the midpoint (2.5) of the scale.

Students level of grit was not significantly different between year levels ($F(2, 208) = 1.034, p = 0.357$) and was not found to be significantly different between genders ($F(1, 209) = 0.056, p = 0.813$).

Academic achievement

Student's academic achievement in three key learning areas: English, Mathematics and Creative Arts were included in the study and ranked on a scale from 1 (limited achievement), to 5 (outstanding achievement). Principal component factor analysis of the three areas revealed that they formed a single factor with a satisfactory reliability (Cronbach's Alpha = 0.72).

Applying the data to this Academic Outcomes Scale produced an average result of 3.47 ($SD = 0.65$). Possible outcomes ranged from 1 (limited achievement) to 5 (outstanding achievement). This result suggests that students are achieving good academic results, with the average above the midpoint (3) of the scale. Academic achievement was not significantly influenced by year level ($F(2, 206) = 0.447, p = 0.640$), but was significantly influenced by gender ($F(1, 207) = 8.198, p = 0.005$). Girls' academic achievement was significantly higher ($M_g = 3.61$) than that of boys ($M_b = 3.35$).

The model

Having reported on the individual variables, it is interesting to consider the relationships between the variables in the study. The results of the structured equation model, with Academic Achievement as the outcome variable, are shown in Figure 1. The final structural model fitted the data very well, as indicated by the goodness-of-fit indices (CMIN = 1.471, $p = 0.225$, CMIN/DF = 1.471; NFI = 0.993, RFI = 0.933, IFI = 0.998, TLI = 0.977, CFI = 0.998 and RMSEA = 0.047). A CMIN/DF statistic below 3 is considered indicative of good model fit, as are other fit indices above 0.9 (NFI, RFI, IFI, TLI, & CFI). The RMSEA value was less than 0.05, which indicated a close fit between the data and the model (Hooper, Coughlan, and Mullen, 2008). Standardized path coefficients are presented in the final model and all paths shown are statistically significant. The squared multiple correlation calculated for Academic Achievement of 0.13 indicates that the model explained 13% of the variance for Academic Achievement.

While Academic Achievement was significantly influenced by a variety of factors, the structured equation model shows three direct positive paths leading to it, indicating that students with higher levels of the associated variable, experience higher levels of achievement in school. Of these positive paths, the largest contribution was from *Grit* (0.19), *Growth Mindset* also had a direct positive path to *Academic Achievement*, but the associated impact is lower (0.18). A direct positive path was also found from the background variable *Gender* to *Academic Achievement*, indicating that girls are more likely to achieve at a higher level academically, than boys, but being of lower associated influence (0.16).

An indirect positively linked pathway was found from the background variable *Gender* to *Mindset* (0.16), through to *Academic Achievement*. From the present structured equation model, it appears that girls are more likely to have a positive growth mindset and as a result more likely to achieve higher academic outcomes.

Interestingly, a positive pathway was found linking *Growth Mindset and Grit*. This meant that students with a greater *Growth Mindset* score were more likely to experience higher levels of *Grit* which has a positive link to *Academic Achievement*. Students more strongly claiming a *Growth Mindset* are more likely to be grittier and experience greater academic success in junior school.

The only negative pathway in the model was from *Gender* to *Grit*. This finding indicates that by a direct path (-0.12) boys are more likely to have higher levels of grit than girls. This direct pathway assists boys to academically achieve even though other mechanisms mean that girls are still likely to achieve at a higher level than boys.

The positive path (0.17) between the background variable *Gender* and *Self-Control* means that girls were more likely to exhibit greater *Self-Control* than boys. *Self-Control* in turn was found to influence *Grit* (0.67) which in turn positively influences *Academic Achievement*. So, while there is a direct negative

link between *Gender* and *Grit* there is a positive indirect link between *Gender* and *Grit* through *Self-Control* and the size of the standardised regression coefficients indicate that this may be the dominant pathway for girls and potentially compensates for the negative direct link discussed earlier, explaining the lack of gender difference observed in the Grit Scale.

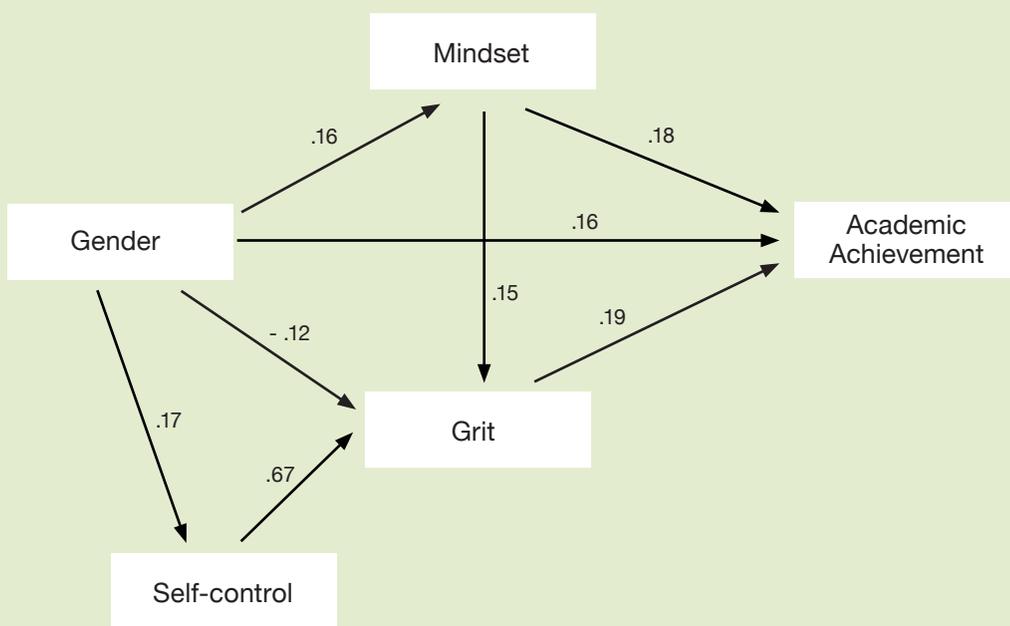
Teacher effects

A secondary aim of this study was to investigate the ways in which teachers are working with students to develop Growth Mindset, Grit and Self Control. Junior school teachers from the participating classes were asked to provide a written response to a set of questions. Teachers were firstly asked to define the term, Growth Mindset. While responses varied, two key themes emerged; Firstly, growth mindset involves a positive attitude to mistakes and challenges with an openness to change. As one teacher states, a growth mindset requires a “willingness to make an effort to pivot or change direction or edit and fix a problem to affect change.” Secondly, a growth mindset involves self-efficacy and a belief that success is possible when combined with sustained effort.

Teachers then agreed that they play an important role in building students’ growth mindset. In particular, teacher responses highlighted the need for teachers to model a growth mindset and encourage

“Students more strongly claiming a Growth Mindset are more likely to be grittier and experience greater academic success in junior school.”

Figure 1: A modelling of variable influence on academic achievement



“
Teachers reported ... learning strategies they use to develop these attributes ... They should be encouraged [by] evidence to support the idea ... growth mindset, grit and self-control can be developed in the classroom”

students to persevere through challenges, try new tasks and to see mistakes as an opportunity to learn and grow. Teachers also suggested that a growth mindset be nurtured through adaptable lesson content, differentiated outcomes, discussion and equipping students with the skills needed to persevere in learning tasks. One response also suggested that teachers can build students' self-confidence through appropriate teacher-student relationships.

When teachers reflected on growth mindset on students' academic achievement, they agreed that a growth mindset has a significant impact on student's current and future academic success. Teachers described the impact of growth mindset on academic achievement as “great”, “huge” and “vital to future success”. In addition to academic achievement, teachers indicated that a growth mindset enables students to “explore at a deeper level than they were before” and empowers them to become “lifelong learners.”

Teacher responses identified the importance of self-control and grit in enabling students to overcome setbacks, reach their full potential and experience success in life. In reflecting on the impact of self-control and grit on students' academic achievement, teachers agreed that perseverance has an important and even “vital” part to play in student's learning and achievement in school. Teacher responses supported the key idea that perseverance is the ability to apply sustained effort to a task despite setbacks, to achieve a set goal. One teacher defined perseverance as the ability to “push forward even when an opposing force which is sometimes stronger is pushing backwards.” Perseverance was also defined as the “willingness to keep trying new ideas to find solutions.”

In exploring the role that teachers play, all of them agreed that they have a valuable part in building perseverance in their students. Most responses identified the need for teachers to model perseverance through their words and actions. As one teacher states “affirming, encouraging and believing in their students” helps students to persevere while another teacher identified the need to provide adequate time during class for students to “see something to completion.” Interestingly, one teacher states that although “inspirational teachers can model and build tools in children”, perseverance is also “heavily” influenced by parents and other factors.

Discussion

The present study investigated the impact of mindset, self-control and grit on the academic achievement of junior school students in the classroom and found that all three factors influence academic achievement. Teachers indicated that they value growth mindset, self-control and grit in their students and perceive

their role as important in developing these attributes in students. Teachers reported a variety of teaching and learning strategies they use to develop these attributes in students. They should be encouraged in this aspiration as there is a growing body of evidence to support the idea that growth mindset, grit and self-control can be developed within the classroom (Blackwell et al., 2007; Yeager, Romero et al., 2016; Yeager, Walton, et al., 2016; Paunesku et al., 2015; Farrington et al., 2012).

While overall academic achievement was positive, the present study discovered a significant achievement gap between genders with girls more likely to achieve higher academic outcomes. This finding partially reflects national performance data that reveals females' academic performance is significantly higher than males, a difference equivalent to one year of schooling (Thomson, DeBortoli & Underwood, 2017, p. 141). Increasing boys' positive self-belief or growth mindset has been identified as a way to reduce the gender gap in literacy (Cole, Jane, Suggett, & Wardlaw, 2016, p. 4).

The present study found no significant difference in academic achievement across year levels. This finding indicates that academic outcomes do not change significantly over time. This result reflects the research of Masters (2013, p. 2) who warns that variations in development and achievement are evident during early education, a gap that often remains unchanged throughout schooling. This finding is particularly pertinent considering the gender-based achievement gap found in the present study.

Apart from gender, the current study found two factors, grit and mindset had a direct, significant influence on academic achievement. Grittier students were more likely to outperform their peers in academic achievement. This finding reflects studies, which found a positive correlation between students' level of grit and their grade point average scores (Duckworth et al., 2007, p. 1093). Students with a higher growth mindset were also more likely to outperform their peers. This finding reflects a growing body of research indicating a growth mindset increases student's capacity to earn higher academic outcomes over time (Yeager & Dweck, 2012; Blackwell et al., 2007; Paunesku et al., 2015; Yeager, Romero, et al., 2016; Yeager, Walton, et al., 2016).

Interestingly, the study found that girls were more likely to exhibit a positive growth mindset and greater self-control than boys. This result may not be surprising as girls often begin emotional maturation earlier than boys which can be a catalyst for a growth mindset and self-regulation.

The present study results found growth mindset had a significant positive relationship with grit. This finding asserts students with a stronger growth

mindset were also more likely to be grittier than peers with a more fixed mindset. This result echoes the findings of Yeager & Dweck (2012) and Blackwell et al., (2007) which found that students' mindset can promote academic resilience and achievement. Although the present study did not find a significant difference in grit based on gender, the structured equation model indicated that boys had a significant direct link to grit, but girls compensated through the significant indirect link to grit via self-control. Like the findings of Duckworth et al. (2007), the present study found a highly positive correlation between self-control and grit. Students with higher levels of self-control were more likely to exhibit higher levels of grit.

Findings from the present study found no significant difference in mindset, grit and self-control across year levels indicating that they do not change significantly over a short period of time. In part, these results conflict with the findings of Duckworth, Gendler and Gross (2014) who suggest that self-control is determined by a child's capacity for metacognition which generally increases with age and maturation. Also, while there was not a direct relationship from self-control to academic achievement, there was an indirect pathway through grit found in this study. This result suggests that students with greater self-control were more likely to be grittier than their peers, which in turn was positively linked to higher academic outcomes. This finding does provide partial support for studies indicating higher levels of self-control are significantly correlated to higher academic success (Duckworth & Carlson, 2013; Michel, 2014; Duckworth et al., 2007; Tangney et al., 2004; Duckworth & Seligman, 2005).

Although research into the way growth mindset is transmitted to children remains inconclusive, recent studies have shown that teacher responses to success and failure, linked with a focus on student learning progress rather than personal abilities, are significant in shaping mindset (Haimovitz & Dweck, 2017; Sun, 2015). Teachers in the present study reported a variety of teaching practices including growth mindset principles. Key strategies included encouraging and equipping students with the necessary skills to persevere, trying new tasks and helping students to see mistakes as an opportunity to learn and grow.

Implications for education

It is important that schools equip students with the skills, not only for academic achievement, but for living in a complex and fast changing world. The present study provides evidence that growth mindset, self-control and grit are attributes that have a significant, positive influence on learning outcomes and may prepare students for success and wellbeing in a rapidly changing world.

This study yields evidence that growth mindset, self-control and grit have a significant, positive influence on learning outcomes and may prepare students for success and wellbeing in a rapidly changing world.

Educators should take note that a variety of teaching strategies foster a growth mindset. Firstly, direct intervention programs that teach students how their intelligence and abilities can be improved through consistent effort can engage students with a sense of purpose and motivation for learning (Blackwell et al., 2007). Research also shows that praising students for effort and hard work, rather than intelligence, fosters resilience, determination and a growth mindset (Mueller & Dweck, 1998). Studies also indicate that teachers who promote a growth mindset focus on student's learning progress rather than their personal abilities, sought understanding, deeper thinking and allowed students to reflect and revise their work. Teachers readily acknowledged the value of mistakes and challenges within the learning process (Sun, 2015). In particular, teacher responses to success and failure, as well as learning practices in the classroom, play a significant role in shaping students' mindset (Haimovitz & Dweck, 2017).

The present study found a strong, positive correlation between self-control and grit. It would seem that helping students resist short term distractions and stay focused on short term academic tasks will help build resilience and the skills students need to persevere in more difficult tasks over the long term. Educators have the opportunity to facilitate academic perseverance through a variety of teaching and learning strategies. Practices include: teaching students metacognitive and self-discipline strategies and promoting a growth mindset (Dweck et al., 2011). Research also indicates that empowering students with strategies to improve learning and understanding of course work can grow perseverance and ultimately lead to improved academic outcomes (Farrington et al., 2012, p.6). Educators can facilitate grit in their students by setting high standards and creating learning tasks that require students to stretch beyond their current capacity within a supportive environment (Dweck et al., 2011, p. 22). It is important to note that students must not only see the standards as high but also believe in their ability to achieve the outcomes. This may be particularly important for low achieving students to ensure they feel supported rather than discouraged to the point of giving up (Dweck et al., 2011, p.24).

The present study has found that growth mindset, self-control and grit can all play a part in helping students to achieve academically in primary schools. The more educators understand the way wellbeing and psychological factors impact student learning and

“
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 ”

“Educators can facilitate grit in their students by setting high standards and creating learning tasks that require students to stretch beyond their current capacity within a supportive environment”

achievement, the better prepared they will be to help students succeed at school and in their future lives.

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