



RELATIONSHIP AMONG SELF-CONTROL, GRIT AND ACADEMIC
PROCRASTINATION AMONG UNDERGRADUATES IN MALAYSIA

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The Relationship among Self-Control, Grit and Academic Procrastination among
Undergraduates in Malaysia

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DECLARATION

We declare that the material contained in this paper is the end result of our own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

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APPROVAL FORM

This research paper attached hereto, entitled “Relationship among Self-Control, Grit and Academic Procrastination among Undergraduates in Malaysia” prepared and submitted by Cheow Pui Kei, Lim Jo Yee, Yap Yee Qi in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

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Abstract

Procrastinate is a common problem among university students that can have negative effects on academic performance, mental health, and well-being. This study aimed to investigate the relationship between self-control, grit, and academic procrastination among undergraduates in Malaysia. This study used a quantitative research design and obtained data through a self-report survey using purposive sampling. Brief Self-Control Scale, Short Grit Scale and Academic Procrastination Scale were being used in this study. Total of 108 undergraduates between the ages from 19 to 24 from various universities were being recruited. The results showed that individuals with higher levels of self-control and grit were less likely to procrastinate academically. However, only self-control was found to be a significant predictor of academic procrastination, while grit was not. The findings of this study have important implications for academic counselors, students, and educators. Educators can incorporate strategies that promote self-control and grit into their teaching methods, such as goal setting and time-management techniques. Students can also benefit from these strategies by recognizing the importance of self-control and grit to reduce their procrastination. Overall, this study adds to the existing body of literature on academic procrastination and highlights the importance of self-control and grit in reducing procrastination tendencies. Future research could investigate the effectiveness of interventions designed to enhance self-control and grit in reducing academic procrastination among university students. Furthermore, exploring the cultural differences in academic procrastination and the relationship between self-control, grit, and academic procrastination in different contexts can also be a fruitful area for future research.

Keywords: Academic Procrastination, Self-control, Grit, Undergraduates, Malaysia

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Chapter I

Introduction

Background of study

Malkoç and Mutlu (2018) say that the transition from high school to college is hard for many students, especially first-year students, who may find college life hard and face many challenges as they try to reach their academic goals. Academic procrastination is defined as the postponement of tasks and activities that are important to or related to education and learning (Ajayi, 2020). People tend to put off doing their homework, even if they know that doing so could have a negative impact. It is common that everybody has a tendency to put things off at various points in their lives. Some chronic procrastinators prefer to put things off in most situations in life because it is in their nature to do so, while other people postpone more frequently in certain circumstances and in particular fields (Steel & Klingsieck, 2016). Academic procrastination is a common occurrence in the current generation. Every student puts off their work occasionally, and roughly one in two do so on a regular basis (Hailikari et al., 2021).

One of the most effective behavioural indicators of procrastination across all domains is self-control. Broadly stated, self-control is the ability to change and adjust oneself in order to maximise the compatibility of oneself with the surrounding environment. If an individual manages to perform well in self-control, it actually brings positive influences to his or her relationships (*Self-Control*, 2019). The definition of self-control is "the capacity to control attention, emotions, and behavior in the face of temptation." according to Duckworth and Gross (2014). Past research showed that people's self-perceptions influence their behavioural control, which in turn directly predicts procrastination. Results specifically indicated that poor self-esteem among students decreased self-control, which in turn increased

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procrastination (Uzun et al., 2020). In the prefrontal cortex, the part of the brain which is responsible for planning events, solving problems and making decisions, is where self-control is rooted (*Self-Control*, 2019). Although self-control is born with us, but self-control is more towards a skill that can be boosted up as we grow up. Let yourself get used to a routine that brings benefits or do more training on concentration to practice to have better self-control (*Self-Control*, 2019). For instance, train yourself to always list out a to do list and finish it before the stated time or before the end of the day.

In contrast to self-control, grit is "the relentless pursuit of a dominating superordinate goal notwithstanding difficulties." Based on grit, students can perceive the determination to keep on working toward the same long-term goal, such as completing a thesis degree; perseverance and enthusiasm assist them in overcoming obstacles and challenges they face along the route. Academic procrastination can be prevented and defeated with grit. Somehow the grit personality is prompting or motivating an individual to continue to achieve the targets or goals in every field. Therefore, developing self-control and having grit both include working toward personal goals and overcoming obstacles. In other words, self-control and grit both require ambition and willpower. In contrast, self-control focuses on short-term objectives and commitment, while grit focuses on long-term goals and commitment (Glanzer et al., 2018).

By looking into every element including self-control, grit and academic procrastination, it seems like they have a direct or indirect connection with each other. However, in searching the articles to support our hypotheses, it can be found out that there is a very lack of resources to prove the relationship among each variable. Therefore, to provide more information that is related to these three elements, we aim to examine the relationships between self-control, grit and academic procrastination among undergraduates in Malaysia.

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Problem statement

According to the statistics that are updated until year 2020, there are around 18,000 university and college students continue pursuing their studies in private higher education institutions (*Department of Statistics Malaysia Official Portal, 2020*). While students in public universities are ten times more than students in private institutions (*Department of Statistics Malaysia Official Portal, 2020*). Nowadays, academic procrastination is the most common issue that occurs in academic settings. Based on Klingsieck et al. (2013), the study found that over 70% of college students often procrastinate. A statistical data from Shatz (n.d.) also stated that between 80% to 95% of university students procrastinate to some extent. Compared to the other three academic domains of academic administration responsibilities, attendance tasks, and general school activities, students procrastinate more when studying for examinations, completing assignments or writing research papers. Similarly, a student who lacks the motivation to complete a task or activity within a specific time frame, such as finishing a reading assignment, finishing a school project or completing a research paper, may put off one or more assignments or administer any activity (Fentaw et al., 2022). The students who are not used to the transition in their life from secondary school to university or college or they have no ideas how to proceed with their academic progress such as the midterms, assignments and examinations may lead to academic procrastination. This is because they do not want to step out from their comfort zone and wish to solve the problems in later time. Therefore, the current study also focuses on the two predictors, self-control and grit to connect with academic procrastination.

According to Robertson-Kraft and Duckworth (2014), grit affects both achievement and retention, which are both important for success in life. Since the concept of "grit" was introduced, both theoretical and empirical research has been conducted to investigate its close

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relationships to the concepts of self-control and conscientiousness. (Credé et al., 2016) and (Duckworth & Gross, 2014) say that grit has a moderately positive relationship with indicators of achievement and a strong relationship with conscientiousness and self-control. Furthermore, a previous study found a significant relationship between grit and self-control (Kannangara et al., 2018). Additionally, it was anticipated that grit would positively link with both self-efficacy and self-control in order for attaining long-term objectives. Another research found that students who were more motivated to do well in school got better academic achievement (Schmidt et al., 2017). Indirectly, it can be saying that grit personality is correlated with self-control which enables the students to achieve better scores or better achievement in their academics.

Moreover, Wolters and Hussain (2014) conducted the study and the findings reported that the grit dimension of persistence in effort significantly and positively predicted self-efficacy, task importance, and procrastination in academics. It was also related to better academic achievement. Procrastination was also significantly and positively predicted by the grit factor of consistency of interest, but the study found that there was no correlation with academic success. According to Littrell (2016), the research revealed that the "grit" component of constancy of interest was adversely connected with academic procrastination, however the "grit" dimension of persistence of effort was not substantially associated with academic procrastination. Other than that, findings indicated that self-control predicts everyday indicators of adaptive functioning, such as report card grades and a healthy weight, but grit predicts identity-relevant goals like winning the National Spelling Bee or surviving "Beast Barracks" at West Point (Duckworth & Gross, 2014; Duckworth & Seligman, 2017). Past research also indicated that students with more self-control report fewer external distractions during study time such as using smartphones or watching television (Duckworth et al., 2019).

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Based on previous studies, the research examined in grit and self-control correlated with academic procrastination were limited in Malaysia. Academic achievement, academic performance, others-focused purpose, time spent socialising, time spent on academic activities, success-focused purpose, and the significance of religion as consequences of grit and self-control have been the primary focus of previous study (Credé et al., 2016; Duckworth et al., 2019; Duckworth & Gross, 2014; Schmidt et al., 2017; Sriram et al., 2018). There are not many studies in Malaysia and even in other countries that focus on the impact of academic procrastination or academic procrastination with self-control and grit. Hence, this current study aims to obtain quantitative data by exploring self-control and grit as the factors affecting academic procrastination among undergraduate students in Malaysia.

Significance of Study

At the present, more and more students are engaging in academic procrastination (Herdian, 2021; Lim & Javadpour, 2021; Melgaard et al., 2022). Therefore, the study might be useful to institutions for them to consider how to address academic procrastination among students.

Moreover, study also helps students and schools to recognize the negative effects of procrastination on academics. It is important to let students and educators know how to deal with procrastination. This is because academic procrastination has been associated with a variety of negative outcomes, including declines in academic performance. For instance, in the quality of work, exam scores, grades, academic misconduct, course failure and withdrawal. Another negative outcome associated with academic procrastination will be declines in emotional well-being. For example, the individual will result in feelings like guilt, shame and sadness. Decline in mental and physical health is also one of the negative outcomes. The individual will feel more stress, lack of sleep and exhaustion.

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Additionally, this study will provide students a clearer picture of the current situation from which to set priorities and get things done. After reading this study, they will be able to evaluate themselves and provide assistance to others who engage in similar situations.

Lastly, researchers in the future will benefit from this since it will shed light on the problem from a perspective that is often overlooked. Procrastination may be a common human trait, but it's far more nuanced than the average person realizes. They will have a deeper comprehension of this occurrence as a result of this as well. Future researchers may be able to reflect on their own practices in light of the insights provided by this study. This research will tell them something new.

Research Objectives

1. To examine the relationship between self-control and academic procrastination among undergraduates in Malaysia.
2. To examine the relationship between grit and academic procrastination among undergraduates in Malaysia.
3. To examine the relationship between self-control and grit among undergraduates in Malaysia.
4. To examine self-control and grit in predicting academic procrastination among undergraduates in Malaysia.

Research Questions

RQ1: Is there any significant correlation between self-control and academic procrastination among undergraduates in Malaysia?

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RQ2: Is there any significant correlation between grit and academic procrastination among undergraduates in Malaysia?

RQ3: Is there any significant correlation between self-control and grit among undergraduates in Malaysia?

RQ4: Do self-control and grit are the significant predictors of academic procrastination among undergraduates in Malaysia?

Hypotheses

H1: There is a significant negative relationship between self-control and academic procrastination among undergraduates in Malaysia.

H2 : There is a significant negative relationship between grit and academic procrastination among undergraduates in Malaysia.

H3 : There is a significant positive relationship between self-control and grit among undergraduates in Malaysia.

H4 : Self-control and grit are the significant predictors for academic procrastination among undergraduates in Malaysia.

Conceptual Definition

Self-Control

According to Jiang and Zhao (2016), those who have high self-control are more likely to engage in pursuits that will benefit them in the long run, while those who are less so will gravitate toward those that provide just momentary relief. Furthermore, self-control is the capacity to direct one's actions and suppress unwanted behaviours and emotions (Stavrova et

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al., 2018). Also, self-control can be defined as the ability to direct one's attention, emotions and behavior toward long-term values despite the presence of more tempting alternatives in the present (Duckworth et al., 2019). When long-term values are in conflict with short-term desires, self-control is the ability to voluntarily rein in one's thoughts, emotions, and behavior to achieve the former. Other than that, being self-controlled means being able to put off gratification in the near term in favour of a bigger reward in the long run (de Ridder et al., 2018).

Grit

According to Attia et al. (2020), grit can be defined as a sense of fortitude, tolerance, and perseverance that aids a learner in overcoming obstacles and establishing long-term objectives. It has two subdomains: constancy of interest and persistence of effort. While "consistency of interest" looks at how often students reach the same goals over time, "perseverance of effort" looks at how well they can get back on track after a setback. Jachimowicz et al. (2018) believe that passion is a critical part of grit and needs to be experimentally recorded for a favorable association between perseverance and productivity to emerge. The authors say that passion is needed for perseverance to show its benefits because passion and perseverance work together to improve immersion in an activity. This is shown by the fact that people who are passionate about something are more likely to focus on and pursue activities related to that passion.

Academic Procrastination

Procrastination can be explained as intended or purposely in delaying to start or finish a given task (Ferrari & Tibbett, 2017). People are being mindful of what task they are requested to complete, but due to procrastination, they may choose to complete it at a later time or nearly the deadline (He, 2017). Academic procrastination can be further defined as a

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tendency to procrastinate and delay in tasks related to academics or education until later time.

For instance, preparation of the examinations, completing the assignments and all the administrative duties related to school (Ajayi, 2020).

Operational Definition

Academic Procrastination

The Academic Procrastination Short Form Questionnaire (Yockey, 2016) was used to assess the level of academic procrastination. A higher rating score on the scale indicates a greater propensity to put off completing academic tasks.

Self-Control

Self-control was measured through Brief Self-Control Scale (BSCS) (Manapat et al., 2019). There are two factors: “impulsivity” (items 5, 9, 12, and 13) and “restraint” (items 1, 2, 7, and 8). There are also two factors: “self-discipline” (items 5, 9, 12, and 13) and “impulse control” (items 1, 8, and 11). The higher score indicates that the person has a high level of self-control.

Grit

Grit is measured by using the Short Grit Scale (Duckworth & Quinn, 2009). After adding up all the points an individual obtains in this scale, then will need to divide by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty). A high score for items means that a person tends to have high passion and perseverance. A person with a high item score is more likely to be high in grit.

Chapter II

Literature Review

Self-control

Self-control can be defined as the ability to direct one's attention, emotions, and behavior toward long-term values despite the presence of more tempting alternatives in the present (Duckworth et al., 2019). When long-term values are in conflict with short-term desires, self-control is the ability to voluntarily rein in one's thoughts, emotions, and behavior to achieve the former. According to Stavrova et al. (2018), self-control is the capacity to direct one's actions and suppress unwanted behaviours and emotions. Being self-controlled means being able to put off gratification in the near term in favour of a bigger reward in the long run (de Ridder et al., 2018). Impulsive behaviour is characterised by a focus on the immediate reward. Those who are high self-control are more likely to engage in pursuits that will benefit them in the long run, while those who are less so will gravitate toward those that provide just momentary relief (Jiang & Zhao, 2016). Moreover, self-control is one of the personality traits that differs from one individual from another. There are people who have excellent self-control and those who have poor self-control. Individuals with great self-control are capable of changing circumstances and become an agent major in guiding and managing the main conduct that results in favorable outcomes. People with strong self-control will often use precise time. They will be able to lead, direct, and regulate conduct, allowing someone to adapt his behavior to items that will help him complete his task. Self-control allows someone to hold a perceived bad response and redirect it to a more positive one (Ferdian Farhan, 2020).

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Grit

Grit is defined as the capacity to persevere tenaciously in the face of difficulty (Duckworth et al., 2007). It has two elements: an effort part that describes the general idea of sticking with something and working hard, and an interesting part that describes the ability to stay interested. The first one, the persistence of effort, shows how students see themselves as dedicated, hard-working, and willing to keep trying important things even when they fail. The second, constancy of interest, shows students' apparent inclination to stick with certain long-term goals even when faced with new opportunities (Duckworth & Quinn, 2009; Duckworth et al., 2007). According to Crede (2018), grit is the persistence of effort and consistency of interest. Sometimes can also be said as the passion for achieving long term goals and sometimes just be simply defined as passion.

Academic Procrastination

An individual purposely or intended to finish a given task late or even delaying to start a given task can be explained as procrastination (Ferrari & Tibbett, 2017). People are being conscious of what task they are requested to complete, but they may choose to complete it at a later time or nearly the deadline only they start due to procrastination (He, 2017). According to Niazov et al. (2021), the results showed that the students with learning disabilities encounter more challenges compared with the students without learning disabilities and this can actually cause them to be more procrastinating. Procrastination nowadays is prevalent among young adults and it may affect their academic performance and result in having poor time management (Hailikari et al., 2021). Higher procrastination may lead to more negative effects towards an individual. The findings of Hailikari et al. (2016) revealed that procrastination is strongly correlated with the students' capability to plan their time and effort. Academic procrastination can be further defined as a tendency to

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procrastinate and delay in tasks related to academics or education until later time. For instance, preparation of the examinations, completing the assignments and all the administrative duties related to school (Ajayi, 2020). According to He (2017), the study concluded that academic procrastination has been linked to a number of factors which are the laziness, lack of desire, excessive internet use, stress and also the complexity of the assignments. Academic procrastination may also lead to anxiety which the findings indicated that over 80% of students get anxious when they put things off (He, 2017).

Self-control and Academic Procrastination

According to Wijaya and Tori's research, which included 100 undergraduate students (47 men and 53 women) from the religious education department of a private institution in Yogyakarta. Moreover, the Procrastination Academic Scale for students was used to measure academic procrastination; the Pure Procrastination Scale was used to measure general procrastination; and a Brief Self-Control Scale was administered to test student self-control. Utilizing correlation analysis, the association between self-control and procrastination was determined. Beside-that, using regression analysis, a predictor of procrastination was identified. The results show that self-control plays an important role in both academic and daily procrastination. It shows a negative association with procrastination and is a fair predictor of procrastination in academic and non-academic settings. Further, other studies have found a correlation between a lack of self-control and procrastination (Rebetez et al., 2016; Steel & Klingsieck, 2016; Ursia et al., 2013). Rather than a lack of forethought or care, or ignorance of the potential repercussions, lack of motivation is more often to blame when a student puts off doing an assignment. They know what they want to do, but they're having trouble getting started or finishing what they've already done because of time constraints.

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Beside-that, individuals with self-control lower academic procrastination since a negative relationship was proved between self-control and academic procrastination by a researcher in the year 2020 (Ferdian Farhan, 2020). Using a qualitative approach, the questionnaire technique was employed to conduct the research. Utilized was a survey method using a causality approach for study. The study's sample consisted of 200 high school students. Additionally, data collecting strategies employing literature and questionnaire methodologies. This study also has suggested some advice on how to decrease procrastination. In order to succeed in school, students should make doing their work a primary priority. It is recommended that both homeroom and subject teachers help students overcome academic procrastination by providing motivation to students to improve self-control and providing structure and routines that make it more likely that students will stick to these strategies. For example, giving a reward after finishing a task, putting away items that aren't related to tasks or learning activities, and turning off communication tools when study.

Referred to Marliyah et al. (2020), the objective of this quantitative correlational study in entrepreneurship education was to evaluate ideas and case studies related to the relationship between academic procrastination and self-control. The students who majored in Natural Sciences from SMA Negeri 3 Semarang who received entrepreneurial education were the subjects. Using a questionnaire and a basic random sample procedure, the results were collected. In addition, student names, student learning results in entrepreneurship education, and school profiles served as evidence in this research. The observed activity involved the teaching and learning of entrepreneurship. Delays in starting and finishing tasks, delays in completing assignments, time gaps between planned and actual performance, and participating in more joyful activities were utilised to measure academic procrastination. Indicators of self-control variables in students include the capacity to regulate behaviour, the

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capacity to control stimuli, the capacity to anticipate events or occurrences, the capacity to comprehend events or incidents, and the capacity to form judgements. Students have a substantial and unfavourable association between self-control and academic procrastination, according to the findings. This indicates that any reduction in academic procrastination is attributable to students' increased self-control.

According to Liu et al. (2020), academic self-control was negatively correlated with academic procrastination. The self-reports were used to measure variables in this cross-sectional research. The participants are drawn from a cluster sampling of full-time graduate students in a Chinese university town. Moreover, a questionnaire was obtained from 577 full-time postgraduates (351 females and 226 men). Academic Self-Control Questionnaire and Questionnaire for Academic Procrastination of Postgraduate Students were utilised in this research. This research suggests that academic self-control is making the right choice when making a final choice, following through to the end of a task, and avoiding procrastination are all aided by a person's belief in their own ability to do so. However, when confronted with task conditions, people with poor academic self-control are unable to keep their motivation high, even if they have modest task goals. They are more inclined to engage in self-defeating behavior like putting things off until later or avoidance, and they may also have emotional difficulties like worry and sadness. Therefore, individuals with high academic self-control will modify their learning behaviour to achieve an academic development objective, with the individual's body, mind, behaviour, external environment, and events acting as objects and social needs and self-concept serving as standards (Duckworth et al., 2019).

Besides, college students' typical problematic conduct, procrastination was significantly impacted by students' ability to exercise self-control (Kim et al., 2017). A total of 377 South Korean college students participated voluntarily in this study. Students' self-

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control was measured using the Self-Control Rating Scale. This measure has 36 items, each of which is scored on a Likert scale ranging from "not at all" (1) to "extremely probable" (5). Furthermore, the Aitken Procrastination Inventory was to quantify procrastination in college students. This assessment has 19 items, each of which is scored on a Likert scale ranging from "not at all" (1) to "extremely probable" (5). A higher score suggests more frequent procrastination when completing academic tasks. All of the questionnaires were translated into Korean, and their reliability and validity were proved. The fact that self-control has a direct bearing on issue behaviours shows that working on one's own self-control is crucial for minimising problem behaviours like procrastination. Researchers have shown a correlation between high levels of self-control and beneficial outcomes including success in school, reduced risk of criminal behaviour, and a more constructive influence on society (Sabry Abd El-Salam et al., 2022). Individuals with low self-control have been linked to a wide range of negative outcomes, including worse academic performance, greater aggressiveness, drug misuse, and Internet addiction, to name just a few. Reasons for this include the low-self-control person's propensity for impulsive behaviour, quick reactions to outside stimuli, a preference for easy jobs, and a need for instant pleasure.

According to Sabry Abd El-Salam et al. (2022), the relationship between Academic Procrastination and Self-Control among Nursing Students at the Faculty of Nursing at Zagazig University was examined. A stratified random sample of 351 nursing students from the 2020-2021 academic year was selected at random. Moreover, the academic procrastination scale, which consists of 45 questions divided into two subscales, and The Tangney Self Control Scale, a 36-item self-report measure of self-control, were used to collect data. The questionnaire was translated into Arabic before a panel of five experts determined its internal and external validity. The result showed that it is negative relationship between Academic Procrastination scores and Self -control scores. The study has suggested

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several ways to improve student self-control. For instance, nurse educators could analyse the academic procrastination of nursing students during interviews in order to gather information and aid in the development of a curriculum to prevent procrastination. In addition, the educator must also teach them how to prevent academic procrastination, increase their self-control, and provide training courses to boost nursing students' self-control.

Recent research has consistently supported our hypothesis that there is a negative relationship between self-control and academic procrastination. Thus, high levels of self-control are associated with more forward movement toward goals and the possibility of greater internal consistency and harmony. Self-control people have a tendency to keep to the exact time. They will be able to direct, command, and govern his actions in ways that improve his productivity. Self-control is the ability to suppress an unpleasant emotion and channel it into a more positive response.

Grit and Academic Procrastination

Based on Jin et al. (2019), the research has demonstrated the relationship of grit in supporting academic achievement, such as greater academic achievement and fewer academic procrastination tendencies. A total of 1,098 university students between the ages of 18 and 25 participated in the study, and they were required to complete a number of self-report questionnaires. The following tests were given: The Aitken Procrastination Inventory (1982), the Inventory of Peer Attachment (1987), the Grit Scale (2009), and the Future Time Perspective Scale (2004). For instance, there is a negative relationship between grit and academic procrastination among undergraduates. Research showed that grit is the opposite of the global psychological stress of college students. This could imply that hardworking students are better able to deal with stress, which reduces procrastination. Indeed, attaining challenging objectives, such as improved academic performance, involves the determination

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to control one's emotions and to work diligently, as well as the skill to manage obstacles connected with goal pursuit. On the basis of these findings, grit is negatively associated to academic procrastination among undergraduates.

Moreover, Attia and Abdelwahid (2020) had conducted studies among nursing students to examine grit, self-regulation and self-efficacy as predictors of academic procrastination. A total sample size of 324 students were selected at random from a total population of 1,743 nursing students. The Academic Procrastination Scale (2015), the Grit Scale (2007), the Self-Regulation Scale (1999), and the Generalized Self-Efficacy Scale (1995) were used in the study. Results showed that grit, self-regulation and self-efficacy had negative relationships with procrastination.

According to Rouhi et al. (2022), the aim of this study is to investigate the effect of grit in increasing academic engagement and decreasing academic procrastination. A sample size of 500 students were selected and asked to complete the Grit Scale (2007), the Academic Engagement Scale (2013), the Academic Procrastination Scale (1984), and the Achievement Goal Questionnaire (2011). Results showed that grit significantly predicted academic procrastination. The study indicated that grit is a trait that can make a person more committed to a task even when there are problems and less likely to give up on it. Because of this, people with more grit are more likely to reach their own goals. This might encourage students' intrinsic motivation and improve their academic engagement, thus academic procrastination decreases.

In Southern Sweden, Wejkum (2018) had conducted a research to examine the relationship between procrastination, grit, and self-efficacy for self-regulation. The purpose of the study was to contribute to the field of research on procrastination. Specifically, the researchers were interested in how procrastination might be related to and affected by grit.

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The questionnaires were completed by a convenience sample of 227 undergraduate psychology and nursing students at a mid-sized public university in southern Sweden. This study included four measures which are the Academic Procrastination Scale-Short Form (2016), the Irrational Procrastination Scale (2014), the Self-Efficacy for Self-Regulated Learning scale (1992), and the Swedish Grit-Scale (2016). The result indicated both measures of procrastination were negatively associated with grit and self-efficacy for self-regulation.

On the other hand, Wolters and Hussain (2015) studied grit's relationship with self-regulated learning (SRL) and academic accomplishment. A total of 213 college students took part in an online self-report survey that consists of the Grit Short scale, the Self-Regulated Learning variables and the past and present academic accomplishments. Research stated that grittier students are more likely to persist in the face of challenges and pursue difficult long-term objectives such as completing a bachelor's degree. The findings are also the first to demonstrate that students with greater grit may be less prone to engage in procrastination, a major kind of academic self-handicap that is frequently characterized as a self-regulation learning failure. Both aspects of grit were related to decreased self-reported delays in initiating and finishing educational tasks. This relationship is consistent with the concept that grit is a protected characteristic that can restrict activities that disrupt academic functioning.

Another study conducted at Open University in Korea explored the structural correlation between female students' academic success and age, grit (i.e., persistence of effort and consistency of interest), conscientiousness, and self-control. A sample size of 509 participants were involved in the study. The Grit Scale (2007), the Self-control Scale (1990), the Conscientiousness (1992), the Academic Maladjustment Scale (2008) and the Academic Achievement (GPA) were developed and used to measure in the study. Finding showed that academic maladjustment was negatively correlated with perseverance. This is because the

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concept of grit is a significant predictor of academic adjustment and accomplishment among adult undergraduates engaged in an open university. This means that grit-related treatments can help adult students avoid academic maladjustment and dropout while also increasing retention, academic achievement, and programme enhancements (Hwang et al., 2018).

Xian and Ying (2022) conducted a study that academic procrastination was found to be significantly influenced by grit, the longer effortful processes of goal achievement. Previous findings showed that the inability to self-regulate is one of the primary causes of procrastination. Moreover, individuals with grit include characteristics such as higher self-regulation. As a result, it is assumed that those with grit are less likely to put off doing academic work because grit has been linked to coping mechanisms against academic procrastination. In conclusion, grit is a significant factor in academic performance, according to research. Studies have found grit personality qualities as a motivator of diligent and persistent behavior, even though grit is not explicitly posited as a proactivity catalyst. Additionally, it has been proposed that grit can control one's behaviour of purposefully delaying a task, as well as one's self-efficacy and productivity, in order to assist a person in enduring challenging circumstances. Indeed, one must be prepared to control desires, strive effectively, and handle distractions in order to accomplish challenging goals like achieving more academic achievement.

Self-Control and Grit

Referring to Duckworth and Gross (2014), self-control can be enhanced or boosted up by practices or training and it is more towards a skill or potential. Self-control enables an individual to regulate our emotions or adjust our behaviour. In opposition to self-control, grit can be explained more towards a motivation or passion to help an individual in achieving long term goals and do their best every time when chances are given.

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According to Suzuki et al. (2015), the authors indicated that there is a positive association between grit and self-control. This is a study that investigates relationships between grit and work engagement. The study was done in Japan and there were a total of 1134 working adults who participated in the online questionnaire. Gender in this study was quite equal, which consists of 50.79% of female adults. Japanese Grit Scale, Orientation to Happiness, Self-Control Scale, Japanese Short Version of Utrecht Work Engagement Scale (Japanese UWES-9) and Japanese Big Five Scale were applied in the distributed online questionnaire. Also, this study revealed that an individual who makes an effort to accomplish their aims may also depend on their self-control which makes them to effectively manage their anger (Suzuki et al., 2015). By using self-control and meticulousness as mediators, Suzuki et al. (2015) also indicated that students who have higher levels of self-control and meticulousness are seen as having engagement in their work and also grit. According to Huo (2022), the author also indicated some elements including self-control and self-motivation serve as the mediators in the relationship among grittiness and engagement in their academics.

Furthermore, Hwang et al. (2017) had conducted a study in South Korea. This study mainly examined the consequences of grit on academic success. The study recruited 509 students as participants and all the participants are female. The Grit Scale, Self-Control Scale, The International Personality Item Pool Big Five and Academic Maladjustment Scale had been used in the survey and GPA being applied to test the academic achievement of the participants. Results indicated that there is a positive relationship among self-control and grit factors (Hwang et al., 2017). Which can also be explained as the greater the self-control, the greater the grit personality.

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Additionally, a study conducted by Boon-Falleur et al. (2022) wanted to find out whether by enhancing the socio-emotional skills is able to result in greater academic achievement. The study involved a total of 3997 participants that currently study in French. The scales being used are Big Five Inventory, Short Grit Scale and Domain-Specific Impulsivity Scale for children. Academic Diligence Task also being used as a tool to test self-control and grit among students. This study found out that the learners who are more diligent, grit or possess greater self-control should have greater gain in their academics which is better in their grade point average (GPA) and also in their discipline index compare with the learners who are less diligent, grit or less self-control (Boon-Falleur et al., 2022). From the findings, self-control and grit can be understood as positively correlated to each other.

Moreover, a research conducted by Kannangara et al. (2015) looking into the significance of the idea of grit. The findings showed that grit personality is highest correlated with self-control (Kannangara et al., 2018). There are a total of three studies being conducted in this research and each study contains 440 university students, 340 university students and 10 graduates respectively. Scales being chosen in this research are Grit Scale, Perceived Stress Scale, short version of Warwick-Edinburgh Mental Well-being Scale, Office of National Statistics Well-being Items and Self-Control Scale. Results revealed that an individual having a greater score in grit may have significantly greater levels of self-control (Kannangara et al., 2018). It can be also understood as positively correlated among both variables. Kannangara et al. (2018) also indicated that age-related differences in grit show that the idea of self-control is most directly associated with each other.

Besides, a recent study aims to investigate the college students' grit, autonomous learning and well-being by using self-control as their mediator. The results of the study revealed that grit and self-control are positively related to each other (Ramos Salazar &

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Meador, 2022). This study total involved 511 university students to take part in by online survey. 70.6% were female and the participants came with an average of 25 years old.

Researchers in this study also revealed that the relationship between grit and autonomous as well as the relationship between grit and well-being was also mediated by self-control (Ramos Salazar & Meador, 2022).

In addition, Jalal (2022) published a conference paper and also claimed that one of the non-cognitive abilities which is grit is correlated with self-control but without direction. This study mainly focused on the role of students' grit and their goal orientation by predicting academic success. In this study, a total of 532 students in the University of Ottawa from the faculty of engineering had finished the online questionnaire. There was only a total of 23.2% respondents were female. The Big Five Personality Traits, grit, peer assessment, goal orientation and academic success of the participants have been evaluated in this study. Similar results go to a study conducted by Gonzalez et al. (2020), it stated that self-control and grit in the domain of self-regulation are interrelated which means they are having relationships. However, the results showed that there are inconsistent findings that might either support or not support the conceptual overlap and empirical interchangeability between self-control and grit (Gonzalez et al., 2020).

Overall, almost all the studies which look into the relationship between self-control and grit indicated that there is a positive correlation among these both variables, these results supported our hypothesis. Except for the studies carried out in recent years by Jalal and Gonzalez and other researchers which concluded that their investigation without a specific or clear direction. However, it is undeniable that there is still a lack of researchers interested in studying or taking chances and time to look into the relationship among self-control and grit.

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Self-Control, Grit and Academic Procrastination

After searching around in the databases, at the end found out that none of the journal articles did examine the relationship among the three variables which are self-control, grit and academic procrastination. If we take self-regulation as a synonym for self-control, there are also limited resources who test the relationship among these variables. There were only two articles who look into self-regulation, grit and academic procrastination and the results from both studies are the same. Results indicated that self-regulation and grit have significant and negative relationships with procrastination (Attia & Abdelwahid, 2020; Wejkum, 2018). Undeniably, there is very limited or lack of studies which examine the relationship among self-control, grit and academic procrastination. Therefore, it shows that there is a need to investigate the connection among these three variables and develop a reference for future study.

Theoretical Framework

Self- Regulation Theory

According to the theory of self-regulation, self-monitoring is a vital aspect of goal pursuit. Self-regulation theory highlights the cyclical management of academic and performance through many important processes, including goal-directed behavior, the adoption of particular methods to achieve objectives, and the adaptation or change of behaviors or strategies to optimize learning and performance.

Why do individuals procrastinate? It is well-established that procrastination results from a lack of self-regulation (Shalev, 2018). Individuals regulate their conduct through self-regulation. Self-regulation is the capacity to manage one's own actions, emotions, and ideas, which plays a crucial part in human behaviour. Without self-regulation, individuals can

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scarcely detect and then manage their eating, drinking, working, speaking, and thinking.

Involved in self-regulation are not only behaviours and thoughts, but also cognition and emotions. People who delay are unable to control their behaviour and prefer engaging in short-term pleasures over achieving their significant goals. Individuals who lack self-control and self-regulation are prone to distractions and enjoyable external stimuli (Saed, 2019).

Given this, it may be concluded that individuals with inadequate self-control and self-regulation are prone to postpone their tasks intentionally for short-term and desired benefits while being aware of the unfavorable repercussions.

Self-regulation and grit are two of the most significant factors that explain success in various parts of a person's everyday life. Self-control encourages delayed satisfaction and directly controls thoughts, emotions, and impulses (Oriol et al., 2017). On the other side, grit facilitates the attainment of goals via tenacity, even in the face of tremendous external obstacles. The study revealed a substantial positive association between grit and learning self-regulation (Angela et al., 2020). According to Wolters and Hussain (2014), grit is commonly seen as a factor that impacts the attitudes, beliefs, cognitive processes and actions that result in self-regulation in learning. Moreover, it may be stated that a person's self-regulation of learning is stronger than the greater their grit and vice versa, the lower their grit, the lower their self-regulation. Therefore, if students exhibit self-control and grit, rather than engaging in academic procrastination, they will increase their determination to complete a work and achieve their long and short terms' goals.

Self-regulation theory supports the linkage between self-control, grit and academic procrastination. Therefore, the theory supports the prediction of self-control, grit and academic procrastination among undergraduates in Malaysia.

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Conceptual Framework

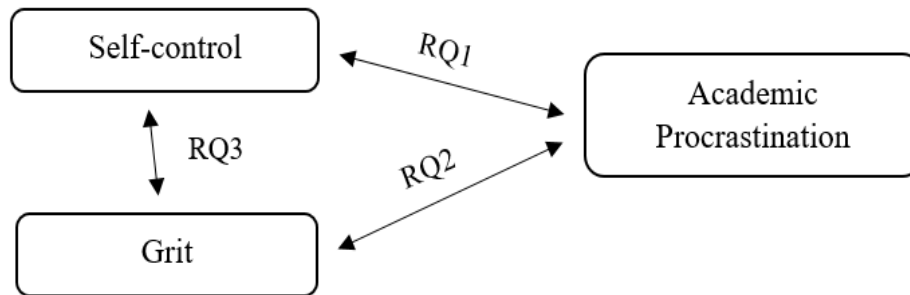
Diagram shown below is the conceptual framework (Figure 1). Referring to the framework, it shows that there is a relationship between self-control and academic procrastination, grit and academic procrastination and also self-control and grit among undergraduates in Malaysia. Based on the literature review, it revealed that there is a relationship among self-control and academic procrastination (Marliyah et al., 2020). Referred to Jin et al. (2019), the study proved that grit is correlated to academic procrastination. Furthermore, Kannangara et al. (2018) indicated in the study that there is a relationship between self-control and grit. In line with all the previous studies, this study aims to determine whether there is a relationship among the self-control, grit and academic procrastination.

Figure 2 showed another conceptual framework. Refer to Figure 2, self-control and grit are independent variables while academic procrastination is dependent variable. The target of this study is also to find out whether self-control and grit are significant predictors for academic procrastination.

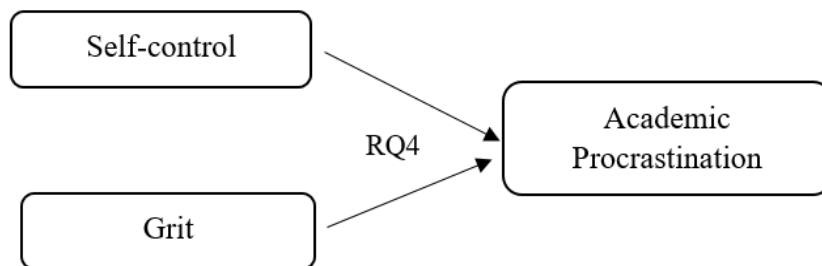
Figure 1

Relationship among self-control, grit and academic procrastination among undergraduates in Malaysia

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**Figure 2**

Self-control and grit as predictors of academic procrastination



Chapter III

Methodology

Research Design

In this quantitative investigation, a cross-sectional survey research design was applied. A cross-sectional study allows for the gathering of information from a large number of participants and comparing group differences. Compared to other research methods, cross-sectional studies are less costly and less time-consuming (Thomas, 2022). A cross-sectional study's participants were simply chosen based on the study's inclusion and exclusion criteria (Mohamad et al., 2021). Additionally, it is thought that the survey method is the most widely used research design (Ponto, 2015). Thus, this study was decided to be conducted as a cross-sectional study and online survey was implemented to gather information and data from few social media platforms. This is because it can be done for a variety of reasons, including gathering information about respondents' personal characteristics, opinions, needs and goals for the present and the future. Prior to the development and advancement of the technology, surveys previously were conducted face-to-face by handing out the survey papers with questions on them. However, in modern times, surveys can be conducted through online platforms and are also capable of quickly reaching more respondents (Tony, 2016). Therefore, this research design was used to collect the data from the university students in Malaysia within a short period of time by distributing the online questionnaires and saving the cost for this study.

Sampling Procedures

Sampling Method

In the current study, non-probability sampling was being chosen as our sampling method. Purposive sampling in non-probability sampling also applied in our study.

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According to the findings, purposive sampling is one of the most widely used non-probability sampling methods (Ndenje-Sichalwe & Elia, 2020). Purposive sampling is a method that recruits the respondents by following the criteria or the characteristics that the study needed for example the differences in age group, gender, ethnicity, events or so on (Nikolopoulou, 2022). The reason that purposive sampling is being applied is because there were few criteria needed to be fulfilled by the respondents before they reply to our online questionnaire. The inclusion criteria included that the respondents must be an undergraduate student staying in Malaysia and their age must be between 18 to 25 years old. While the exclusion criteria were the person is not currently an undergraduate student in Malaysia and also below the age of 18 and above the age of 25.

Sample Size

The G*Power software was used to calculate the minimum sample size of this study. G*Power is simple to use since it features a graphical user interface and it is free of charge (Kang, 2021). The formula $f^2 = R^2 / (1-R^2)$ was used to complete the calculation of the effect size. The values of f^2 are taken from the articles that had reviewed in the Literature Review part and the results and findings did indicate that they have a correlation with each other which are the variables. For instance, when counting the effect size for grit and academic procrastination, the number in one of the regression analysis table which stated the value of $f^2=0.110$ has been taken. After putting the values into the formula, all the answers being sum up and divided it by 3 to get an average effect size which needed to key in in the G*Power to calculate the minimum sample size. 0.2166 is the effect size that has been obtained by applying the formula and this can be indicated as a medium effect size. Number of predictors has also been entered as 2 to calculate the minimum participants that we need to recruit in this study. By following the result, the total of the minimum sample size in this study is 75 respondents. The target participants will be undergraduate students in Malaysia and between

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the ages of 18 to 25. All data was kept anonymous and the participation of the respondents was voluntary.

Research Location

The location of this current study is within Malaysia. An online survey was generated by using an online software, Qualtrics and had been distributed to the participants that fulfill the inclusion criteria. The online questionnaire reached out to the participants through WhatsApp, Instagram and Microsoft Teams these various social media platforms.

Procedure of Ethical Clearance Approval

An online questionnaire will be created by using Qualtrics and English was the language that was chosen to use in this questionnaire. The scientific and ethical approval was acquired from Universiti Tunku Abdul Rahman (UTAR) before we started to collect the data from the targeted participants. The reference number of the approval letter is U/SERC/02/2023 (refer to Appendix K). After we send out the questionnaire to our targeted participants, before they start to answer the questionnaire, there are few options they need to pick. The participants are requested to read the informed consent at the first page of the online questionnaire. The consent was needed to continue to answer this survey. Therefore, at the page of informed consent, they must reach an agreement before proceeding to complete the survey form. But the participants also have the option to leave the survey if they do not agree to continue to take part in the survey or they do not wish to continue at any part.

The survey questionnaire consists of five sections. Part A will be Personal Data Notice and Informed Consent, Part B is the Demographics of participants, Part C involving Academic Procrastination Scale (APS-S), Part D contains Brief Self-Control Scale (BSCS) and Part E will be Short Grit Scale (Grit-S). The approximate time to finish this questionnaire was between 5 minutes to 10 minutes. The time range we collected the data is around one

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month which was between 11 February 2023 to 12 March 2023. After the data was collected, the data analysis will be done using IBM SPSS Statistics 23 (SPSS).

Pilot Study

A pilot study is typically the initial stage of a research protocol, involving a smaller-scale investigation that aids in the planning and refinement of the primary study, with the aim of achieving better results (In, 2017). Based on Johanson and Brooks (2010), a minimum recommendation of 30 representative participants from the population of interest is considered appropriate for a pilot study. Thus, in this context, a pilot test with 44 participants was conducted using online questionnaires and distributed to Malaysian undergraduates through Qualtrics before proceeding to the actual study. The collected data was then subjected to analysis to assess the reliability of the instruments used to measure each variable. The reliability for the pilot test for self-control was .68, grit was .71 and academic procrastination was .85.

Actual Sample Size

The targeted participants for this study are undergraduate students in Malaysia and currently between the ages of 18 to 25. According to the criteria, university students and college students in Malaysia were the targeted participants. The total respondents this study collected was 108 after the data cleaning. There were a total of 63 (58.3%) respondents were female and 45 respondents (41.7%) were male. They are mostly from the same ethnic group which was Chinese ($n=100$) and followed by Indian ($n=6$), Malay ($n=1$) and there was one respondent from Khadazan ($n=1$). For the religion, 80 of the respondents were Buddhist, 22 were Christian followed by 4 Hindu, 1 Muslim and 1 atheist. After concluding the universities and colleges they came from, a total of 58 respondents were from Universiti Tunku Abdul Rahman (UTAR), followed by 15 respondents from Tunku Abdul Rahman

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University of Management and Technology (TAR UMT), 6 respondents from Sunway College and also YPC International College, and the remaining respondents were from International Medical University (IMU), Inti International University, Asia Pacific University of Technology & Innovation (APU), New Era Institute of Vocational and Continuing Education and other universities and colleges.

Research Instruments

Demographic Information

The demographic information of the respondents was being collected in the first part in the online survey form. After the informed consent, the participants' age, gender, ethnicity and religion were being collected. After these questions, since our inclusion criteria stated that our respondents must be an undergraduate student, therefore their university or college name was being collected in the coming question too.

Academic Procrastination Scale (APS-S)

The items for the five-item APS-S short form scale (Yockey, 2016) were originally chosen from the 25-item full-length scale which was developed by McCloskey (2011). The short form of scale is selected from items 2, 4, 7, 17, and 23 full length scale. A 5-point Likert type scale ranging from 1 (*Disagree*) to 5 (*Agree*) was being applied in this scale. The scores for each item are summed to produce a minimum score of 5 and maximum score of 25. The higher total scores on the scale indicate a greater academic procrastination. The Cronbach's Alpha Coefficient of the scale was .87. In the current study, the pilot test obtained a value of .85 for the internal reliability which was as same as the reliability of the actual study.

Brief Self-Control Scale (BSCS)

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The level of the self-control of an individual was measured by using the Brief Self-Control Scale (BSCS) which developed by Tangney et al. (2004). The scale originally consisted of 36 items but then was developed into the short version which only consists of 13 items. The 5-point Likert scale ranges from 1 (*Not at all like me*) to 5 (*Very much like me*) was used in this instrument. Items 1, 6, 8 and 11 are reverse items. Higher scores indicated higher levels of self-control for the reverse items. While in other items, higher scores indicated that there is a lower level of self-control. The scores for each item are summed to produce a minimum score of 13 and maximum score of 65. Cronbach's alpha was .89 in the study conducted by Tangney et al. (2004). In the current study, the internal reliability was reported as high reliability in the actual study which was .86 but in the pilot study was .68.

Short Grit Scale (Grit-S)

Short Grit Scale which comes with 8-items was developed by Duckworth and Quinn (2009). The items are all using a 5-point Likert Scale to measure, from 1 (*Not like me at all*) to 5 (*Very much like me*). However, only items 2, 4, 7 and 8 are following this scoring. Items 1, 3, 5 and 6 are reverse items which range from 1 (*Very much like me*) to 5 (*Not like me at all*). After adding up all the points an individual obtains in this scale, then will need to divide by 8. The highest score in this scale after dividing is 5 which represents extremely gritty and minimum score is 1 represents not at all gritty. The Cronbach's Alpha Coefficient of the scale was .81 conducted by Duckworth and Quinn (2009). Nevertheless, in the current study, a value of .71 has been revealed in the pilot test as the internal reliability. While .81 was indicated as the reliability of the actual study.

Chapter IV**Result****Data Cleaning**

Data cleaning involves identifying and resolving various types of data issues, such as incorrect, corrupted, duplicate, incorrectly formatted, or incomplete data, within a dataset by either fixing or removing them. In the study, a total of 108 sets of responses were collected.

Input Error

The SPSS file downloaded from Qualtrics contained several sets of responses. No input errors have been identified in the data input process, which means that the total number of responses remains 108.

Irrelevant Data

The eligibility check that was carried out at the beginning of the survey. Therefore, there is no irrelevant data in the data sets. The survey system ensured that participants who did not meet the research's inclusion criteria were automatically stopped from proceeding with the survey. By implementing this eligibility check, the data collected can be considered more reliable and accurate for analysis. This check helped to eliminate any irrelevant responses. Thus, the total number of responses remains at 108.

Missing Data

In the current study, a total of 165 participants were recruited initially. The process of cleaning the data involved removing the case with any missing values, incompleteness or blank responses, and errors occur while entering the data, 13 missing data were identified. The 13 missing data, and the 44 data being used in the pilot test were removed. As a result, the final sample size for data analysis was 108.

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Straight-Lining Data

To detect straight-lining data and ensure the quality of data, examine response patterns, reverse-coded questions and use statistical methods was conducted to discourage straight-lining responses and identify participants who exhibit this bias. Straight-lining data refers to a survey response bias where the respondent gives the same answer for each question in a survey (Kim et al., 2018). This bias can occur when a participant is not fully engaged in the survey process or is trying to rush through the questions without much thought. This type of response bias can result in invalid data and inaccurate conclusions. Eventually, no data was deleted and the total number of responses remains at 108.

Normality Assumptions

The normality assumption of each variable including self-control, grit and academic procrastination were tested by using histogram, Quantile-Quantile Plot (Q-Q Plot), skewness, kurtosis and Kolmogorov Smirnov (K-S) test.

Histogram

The histograms (refer to Appendix D) for all the variables displayed a bell-curved which indicated that each variable had achieved the normality assumptions.

Quantile-Quantile Plot (Q-Q Plot)

The data points in each Q-Q plots (refer to Appendix E) for all the variables were mostly near to the diagonal line which indicated that the variables had achieved the normality assumptions.

Skewness and Kurtosis

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The standard range of Skewness and Kurtosis need to be fulfilled is ± 2 (Garson, 2012). According to Table 4.1, the skewness values for academic procrastination was .116, self-control was -.087, and grit was .540. The kurtosis scores for academic procrastination were negatively skewed (-.730), self-control was positively skewed (.134), and grit was positively skewed (.269). Referring to the results demonstrated, the values of skewness and kurtosis were within the standard range, which also indicated that academic procrastination, self-control and grit was normally distributed.

Table 4.1

Skewness and Kurtosis Values

Variable	Skewness	Kurtosis
Academic Procrastination	.116	-.730
Self-control	-.087	.134
Grit	.540	.269

Kolmogorov-Smirnov Test (K-S Test)

According to the Kolmogorov-Smirnov test, if the results being obtained was a non-significant p-value ($p > .05$), which indicated that the normal distribution falls under the acceptable standard. Referring to the Table 4.2, the test results shown that academic procrastination, $D(108) = .068$, $p = .200$ and self-control, $D(108) = .074$, $p = .186$ were normally distributed. While grit demonstrated in a non-normally distributed which showed a result of $D(108) = .116$, $p = .001$.

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Table 4.2*Kolmogorov-Smirnov Test*

Variable	Statistic	df	Sig.
Academic Procrastination	.068	108	.200*
Self-control	.074	108	.186
Grit	.116	108	.001

*Note: *This is about a lower bound of the true significance.
Lilliefors Significance Correction*

Summary

Overall, the majority of the indicators, which including histogram, skewness, kurtosis, and Quantile-Quantile plot (Q-Q Plot), showed no violation of normality for all the variables. However, the Kolmogorov-Smirnov test (K-S) test for grit showed a violation of normality. Therefore, the normally assumptions for all the variables were considered approximately normally distributed, which were 4 out of 5 showed no violation of normality.

Outliers*Univariate Outlier*

A univariate outlier refers to an instance where a single variable has an extremely high or low value that is beyond what is normally expected for the general population (Tabachnick & Fidell, 2013). 5 outliers had been identified by using the boxplot (refer to Appendix C). Since the outliers in this study were not the result of input errors and did not have a significant impact on the normality distribution or the study's results (Aguinis et al., 2013), the data were not removed from the analysis.

Multivariate Outliers

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The current research has utilized Cook's Distance, Mahalanobis Distance, and Centered-Leverage range with two standard deviations as tools for analyzing multivariate outliers. There cases including case 9, 30, 35, 62, and 102 (refer to Appendix I) were detected as the potential outlier cases. As assessed by the Mahalanobis Distance standard, the value for case 9 (0.13709), 30 (0.52247), 35 (0.58131), 62 (1.73134), 102 (5.70933), Mahalanobis Distance showed no violation since all the values are less than 15 (Barnett & Lewis, 1978). Additionally, the value of 1 has not been exceeded by cases 9(0.02116), 30(0.02081), 35(0.02622), 62(0.07255), 102(0.10578) which remained in the Cook's Distance standard (Cook & Weisberg, 1982). Thus, there are no violation in Cook's Distance for all the cases. If Centered-Leverage is higher than twice leverage's value .0656 by using the formula from Dhakal (2017), cases are probably outliers. The cases 9 (0.00128), 30 (0.00488), 35(0.00543), 62(0.01618) and 102(0.05336) were within the specified range. Therefore, cases were not removed.

Table 4.3

Multivariate Outliers Test

Number of case	Mahalanobis Distance	Cook's Distance	Centered-Leverage range
9	0.13709	0.02116	0.00128
30	0.52247	0.02081	0.00488
35	0.58131	0.02622	0.00543
62	1.73134	0.07255	0.01618
102	5.70933	0.10578	0.05336

Note: Dependent Variable: Academic Procrastination
Independent Variables: Self-control, Grit

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Descriptive Statistics

The following table had listed out the demographic information of participants consisting of gender, age, ethnicity, religion, and university by separating using the standard deviation, mean, total number, and percentages of participants. The demographic information for the respondents in present study was being showed in the Table 4.4. Based on the sample collected through the distribution of questionnaires, a total of 108 respondents, among ages 19 ($n= 5$; 4.6%), 20 ($n= 9$; 8.3%), 21 ($n= 17$; 15.7%), 22 ($n= 58$; 53.7%), 23 ($n= 17$; 15.7%), and 24 ($n= 2$; 1.9%). The male respondents ($n= 45$; 41.7%) and female ($n= 63$; 58.3%). In terms of ethnicity, the majority of the respondents were Chinese ($n= 100$; 92.6%). The remaining respondents included Indians ($n= 6$; 5.6%), Malay ($n= 1$; 0.9%), and other ethnic groups ($n=1$; 0.9%). Regarding religion, the majority of respondents were Buddhists ($n= 80$; 74.1%). Other religions represented in the survey included Christian ($n= 22$; 20.4%), Hinduism ($n= 4$; 3.1%), and others religion ($n= 1$; 0.9%).

Additionally, the majority of the participants in the survey were from Universiti Tunku Abdul Rahman (UTAR) (52.7%), followed by Tunku Abdul Rahman University of Management and Technology (TAR UMT) (13.8%), Sunway College (5.5%) and YPC International College (5.5%) and other universities or colleges. The remaining respondents were from a diverse range of universities and colleges, including International Medical University (IMU), Inti International University, Asia Pacific University of Technology & Innovation (APU), New Era Institute of Vocational and Continuing Education, LimKokWing University, Multimedia University (MMU), UCSI University, Universiti Sains Malaysia, and others.

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Table 4.4*Descriptive Statistic of Participants*

	<i>n</i>	%	M	SD
Gender			1.58	.495
Male	45	41.7		
Female	63	58.3		
Age				
19	5	4.6		
20	9	8.3		
21	17	15.7		
22	58	53.7		
23	17	15.7		
24	2	1.9		
Ethnicity			2.06	.314
Malay	1	.9		
Chinese	100	92.6		
Indian	6	5.6		
Others	1	.9		
Religion			2.46	.858
Muslim	1	.9		
Buddhist	80	74.1		

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	<i>n</i>	%	M	SD
Hindu	4	3.7		
Christian	22	20.4		
Others	1	.9		
University				
<i>Asia Pacific University of Technology & Innovation (APU)</i>	2	1.9		
<i>International Medical University (IMU)</i>	4	3.7		
<i>INTI International University</i>	3	2.8		
<i>Kompas International College (KIC)</i>	1	0.9		
<i>LimKokWing University</i>	1	0.9		
<i>Multimedia University (MMU)</i>	1	0.9		
<i>New Era Institute of Vocational and Continuing Education</i>	2	1.9		
<i>Sunway College</i>	6	5.5		
<i>Tunku Abdul Rahman University of Management and Technology (TAR UMT)</i>	15	13.8		
<i>UCSI</i>	2	1.9		
<i>Universiti Malaya</i>	2	1.9		
<i>University Sains Malaysia</i>	2	1.8		
<i>Universiti Tunku Abdul Rahman (UTAR)</i>	58	52.7		

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	<i>n</i>	%	M	SD
<i>Universiti Tun Hussein Onn Malaysia (UTHM)</i>	1	0.9		
<i>Universiti Teknologi Malaysia (UTM)</i>	1	0.9		
<i>Universiti Teknikal Malaysia Melaka (UTeM)</i>	1	0.9		
<i>Universiti Utara Malaysia (UUM)</i>	1	0.9		
<i>YPC International College</i>	6	5.5		

Data transformation

There were 2 instruments used in the current study that had reverse-scored items. Firstly, the reverse-scored items in Brief Self-Control Scale (BSCS) were items 1, 6, 8 and 11. Higher scores indicated higher levels of self-control for the reverse items. Secondly, Short Grit Scale (Grit-S) were items 1, 3, 5 and 6 are reverse items which higher scores indicated lower levels of grit. Specifically, the score of 1 was reversed to 5; 2 was reversed to 4; 3 was reversed to 3; 4 was reversed to 2 and 5 was reversed to 1. After the data transformation, the total score was computed to proceed to further statistical analysis.

Multiple Linear Regression Assumptions***Type of variables***

The variables involved in current research are continuous, it appears that they satisfy the assumptions needed for multiple linear regression. Thus, the assumption has been met.

Independent

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Each respondent's values were collected independently of the values obtained from other respondents, indicating that the assumption of multiple linear regression was satisfied.

Independent Errors

The residual assumption in current study was being examined by applying the Durbin Watson statistic that showed in Table 4.5. The Durbin-Watson statistic value in our study was 1.683, which is within the acceptable range 1.5 to 2.5 (Maxwell & David, 1995), and we can state that the residuals have relative independence and there is no serial correlation between them. Thereby, satisfying the assumption of Multiple Linear Regression.

Table 4.5

Model Summary of Predictors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.727	.528	.519	.738	1.683

Note: Predictors: (Constant), Self-control, Grit
Dependent Variable: Academic Procrastination

Multicollinearity

The indicators of the Variance Inflation Factor (VIF) and tolerance were employed to notice multicollinearity for the three independent variables, namely self-control and grit. No multicollinearity is considered, when the result of VIF is not higher than 5 to 10; the result of tolerance is not lower than 0.1 to 0.2 (Kim, 2019; Senaviratna & A. Cooray, 2019). The result of VIF for self-control and grit were the same value which is 3.045, the results were not higher than 5 to 10. Besides, both of the tolerance values for self-control and grit were .328, it

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is not lower than 0.1 to 0.2. The values of VIF and tolerance for each independent variable may be evidence that no multicollinearity problem has arisen. (refer to Table 4.6).

Table 4.6

Collinearity Statistics

	Tolerance	VIF
Grit	.328	3.045
Self- Control	.328	3.045

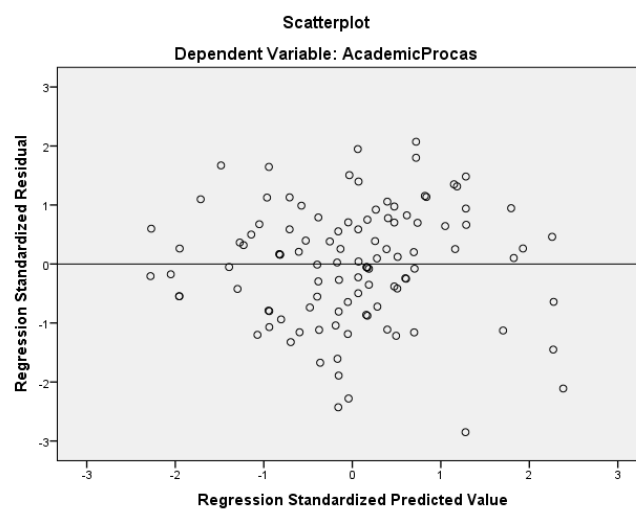
Note: Dependent Variable: Academic Procrastination

Homogeneity of Variances, Linearity of Residuals, and Multivariate Normality

Based on the Figure 4.1, the residuals that showed in the scatterplot were randomly and evenly distributed. The three underlying assumptions of multiple linear regression analysis have been satisfied.

Figure 4.1

Scatterplot Showed Homoscedasticity, Normality of Residuals, and Linearity of Residuals among Variables



Inferential Statistics

H₁: There is a significant negative relationship between self-control and academic procrastination among undergraduates in Malaysia.

The correlation between self-control and academic procrastination was computed using Pearson Correlation. Table 4.7 showed that academic procrastination negatively correlates with self-control, $r(106) = -.727, p < .001$ among undergraduates in Malaysia. Result showed that the lower the self-control were more likely to academic procrastination.

Table 4.7

Pearson Correlation between Self-control and Academic Procrastination

		Academic Procrastination
Self-control	Pearson Correlation	-.727**
	Sig. (2-tailed)	.000
	<i>N</i>	108

Note. ** correlation is significant at the 0.001 level (2-tailed).

H₂ : There is a significant negative relationship between grit and academic procrastination among undergraduates in Malaysia.

Pearson Correlation was computed to determine the correlation between grit and academic procrastination. Table 4.8 presented that academic procrastination was negatively correlated with grit, $r(106) = -.601, p < .001$ among undergraduates in Malaysia.

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Table 4.8*Pearson Correlation between Grit and Academic Procrastination*

		Academic Procrastination
Grit	Pearson Correlation	-.601**
	Sig. (2-tailed)	.000
	<i>N</i>	108

Note. ** correlation is significant at the 0.001 level (2-tailed).

H₃ : There is a significant positive relationship between self-control and grit among undergraduates in Malaysia.

The results of the Pearson's correlation revealed that the relationship between self-control and grit was a significant and positive correlation, $r(106) = .819, p < .001$ among undergraduates in Malaysia.

Table 4.9*Pearson Correlation between Self-control and Grit*

		Grit
Self-control	Pearson Correlation	.819**
	Sig. (2-tailed)	.000
	<i>N</i>	108

Note. ** correlation is significant at the 0.001 level (2-tailed).

Multiple Linear Regression Analysis

H₄ : Self-control and grit are the significant predictors for academic procrastination among undergraduates in Malaysia.

Multiple linear regression was performed to analyze whether self-control and grit significantly predicted academic procrastination among Malaysian undergraduates.

Preliminary analyses were conducted to ensure no violation of the assumptions of normality of residuals, linearity of residuals, multicollinearity, homoscedasticity, independence of residuals, and multivariate outliers. As the ANOVA Table 4.1.1 showed the result, the regression model was statistically significant, $F(2, 105) = 58.747, p < .001$ and it accounted for 51.9% of variances, indicating a large effect size (Cohen, 1988). Moreover, it was found that self-control ($\beta = -1.088, p < .001$) is significantly predicted academic procrastination among undergraduates in Malaysia (refer to Table 4.1.1) but not grit ($\beta = -.026, p = .875$) predicted academic procrastination among undergraduates in Malaysia.

Table 4.1.1

ANOVA Table for the Regression Model

Model		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
1	Regression	63.969	2	31.985	58.747	<.001
	Residual	57.167	105	.544		
	Total	121.136	107			

Note. $R^2 = .528, Adjusted R^2 = .519$

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Table 4.1.2*Table for the Regression Coefficient*

Model		Std. β	t	p
1	(Constant)	6.391	19.050	.000
	Grit	-.026	-.157	.875
	Self-control	-1.088	-6.083	.000

Note. Dependent Variable: Academic Procrastination

Chapter V

Discussion and Conclusion

Discussion

H₁: There is a significant negative relationship between self-control and academic procrastination among undergraduates in Malaysia.

The results of current study revealed that there was a significant and negative relationship between self-control and academic procrastination. Hence, this hypothesis is supported. The present study showed that lower levels of self-control increased academic procrastination, which is consistent with previous research findings (Ferdian Farhan, 2020; Liu et al., 2020; Marliyah et al., 2020). Based on Uzun et al. (2020), study suggested that people's thoughts and beliefs about themselves play a significant role in regulating their behavior, which ultimately has a direct impact on their tendency to procrastinate.

Additionally, author also mentioned that students who procrastinate have difficulty regulating their behavior, cognition, and motivation, which results in delaying tasks not because of a lack of planning or awareness of consequences, but because of a depletion of energy and willpower, making it challenging to start and finish tasks within the given timeframe (Park & Sperling, 2012).

A study by Wijaya and Tori (2018) also found that self-control has negative and significant correlation with academic procrastination. According to Gollwitzer et al. (2010), study stated that the act of procrastination in students involves three main stages. Firstly, initiating a task can be hindered by the temptation of engaging in more enjoyable activities, such as spending time with friends, which a student with low self-control may struggle to resist. Secondly, staying on track with a task, such as writing a paper, requires consistent

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effort and focus over an extended period, which can be difficult for those with poor self-control, as they may succumb to any distractions that arise. Thirdly, completing a complex task or assignment can be challenging, and students with low self-control may easily give up or make excuses to abandon the task. Hence, high-resource goals, such as long-term projects that require a high level of self-control, can lead to cognitive overload and ego depletion, which can cause students to feel depleted and unable to continue working towards their goal.

H₂ : There is a significant negative relationship between grit and academic procrastination among undergraduates in Malaysia.

The results of current study showed that there is a significant and negative relationship between grit and academic procrastination. Therefore, this hypothesis was supported. The results of the past studies done by Littrell (2016) and Poh et al. (2019) were consistent with present study which revealed that academic procrastination had a negative relationship with grit. According to the past research conducted by Wyszynska et al. (2017), an individual who with a higher level of grit personality may prefer to exhibit lower levels of procrastination. This is because grit personality traits can motivate individuals to persistently pursue their goals, even though grit itself is not considered a direct cause of proactive behavior. Therefore, grit can help people control intentional task delay, as well as improve their self-efficacy and productivity (Xian & Ying, 2022). Furthermore, findings concluded that procrastination is not solely caused by a lack of planning or an inability to recognize negative consequences, but rather, is often attributed to a person's low levels of energy and willpower (Wijaya & Tori, 2018). Hence, individuals with grit personality traits tend to procrastinate less because they have a persistent mindset and work hard towards their goals, even if there is no immediate reward. This means that they are able to stay motivated and

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focused on what they want to achieve, without needing someone or something else to motivate them.

H₃ : There is a significant positive relationship between self-control and grit among undergraduates in Malaysia.

The current study indicated that self-control was positively correlated with grit among undergraduates in Malaysia, which supports the third hypothesis. The current study was in line with few past research (Hwang et al., 2017; Kannangara et al., 2018; Suzuki et al., 2015) which means that individuals with high levels of grit are likely to possess strong self-control and can effectively resist temptations (Duckworth & Gross, 2014). Self-control and grit play a significant role in determining various desirable outcomes for college students. Therefore, individuals who have less self-control and grit are more likely to engage in disruptive behaviors that divert their attention away from their objectives. Moreover, Duckworth and Gross (2014) suggested that self-control is closely linked to grit, which involves sustained effort towards long-term goals. Thus, someone who has grit is more likely to resist the temptation of immediate gratification that could hinder their progress towards achieving their long-term goals. This concept is associated with delayed gratification, as described by Mischel (2014).

Although grit involves having self-control, it's not just about being able to resist temptation in the moment. Grit also includes the ability to keep pursuing long-term goals, even when faced with setbacks or obstacles (Hoyle & Davisson, 2016). Based on the current result, a student who has high levels of self-control is likely to be better equipped to manage their time effectively and resist distractions in order to study for exams or complete assignments. This ability to stay focused and disciplined over time is also a key aspect of grit. In turn, someone with grit is more likely to persist in the face of challenges and setbacks,

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which requires a significant amount of self-control and self-regulation. Therefore, it's not surprising that there is a positive correlation between these two traits, as they both contribute to an individual's success in achieving their goals.

H₄ : Self-control and grit are the significant predictors for academic procrastination among undergraduates in Malaysia.

Our study, similar to previous research (Attia & Abdelwahid, 2020; Wejkum, 2018), found that self-control which are significant predictors of academic procrastination among undergraduates in Malaysia. Previous studies (Duckworth et al., 2007; Eskreis-Winkler et al., 2014; Robertson-Kraft & Duckworth, 2012) have demonstrated that self-control predicts academic achievement and expected success, which are often linked to procrastination. This is because having a sense of control over starting and completing tasks are crucial aspects of prioritizing and scheduling. In other words, ineffective self-management, such as procrastination, can result from a lack of perceived control and grit over regulating one's work. Therefore, an individual's belief in their ability to manage tasks can impact their tendency to procrastinate. However, this study showed grit as a positive and non-significant predictor for academic procrastination. In contrast to past findings (Attia & Abdelwahid, 2020; Wolters & Hussain, 2015). According to Wolters and Hussain (2015) demonstrated that individuals with grit exhibit improved self-control. As a result, individuals with higher levels of grit are less likely to procrastinate when it comes to academic tasks, which do not align with our current study and the fourth hypothesis was not supported. Maddi et al. (2017) reported that a study conducted on military cadets indicates that grit is not significantly associated with their academic or overall performance. As a result, the authors do not propose that grit should be evaluated as part of the selection process for military academy admission.

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This suggests that previous research on the correlation between grit and various outcomes has produced inconsistent findings.

Implications

Theoretical Implication

The present study investigated (1) the relationship between self-control and academic procrastination, (2) the relationship between grit and academic procrastination, (3) the relationship between self-control and grit, and (4) self-control and grit as predictors of academic procrastination by using the framework of self-regulation theory developed by Zimmerman (2001).

According to the results of the study, the theory supported that self-control was significantly negatively correlated with academic procrastination, which was consistent with the past study (Saed, 2019) on the self-regulation theory, which indicated that individuals who struggle with maintaining self-control and self-regulation often find themselves easily distracted by pleasurable external stimuli. Moreover, grit has been found to be negatively associated with academic procrastination (Duckworth & Quinn, 2009), which showed a similar result to the current study. Furthermore, the current study showed that self-control was positively associated with grit. Based on the theory of self-regulation, it is stated that self-control encourages delayed satisfaction and directly controls thoughts, emotions, and impulses (Oriol et al., 2017), while grit and learning self-regulation have a positive correlation proven by past research (Angela et al., 2020). Thus, based on the findings, improving self-control and grit may be effective interventions for addressing academic procrastination among undergraduate students in Malaysia.

Besides, the results showed that self-control and grit were significant correlated with academic procrastination, supporting the self-regulation theory's proposition that individuals

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who struggle with self-regulation are more likely to procrastinate. Students with higher levels of self-control and grit were found to be less likely to procrastinate academically and achieve higher academic performance (Duckworth et al., 2016). Additionally, previous research that identified self-control and grit as critical factors in academic success (Duckworth et al., 2016; Duckworth & Quinn, 2009) which was not consistent with the forth hypothesis. Due to the limited research in this area, there is a need for further research to identify how more stable patterns of self-control and grit relate to one another and contribute to different domains of academic success which could become an advanced source in the literature field.

Hence, the present study's findings contribute to the self-regulation theory by highlighting its potential for evaluating the link between self-control, grit, and academic procrastination. The significant results regarding the role of self-control and grit in academic procrastination support the theoretical aspects of the self-regulation theory and establish it in this research area as an advanced resource. Specifically, this study provides valuable information for further research regarding self-control, grit, and academic procrastination, as there is limited research in the Malaysian context.

Practical Implication

The current study contributes to the database of research for future use, particularly on the factors associated with academic procrastination among undergraduate students in Malaysia. The study sheds light on the importance of self-control and grit in mitigating academic procrastination, and highlights the factors that contribute to academic procrastination. The findings of this study have practical implications for psychologists and professionals working in higher education. With a better understanding of the underlying factors influencing academic procrastination, interventions and programs can be developed to enhance self-control and grit in students. For instance, adopting a growth mindset, developing

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self-management plan and setting short- and long-term goals, can be particularly effective in this regard. It is clear that self-control and grit are important for college students. Based on our review of the literature and findings of this study, the study also aligns with previous research Duckworth and Gross (2014) that self-control and grit overlap in terms of their connection to goals and determination. short-term goals require self-control, while long-term goals require grit to overcome setbacks and challenges. By focusing on improving both of these traits, undergraduate students can better prioritize their academic goals and avoid procrastination, leading to improved academic performance and future career prospects.

Moreover, future studies can build on these findings by developing and testing interventions aimed at improving self-control and grit in undergraduate students. By doing so, higher education professionals can create a supportive environment that enables students to achieve their academic goals and succeed in their future careers. Lastly, to enhance the accuracy and reliability of their findings, future researchers could augment self-reported assessments of procrastination, which were utilized in the present study, by integrating behavioral measures of procrastination into their research methodology.

Limitations

Every research study has its own limitations, and it is essential to acknowledge and address these limitations to ensure the accuracy, validity, and reliability of the research findings. Firstly, the limitation of this study is **using purposive sampling** in our study. It is a non-probability sampling technique that involves selecting participants based on the inclusion and exclusion criteria that meet the requirements of the study. While it may seem like an easy and cost-effective way to gather data, it comes with several limitations that can affect the reliability and validity of the research findings (Andrade, 2020). One significant limitation is that purposive sampling may lead to biased results since it only focuses on a selected group

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of people (Rai, 2016) such as undergraduates or a selected ethnic group. For instance, in this study, most of the respondents will be Chinese then followed by Indian and Malay. It may not accurately reflect the views or opinions of the larger population of the study. Therefore, the generalizability of the findings to the broader population may be limited, which can undermine the credibility and applicability of the study.

In addition, **self-report** is a common method of data collection in research studies, which involves participants reporting their thoughts, feelings, attitudes, and behaviors through questionnaires or interviews by themselves (Demetriou et al., 2015). Cannot be denied that it can be a useful tool to collect data quickly and easily, but it has some limitations that can affect the validity and reliability of the results. One of the main limitations of self-report is that it relies on participants' honesty and willingness to provide accurate and truthful responses (Brutus et al., 2012). However, some participants may intentionally deceive or misrepresent their responses to either please the researcher or conceal their true thoughts and behaviors. Additionally, self-report measures may also suffer from response bias, where participants may provide socially desirable responses instead of their true feelings or opinions (Rosenman et al., 2011). The online surveys may not provide an opportunity for the researcher to clarify ambiguous questions or assess the participant's understanding of the question. It may also be difficult to verify the accuracy of the responses provided, which can affect the reliability of the data collected.

Moreover, **the language of our questionnaire** will also be one of the limitations. If the respondents are not clear about the meaning of some of the questions or some esoteric words that are being used, then the respondents will probably choose to randomly pick an answer as their response rather than choose to ask or look for the meaning. Therefore, this may cause the reliability and validity of the study being questioned.

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The design of the study also will be one of the limitations. This is because **cross-sectional design only collects the data once** (Thomas, 2022). It will be less accurate since everyone will just record down the feelings or opinions during the specific time they answer the questionnaire (Wang & Cheng, 2020). For instance, maybe the behaviour of procrastination was not that obvious or serious while the respondent answered the survey, but after maybe two weeks the deadlines are near then the procrastination behaviour becomes more severe. Therefore, cross-sectional study design will be less suitable to use to study on the variables that will change over time quickly such as happiness or self-control.

Lastly, there was limited research to become the references for current study. There were limited journal articles that examined the relationship among self-control, grit and academic procrastination in the same study. As stated in the literature review, there are no journals that study the same topic like what this study did. There were also limited studies that examined the relationship among self-control and grit and also grit and academic procrastination. Since the term, grit is considered as a relatively new term while studying with other variables. Therefore, one of the limitations will be there are limited studies and findings that can support our results or can be referred to as the references when we discuss the hypotheses.

Recommendations

Here are a few recommendations for future research to view as references are being discussed. The first recommendation will be considering **using probability sampling methods such as stratified sampling method**. Stratified sampling involves dividing the population into different subgroups or strata based on relevant characteristics such as age, gender, ethnicity, or education level, and then selecting a random sample from each stratum (Hayes, 2022). This approach ensures that each subgroup is represented in the sample, which

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can increase the generalizability of the findings to the broader population (Arnab, 2017; Thomas, 2022). Therefore, by using stratified sampling, the researcher can select a certain group of people in the populations and divide them into different subgroups and collect a certain amount of the responses in each subgroup. There are equal chances for the people in the selected subgroup being chosen. For instance, the researcher can divide the undergraduates into different subgroups based on ethnicities and collect an equal amount of responses from different ethnicities and this can enhance the credibility and applicability of the study findings.

Besides that, to mitigate the limitations of self-report data collection, it is recommended to **include validity checks questions** within the questionnaire design. This can be achieved by including questions that require participants to select a specific response (e.g., "please choose 'disagree' for this question"), which will indicate that they have read and understood the question. It is also important to use clear and unambiguous language in the questions to minimize response bias.

Furthermore, highly recommend that the **questionnaire be made in dual language**, which is available in both Chinese and English. Given that most respondents are more comfortable with Chinese, providing the questionnaire in both languages will enable them to fully understand and engage with the questions. This will not only improve the reliability and validity of the study, but it will also ensure that the data collected is more representative of the respondents' true thoughts and opinions.

In addition, to address the limitation of the cross-sectional design in studying variables that change over time quickly, it is recommended to **use a longitudinal study design** instead. Collecting data across several months or even years will provide a more accurate understanding of how these variables change and develop over time (Thomas, 2022). This will allow researchers to capture fluctuations in these variables and to better understand

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the factors that influence them (Caruana et al., 2015). Therefore, a longitudinal design should be considered when studying variables that are likely to change over time, as it provides a more comprehensive and accurate understanding of these variables.

Also, to address the limitation of limited research to become the references for the current study, it is recommended to **refer to similar terms or change other more familiar terms**. This approach will expand the pool of literature available for the study, which can then be used as references to support the hypotheses. For instance, since the term "grit" is relatively new, other more familiar terms such as perseverance, or tenacity can be used as proxies to expand the literature available for the study. Additionally, the study can also look into the relationship between self-control, grit, and other related constructs such as self-regulation to further expand the literature available. Therefore, by broadening the scope of the study to include related constructs or using more familiar terms, the study can have a stronger foundation and support for its hypotheses and findings.

Conclusion

In conclusion, the present study was aimed to examine the relationship between self-control, grit, and academic procrastination among undergraduates in Malaysia. The results of the current study indicated that there is a significant and negative relationship between self-control and academic procrastination and also between grit and academic procrastination. Also, the findings revealed that there is a significant and positive relationship between self-control and grit. For the predictors, self-control is a significant predictor of academic procrastination but grit is not a significant predictor of academic procrastination.

The results of the current study are mostly aligned and consistent with the previous research except the grit is not a significant predictor of academic procrastination which contrasts with the previous research. Additionally, there is still a lack of research that

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examines the relationship between self-control, grit and academic procrastination.

Nevertheless, the results in this study had contributed to the literature gap by providing a better understanding of the relationship between self-control, grit and academic procrastination. Also, the current study can also become a reference for future researchers to look a little deeper about this topic in their studies.

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SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

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SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendices**Appendix A****Questionnaire**

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(001234)

Consent Form

**UNIVERSITI TUNKU ABDUL RAHMAN
FACULTY OF ARTS AND SOCIAL SCIENCE (FAS)
BACHELOR OF SOCIAL SCIENCE (HONS) PSYCHOLOGY
UAPZ3023 Final Year Project II Year 3 Trimester 3 (202301)**

Introduction

The questionnaire is designed to find out the relationship between academic procrastination, self-control, and grit among undergraduates in Malaysia. This study is done to fulfill the requirements of subject UAPZ3023 Final Year Project II. In order to collect the required information, your participation in this research study is highly appreciated.

Procedures and Confidentiality

The questionnaire consists of 4 sections A to C and you will be asked to fill in your demographic details in the first section, followed by completing the questionnaire which consists of 25 questions. You will take approximately 10-15 minutes to complete this survey.

Participation

Your participation in this study is voluntary. You may choose not to participate or to withdraw from the study at any point in time without any prejudice or penalty charged. Your responses will be coded numerically in the research assignment for the research interpretation.

Consent II

Personal Data Protection Statement

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:-

- For assessment of any application to UTAR
- For processing any benefits and services
- For communication purposes
- For advertorial and news
- For general administration and record purposes
- For enhancing the value of education
- For educational and related purposes consequential to UTAR
- For the purpose of our corporate governance
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.
2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
3. You may access and update your personal data by writing to us at :
puikeicheow0502@utar.my (Cheow Pui Kei)
joyee26@utar.my (Lim Jo Yee)
yap.yee.qi@utar.my (Yap Yee Qi)

Acknowledgment of Notice

- I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.
- I disagree, my personal data will not be processed.

Demographic

Age :

Gender :

- Male

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Female

Ethnicity :

Malay

Chinese

Indian

Others :

Religion :

Muslim

Buddhist

Hindu

Christian

Others :

Please select your nationality

Malaysian

Non-Malaysian

Please state which university are you from?

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

--

Section A

The following items are designed to assess academic procrastinators and academic non-procrastinators among undergraduate students. It is important that your answers be true and accurate for you. From 1 (Disagree) to 5 (Agree), choose a number that best describes your answer to each question. There are no right or wrong answers.

	Disagree (1)	Slightly Disagree (2)	Neutral (3)	Slightly Agree (4)	Agree (5)
1. I put off projects until the last minute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I know I should work on schoolwork, but I just don't do it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I get distracted by other, more fun, things when I am supposed to work on schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When given an assignment, I usually put it away and forget about it until it is almost due.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I frequently find myself putting important deadlines off.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section B

The following items are designed to assess self-control among undergraduate students. It is important that your answers be true and accurate for you. Rating scale ranging from 1 (Not at all like me) to 5 (Very much like me), choose a number that best describes your answer to each question. There are no right or wrong answers.

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

	Not at all like me (1)	Not much like me (2)	Somewhat like me (3)	Mostly like me (4)	Very much like me (5)
1. I am good at resisting temptation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have a hard time breaking bad habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I am lazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I say inappropriate things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I do certain things that are bad for me, if they are fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I refuse things that are bad for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I wish I had more self-discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. People would say that I have iron self-discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Pleasure and fun sometimes keep me from getting work done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I have trouble concentrating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I am able to work effectively toward long-term goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Sometimes I can't stop myself from doing something, even if I know it is wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I often act without thinking through all the alternatives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section C

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

The following items are designed to access grit among undergraduate students. It is important that your answers be true and accurate for you. Rating scale ranging from 1 (Not like me at all) to 5 (Very much like me), choose a number that best describes your answer to each question. There are no right or wrong answers.

	Not like me at all (1)	Not much like me (2)	Somewhat like me (3)	Mostly like me (4)	Very much like me (5)
1. New ideas and projects sometimes distract me from previous ones.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Setbacks don't discourage me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I have been obsessed with a certain idea or project for a short time but later lost interest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am a hard worker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I often set a goal but later choose to pursue a different one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I finish whatever I begin.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I am diligent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix B

Sample Size Calculation

Self-control and academic procrastination

$$f^2 = \frac{R^2}{1-(R^2)}$$

$$f^2 = \frac{(-0.361)^2}{(1-(-0.361)^2)}$$

$$f^2 = 0.1498$$

Table 1. Results of Self Control Relations with Academic Procrastination

		Correlations	
		KD	Y
KD	Pearson Correlation	1	-.361**
	Sig. (2-tailed)		.003
	N	65	65
Y	Pearson Correlation	-.361**	1
	Sig. (2-tailed)	.003	
	N	65	65

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

Source: Primary Data, 2019.

Grit and academic procrastination

$$f^2 = \frac{R^2}{1-(R^2)}$$

$$f^2 = \frac{0.110}{(1-0.110)}$$

$$f^2 = 0.1236$$

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Grit, Self-Regulation and Self-Efficacy as Predictors of Academic Procrastination among Nursing Students

	0.005	0.92	0.09	0.10		
Self-efficacy						
Academic procrastination	- 0.39*	0.047	-0.43**	0.000	-0.81**	0.000

**Highly statistically significant at $p < 0.01$

Table (4): demonstrates that,grit, self-regulation and self-efficacy were predictors of academic procrastination, particularly self-efficacy was responsible for 65.9 % of the variation in academic procrastination compared to 29% for self-regulation and 11% for grit ($R^2= 0.659$, $R^2= 0.290$, & $R^2 = 0.110$, respectively).

Table (4): Regression analysis to study the independent factors affecting academic procrastination (n=324)

	R	R ²	Unstandardized coefficient		t	Sig.
			B	Std. error		
Grit	0.321	0.110	0.215	0.047	4.960**	0.000
Self-regulation	0.541	0.290	0.509	0.051	9.320**	0.000
Self-efficacy	0.812	0.659	2.263	0.090	25.00**	0.000

Figure (1): portrays that more than half of students had high levels of procrastination, self-efficacy, grit and self-regulation (67%, 52%, 55.5% & 53% respectively)

Self-control and grit

$$f^2 = \frac{R^2}{1-(R^2)}$$

$$f^2 = \frac{(0.523)^2}{1-(0.523^2)}$$

$$f^2 = 0.3765$$

TABLE 3 | Correlations between grit and other measures taken using the total grit score.

Variable	1	2	3	4
1. Grit	—			
2. Self-control	0.523**†	—		
3. Well-being	0.384**	0.279**	—	
4. Perceived stress	-0.105*	-0.148**	-0.308**	—

*Significant at <0.05 , **significant at <0.001 .

$$f^2 = \frac{0.1498 + 0.1236 + 0.3765}{3}$$

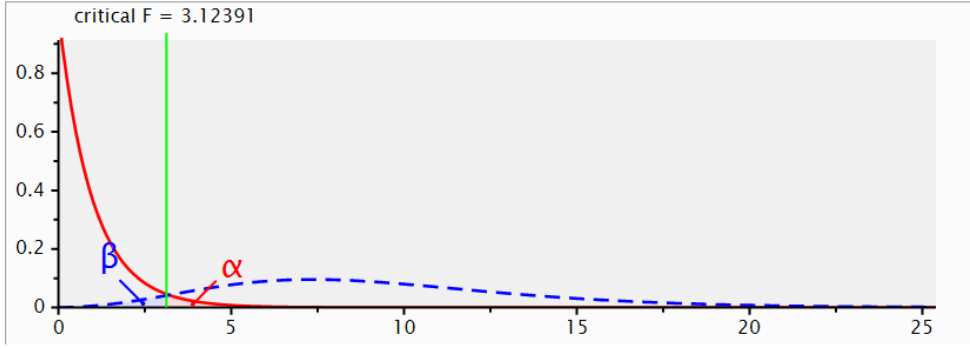
$$f^2 = 0.2166$$

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

G*Power 3.1.9.7

File Edit View Tests Calculator Help

Central and noncentral distributions Protocol of power analyses



critical F = 3.12391

Test family: F tests

Statistical test: Linear multiple regression: Fixed model, R² deviation from zero

Type of power analysis: A priori: Compute required sample size – given α , power, and effect size

Input Parameters

Determine =>

Effect size f^2	0.2166
α err prob	0.05
Power (1- β err prob)	0.95
Number of predictors	2

Output Parameters

Noncentrality parameter λ	16.2450000
Critical F	3.1239074
Numerator df	2
Denominator df	72
Total sample size	75
Actual power	0.9516649

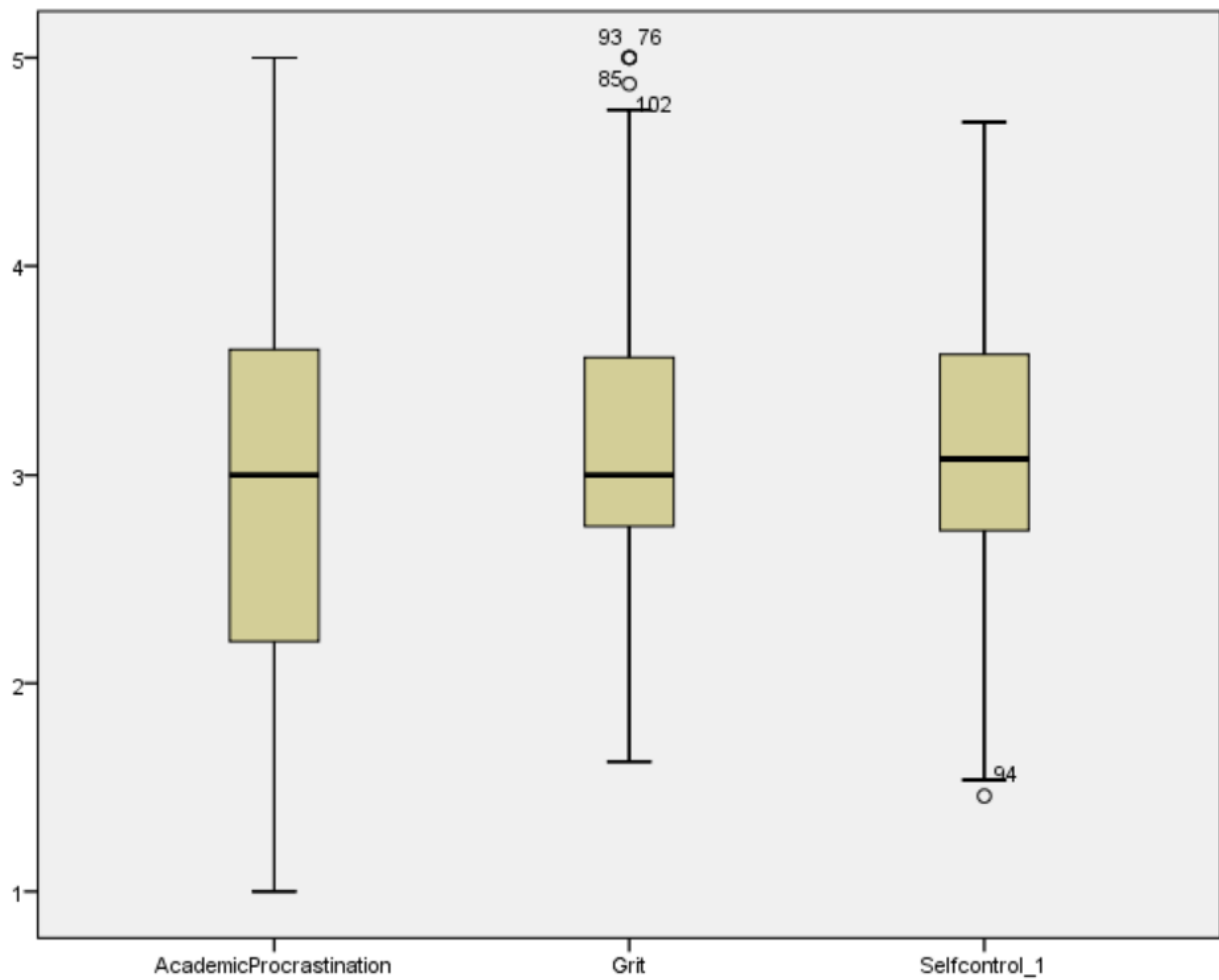
X-Y plot for a range of values

Calculate

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix C

Box Plot

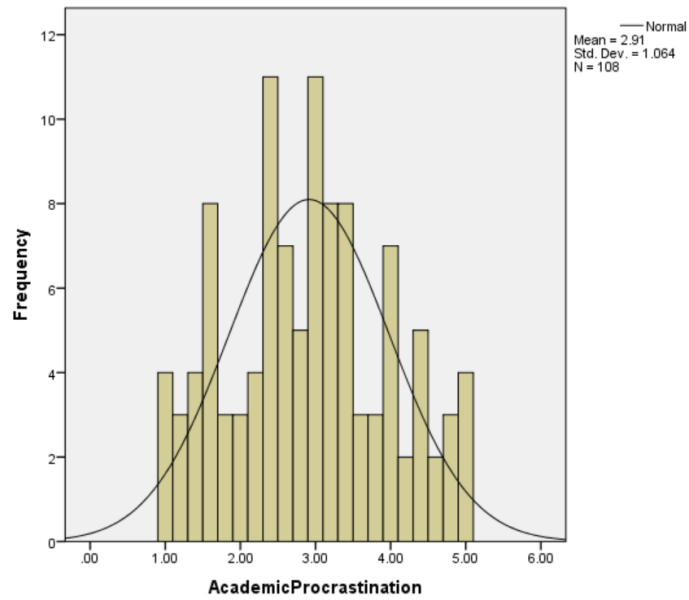


SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

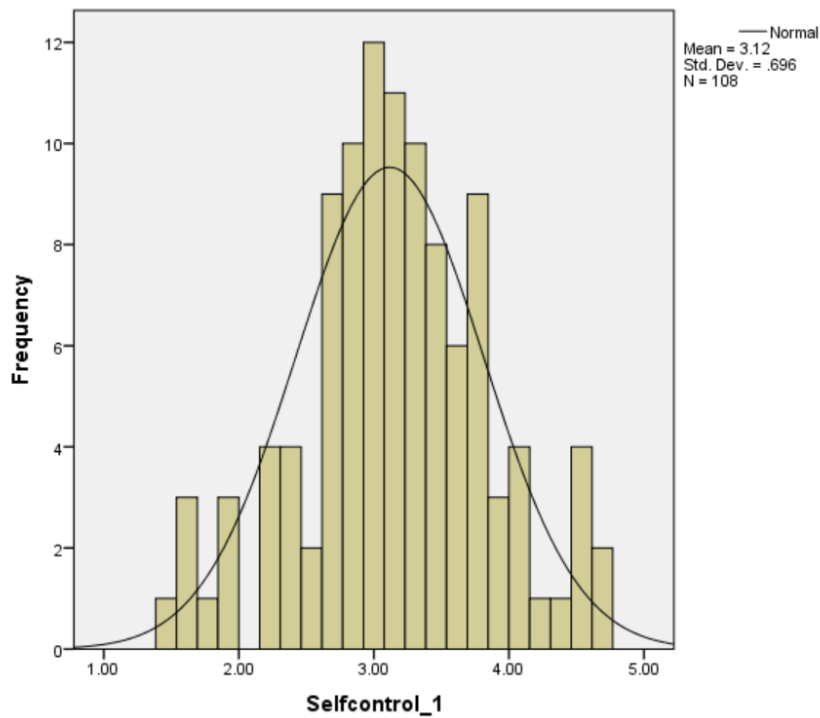
Appendix D

Histogram

Academic Procrastination

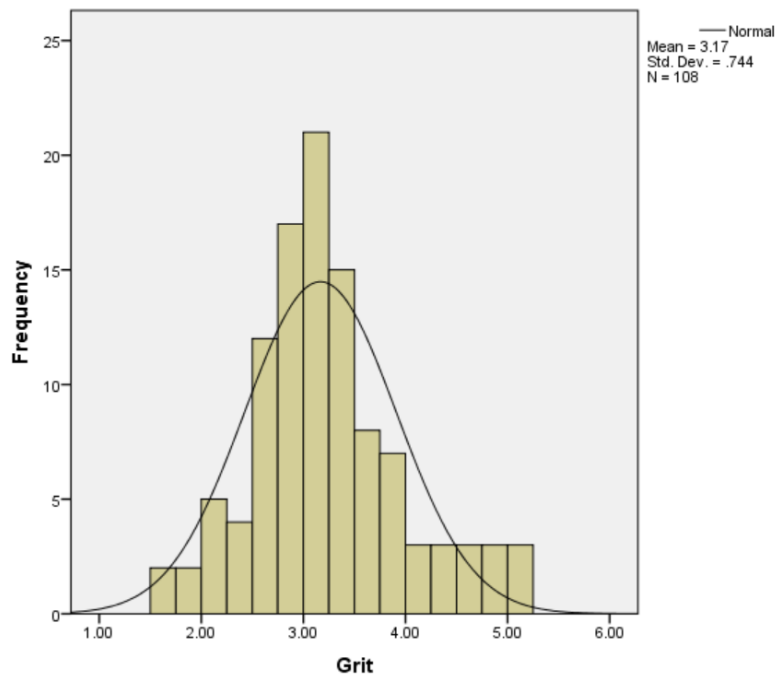


Self-control



SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Grit

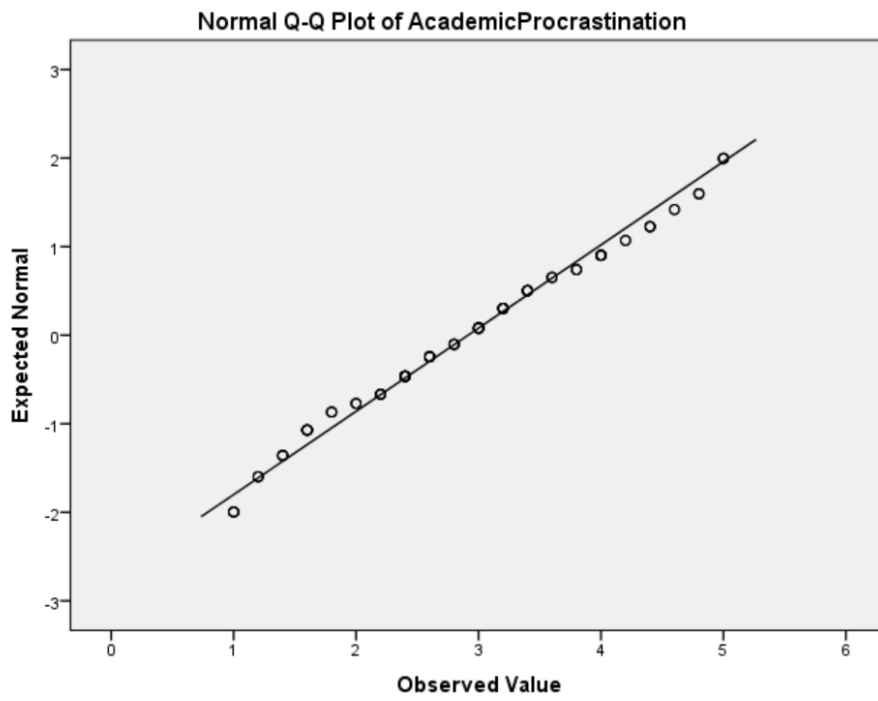


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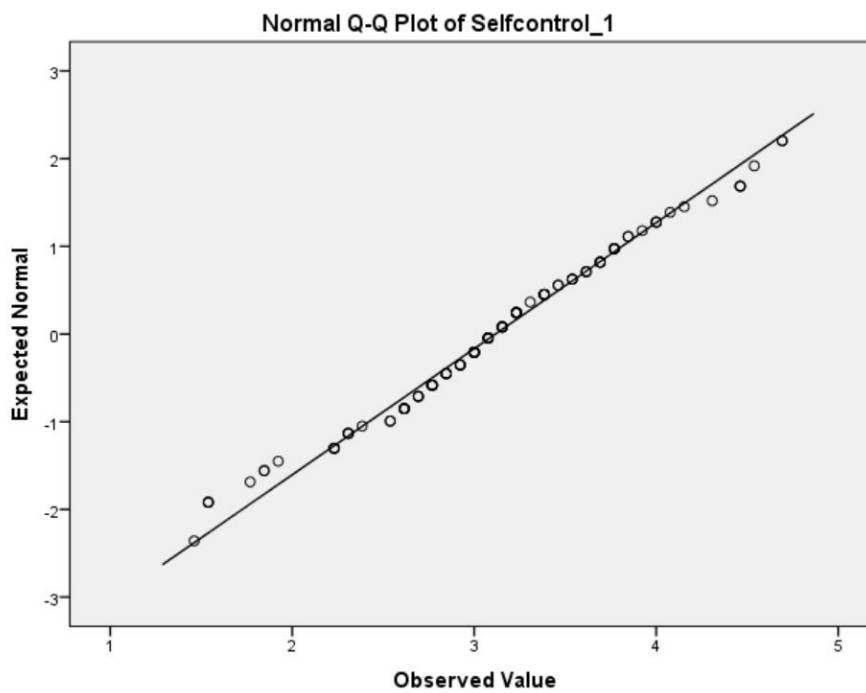
Appendix E

Q-Q Plot

Academic Procrastination

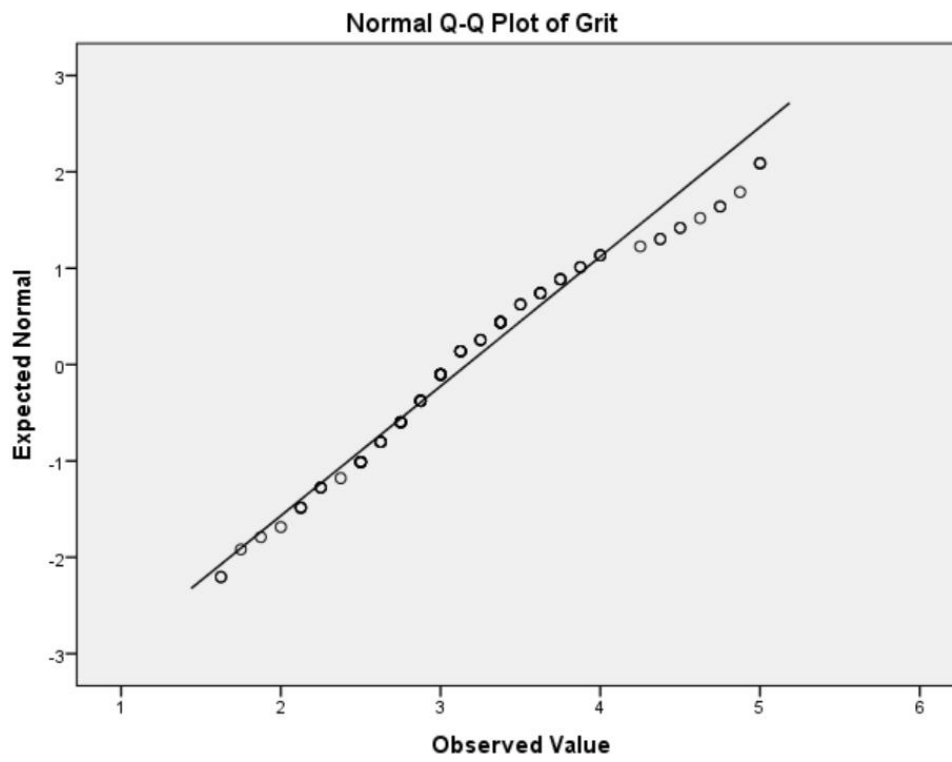


Self-control



SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Grit



SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix F**SPSS output: Reliability**

Academic Procrastination

Reliability Statistics

Cronbach's Alpha	N of Items
.845	5

Self-control

Reliability Statistics

Cronbach's Alpha	N of Items
.859	13

Grit

Reliability Statistics

Cronbach's Alpha	N of Items
.813	8

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix H

SPSS output: Kolmogorov-Smirnov

Academic Procrastination

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AcademicProcrastination	.068	108	.200 [*]	.973	108	.028

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Self-control

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Selfcontrol_1	.074	108	.186	.984	108	.230

a. Lilliefors Significance Correction

Grit

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Grit	.116	108	.001	.964	108	.005

a. Lilliefors Significance Correction

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix I

SPSS Output: Multivariate Outliers

Casewise Diagnostics^a

Case Number	Std. Residual	AcademicPro cas	Predicted Value	Residual
9	-2.428	1.00	2.7919	-1.79187
30	2.071	5.00	3.4715	1.52845
35	-2.280	1.20	2.8822	-1.68218
62	-2.851	1.80	3.9033	-2.10334
102	-2.110	3.20	4.7570	-1.55704

a. Dependent Variable: AcademicProcas

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.1517	4.7570	2.9148	.77320	108
Std. Predicted Value	-2.280	2.383	.000	1.000	108
Standard Error of Predicted Value	.072	.230	.117	.038	108
Adjusted Predicted Value	1.1305	4.8611	2.9146	.77522	108
Residual	-2.10334	1.52845	.00000	.73094	108
Std. Residual	-2.851	2.071	.000	.991	108
Stud. Residual	-2.888	2.086	.000	1.004	108
Deleted Residual	-2.15824	1.55038	.00025	.75030	108
Stud. Deleted Residual	-2.995	2.121	-.002	1.013	108
Mahal. Distance	.033	9.415	1.981	1.982	108
Cook's Distance	.000	.106	.009	.014	108
Centered Leverage Value	.000	.088	.019	.019	108

a. Dependent Variable: AcademicProcas

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix J

Correlation Table

Correlations

		AcademicPro cas	Selfcontrol_1	Grit
AcademicProcas	Pearson Correlation	1	-.727**	-.601**
	Sig. (2-tailed)		.000	.000
	N	108	108	108
Selfcontrol_1	Pearson Correlation	-.727**	1	.819**
	Sig. (2-tailed)	.000		.000
	N	108	108	108
Grit	Pearson Correlation	-.601**	.819**	1
	Sig. (2-tailed)	.000	.000	
	N	108	108	108

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

SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix K

Ethical Approval Letter



UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)
Wholly owned by UTAR Education Foundation Co. No. 578227-M

Re: U/SERC/02/2023

10 January 2023

Dr Pung Pit Wan
Head, Department of Psychology and Counselling
Faculty of Arts and Social Science
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak.

Dear Dr Pung,

Ethical Approval For Research Project/Protocol

We refer to the application for ethical approval for your students' research project from Bachelor of Social Science (Honours) Psychology programme enrolled in course UAPZ3013/UAPZ3023. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Personality Traits and Masculinity as Predictors of Homophobia Among Malaysian Young Men	1. Chiew Yee Kuan 2. Esther Ching Qian Han 3. Ling Chai Hong	Dr Chia Qiu Ting	10 January 2023 – 9 January 2024
2.	Social Media Use and Self-esteem as Predictors of the Risk of Experimentation with e-cigarettes Among University Students in Malaysia: Peer Influence as Mediator	1. The Xin Rou 2. Tan Jing Yi Evelyn 3. Yap Xue Li		
3.	"The Soft Things That We Hold Onto" – A Study on the Association Between Attachment Styles, Presence of Transitional Objects and Psychological Security Among Malaysian Young Adults	1. Poon Ying Ying 2. Chow Ya Ying 3. Sam Hei Man		
4.	The Predicting Effects of Attitudes, Subjective Norms, Perceived Behavioral Control on the Intention Towards Food Waste Reduction Behavior Among Malaysian Young Adults	1. Chan Hooi Mai 2. Shirley Lok Xiao Rui 3. Tee Hai Lin	Dr Gan Su Wan	
5.	Parent-Child Relationship, Perceived Social Support, and Perceived Discrimination as Predictors of Well-Being Among LGBTQ Emerging Adults in Malaysia	1. Hew Ying Hui 2. Lee Nie 3. Yashnevaly a/p Govindasamy		
6.	Personal Growth Initiative, Self-efficacy and Social Support as Predictors of Life Satisfaction Among Undergraduate Students in Malaysia	1. Dia Ja Suan 2. Chow Wen Chung 3. Treh Sin Lin	Dr T'ng Soo Ting	
7.	Self-esteem, Locus of Control and Hopelessness as Predictors of Depression Among University Students in Malaysia	1. Cheang Yen Thang 2. Chuah Yue Xuan 3. Kelvin Goh Wei Jin		

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 408 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
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SELF-CONTROL, GRIT AND ACADEMIC PROCRASTINATION

Appendix L

Turnitin Result

fyp II

ORIGINALITY REPORT

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PRIMARY SOURCES

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