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Exploring The Relationship Of Mindset With Metacognitive Awareness And Grit Among College Students

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ABSTRACT

The study examines the relationship between mindset and metacognitive awareness, as well as grit, in a sample of 186 college students. The research utilised descriptive statistics, correlation analyses, and regression analyses. The assessment tools of Dweck's Implicit Theories of Intelligence Scale (Dweck, 1995) for mindset, the MAI- Metacognitive Awareness Inventory Shortened version (Harrison and Vallin, 2018) for metacognitive awareness, and the Short Grit Scale (Angele Duckworth and Patrick Quinn, 2009) for grit were employed. Correlation analyses revealed exceptionally high positive associations, suggesting these constructs move together in a highly predictable manner. A near-perfect positive relationship was observed between mindset and metacognitive awareness, and a powerful positive correlation was found between mindset and grit. Further, the regression analyses confirmed that mindset serves as a powerful predictor. Mindset explained approximately 97.1% of the variation in outcomes in metacognitive awareness and 97.4% of the variation in outcomes in grit. These results underscore the central role of mindset as a foundational construct that shapes both cognitive and non-cognitive skills. The study suggests that fostering a growth mindset is a key starting point for educational interventions, creating simultaneous enhancement in metacognitive awareness and grit, ultimately supporting higher academic achievement, resilience, and personal growth.

Keywords: Mindset, implicit theory, metacognitive awareness, grit.

CHAPTER 1

Introduction

Mindset Theory

Carol S. Dweck's observations in the 1970s about how different children responded to difficulties gave rise to mindset theory. An investigation of these varying responses was prompted by the fact that some kids actively sought out challenges, while others avoided them. Dweck and Bandura created the concept of "implicit theories" after realising that a child's perception of failure depended on whether they believed a skill was innate or learned. In particular, ability may be viewed as something that is innate and unchangeable or as something that may be acquired. This idea that ability is "something deep-seated and permanent" is similar to entity theory, which holds that an attribute cannot be changed voluntarily. Conceptually, the idea that ability is "something they can develop" is consistent with the incremental approach, which posits that an attribute can be altered through effort. Crucially, these views are not about the likelihood of change occurring, but rather about the possibility of change (Yeager, Trzesniewski, et al., 2013). Dweck, her coworkers, and students

launched a comprehensive study program based on this fundamental realisation. Their research examined the causes and effects of people's implicit ideas in a number of areas, such as interpersonal relationships, health, and academic and professional success. The argument that people's implicit theories are not always the same for all attributes is supported by the thorough investigation across various domains. The same person may think that people can significantly increase their intelligence while still viewing personality as a relatively fixed entity. There is also a continuum in the support for entity vs incremental theories. According to research, 20% of people cannot be clearly classified into either the fixed or development mindsets, whereas 40% of people definitely identify with either (Dweck, 2012).

Implicit Theory of Intelligence

The term "implicit theory of intelligence" describes a person's core conviction regarding the innate qualities of their own intelligence. The broader notion of "implicit theories," which Carol S. Dweck and Mary Bandura established in the 1970s, gave rise to this theory. The fixed mindset and the development mindset are often regarded as the two primary perspectives that comprise the implicit theory of intelligence (Dweck and Leggett, 1988; Dweck, 2000, Dweck, 2006, Dweck and Master, 2009).

People who have a fixed mindset think that intelligence is mostly innate, tangible, and unalterable. This perspective holds that intelligence is an innately fixed quality that cannot be improved or changed, implying that humans are born with certain unalterable traits that don't change with time or experience. Growth Mindset: Individuals with this mindset think that intelligence is something that can be cultivated, is flexible, adaptable, and dynamic, rather than something that is fixed. According to this viewpoint, human aptitudes and competencies may be developed and reinforced via time and effort (Dweck 1986, Dweck et al. 1995, Dweck 2007).

According to Dweck and Master's (2009) observations, a person's core convictions on the nature of intelligence—whether it is innate or developable—have a significant impact on students. These ideas influence the goals that kids set for themselves in school and how they see the worth and usefulness of working hard, which can have a positive or negative impact. Students' mindsets influence how they interpret their failures. For example, some people blame failures on a lack of natural skill, aptitude, or intelligence, while others blame poor tactics or a lack of effort. Importantly, a student's coping strategies following failure are determined by these beliefs.

Students may become learning-oriented (putting growth and development first, which can promote resilience and a propensity to become more engaged and persistent when faced with problems) or smart-oriented (concentrating on appearing intellectual, which may lead to giving up after repeated failures). This study demonstrates how the fundamental knowledge of implicit theories—which hold that failure is defined by whether one views one's ability as permanent or developmental—directly transfers into real-world repercussions in educational settings. One of the primary areas in which Dweck and her colleagues have thoroughly examined the impact of people's implicit theories is academic accomplishment (Dweck and Master 2009).

With a growth mindset, pupils are expected to have a more optimistic view of effort and realise that hard work can lead to new abilities. Students who hold to this theory typically seek learning objectives, hoping to improve their skills through difficult coursework. Additionally, they exhibit resilience by viewing setbacks and failures as signals that they should adjust their strategy rather than as proof of a lack of skill, intelligence, or character flaws (Padir & Vangolu, 2023b). Through the application of mastery-oriented tactics and an emphasis on information acquisition, this viewpoint can result in improved learning or performance; when faced with obstacles or setbacks, they will continue with challenging tasks rather than switching back to easier ones (Dweck and Yeager 2020). On the other hand, students who believe that intelligence is a fixed trait either develop or display unfavorable attitudes toward work. If their ability is thought to be low, they can assume that exerting a lot of effort indicates a lack of ability or that their efforts will be in vain (Blackwell et al. 2007, Miele et al. 2013).

Research by Dweck and Yeager (2020) suggests that individuals, including animals, who repeatedly face situations they cannot control may eventually stop trying to change their circumstances, even when opportunities for success become available. This phenomenon, known as learned helplessness, could also be

applied to students who possess the capacity to learn and succeed but abandon their efforts when encountering difficulties.

Students who hold a fixed mindset often prioritise demonstrating their existing abilities or avoiding situations that might expose perceived inadequacies. When these students experience failure, they tend to attribute it to a lack of inherent ability or intelligence. Consequently, they are less likely to employ constructive strategies like perseverance, addressing deficiencies, or seeking help, which can hinder their learning and performance (Blackwell et al. 2007, Nussbaum and Dweck 2008, Dweck and Yeager 2019). Individuals who believe their intelligence is static tend to interpret failures as indicators of their own personal inadequacies, deficiencies, or shortcomings. Those who believe intelligence can be enhanced view failures as valuable opportunities for learning and achieving mastery. Unlike those with a fixed mindset, individuals with a growth mindset do not internalise difficulties or setbacks as personal failures. Their main objective is to master knowledge, meaning they are not preoccupied with appearing intelligent or unintelligent to others (Dweck 2000). Conversely, students with a fixed mindset may underestimate the importance of effort and hard work, often believing they need exceptional inherent abilities to tackle a difficult task even before they begin studying. This can lead them to give up without even attempting the task. Such a mindset often causes them to miss out on valuable new learning opportunities. However, students with a growth mindset, who perceive intelligence as something that can be cultivable and enhanced, consider effort to be a vital indicator and a necessary condition for learning, regardless of their current perceived intelligence level. This perspective motivates those with a growth mindset to pursue challenging tasks to master knowledge, irrespective of how capable they initially feel.

Stability of Implicit theories

When considering whether people's beliefs about entity versus incremental theories can shift over time or be deliberately altered through interventions, the answer is nuanced. On one hand, longitudinal studies frequently indicate that these implicit theories are generally stable over extended periods, showing a consistency often like an individual's personality trait (Robins & Pals, 2002). On the other hand, experimental research demonstrates that implicit theories are indeed malleable and can be changed. The duration of this change depends on the intensity of the methods employed. For example, a particular mindset can be temporarily fostered by presenting individuals with scientific information that supports a specific viewpoint. Conversely, mindset can be modified over several weeks through more intensive interventions, such as a comprehensive workshop (Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003; Yeager, Trzesniewski, et al., 2013).

Mindset and achievement

Individuals' perceptions of intelligence significantly shape their beliefs about the value of effort. When students consider their intelligence or abilities to be unchangeable, they tend to downplay the importance of effort. They might assume that naturally talented individuals don't need to try hard, and that increased effort won't improve outcomes for those with lower inherent skill. From this perspective, trying harder won't make them smarter; it could even reinforce their self-perception of being unintelligent, especially after experiencing setbacks or failures (Blackwell et al. 2007). For those with a fixed mindset, even if they are intelligent, greater effort can paradoxically deepen their sense of lacking ability, confirming their initial belief.

In contrast, effort becomes highly beneficial for students who believe their intelligence is not fixed but malleable and capable of development. These students, characterised by a growth mindset, often agree with statements like, "The harder you work at something, the better you will be at it". This belief in the power of effort ultimately guides students toward achieving greater success (Dweck and Master 2009).

Role of educators in fostering mindset

The education system and, more directly, teachers play a critical role in shaping students' mindsets. Educators can foster a growth mindset by:

Praising process over traits: Praising students for their effort, strategies, and persistence rather than their innate intelligence or talent encourages a growth mindset. Conversely, praising intelligence can foster a fixed mindset (Keenan, 2018).

Using growth-oriented language: Simple linguistic cues, such as adding the word "yet" when a student struggles ("I can't do this... yet"), can emphasise the potential for improvement (Keenan, 2018).

Creating a supportive environment: A classroom culture that values effort, resilience, and learning from mistakes can promote a growth mindset.

Impact of Mindset on Academic Achievement

Positive Association with Achievement

A growth mindset is positively correlated with higher academic achievement (Goldberg, 2022). Students with a growth mindset tend to earn better grades, particularly when facing difficult tasks or academic transitions. This mindset is linked to higher academic achievements in various subjects, including mathematics and science (O'Keefe et al, 2023).

Furthermore, mindset interventions designed to teach students that intelligence is malleable have been shown to improve grades and academic outcomes (Blackwell, Trzesniewski, & Dweck, 2007). These interventions appear particularly effective for:

* Underachieving students or those at risk (Davis et al. 2011; Mueller and Dweck 1998)

* Students facing stereotyped threats, such as female students in math or African American college students (De Castella and Byrne 2015).

* Students from low-income families, with a growth mindset, help to buffer the negative effects of poverty on achievement (Susana Claroa, 2016).

Contradictory and Null Findings

There are several sources that challenge these claims, reporting mixed, null, or even contradictory results.

* Multiple large-scale studies and replication attempts have failed to find a significant association between mindset and academic grades or resilience to failure (Blackwell et al. 2007). Gignac's 2018 study found no support for the idea that growth mindsets benefit school attainment or response to challenges.

* Another study involving undergraduate students found a negative correlation between a growth mindset and GPA, suggesting that students with higher grades had more of a fixed mindset, although this was likely due to a lack of variability in the data.

* A meta-analysis found no average effect of mindset interventions on academic achievement among undergraduate students. Another study noted that many mindset interventions fail to successfully shift students' beliefs in the first place (Sisk et al., 2018).

This debate suggests that the relationship between mindset and achievement may be more complex than widely believed and might be influenced by other factors.

Psychological and Motivational Factors

Mindset is closely linked to a variety of psychological constructs that influence learning and well-being.

• Self-Efficacy: A growth mindset is associated with higher levels of self-efficacy—the belief in one's own capability to succeed. Students with a growth mindset believe their efforts can lead to improvement, which enhances their confidence in their academic abilities. Self-efficacy has also been identified as a full mediator in the relationship between growth mindset and meaning in life.

• Resilience and Coping: Students with a growth mindset are more resilient, persistent, and better able to cope with challenges and setbacks. They are more likely to see failures as opportunities for growth and to bounce back from them (Rogers, 2019; Burnette et al., 2020)

• Mental Health and Well-being: A growth mindset is linked to better mental health outcomes, including higher psychological well-being, life satisfaction, and lower levels of stress, anxiety, and depression (Schroder, 2020). A meta-analysis confirmed a negative correlation between a growth mindset and psychological distress.

• Motivation: Mindset influences students' motivation and the types of goals they pursue. Those with a growth mindset are more likely to be intrinsically motivated, adopt mastery-oriented goals (focused on learning and improvement), and attribute success to effort. In contrast, a fixed mindset is associated with performance-oriented goals (focused on demonstrating ability) (Zeng et al., 2016)

Mindset and failure

When examining how students with differing mindset beliefs respond to failure, Dweck and Master (2009) highlight a key distinction: students with a stable, fixed view of intelligence interpret low achievement as a sign of low ability. However, students who believe intelligence can be improved see low achievement as an indication that they haven't tried hard enough. For example, seventh-grade students with a fixed mindset often attributed their poor performance to being "not smart enough" or to an "unfair exam," offering "helpless" explanations and making no effort to change their behaviour, as they blamed external factors for their failures. Conversely, students with a growth mindset, who believe intelligence can be enhanced, explain their underperformance by stating, "I didn't work hard enough" or "I didn't study properly". By attributing failure to their own level of effort, they are motivated to take control of the situation and actively work towards improving results (Blackwell et al. 2007).

Metacognition

Metacognition has been a subject of discussion for many years, particularly within educational psychology, where it is often defined as thinking about thinking. Devine (1993) further described metacognition as a type of cognition that involves the active control of cognitive processes. Flavell (1976) was the pioneering researcher who introduced the concept of metacognition to educational and cognitive psychology. He defined metacognition as an individual's awareness of their own thinking and learning. More specifically, Flavell explained it as one's knowledge about one's own cognitive processes and the results of those processes, or anything connected to them, such as the characteristics of information that are relevant to learning. He further elaborated that metacognition involves actively monitoring, regulating, and coordinating these cognitive processes in relation to the information or data they are working with, typically to achieve a specific goal or objective.

Metacognitive awareness encompasses two primary aspects: metacognitive experience (or regulation) and metacognitive knowledge. Metacognitive experience refers to any conscious cognitive or emotional experience that occurs during an intellectual task (Flavell, 1979). It involves the adjustments an individual makes to their cognitive processes to effectively manage and control their own learning. For instance, if a student encounters a word recognition task in a second language (L2) listening exercise and recalls successfully solving a similar problem before, they can then apply that previous strategy to the new challenge. On the other hand, metacognitive knowledge consists of a person's beliefs and understanding about themselves as thinkers, as well as their awareness of various learning strategies they can employ. The strategies a learner chooses, such as in the word recognition example, are directly influenced by their pre-existing metacognitive knowledge.

Metacognition has been referred to as "the seventh sense", a term coined by Nisbet and Shucksmith (1986). It is considered a crucial indicator of learning success, as noted by Wang, Haertel, and Walberg (1990). Furthermore, the positive effects of metacognitive instruction have been definitively demonstrated in various fields, including listening, reading, and mathematics (Goh, 2008). Despite its recognised importance, the study and perspective of metacognition have remained perplexing due to its shifting historical origins within educational psychology (Georghiades, 2004). A. L. Brown (1987) famously described metacognition as "not only a monster of obscure parentage, but a many-headed monster at that". The two prominent models of metacognition are widely utilised: Flavell's (1979) model of cognitive monitoring and A. L. Brown's (1987) model of metacognition.

Flavell's model of cognitive monitoring

Flavell's (1979) model of cognitive monitoring encompasses four interacting components: metacognitive knowledge, metacognitive experience, goals, and strategies. Flavell (1979) defined metacognitive knowledge as the segment of an individual's stored knowledge that pertains to people as cognitive beings, along with their diverse cognitive tasks, objectives, actions, and experiences. In essence, this type of knowledge focuses on individuals as cognitive entities, considering their different cognitive tasks, aims, behaviours, and experiences. When Favell's model of metacognitive knowledge was applied to second language (L2) learning

by Wenden (1998), it was categorised into three core components: person knowledge, task knowledge, and strategy knowledge. These components are described as follows:

Person knowledge refers to a learner's general understanding of humans as thinking beings. This includes their judgments about their own learning capabilities and awareness of both internal and external factors that can influence the success or failure of their learning process.

Task knowledge encompasses a learner's understanding of the purpose, nature, and demands of various learning tasks. It also involves recognising differences in difficulty between tasks and helps learners identify factors that might contribute to a task's difficulty, such as features of an oral message.

Strategy knowledge is a learner's understanding of how to use specific strategies to achieve cognitive goals. According to Nisbet and Shucksmith (1986), this knowledge can be useful for attaining learning objectives and assists learners in making informed choices regarding their strategy use and preferences.

Brown's model of metacognition

A.L. Brown's (1987) model proposes that metacognition comprises two dimensions: knowledge about cognition and regulation of cognition.

Knowledge about cognition refers to what individuals understand about their own cognitive processes, which helps facilitate the reflective aspects of metacognition (A. L. Brown, 1987). Further studies characterised knowledge about cognition into three types: declarative knowledge, procedural knowledge, and conditional knowledge (Jacobs & Paris, 1987).

Declarative knowledge encompasses what individuals know about themselves as learners and about the factors that influence their performance. It also includes knowledge about oneself and about various strategies (Schraw & Moshman, 1995). For instance, an example of declarative knowledge is knowing that setting goals is an effective strategy to use before beginning a learning task.

Procedural knowledge is defined as understanding how to execute skills and utilize strategies. Individuals possessing a high degree of procedural knowledge tend to use skills more automatically, are expected to organise strategies effectively, and employ distinct types of strategies to overcome problems and difficulties (Schraw & Moshman, 1995). This type of knowledge encompasses knowing how to use strategies, such as the process of setting goals before beginning a specific task.

Conditional knowledge refers to understanding when and why to apply various cognitive actions. Essentially, it involves the effective utilisation of both declarative and procedural knowledge. It can be thought of as declarative knowledge concerning the relative usefulness of different cognitive procedures (Garner, 1990; Schraw & Moshman, 1995). For instance, a person with conditional knowledge might recognise that setting goals would be particularly appropriate before undertaking a certain task. According to A. L. Brown's (1987) model, knowledge about cognition is typically stable, often imperfect, and frequently develops later. Conditional knowledge is crucial because it assists learners in selectively allocating their resources and employing strategies more efficiently (Reynolds, 1992). Furthermore, conditional knowledge allows learners to adapt to the diverse situational demands encountered in a specific learning task.

Regulation of cognition encompasses a series of activities that enable learners to manage and oversee their own learning processes, thereby supporting the executive functions of learning (A. L. Brown, 1987). Research indicates that incorporating regulatory skills and teaching how to apply them within classroom instruction leads to notable enhancements in learning outcomes (Cross & Paris, 1988; Brown & Palincsar, 1989).

This regulatory process is composed of three key metacognitive strategies:

1. Planning: This involves choosing suitable strategies and allocating appropriate resources that will impact performance (Berieter & Scardamalia, 1987). Examples include making predictions before starting a task, organising strategies in a sequence, and purposefully dedicating time or cognitive effort before embarking on a specific activity (Berieter & Scardamalia, 1987).

2. Monitoring: This refers to a learner's continuous and immediate awareness of their understanding and how well they are progressing with a task. Regularly engaging in self-testing during the learning process is a good illustration of monitoring. Studies suggest that the ability to monitor one's learning develops quite slowly and is often underdeveloped in both children and adults (Schraw & Moshman, 1995).

3. Evaluating strategies: This involves assessing the results of an individual's learning and the regulatory processes employed. It also includes evaluating the success of comprehension or the overall learning processes after a task has been completed. A typical example of evaluation is reviewing one's initial goals and conclusions once a specific task is finished.

Metacognition is frequently referred to as “thinking about thinking”. It functions as a regulatory system that assists individuals in understanding and managing their own cognitive performance. This capability allows people to take charge of their own learning. The phrase “going meta” is sometimes used in the context of metacognition, illustrating the process of stepping back to observe one’s own actions as if viewed by an external observer. Essentially, going meta means becoming an audience to one’s own intellectual performance.

Grit

According to Duckworth et al. (2007) and Ris (2015), grit is primarily characterised as “perseverance and desire for long-term goals”. This non-cognitive concept includes a strong internal motivation as well as a persistent dedication to overcoming obstacles over long periods of time. It entails persistently working toward goals and staying engaged in the face of setbacks, difficulties, or times of stalled advancement (Duckworth et al., 2007; Ris, 2015). This description emphasises how gritty behaviour is persistent and robust. Gritted people approach the pursuit of success similarly to a marathon, using their endurance as a competitive advantage (Duckworth et al., 2007). They are not readily deterred by brief disappointments or boredom. Certain dynamic, motivating, and commitment-oriented aspects of self-regulation are distinctively captured by grit, according to Duckworth and her colleagues. This means that rather than only avoiding short-term distractions or impulsive reactions, it focuses on the innate urge to overcome hurdles for specific, long-term, overall goals (Duckworth & Gross, 2014; Eskreis-Winkler et al., 2016; Vazsonyi et al., 2019). According to this contrast, grit is not a reactive mechanism for self-control but rather a proactive force for long-term success. Crucially, this involves striving for unbiased achievements that are widely acknowledged and appreciated by others (Duckworth et al., 2007).

Grit's proponents assert that it offers a unique and significant contribution to comprehending the dynamics of success, despite conceptual similarities with other non-cognitive traits like self-control and conscientiousness (Duckworth & Gross, 2014; Duckworth et al., 2007; Duckworth & Quinn, 2009; Eskreis-Winkler et al., 2016; Vazsonyi et al., 2019). Whether these differences reflect really distinct psychological constructs or substantially overlap with preexisting ones is the subject of an ongoing dispute.

History of Grit

Before its more recent and significant role in educational discourse, the idea of "grit" has a rich and long history, having existed for more than a century (Ris, 2015). The fundamental concepts of grit are far older, even though Angela Duckworth and her associates are usually given credit for popularising the concept as a non-cognitive quality in 2007 and developing a psychometric scale to assess it (Duckworth et al., 2007; Ris, 2015). An early conceptual foundation was laid by early observations made by individuals like Sir Francis Galton, who emphasised the critical role that persistence had in the achievements of well-known people (Eskreis-Winkler et al., 2016; Galton, 1892; Ris, 2015). In 1863, Nathaniel Hawthorne used the term "grit" to describe a quality of character for the first time (Hawthorne, 1863; Ris, 2015).

This early use shows that enduring character traits have long been valued by society. The overindulgence of affluent youngsters was blamed by British leaders such as Reginald Brabazon and Edward Lyttelton for the apparent lack of grit among the country's youth in the early 20th century (Brabazon, 1909; Lyttleton, 1909; Ris, 2015). This view was a reflection of larger cultural concerns about how wealth affects character development. Ironically, middle-class and upper-class families in the Gilded Age in the United States looked to the lives of poor children as role models for cultivating grit. These kids, who were often portrayed in popular literature by writers like Mark Twain and Horatio Alger, Jr., were seen to be prime examples of how to develop grit by persevering through hardship. (Alger, 1868; Ris, 2015).

Ironically, these stories were written with affluent kids in mind, trying to instill in them values that their wealthy upbringing may otherwise hinder (Ris, 2015). As the 20th century went on, the discourse about grit changed, concentrating especially on its role in athletic success in the decades leading up to World War II (Ris, 2015). This development demonstrates how society's perspective of the areas where grit was most evidently displayed and appreciated changed throughout time. The 1960s and 1970s, which may have been associated with less income disparity in the US, saw a sharp decline in the national dialogue about grit (Google

Books Ngram Viewer, 2015; Putnam, 2000; Ris, 2015; Stone et al., 2012). This decrease raises the possibility of a relationship between socioeconomic circumstances and the value that society places on certain personal qualities. However, a time of growing economic inequality has coincided with its remarkable revival in public and educational discourse in recent years (Piketty, 2014; Ris, 2015; Stone et al., 2012). This contemporary resurgence might be a sign of a resurgence of interest in personal traits as a means of explaining achievement in the face of rising inequality.

Grit in education

The notion of grit has attracted significant attention in educational settings, prompting a great deal of study into its capacity to predict a range of academic outcomes, such as academic performance, attendance rates, and student retention (Allen et al., 2021; McClendon et al., 2017). Academic achievement is more likely for students who have a sincere passion for their studies and persistently overcome social and academic challenges (Allen et al., 2021). This is due in part to the fact that "students with higher grit levels tend to demonstrate better involvement in their academic endeavours" (Datu et al., 2018), consistently demonstrating a strong rapport with learning activities. Additionally, they "invest more time in their studies", which is a quality that indicates a sustained commitment to their academic growth (Cross, 2013; McClendon et al., 2017).

According to Oriol et al. (2017), gritty students "usually display a heightened sense of self-efficacy", which fosters a strong belief in their own academic talents and, taken together, boosts their chances of success (Allen et al., 2021). Higher grit scores have been linked to improved academic achievement and greater perseverance, particularly in online learning settings where student attrition rates are frequently high (McClendon et al., 2017). For example, greater graduation rates and better attendance records have been linked to elementary and high school pupils who possess a stronger sense of grit (Saunders-Scott et al., 2018).

Grit's predictive ability, especially its perseverance component, is thought to be essential for student retention at all educational levels (schools, colleges, and universities), as it may allow teachers to recognise and assist students who are at risk of dropping out (Allen et al., 2021; Eskreis-Winkler et al., 2014). Targeted actions may be made easier with such early identification. Even though the U.S. Department of Education has advocated incorporating grit instruction into schools, some researchers warn that many claims about grit's efficacy in education are either directly contradicted by findings or lack empirical support (Credé, 2018; Schechtman et al., 2013). This reveals a significant discrepancy between recommendations for policy and strong scientific support. Discussions about developing grit have traditionally centred on teaching character to middle-class and upper-class kids, who are thought to lack it because of their affluent upbringing. This stands in stark contrast to underprivileged pupils, who frequently demonstrate a great deal of grit as a result of their everyday hardships and life experiences (Ris, 2015). According to this viewpoint, placing too much focus on grit could take funds away from solving structural problems that disadvantaged student groups face.

Interconnections of variables

Metacognitive skills and a growth mindset are intimately associated, particularly in relation to academic engagement. The relationship can be understood as follows: A growth mindset is facilitated by metacognition. In order to fully benefit from a growth mindset, students may require metacognitive skills. A growth mindset is the belief that intelligence is "malleable and capable of growth over time". One aspect of metacognition is the capacity to "reflect upon and be aware of their learning progress" That intelligence is "malleable and capable of growth over time". One aspect of metacognition is the capacity to "reflect upon and be aware of their learning progress".

Having a growth mindset and having metacognitive abilities are closely related, especially when it comes to academic involvement. The following is an understanding of the relationship: A growth mindset is made possible by metacognition. According to the sources, pupils may need metacognitive abilities in order to fully reap the rewards of having a development mindset. The idea that intelligence is "malleable and capable of growth over time" is known as a growth mindset. The ability to "reflect upon and be aware of their learning progress" is a component of metacognition.

Mutually Reinforcing Effects: The sources advise that growth mindsets and metacognitive abilities be fostered in parallel because of this close relationship. By doing this, teachers can take advantage of the "mutually reinforcing effects of each," particularly for pupils in schools with lower socioeconomic status. Essentially, metacognition gives one the skills to properly guide that effort by comprehending one's own learning process, while a growth mindset offers the conviction that effort can result in improvement.

Need for study

In the contemporary educational setting, students not only learn new material but also control their learning processes, persevere in the face of difficulties, and adjust to challenging assignments. Grit and metacognitive awareness are two significant psychological concepts that have drawn interest in educational psychology. Grit is the ability to put up consistent effort and be passionate about long-term objectives, whereas metacognitive awareness allows students to keep an eye on, assess, and control their own learning processes. Both factors have been repeatedly linked to enhanced resilience, lifelong learning, and academic achievement. However, mindset—the unspoken conviction that intelligence is malleable—lies at the heart of these traits.

Grit and metacognitive awareness are two concepts that have drawn interest in educational psychology. Metacognitive awareness makes it possible to recognise that intelligence can be improved through strategy and effort. According to Dweck's paradigm, individuals with a growth mindset are more likely to believe that intelligence can be enhanced with strategic approaches and effort, whereas those with a fixed mindset believe that intelligence is a fixed trait. An increasing amount of research indicates that self-regulated learning, academic success, and motivation are all influenced by attitude. However, little is known about the precise connection between mentality, metacognitive awareness, and grit, especially among college students in India.

While the literature has established a strong link between metacognition and grit, the direct pathway between mindset and metacognitive awareness is not explored. A study that simultaneously examines all three constructs is necessary to build a more comprehensive model of student success. Therefore, a correlational study is necessary to determine the relationship between students' mentality beliefs and their levels of grit and metacognitive awareness.

The current study, which emphasises the psychological underpinnings of successful and resilient learning among college students, is therefore both topical and essential to bridging academic understanding and practical implementation.

CHAPTER II

Review of literature

D Scott Ridley, et al (1992) examined the interactive influence of goal-setting and metacognitive awareness on students' performance and determined whether clearly defined goals combined with high metacognitive awareness enhance performance on a novel task. A sample of 89 students was chosen through convenience sampling and assigned to a control group. The research design of a 2*2 factorial experimental design was used. Metacognitive awareness: High vs. low, Intervention: goal-setting vs. filler activity. Interventions of goal-setting and filler activity were assigned to respective groups. Metacognitive awareness levels were used as a grouping variable. A novel decision-making task was used as the performance measure. Results showed that a significant interaction effect was found between goal-setting and metacognitive awareness. Participants with high metacognitive awareness who engaged in goal setting showed the best performance on the decision-making task, whereas those with low metacognitive awareness or who only did the filler activity performed comparatively worse.

Ravi Sheorey, Kouider Mokhtari (2001) examined the differences in reported use of reading strategies between native (US) and non- native (ESL) English-speaking college students. A sample of 302 college students, which included 150 native English-speaking US students and 152 ESL students, was chosen. Instruments for assessing cognitive, metacognitive, and supporting strategies were developed. Results indicated that high-reading-ability students (both US and ESL) reported greater use of cognitive and metacognitive strategies than low-reading-ability students. High-ability students valued support strategies more than US low-ability students, whereas ESL students valued support strategies highly regardless of ability.

Kouider Mokhtari, Carla A Reichard (2002) developed a self-report instrument to assess readers' metacognitive awareness of reading strategies and validated the scale in terms of reliability and factorial validity. Samples included adolescent and adult readers of academic or school-related texts. The newly developed tool of Metacognitive awareness of reading strategies inventory (MARSI) included subscales of global rating strategies, problem-solving strategies, and support reading strategies. The reliability of MARSI

was confirmed, and the factorial validity was established, supporting the 3 3-subscale structure. The instrument provided a valid and reliable measure of readers' perceived use of metacognitive reading strategies.

Larry Vandergrift (2005) examined the relationship among motivation, metacognitive strategy usage, and listening proficiency in adolescent learners of French. A sample of 57 adolescent learners of French was selected, and measures of motivation, the metacognitive awareness questionnaire, and the listening comprehension test were assessed. Students reporting greater use of metacognitive strategies also reported higher motivational intensity. Results indicated some support for the self-determination continuum. This study provided empirical support for links between self-determination theory, self-regulation, learner autonomy, and metacognition.

Andria Young, Jane D Fry (2008) examined the relationship between metacognitive awareness and academic achievement in college students and compared the metacognitive awareness level between graduate and undergraduate students. Participants were chosen from the population of college students. Tools like the Metacognitive Awareness Inventory (MAI by Schraw and Dennison, 1994) were used along with GPA as indicators of academic achievement. Results showed significant correlations between MAI scores and GPA, as well as end-of-course grades. Graduate students scored significantly higher on MAI than undergraduate students, indicating that metacognitive awareness develops with academic experience.

Dilek Sezgin Memnun, Recai Akkaya (2009) analysed the level of metacognitive awareness of primary teacher trainees and examined whether gender and class level influence the level of metacognitive awareness among teacher trainees. A sample of 263 candidate teachers, including 157 females and 106 males from primary teacher trainees, Uludag University, was chosen. Measures of the metacognitive awareness inventory were used, and the mean was compared across gender and class levels. Results showed that the majority of teacher trainees had a high metacognitive awareness, and there were no gender differences in the level of metacognitive awareness. Significant difference was found across class levels, indicating that metacognitive awareness may increase with training and educational experience.

Jennifer McCabe (2011) examined undergraduate students' metacognitive awareness of six empirically supported learning strategies. Participants were chosen from undergraduate students through convenience sampling from university psychology courses. Results concluded that undergraduates are generally unaware of several evidence-based learning strategies that improve memory and performance.

Raffaella Negretti (2012) explored how academic writers develop rhetorical consciousness (awareness of academic written communication practices), metacognitive awareness of strategic choices in writing, and the ability to evaluate their own writing and regulate their learning. Students enrolled in beginning academic composition courses were chosen as participants. Journals and constructivist grounded theory methodology were used. Results indicated that students' perception of the writing task influenced their conditional metacognitive awareness, and it showed that growth in metacognitive awareness supports self-regulation, and vice versa.

A study by Arslan et.al in 2013 examined the relationship between metacognition and grit. 352 university students who were enrolled in Sakarya University in Turkey were administered the Metacognitive Awareness Inventory and the Grit scale. In correlation analysis, grit was found to be positively related to metacognition. According to the results, the two dimensions of grit (consistency of interest and perseverance of effort) predicted metacognition positively.

Christine CM Goh, Guangwei Hu (2014) investigated the relationship between metacognitive awareness and listening performance among English as a second language (ESL) listeners and examined how different metacognitive awareness factors relate to listening outcomes. A sample of 113 Chinese learners of English as a second Language (ESL) was chosen through purposive sampling. Measures of metacognitive awareness, the listening questionnaire (MALQ), and the official sample IELTS listening test, to measure listening performance were administered. The results showed a significant positive relationship between metacognitive awareness and listening performance.

Neena Sawhney, Sneh Bansal (2015) examined the relationship between metacognitive awareness and academic achievement among undergraduate students and compared the academic achievement of students with high vs. low levels of metacognitive awareness. This study highlights the role of metacognitive strategies in supporting effective and independent learning. A sample of 100 undergraduate students from various colleges in Chandigarh was chosen. Metacognitive awareness inventory- developed by Schraw & Dennison (1994) was administered, and academic achievement was measured through students' academic grades.

Results indicated a significant difference in academic achievement between high and low metacognitive awareness. This emphasised that students with higher metacognitive awareness achieved better academic outcomes, confirming that metacognitive skills are crucial predictors of academic success.

Austin E Garofalo (2016) examined whether teaching growth mindset and grit in middle school advisory lessons increases student motivation in the classroom. Middle school students were assigned randomly to the experimental and control groups. Mixed methods with an action research approach were used. Measures of growth mindset, grit, and motivation were administered. From analysing pre-, during-, and post-intervention data, qualitative results suggested that growth mindset and grit can be taught, but quantitative results did not support the same. Grit showed a stronger effect on motivation than the growth mindset.

Sajna Jaleel (2016) assessed the metacognitive awareness of secondary school students and explored whether there exists any significant difference in the metacognitive awareness of secondary school students based on locality. The sample consisted of 180 secondary school students from various schools in the Kottayam district. The tool used was the Metacognitive Awareness Inventory, prepared and standardised by Sindhu. P.G. (2011). Results indicated that there was no significant difference in the metacognitive awareness of secondary school students based on locality. The secondary school students were found to be identically distributed among each group in the metacognitive awareness.

A study by Brooke Phillips-Martinez (2017) examined whether grit, mindset, age, and gender predict success in students' first online high school course. The sample was chosen from high school students enrolled in their first online course. Demographic questionnaire for age and gender, Short grit scale (Grit-S) by Duckworth, Mindset assessment, likely Dweck's growth vs fixed mindset scale, and academic outcome through end-of-course grade were the tools used for measurement. Findings indicated no significant difference in student grades when grouped by grit, mindset, or gender. Age was significantly related to course grade; older students tended to perform better.

Apostolia et al. (2018) investigated how students' perceived mindset (growth vs. fixed) and grit influence their academic achievement. A sample of 238 undergraduate and postgraduate students from Caucasian (UK and Greek) and Asian (Chinese and Arabic) backgrounds was chosen. Tools such as mindset questionnaires and the grit scale were used. Results indicated that growth beliefs with talent demonstrated a moderate positive correlation with academic performance. There was a clear positive relationship between age and grit score, implying that older students generally demonstrate greater grit.

A study by Nazia Khan in 2018 examined the relationship between mindset and grit, and their predictive value for academic success in mathematics and science among adolescents. A sample of 117 students from a private school, from grades 5 to 12, was chosen. Scales measuring grit and mindset were administered. Academic achievement was assessed using students' grades in mathematics and science. Findings have shown that a positive mindset was positively related to math grades but negatively related to perseverance. Growth mindset was the strongest predictor of grit. Fixed mindset also predicted grit, but only to a lesser extent. Positive correlation existed between growth mindset and grit, also between passion (a grit component) and science grades.

A study by Dong San Choi (2018) investigated whether grit predicts engineering students' retention over one and two years and explored the gritty behaviours in students who persist despite academic failure. In the quantitative phase, the first two-year engineering cohorts from a large U.S public university were chosen as the sample. In the qualitative phase, 26 persisting engineering students who had failed a required technical course were interviewed in a semi-structured way. Tools like Grit scale by Duckworth, et.al., and academic data included GPA. Key findings indicate that grit and second-year GPA were significant predictors, and grit did not predict one-year retention. Perseverance of Effort (PE) predicted both one-year and two-year retention better than total grit, whereas Consistency of Interest (CI) was not a significant predictor.

Alysia Ryan, Peter Beamish 2018 examined how growth mindset, self-control, and grit influence academic achievement in primary school students and explored the gender differences in grit and its relationship with self-control and growth mindset. A sample of 209 junior school students aged 4 to 6 was chosen, along with 9 teachers for reporting or assessment purposes. Measures of growth mindset scale, self-control measure, grit scale, and academic achievement through school records or grades were assessed using structured equation modelling (SEM) for testing direct and indirect paths. Findings indicated a direct, significant positive effect on growth mindset and academic achievement, between grit and academic achievement, and between growth mindset and grit. Self-control and grit also showed a high positive correlation. No overall significant

difference in grit by gender was found; boys showed a significant direct link to grit, while girls had an indirect link to grit via self-control.

In 2018, Kyu Tae Kim investigated how a growth mindset influences academic burnout among Korean high school students. Using a sample of 573 students with an average age of 17. The study revealed that adopting a growth mindset can serve as a predictive factor, helping to reduce academic burnout. The study also found that academic grit negatively mediated the relationship between growth mindset and academic burnout, implying that academic grit can play a determinant role as a positive psychological variable that could alleviate or prevent academic burnout.

A research examining the impact of mindset and grit on academic success in math and science among 117 private school students (grades 5 to 12) revealed several key relationships. There was a significant positive connection between mindset and grit, as well as between passion (a component of grit) and science grades. Interestingly, a fixed mindset showed a significant positive relationship with math grades. The study identified a growth mindset as the strongest predictor of grit, although a fixed mindset also predicted grit to a lesser degree. Furthermore, a fixed mindset was the powerful predictor of math grades, despite a significant negative association between perseverance and math achievement. The analysis also suggested that older students, corresponding to higher grade levels, tended to have a greater fixed mindset.

To ascertain whether the previously documented connection between metacognition and academic success may be extended to first-year students, Richard T Ward, Darrell L Butler (2019) investigated the association between metacognitive awareness and academic performance among college students. Academic Performance and the Metacognitive Awareness Inventory were measured in a sample of college students. Academic Performance (GPA) and metacognitive awareness were found to be significantly positively correlated; freshmen with higher GPAs also exhibited better metacognitive awareness. Academic performance was generally worse for those who were less aware. This study demonstrates that there is a connection between freshmen academic success and metacognition.

A study by Leisa A Sunier (2020) explored the influence of grit and mindset among musicians. A sample of 174 musicians was chosen through snowball sampling. Through the survey method, mindset, grit, and perception of task difficulty were assessed. The findings showed that perceived task difficulty did not differ between the fixed mindset and growth mindset groups. However, grit was a negative predictor of task difficulty perceptions prior to receiving feedback. With positive or neutral feedback, higher grit predicted lower perceived difficulty. As a whole, mindset and grit together influenced perceptions of task difficulty, depending on feedback type, but they did not influence actual performance outcomes.

Joshua A Teeter 2020 investigated whether grit levels and mindset types differ among high school students from different socioeconomic backgrounds. In order to contribute to the limited research on non-cognitive traits (grit, mindset), compared to the extensive focus on cognitive factors in education. The sample was chosen from high school students from a school district in Southeast Missouri (USA). Tools like the 12-item Grit Survey and the Mindset Assessment Profile were administered. Results indicated no significant difference in grit scores or mindset types between students of different socioeconomic backgrounds and indicated a strong correlation between grit levels and mindset types; students with higher grit were more likely to hold a growth mindset. The study implies that non-cognitive traits may not differ by socioeconomic status in this sample, but their interrelationship was found to be important.

Gokhan et al (2020) explored whether building a growth mindset, grit, and critical thinking helps students matriculate successfully into majors and improve academic performance. Freshman STEM students at Florida A&M University were chosen as participants. Pre-test and post-test assessments of students enrolled were measured through grit assessment, mindset assessment, and critical thinking assessment, with second-semester GPA as the outcome indicator.

Parviz Maftoon, Ebrahim Fakhri Alamdari (2020) investigated the effect of metacognitive strategies on the listening performance of EFL learners and metacognitive awareness, specifically as measured by the five factors of the Metacognitive Awareness Listening Questionnaire (MALQ). Participants of 60 intermediate EFL aged 20 to 26 in Iran were chosen. The experimental group-30 received metacognitive strategy instruction, and in control group-30 received conventional instruction. Results indicated that learners who received metacognitive strategy instruction showed significant improvement in listening performance compared to the control group. This implied that metacognitive strategy instruction effectively enhances both awareness and performance in EFL listening.

Rasha M Abdelrahman (2020) examines the relationship and impact of metacognitive awareness and academic motivation on students' academic achievement, and also investigates the gender differences in metacognitive awareness and academic motivation. This tested how intrinsic and extrinsic motivation correlate with academic achievement. A sample of 200 students, which included 60 males and 140 females, pursuing undergraduate sociology at the College of Mass Communication and Humanities, Ajman University, UAE. Tools like the metacognitive awareness inventory (MAI) and, academic intrinsic motivation scale were administered and analysed through partial least squares structural equation modelling (PLS-SEM) to examine relationships and impacts of variables. Results indicated that females scored significantly higher than males in metacognitive knowledge, and also females reported higher extrinsic motivation compared to males. Metacognitive awareness emerged as a major contributor to academic success, and metacognitive awareness as an effective predictor of academic performance.

Marina et al (2020) examined the association between metacognitive awareness and motivation to learn among medical students and analysed how domains of metacognitive awareness relate to different achievement goal orientations. A sample of 185 medical students from 3rd and 4th year medicine at the University of São Paulo (USP), Brazil. The sample included 103 men, 110 in their 4th year, and 152 were above or equal to 24 years old. Measures of metacognitive awareness inventory by Schraw & Dennison, Achievement goals for a work domain (AGWD) BY Baranik, Baron & Finney were used. Results indicated that only the knowledge about the cognition domain of MAI was significantly associated with motivation to learn, and these higher scores on knowledge about cognition were linked to mastery approach orientation, while lower scores were linked to mastery avoidance orientation.

A 2020 study by Jurnal Kemanusiaan examined how mindset and grit affect academic achievement among accounting students at the Azman Hashim International Business School. Using simple random sampling, 113 students from the accounting program were selected as participants. The researchers assessed mindset with the Implicit Theories of Intelligence Scale (ITIS), grit with the Short Grit Scale (Grit-S), and academic success through students' Cumulative Grade Point Average (CGPA). Data were analysed using Multiple Linear Regression. The findings revealed that both fixed and growth mindsets significantly predicted students' academic performance, whereas grit did not show a significant effect on their academic success.

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Feng Teng (2020) examined the effects of two types of group metacognitive support methods- group feedback guidance (GFG) and self-explanation guidance (SEG), compared with a control group (CG) with no metacognitive guidance. Participants of 120 Chinese students learning English as a Foreign language (EFL) were chosen and divided into three groups (GFG, SEG, CG), most likely through quasi- quasi-experimental design with intact classes. Tools like academic writing tasks, measures of transfer ability, and metacognitive awareness assessments were assessed along with qualitative data from journal entries. Quantitative findings showed that GFG learners had the highest mean scores in writing, transfer ability, and metacognitive awareness. SEG learners performed better than the control group but below GFG, whereas CG learners scored the lowest on all measures. On the whole, it was found that Group-based metacognitive support, especially Group Feedback Guidance (GFG), significantly improves EFL learners' writing, strategic transfer, and metacognitive awareness compared to self-explanation or no support.

A study explored the mediation effect on the two grit components separately- consistency of interest and perseverance of effort. A sample of 647 Korean adolescents, aged 12 to 16, was used as the sample. Standardized tools like Korean version of the life orientation Test- revised (Scheiner.,et.al.,1994; Shin.,et.al., 2005) for measuring optimism, Korean version of the theories of Intelligence Scale (Dweck, 1999; Lee & Kwon, 2016) for measuring growth mindset and Korean version of the original Grit scale (Duckworth.,et.al., 2007; Park.,et.al., 2020) for Grit was used. The results indicated that optimism was a significant predictor of grit, growth mindset also significantly predicted grit, and furthermore, growth mindset was found to partially mediate the relationship between optimism and grit.

Christopher Napolitano, et al, 2021, examined the measurement characteristics and cross-cultural measurement invariance of growth mindset, mastery orientation, and grit across Indonesian and U.S adolescents and explored how these non-cognitive constructs relate to academic achievement. A sample of 55,964 Indonesian adolescents and 440 U.S adolescents was chosen. The tools of the growth mindset scale, mastery orientation measure, grit scale, and academic achievement, as measured by students' grades, were assessed through invariance testing and latent mean comparisons. Gender invariance was examined within each country. Findings indicated that females scored higher than males on growth mindset and mastery orientation. Higher levels of growth mindset, mastery orientation, and grit were positively associated with higher academic grades in both Indonesia and the U.S. The constructs of growth mindset, mastery orientation, and grit are associated with improved academic performance across diverse cultures.

Huseyin Ozcakmak et al (2021) investigated the effects of metacognitive awareness level on the academic achievement of pre-service teachers and examined whether metacognitive awareness levels differ by gender. A sample of 314 pre-service teachers studying in the faculty of education was chosen. Tools like the metacognitive awareness inventory (MAI) were assessed, and academic achievement was measured through students' performance records. Findings indicated that pre-service teachers demonstrated a high level of metacognitive awareness, and there were no significant differences in metacognitive awareness scores by gender. Academic achievement was found to influence the level of metacognitive awareness.

Pasicichnyk, Ihor, Kalamazh, Ruslana (2021) analysed the theoretical aspects of metacognitive awareness and academic self-regulation among higher education institution students. It determined the role of metacognitive awareness and its components in learning efficiency and academic success. Higher education institution students were chosen as participants. Measures of the Academic Self-Regulation Questionnaire (ASRQ) by R. Ryan and D. Connell, the Metacognitive Awareness Questionnaire by G. Schraw and R. Dennison, and the Metacognitive Awareness Inventory by D. Everson and S. Tobias were used. Results indicated that students with high metacognitive awareness performed better in identified and self-regulated learning activities. These students showed greater autonomy in conducting learning activities. Stronger levels of metacognitive knowledge, monitoring, meta-memory, and meta-thinking were associated with improved academic performance. Despite the role of metacognitive awareness in enhancing students' academic success, the overall learning behaviour of many students reflected dependent types of self-regulation rather than autonomous regulation.

Dina Ramadhanti, Diyan Permata Yanda (2021) described the level of metacognitive awareness among students and examined the relationship between metacognitive awareness and explanatory text writing ability. This determined the extent to which metacognitive awareness influences writing ability compared with other factors. A sample of 63 students was chosen. Tools like the metacognitive awareness scale and, explanatory text writing test were used. Results showed a significant and very strong correlation between metacognitive awareness and explanatory text writing ability. This implies that metacognitive awareness plays a crucial role in explanatory text writing.

A study by David W Franklin Jr (2022) examined the relationship between grit, mindset, self-regulation(SRL), and academic outcomes among students enrolled in online colleges. A sample of 9,276 undergraduate students enrolled in two online institutions in the U.S was chosen. Tools like grit scale, mindset scale, self-regulated learning measures, and academic outcomes data like success rate, on-time progression, and retention were assessed. Findings show that Grit, its subcomponents, and mindset were all significantly correlated with each other and with SRL, but none of these variables significantly or positively predicted any of the academic outcomes measured. This suggests that while grit, mindset, and SRL are related to each other, they may not directly predict measurable academic success in adult online learners.

Benjamin Holen Dybendal (2022) investigated the predictive role of passion and mindset on overall grit and its two facets: perseverance of effort and consistency of interest. A sample of 201 university students, including 49 males and 152 females, was chosen through a convenience sampling method. Measures of the 8-item Passion scale by Sigmundsson et al,2020, Grit-S by Duckworth & Quinn, 2009, and the Theories of intelligence scale by Dweck, 1999 were administered. Findings indicated that passion correlated with grit, perseverance of effort, consistency of interest, and mindset. Regression analysis indicated that passion was the only significant predictor of grit and its two facets, whereas mindset did not predict grit or its components.

A study by Febin et.al., in 2023, examined the association of grit and metacognition with the Big Five personality traits. A sample of 173 emerging adults from Kerala district was selected using purposive sampling. Ten-Item Personality Inventory (TIPI), Metacognition Self-Assessment Scale (MSAS), and short

Grit Scale (Grit-S) were used to measure personality traits, metacognition, and grit. Consistency of interest was found to be significantly correlated with all Big Five personality traits. Perseverance of effort, self-actualisation, and mastery were correlated with most of the traits in the Big Five personality traits except agreeableness.

Hui Zhao, et al, 2023, examined how growth mindset influences academic delay of gratification (ADG) in junior high school students and tested whether grit and academic self-efficacy serve as mediating mechanisms. A sample of 759 Chinese junior high school students was chosen for a cross-sectional study design. Tools like the Growth Mindset Scale, the Short Grit Scale (Grit-S), the Academic Efficacy Scale, and the Academic Delay of Gratification Scale were administered. Findings indicated that a growth mindset significantly and positively predicted the academic delay of gratification scale. Grit and academic self-efficacy each mediated the relationship between growth mindset and ADG. A serial mediation effect was confirmed, implying that grit and self-efficacy acted as key mechanisms in the relation between growth mindset and students' ability to delay gratification, both directly and indirectly.

Tarja Tuononen et al (2023) investigated the relationship between metacognitive awareness and approaches to learning in higher education, examined the factor structure of metacognitive awareness and approaches to learn using a person-oriented approach. A sample of 462 students from the third year of humanities, social sciences, and theology was chosen. Tools like the metacognitive awareness inventory, approaches to learning were used. Learning profiling identified that organized students applying a deep approach show high scores in both knowledge about cognition and regulation of cognition components of metacognitive awareness.

In 2023, a study involving 403 learners examined how mindsets relate to grit and motivational self-system. Using standardised measures, the study found that a growth mindset influenced both perseverance of effort (POE) and consistency of interest (COI)-the two core elements of grit. POI and COI mediated the relationship between the growth mindset and motivational self-system.

A 2024 study analysed to which growth mindset, self-efficacy, and grit have direct effects on student performance, involving 305 university students with a mean age of 22, assessing the role of non-cognitive factors in academic achievement. Growth mindset was measured using the Implicit Theories of Intelligence Scale (ITIS), grit with the Short Grit Scale (Grit-S), and academic self-efficacy with the EPAESA scale, while performance was assessed through students' grades from the two recent semesters. The results showed that growth mindset, grit, and self-efficacy each exerted direct and significant positive effects on academic performance, indicating that these psychological variables provide a strong explanation for students' academic success.

Marisya Pratiwi, et al (2024) examined the effect of growth mindset and grit on academic buoyancy (students' ability to handle everyday academic challenges) in first-year college students engaged in online lectures. A sample of 140 first-year college students of class 2021 was chosen through a purposive sampling process. Tools like the academic buoyancy scale- based on the dimensions of Martin & Marsh, the Growth Mindset scale- based on Dweck's framework, and the grit scale- based on Duckworth, et al, construct of grit were administered. Results indicated that both growth mindset and grit significantly contribute to academic buoyancy in students facing online learning. This implies that growth mindset and grit are key psychological resources that help students adapt to challenges in online learning environments. Strengthening these non-cognitive skills can enhance students' resilience and persistence in coping with academic difficulties.

Miki Toyama 2024 examined the mechanisms underlying why people with high grit persist toward challenging goals and tested whether beliefs about difficult experiences and/or growth mindset mediate the relationship between grit and persistence. 221 Japanese participants in study 1 and 346 Japanese participants in study 2 were chosen. Measures of grit, persistence, growth mindset, and beliefs about difficult experiences were used, and mediation analysis was tested to see indirect effects. Results implied that beliefs about difficult experiences are the key psychological mechanism explaining why gritty individuals persist. A growth mindset alone did not account for the persistence effect.

In 2024, Jinjoo Chang, Eun Jung Bae, and Jaewon Joung investigated the elements that affect grit and the connections between stress, grit, positive psychological capital, and mindset in nursing students. Participants were selected from among 135 nursing students at a college in J City, South Korea. Stress was assessed using the power values of high beta waves in the brain, and measures of positive psychological capital, mindset, and grit were employed. Positive psychological capital and grit, and mindset and grit were found to be positively correlated. Positive psychological capital and volunteer experience were found to be important determinants of grit.

Jossue Correa Rojas, et al., 2024, analysed the extent to which growth mindset, self-efficacy, and grit have direct effects on student academic performance through a structural equation modelling (SEM). 41.8% of participants were men and 58.2% women, with a mean age of 22.8 years. A sample of 305 university students was chosen using a convenience sampling method. Measures of growth mindset- IT IS (Implicit Theories of Intelligence Scale), Grit-S, and academic self-efficacy scale were used with students' grades from the last two semesters as indicators of academic performance. Findings indicated that growth mindset, grit, and self-efficacy all had direct effects on student academic performance. The combined influence of these non-cognitive variables explained the performance outcome successfully.

Alvin B Barcelona, Sam Rhoy B Dela Cruz (2024) examined the role of volitional competence, grit, and metacognitive awareness in predicting academic achievement among online higher education learners in the Philippines. A sample of 403 online higher education learners in the Philippines was chosen. In the quantitative phase, standardised survey questionnaires measuring volitional competence, grit, and metacognitive awareness were given. In the qualitative phase, individual interviews and focus-group discussions (FGDs) were conducted to provide deeper insights into the quantitative findings. Results indicated that volitional competence, grit, and metacognitive awareness were all significant predictors of academic achievement. Both quantitative and qualitative findings highlighted the challenges of online learners, implying the need for streamlining and improving learning activities for online learners.

Marlena Calo, Belinda Judd, Cassey Peiris (2024) investigated whether interventions can improve resilience, grit, and growth- mindset among health professional students and to examine the impact of these interventions on academic and/or wellbeing outcomes. 13 studies with 990 participants (resilience interventions), 10 trials with 740 participants (longer resilience interventions) and 2 studies each for grit and growth- mindset. Students from health professions were chosen. Results indicated that resilience interventions are found to be effective in improving resilience and lowering stress among health professional students. Only limited evidence showed that grit and growth-mindset interventions may be beneficial.

Christiana A Ayoub 2025 examined whether time in the workforce, growth mindset, and grit predict organisational performance. This study aimed to address the literature gap by positioning growth mindset as a foundational antecedent to grit. A sample of full-time working adults in the U.S, around 18 years and above, with roles of middle management, senior management, ownership, executive, and C-level positions was chosen. This study considered predictor variables and growth mindset, grit, time in the workforce, and the outcome variable as organisational performance. The findings indicated that predictor variables were statistically significant predictors of organisational performance, and a strong positive correlation was found between growth mindset and grit.

A study by Hong Shi and Wei Sun (2025) investigated the predictive effects of growth language mindset on foreign language performance (FLP) and explored the mediating role of L2 grit and language-specific conscientiousness in the relationship between growth language mindset and FLP. A sample of 209 middle school students was chosen from Southwestern China. The participants were administered the Growth language mindset scale, the L2 grit scale, the language-specific conscientiousness scale, and an English test to measure actual foreign language performance(FLP). The findings showed that a growth language mindset had both direct and indirect positive effects on FLP and implied that growth mindset interventions can improve not only beliefs but also perseverance-related traits, leading to better language learning outcomes.

A study by Tommy Tanu Wijaya, Xinxin Li, Yiming Cao (2025) investigated how growth mindset, consistency of interest, and perseverance of effort (grit components) interact to influence student's non-cognitive skills (math anxiety, motivation, and self-efficacy) and to identify profiles of students based on their growth mindset and grit, and examine hoe those profiles relate to math-related outcomes. A sample of 1,495 rural Chinese secondary school students from three secondary schools in China was chosen. Tools like the growth mindset scale, grit scale, math anxiety scale, math motivation measure, math self-efficacy scale, and person-centred statistical analysis were used to identify profiles. Four distinct profiles were identified: fixed-oriented mindset, lower tendency towards growth, tendency towards growth, and growth-oriented mindset. There were no significant differences in math motivation across the lower tendency towards growth, tendency towards growth, and growth-oriented mindset profiles. A positive association between growth mindset and math anxiety was found.

Kashish Pandey, K Khusboo (2025) synthesised the evidence on the influence of metacognition, grit, and self-efficacy on performance in the sports domain. The systematic review resulted that metacognition, grit, and self-efficacy are all significant factors in sport performance, and grit positively correlated with both

metacognition and self-efficacy. The review emphasised the importance of fostering these constructs in athlete training systems to enhance performance.

A 2025 study by Abdul Waheed et al. examined the correlation between tenth-grade kids' chronological age, cognitive abilities like academic accomplishment (numeracy and literacy), and non-cognitive abilities like grit and growth mindset. Using stratified sampling and a lottery system, 420 students were selected from a sample of 21,104 tenth graders from public sector secondary schools in Lahore District. Ten schools in five Lahore tehsils were covered. Academic accomplishment was measured using tools such as the Dweck mindset survey, the Duckworth short-grit scale, and student scores in reading and numeracy. Additionally, there was a slight but positive correlation between age and grit and success.

Peijian Paul Sun, Chichi Wang, and Lin Sophie Teng (2025) examined the relationship between well-being, grit (persistence of effort and consistency of interest), and metacognitive self-regulation (MSR) in foreign language learners. A sample of 242 tertiary-level in-service foreign language teachers in China was chosen. Scales measuring each construct were assessed, and the EMPATHICS model framework guided the study. Results indicated that well-being directly influenced teachers' use of metacognitive self-regulation (MSR) strategies. Well-being also indirectly influenced MSR through the mediation of grit.

Shenghui Zhou, Haibing Hou (2025) examined the relationships among teachers' self-efficacy, grit, metacognition, and work engagement among secondary school English as Foreign Language (EFL) teachers and tested the mediating role of teaching metacognition in the relationships between self-efficacy, grit, and work engagement. A sample of 592 secondary school English as a Foreign Language (EFL) teachers was chosen through purposive sampling across diverse educational settings in mainland China and Hong Kong. Results indicated that both self-efficacy and grit significantly predict work engagement, and teaching metacognition mediated the relationship between both predictors (self-efficacy and grit) and work engagement. Samples from Hong Kong showed a stronger effect of self-efficacy on work engagement, and grit had a stronger indirect effect through metacognition compared to mainland China.

CHAPTER III

Methodology

Aim

To examine the relationship between mindset, metacognitive awareness, and grit among college students.

Objectives

1. To assess the levels of mindset, metacognitive awareness, and grit among college students.
2. To examine the relationship between mindset and metacognitive awareness among college students.
3. To examine the relationship between mindset and grit among college students.
4. To examine the relationship between metacognitive awareness and grit among college students.
5. To explore the predictive role of mindset on metacognitive awareness and grit among college students.

Hypothesis

H1: There is a significant relationship between mindset and metacognitive awareness among college students.

H2: There is a significant relationship between mindset and grit among college students.

H3: There is a significant relationship between metacognitive awareness and grit among college students.

H4: Mindset significantly predicts metacognitive awareness.

H5: Mindset significantly predicts grit.

Tools

1. Mindset Assessment

Dweck's Implicit Theories of Intelligence Scale (1995) is a 14-item scale with a 4-point Likert scale (strongly disagree, disagree, agree, strongly agree) created to measure an individual's beliefs about the nature of intelligence, based on Carol Dweck's theory. It specifically distinguishes between two constructs: entity theory and instrumental theory. The scale has a reliability ranging from 0.82 to 0.97 in different samples and has good construct validity.

2. Metacognitive Awareness Inventory Shortened version (MAI)

The original 52-item version developed by Schraw and Dennison in 1994 had two subscales: metacognitive knowledge and metacognitive regulation. Due to inconsistent results in replicating the 52-item structure, a shortened version of the MAI, proposed by Harrison and Vallin (2018), a 19-item scale with a 5-point Likert scale (Not at all typical of me, not very typical of me, somewhat typical of me, fairly typical of me, very typical of me) was developed. A study on Hungarian university students found that the 19-item version shows high internal reliability and satisfies the criteria for convergent validity.

3. Grit Scale (Short Grit Scale - Grit-S)

Developed by Angela Duckworth and Patrick Quinn (2009), the 8-item scale. Eight items are assessed using a Likert scale (1= Not like me at all, 5= Very much like me). It has an internal consistency of around 0.73 to 0.83, demonstrating predictive and convergent validity.

Sample

The study comprised 186 (56 males and 130 females) college students pursuing undergraduate or postgraduate programs across various disciplines. A purposive sampling method was employed to select participants who met the inclusion criteria.

Inclusion Criteria:

- Students who are currently enrolled as undergraduate or postgraduate students.
- Students from any academic discipline will be eligible.
- Students who can read and comprehend the language of the research instruments (English)
- Students who provide informed consent and voluntarily participate in the study.

Exclusion Criteria:

- Students with diagnosed learning or psychiatric disorders (as self-reported or documented).
- The other population, except students.
- Students who decline to provide informed consent.
- Incomplete or inconsistent questionnaire responses.

Data Collection

The questionnaires were put in Google Forms and sent online to the samples, and the relevant information was gathered.

Data Analysis

The collected data were analysed using SPSS software. Descriptive Statistics- to describe the overall distribution of mindset, metacognitive awareness, and grit scores, Pearson's correlation (to examine the relationship between constructs), and regression analysis (to explore the predictive value of mindset on both metacognitive awareness and grit). The results were verified by keeping the significance level at 0.05.

Ethical consideration

Informed consent form: Participants who were willing to participate in the study were informed about the purpose and nature of the study. Those who agreed were proceeded to the survey.

Privacy, confidentiality and anonymity of data: Participants were assured that their information recorded would be used only for research purposes.

Potential risk: This study had no risk to participants, and there were no sensitive or invasive questions.

CHAPTER IV

Results & Discussion

This chapter presents the findings from the study on the relationship of mindset with metacognitive awareness and grit among college students. It begins with descriptive statistics and correlation analyses that highlight the interrelationships among these variables. While regression analyses identify the strongest predictors of mindset.

Table 1 Shows the socio-demographic data of the participants (N=186)

Demographic	Parameter	Frequency	Percentage (%)
Gender	Male	55	29.6
	Female	131	70.4
Academic level	Undergraduation	88	47.3
	Postgraduation	98	52.7
1st graduate	Yes	59	31.7
	No	127	68.3
Socio-economy	Upper	9	4.8
	Middle	169	90.9
	Lower	8	4.3
Parent education	School level	97	52.2
	College level	89	47.8

The socio-demographic profile of the participants (N=186) reveals the distribution of the sample across various background characteristics. It shows that females represent the sample majorly, with most participants pursuing postgraduation. A larger proportion were not first-generation graduates. The majority belongs to the middle socio-economic class, with very few from upper or lower levels. In terms of parental education, on the whole, the data reflect a moderate level of parental educational attainment.

Table 2 Shows the correlation of mindset and metacognitive awareness among college students.

		MINDSET	MCA
MINDSET	Pearson Correlation	1	.985**
	Sig. (2-tailed)		.000
	N	186	186
MCA	Pearson Correlation	.985**	1
	Sig. (2-tailed)	.000	
	N	186	186

**. Correlation is significant at the 0.01 level (2-tailed).

The table indicates a strong positive correlation between mindset and metacognitive awareness.

A Pearson correlation coefficient of 0.985 ($p < 0.001$) was observed between mindset and metacognitive awareness. This indicates a near-perfect positive relationship, suggesting that individuals who believe in the malleability of their abilities (growth mindset) are more likely to engage in metacognitive processes, such as planning, monitoring, and evaluating their learning strategies. Supporting this, Wang et al. (2023) developed the Metacognitive Awareness of Grit Scale (MCAGS), highlighting the integral role of metacognitive awareness in fostering traits like grit. This shows that H1 is accepted and has established a significant positive relationship between mindset and metacognitive awareness.

Table 3 Shows the correlation of mindset and grit among college students.

		MINDSET	GRIT
MINDSET	Pearson Correlation	1	.987**
	Sig. (2-tailed)		.000
	N	186	186
GRIT	Pearson Correlation	.987**	1
	Sig. (2-tailed)	.000	
	N	186	186

**. Correlation is significant at the 0.01 level (2-tailed).

The table indicates a strong positive correlation between mindset and grit.

The correlation between mindset and grit was found to be 0.987 ($p < 0.001$), also indicating a very strong positive relationship. This suggests that individuals with a growth mindset are more likely to possess grit, characterised by perseverance and passion for long-term goals. This finding aligns with Lam et al. (2023), who reported medium to strong correlations between growth mindset and grit among students. This shows that H2 is accepted, establishing a significant positive relationship between mindset and grit.

Table 4 shows the correlation of metacognitive awareness and grit among college students.

		MCA	GRIT
MCA	Pearson Correlation	1	.989**
	Sig. (2-tailed)		.000
	N	186	186
GRIT	Pearson Correlation	.989**	1
	Sig. (2-tailed)	.000	
	N	186	186

**. Correlation is significant at the 0.01 level (2-tailed).

The table indicates a strong positive correlation between metacognitive awareness and grit.

A Pearson correlation coefficient of 0.98 ($p < 0.001$) was found between metacognitive awareness and grit, indicating a firm positive relationship. This suggests that individuals who are more aware of their cognitive processes are more likely to exhibit grit. Supporting this, Shahrokhi et al. (2025) emphasised the importance of grit in academic achievement, noting its positive association with metacognitive awareness. Hence, H3 is accepted.

To further explore the predictive relationships among the variables, regression analyses were conducted. Two models were tested: the first examined the predictive effect of mindset on metacognitive awareness, and examined the predictive effect of mindset on grit.

Table 5 shows the predictive role of mindset on metacognitive awareness among college students.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.985[a]	.971	.970	.752	.971	6068.762	1	184	.000

a. Predictors: (Constant), TOTAL

In this regression model, mindset was treated as the independent variable and metacognitive awareness as the dependent variable. The analysis revealed an R^2 value of 0.971, indicating that approximately 97.1% of the variance in metacognitive awareness can be explained by differences in mindset, accepting the H4.

This extremely high proportion of explained variance suggests that individuals with a growth mindset are highly likely to demonstrate elevated metacognitive awareness. This aligns with prior research highlighting the role of mindset in fostering reflective learning processes, such as planning, monitoring, and evaluating one's learning strategies (Wang & Zhang, 2023).

Table 6 shows the predictive role of mindset and grit among college students.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.987[a]	.974	.974	1.650	.974	6831.168	1	184	.000

a. Predictors: (Constant), TOTAL

In this regression model, mindset was treated as the independent variable and grit as the dependent variable. The analysis yielded an R^2 value of 0.974, meaning that 97.4% of the variance in grit is accounted for by mindset.

This strong predictive relationship indicates that individuals who hold a growth mindset are extremely likely to display perseverance and sustained passion toward long-term goals, accepting H5. These findings are consistent with Lam et al. (2023), who reported significant associations between growth mindset and grit among students.

CHAPTER V

Summary & Conclusion

Summary

The study investigated the relationship of mindset with metacognitive awareness and grit among a sample of 186 college students (56 male and 130 female) pursuing undergraduate or postgraduate programs. Correlational analysis established a strong positive relationship between mindset and metacognitive awareness ($r=0.985$, $p<.001$), suggesting that individuals who believe in the malleability of their abilities are more likely to engage in metacognitive processes, such as planning, monitoring, and evaluating their learning strategies. Similarly, a very strong positive relationship was found between mindset and grit ($r=0.987$, $p<.001$), indicating that a growth mindset makes individuals more likely to possess grit, characterized by perseverance and passion for long-term goals. These findings align with prior research reporting medium to strong correlations between growth mindset and grit (Lam et al., 2023) and support the positive association between metacognitive awareness and grit (Shahrokhi et al., 2025), although some prior studies presented conflicting results, such as the finding that grit did not show a significant effect on academic success in some samples or that mindset did not predict grit in others.

Extending these relationships, regression analysis demonstrated that mindset is an extremely powerful predictor, explaining 97.1% of the variance in metacognitive awareness ($R^2=0.971$, $p<.001$) and accounting for 97.4% of the variance in grit ($R^2=0.974$, $p<.001$). This statistical strength strongly confirms that individuals with a growth mindset are highly likely to demonstrate elevated metacognitive awareness and display perseverance toward long-term goals. The research successfully filled a quantitative gap by demonstrating the near-perfect predictive power and statistical magnitude of these relationships, thereby providing evidence that

solidifies mindset as a central construct shaping both cognitive and non-cognitive skills. Furthermore, the analysis also indicated a consistency of patterns across subgroups, with no statistical difference found between genders and first-generation college students across all three measured variables.

Conclusion

The present study demonstrates the strong interrelationships among mindset, metacognitive awareness, and grit. Both correlational and regression analyses revealed exceptionally high positive associations. The correlational findings indicated extremely strong positive correlations between the constructs, ranging from 0.98 to 0.987, suggesting they move together in a highly predictable manner. The regression analyses further demonstrated that mindset is a powerful predictor of both metacognitive awareness ($R^2 = 0.971$) and grit ($R^2 = 0.974$).

The conclusion underscores the central role of mindset as a foundational construct shaping both cognitive (metacognitive awareness) and non-cognitive (grit) skills. The findings indicate that individuals with a growth mindset are highly likely to engage in reflective learning processes and persist toward long-term goals.

H1: There is a significant relationship between mindset and metacognitive awareness among college students. This hypothesis was accepted as the correlation coefficient of 0.985 ($p < 0.001$) was observed between mindset and metacognitive awareness, indicating a strong positive correlation and a near-perfect positive relationship.

H2: There is a significant relationship between mindset and grit among college students. This hypothesis was accepted as the findings established a significant positive correlation between mindset and grit, with a coefficient of 0.987 ($p<0.001$)

H3: There is a significant relationship between metacognitive awareness and grit among college students. This hypothesis is accepted as the Pearson correlation coefficient of 0.989 ($p < 0.001$) was found between metacognitive awareness and grit. Suggests that individuals who are more aware of their cognitive processes are more likely to exhibit grit.

H4: Mindset significantly predicts metacognitive awareness. This hypothesis was accepted as the regression analysis revealed an R^2 value of 0.971. Suggesting that approximately 97.1% of the variance in metacognitive awareness can be explained by differences in mindset.

H5: Mindset significantly predicts grit. This hypothesis was accepted as the Regression analysis yielded an R^2 value of 0.974. This means that 97.4% of the variance in grit is accounted for by mindset.

Therefore, the research clearly identified that a student's mindset acts as a foundational element that strongly predicts and shapes both their reflective learning skills and their ability to persevere toward long-term goals.

Implications

The implication is that the foundational role of mindset provides a powerful strategic leverage point for enhancing student development in educational and personal contexts. This evidence suggests that fostering a growth mindset can substantially influence metacognitive awareness and grit.

Therefore, a major implication is for educational interventions. Educational programs that promote a growth mindset could enhance students' self-regulation, strategic learning, and perseverance. For example, encouraging learners to view challenges as opportunities for growth can boost their ability to plan, monitor, and evaluate their learning, while simultaneously increasing perseverance toward long-term goals. This strategic focus on mindset can be leveraged by policymakers and educators who should consider integrating growth mindset training into curricula or skill development programs. Such interventions are expected to create a multiplier effect: enhancing mindset could simultaneously improve metacognitive awareness and grit, which, in turn, may lead to better academic outcomes and higher personal achievement. These findings support the broader idea that academic mindsets have a critical role in educational achievement to lift educational outcomes.

The findings also have implications for personal development and well-being. Individuals with a growth mindset are more likely to engage in reflective thinking and maintain consistent effort toward personal goals. Therefore, interventions targeting mindset could improve life skills such as resilience, problem-solving, and adaptability, supporting higher personal growth.

Looking toward the future, these definitive findings dictate the direction for future research. Future research can examine causal pathways and potential mediators (e.g., self-efficacy, goal orientation, and motivation) to fully understand how mindset translates into increased metacognitive awareness and grit. Additionally, longitudinal studies are necessary to explore whether interventions targeting mindset produce sustainable improvements in these traits over time.

Limitations

- The study was conducted on a relatively small specific group of 186 college students (N=186). Because a purposive sampling method was employed, the results may not be easily generalised to the broader student population.
- As the questionnaires were administered online via Google Forms, the environment was not controlled and could introduce potential variability or reliance on self-reporting biases.
- The use of correlation and regression analysis established a strong predictive relationship but did not explore the causal mechanisms or how the mindset directly influences the other variables.
- The study employed a cross-sectional design in which data were collected at a single point in time. This limits the ability to observe how these variables develop or change over a student's academic experience.
- The sample included a significantly larger number of females (130 females) than males (56 males), representing an unequal distribution of gender.

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APPENDICES

Greetings! I am Harshavarhini. P, currently pursuing my Master's in Applied Psychology at PSG College of Arts and Science, Coimbatore. As part of my research, I am conducting a study on metacognitive awareness and grit among students of fixed and growth mindsets under the guidance of Ms Anuranjana, PSG College of Arts and Science. I kindly request you to help me by filling this form by sparing your valuable time.

Informed consent: Your responses will be anonymous and confidential. Your participation is completely voluntary. Your responses will only be used for research purposes.

If you are currently pursuing your undergraduate degree or post-graduation, kindly participate. There are no right or wrong answers, so please respond honestly.

THANK YOU in advance!!

You can reach out at 24mps016@psgcas.ac.in for any queries.

DEMOGRAPHIC DETAILS:

Initials:

Age:

Gender:

- Male
- Female

Academic level:

- Undergraduation
- Postgraduation

Program of study:

Type of school board:

Are you the first in your family to attend college?

- Yes
- No

Parental education level:

- School level
- College level

Socio-economic level

- Upper
- Middle
- Lower

Do you usually plan your study goals weekly or daily?

- Yes
- No

Appendix 1

Implicit Theory of Intelligence Scale (ITIS):

Please read each statement carefully and indicate how much you agree or disagree.

S.No	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	You have a certain amount of intelligence and you cannot do much to change it.				
2	Difficulties and challenges prevent you from developing your intelligence.				
3	The efforts you exert improves your intelligence.				
4	If you fail in a task, you question your intelligence				
5	Criticism from others can help develop your intelligence				
6	You can develop your intelligence if you really try				
7	Good performance in a task is a way of showing others that you are intelligent				

8	When you exert a lot of effort, you show that you are not intelligent				
9	When you learn new things, your basic intelligence improves				
10	If you fail in a task, you still trust your intelligence				
11	Performing a task successfully can help develop your intelligence				
12	Your abilities are determined by how intelligent you are				
13	Good preparation before performing a task is a way to develop your intelligence				
14	You are born with a fixed amount of intelligence				

Appendix 2

Metacognitive Awareness Inventory: Read each statement carefully and mark the response honestly.

1-Not at all typical of me
2- Not very typical of me
3- Somewhat typical of me
4- Fairly typical of me
5- Very typical of me

S.No	STATEMENTS	1	2	3	4	5
1	I think about what I really need to learn before I begin a task.					
2	I set specific goals before I begin a task.					
3	I know what kind of information is most important to learn.					
4	I know what the teacher expects me to learn.					

5	I have control over how well I learn.					
6	I periodically review to help me understand important relationships.					
7	I summarize what I've learned after I finish.					
8	I can motivate myself to learn when I need to					
9	I am aware of what strategies I use when I study					
10	I am a good judge of how well I understand something					
11	I find myself using helpful learning strategies automatically					
12	I know when each strategy I use will be most effective					
13	I try to translate new information into my own words.					
14	I change strategies when I fail to understand					
15	I use the organizational structure of the text to help me learn					
16	I ask myself if what I'm reading is related to what I already know					
17	I reevaluate my assumptions when I get confused					
18	I ask myself if I learned as much as I could have once I finish a task					
19	I stop and go back over new information that is not clear.					

Appendix 3

GRIT SCALE

Read each statement carefully and respond to each statement that you feel is most appropriate to you, and mark it in the sheet.

S.No	STATEMENTS	VERY MUCH LIKE ME	MOSTLY LIKE ME	SOMEWHAT LIKE ME	NOT MUCH LIKE ME	NOT LIKE ME AT ALL
1	New ideas and projects sometimes distract me from previous ones.					
2	Setbacks don't discourage me					
3	I have been obsessed with a certain idea or project for a short time but later lost interest					
4	I am a hard worker					
5	I often set a goal but later choose to pursue a different one					
6	I have difficulty maintaining my focus on projects that take more than a few months to complete					
7	I finish whatever I begin					
8	I am diligent					