



THE RELATIONSHIP BETWEEN PERFECTIONISM, COGNITIVE FLEXIBILITY AND
SUICIDE IDEATION AMONG MALAYSIAN UNDERGRADUATES

ZOE CHNG WOON CHIN

LIEW KEE YEE

TIONG WEI JIE

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Zoe Chng Woon Chin, Liew Kee Yee and Tiong Wei Jie.
Universiti Tunku Abdul Rahman

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ZOE CHNG WOON CHIN

LIEW KEE YEE

TIONG WEI JIE

PERFECTIONISM, COGNITIVE FLEXIBILITY, SUICIDE IDEATION

APPROVAL FORM

This research paper attached hereto, entitled “The Relationship between Perfectionism, Cognitive Flexibility and Suicide Ideation among Malaysian Undergraduates” prepared and submitted by “Zoe Chng Woon Chin, Liew Kee Yee and Tiong Wei Jie” in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

Date: _____

Supervisor

Dr. Ooh Seow Ling

Abstract

The rising of suicide at an alarming rate globally urges the recognition of suicide ideation, which refers to one's desire and interest in suicide. Yet, the role of both perfectionism and cognitive flexibility in suicide ideation remains controversial and unclear to date. Thus, this study was designed to examine the predictive relationship between perfectionism, cognitive flexibility and suicide ideation among Malaysian undergraduates. A quantitative cross-sectional research design was used with three instruments including Frost Multidimensional Perfectionism Scale-Brief (FMPS-B), Cognitive Flexibility Inventory (CFI) and Scale for Suicidal Ideation (SSI), to assess the corresponding variables. The purposive sampling method was employed with specific inclusion criteria to recruit 18 to 25 years old Malaysian undergraduates. A total number of 262 Malaysian undergraduates ($M = 22.18$, $SD = 1.256$) with 53.8% females ($n = 142$) were recruited through online self-reported survey. The results showed that perfectionism positively predicted suicide ideation, in contrast, cognitive flexibility negatively predicted suicide ideation. The present findings provided new insight into the existing literature regarding suicide ideation in the Malaysian context, and the empirical evidence that could serve as a reference for practitioners to sketch effective evidence-based interventions regarding suicide-related issues. Several limitations and recommendations of the study were discussed.

Keywords: Perfectionism, cognitive flexibility, suicide ideation, Malaysian undergraduates

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.

Name : ZOE CHNG WOON CHIN

Student ID : 19AAB05644

Signed :



Date : 22nd August 2022

Name : LIEW KEE YEE

Student ID : 19AAB05886

Signed :



Date : 22nd August 2022

Name : TIONG WEI JIE

Student ID : 19AAB05567

Signed :



Date : 22nd August 2022

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List of Abbreviations

Abbreviations

1. WHO - World Health Organization
2. SDT - Self-Determination Theory
3. BPNT - Basic Psychological Need Theory
4. UTAR - Universiti Tunku Abdul Rahman
5. FMPS-B - Frost Multidimensional Perfectionism Scale-Brief
6. CFI - Cognitive Flexibility Inventory
7. SSI - Scale of Suicide Ideation
8. SPSS - Statistical Package for Social Science
9. VIF - Variance Inflation Value
10. MLR - Multiple Linear Regression

Chapter I

Introduction

Background of Study

Suicide is defined as a fatal self-injurious act committed with the purpose to die (Turecki & Brent, 2016). Suicide and attempted suicides are critical global public health issues and have been of interest to researchers and the public. According to World Health Organization (WHO; 2019), suicide is the second greatest cause of death among people aged 15 to 29 years old. Many countries have revealed a rise in the number of suicides and attempted suicides in recent years. In general, suicidal behaviours include suicide ideation, plans and attempts (Chua & Mogan, 2021). Compared to research about suicide attempts and suicide planning, suicide ideation is an area where researchers have done comparatively little research. Suicide ideation refers to a person's wide range of thoughts, desires, and interests with death and suicide (Harmer et al., 2021). Hence, it is essential to recognise that the study of suicide ideation is vital, as ideation and planning are critical elements in the suicide process. This is because ideation comes before planning, which might lead to one man's death. With that, there is an increased interest in studies of factors related to suicide ideation such as depression (Ibrahim, 2021; Lew et al., 2019; Mustaffa et al., 2014), stress (Ibrahim, 2021; Lew et al., 2019) and anxiety (Bajaj & Makkar, 2020; Briede & Sudraba, 2020).

A study by O'Connor (2007) found that perfectionism, the tendency to demand an exceedingly high degree of performance from others or oneself ("Perfectionism," 2020) is one of the variables that has been connected with suicidal risk, especially among young adults. Generally, perfectionism is shown to be associated with positive effects such as academic achievement, high self-esteem, academic adjustment and social adjustment (Stoeber & Otto, 2006). It also stated that perfectionism has been linked to different ranges of psychological and physical problems such as suicidal ideation, anxiety, depression, substance

abuse, migraine and so on (Flett & Hewitt, 2002b). In addition, the study of Flett and Hewitt (2002a; 2002b) suggested the adaptive aspects of perfectionism are proved to be maladaptive under some stressful conditions. Hewitt et al. (1996) also found that self-oriented perfectionists with excessive motivation and a high level of personal perfectionism experienced a greater level of depression compared with individuals who are not socially prescribed perfectionism. It is explained with an example in the study of Rice et al. (2006), who mentioned that college students with very high levels of personal standards may suffer during the high-stress period of examination week. Similarly, Rice et al. (2006) also suggested that perfectionists have higher chances of having depression when coping difficulties were presented. It also mentioned that individuals with maladaptive perfectionism may experience some dysfunctional cognitions that may contribute to the happening of experiencing homelessness, suicide ideation and depression. This is due to individuals with perfectionism that hold high standards and believe strives to achieve their goals through personal efforts, however, those initiatives are seen as unlikely to exceed expectations or satisfy outcomes. Thus, individuals with perfectionism are more likely to produce hopelessness, depression and other psychological problems while facing stress compared with individuals without perfectionism (Chang & Rand, 2000).

Other than that, Keilp et al. (2001) also suggested that cognitive flexibility is one of the distinguishing features that affect the high or low lethality of suicide attempters. Cognitive flexibility refers to an individual's ability to assess situations objectively and behave in a flexible manner. Adaptability and fair-mindedness are also characteristics of cognitive flexibility ("Cognitive Flexibility," 2020). According to Stahl and Pry (2005), it mentioned that the cognitive flexibility skills of an individual are developed from the learning environment they have grown up in. The cognitive flexibility of an individual will help him or her to generate effective coping strategies against different experiences. It mentioned that

individuals who can be flexible in cognition can create a positive cognition by discovering non-constructive thoughts (Cikrikci, 2018). Individuals who can cope effectively with difficult situations have greater psychological resilience (Phillips, 2011). This is due to the fact that individuals who have higher levels of cognitive flexibility tend to have a good ability to rearrange their cognition as a result of flexibility while confronted with compulsive experiences by effectively utilising the individual cognitive skills that allow them to learn from their mistakes (Schell, 2012). Similarly, a study by Celikkaleli (2014) stated that cognitive flexibility is correlated positively with problem-solving skills, decision making and coping with problem-solving-oriented stress. Therefore, it is believed that individuals with lower levels of cognitive flexibility may experience a greater level of hopelessness as the result of impairment of problem-solving skills, decision making and coping with problem-solving-oriented stress which leads to a higher chance of having suicidal ideation. Studies by Miranda in 2011 and 2013 pointed out cognitive inflexibility increases an individual's vulnerability to suicidal ideation by meditating bigger brooding rumination and hopelessness. From that, we can see that perfectionism and cognitive flexibility are factors related to suicide ideation.

Problem Statement

In Malaysia, the suicide rate has risen in recent years as there were 468 suicide cases reported from January to May 2021, compared to the total of 631 cases in 2020 and 609 cases in 2019 based on the statement released by police ("Malaysia records three daily suicides this year up to May," 2021). Of the recorded 1708 cases, 872 victims were aged between 15 to 18 years old, followed by 668 victims aged 19 to 40 while 168 cases were aged above 40 years old ("Malaysia records three daily suicides this year up to May," 2021). In addition, according to the statistics from The Befrienders Kuala Lumpur, callers who had expressed

their suicidal ideation increased from 34% in 2019 to 40% in 2020 between January to July (Menon, 2021).

In this context, there are studies regarding different factors that are associated with suicide ideation such as depression and stress globally, including in Malaysia (Ibrahim, 2021; Mustaffa et al., 2014). Meanwhile, along with the notable escalation of perfectionism rates among current undergraduates in the United Kingdom, the United States and Canada from 1989 to 2016 (Curran & Hill, 2019), and the importance of cognitive flexibility throughout an individual's life (Sahakian et al., 2021), some Western researchers began to study on perfectionism and cognitive flexibility. Their findings reported a significant association between perfectionism with suicide ideation (Hamilton & Schweitzer, 2000; Hewitt et al., 1992; Shahnaz et al., 2018), and between cognitive flexibility and suicide ideation as well (Hausman et al., 2020; Miranda et al., 2013). Hence, perfectionism and cognitive flexibility are being discussed as the factors correlated to suicide ideation in the Western context over the past few years. However, Smith et al. (2017) pointed out that as the results of inconsistencies in findings between studies, inadequate studies and uncertainty if perfectionism could confer risk for suicide ideation or attempt, the role of perfectionism in suicide may be misunderstood, under-recognized and disregarded. On the other hand, despite the increasing number of studies on cognitive flexibility and suicide ideation or attempt, Lai et al. (2018) mentioned that there are gaps in the understanding of cognitive flexibility in different gradations of suicide ideation.

Due to this situation, suicidal thoughts among Malaysian undergraduates are worth investigating as they tend to set higher goals or expectations for themselves which could affect their psychological well-being (Curran & Hill, 2019). It is because university students need to achieve certain grades for their assignments, extracurricular activities and examinations to successfully graduate. Other than that, they also need to be flexible in

different situations as the learning system in the university is not the same as in secondary schools. In university, everything is on your own. University students need to get the study materials by themselves, meet different friends from semester to semester and take responsibility for the assignment deadlines. Unlike in secondary schools, textbooks and exercise books are provided by teachers, whereas the classmates basically will not change throughout the 5 years. Thus, in this study, we would like to study the relationship between perfectionism, cognitive flexibility and suicide ideation among Malaysian undergraduates.

Research Objectives:

1. To identify the relationship between perfectionism and suicide ideation among Malaysian undergraduate students.
2. To examine the relationship between cognitive flexibility and suicide ideation among Malaysian undergraduate students.

Research Questions

1. Does perfectionism predict suicide ideation positively among Malaysian undergraduate students?
2. Does cognitive flexibility predict suicide ideation negatively among Malaysian undergraduate students?

Research Hypotheses

*H*₁: Perfectionism positively predicted suicide ideation among Malaysian undergraduates.

*H*₂: Cognitive flexibility negatively predicted suicide ideation among Malaysian undergraduates.

Significance of Study

The present study may provide insight into suicide ideation among Malaysian undergraduates by exploring the role both perfectionism and cognitive flexibility have in predicting suicide ideation. Unlike common risk factors of suicide ideation such as depression, anxiety, and stress (Briede & Sudraba, 2020; Ibrahim, 2021; Lew et al., 2019), there is limited study on the predictive relationship between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation in the Malaysian context, especially for Malaysian undergraduates. Typically, university students tend to set higher expectations for their academic performances, so that they can continue their studies in order to have a better job opportunity after graduation. Moreover, there are a lot of challenges during university life such as assignments, final assessments, and internship placement that require different problem-solving skills. All the struggles could become tougher when the individuals have unrealistic targets but are unable to be flexible throughout their university life. As a result, their psychological well-being might be affected and increase the risk of psychological impairments such as suicide ideation when their goals are unable to be obtained.

Therefore, this research can contribute to the literature component regarding the relationship between perfectionism, cognitive flexibility and suicide ideation in the Malaysian context, which remains insufficient and understudied, by providing statistical results on Malaysian undergraduate students. The results could serve as a reference for future studies to explore more variables or risk factors that could have associations or predictions to suicide ideation in different populations. Apart from that, it could be the reference for professional practitioners and counsellors in different settings to create intervention programs, detect and support the at-risk group to effectively reduce the risks of developing suicide ideation in the general population.

Conceptual Definition

Perfectionism

Perfectionism is often defined as setting exceedingly high standards for oneself or others' performance along with hypercritical self-evaluations (Frost et al., 1990). In other words, it is the striving for faultlessness of one's own or others' behaviours. Perfectionism is a multifaceted personality trait that can be in positive or negative form (Hamachek, 1978 as cited as Stoeber & Otto, 2006, p. 296). According to Hamachek (1978), two forms of perfectionists tend to set high expectations or standards for themselves. Positive perfectionists enjoy and are satisfied with the process of pursuing, while negative perfectionists are unable to tolerate any single error and are never satisfied (Frost et al., 1990). Since Frost et al. (1993) proposed the two-factor structure of perfectionism which are "positive striving" and "maladaptive evaluation concern", the dimensions of perfectionism are continuously studied and tested for many years (Woodfin et al., 2020). These two dimensions were then revised to "perfectionistic strivings" and "perfectionistic concern" where "perfectionistic strivings" implies maladaptive perfectionism, while "perfectionistic concern" refers to adaptive perfectionism (Stoeber & Otto, 2006). In 2016, the two dimensions of perfectionism were named "striving" and "evaluative concern" in the study by Burgess et al. (2016). According to Burgess et al. (2016), the first dimension of perfectionism usually incorporates setting high-level goals and striving for accomplishments which can be known as "striving", whereas the second dimension encompasses concern about negative evaluation and self-criticism of one's performance which can be referred as "evaluative concerns". Although previous studies suggested that perfectionism has a positive side, it is typically perceived as a negative personality characteristic (Hamilton & Schweitzer, 2000). Indeed, majority of the past studies indicated that the increased level of perfectionism is associated with numerous

psychopathology such as depression, anxiety, obsessive-compulsive disorder, eating disorder and so on (Afshar et al., 2011; Frost et al., 1990; Moretz & McKay, 2009; Vacca et al., 2020).

Cognitive Flexibility

Cognitive flexibility refers to the ability to convert cognitive sets to perceive, adapt or respond to different circumstances in various ways (Rende, 2000). Besides, cognitive flexibility is the individual's ability to adapt his or her cognitive processing strategies in unexpected or new environments (Canas et al., 2003). According to Canas et al. (2006), this definition has three concept characteristics: (1) ability to imply the learning process that requires experiences, (2) ability to adapt cognitive processing strategies to generate solutions and change behaviours, and (3) ability to adapt to environmental changes once performed the task multiple times.

Suicide Ideation

In general, suicide ideation is defined as an individual's desire or consideration to take one's own life (Harmer et al., 2021). According to Purse (2020), suicide ideation can be divided into two categories, which are passive suicidal ideation and active suicidal ideation. Passive suicidal ideation refers to an individual's desire to die, which denotes the earliest stage of suicidality (Harmer et al., 2021). However, individuals with passive suicidal ideation have the desire to die but have no intention to commit suicide. Whereas, active suicide ideation refers to an individual not only has the desire to die but also includes the intention to commit suicide such as having a plan to carry out the suicide (Purse, 2020).

Operational Definition

Perfectionism

There are some instruments to measure perfectionism such as Clinical Perfectionism Questionnaire (CPQ; Fairburn et al., 2003b), Almost Perfect Scale-Revised (APS-R; Slaney

et al., 1996), The Big Three Perfectionism Scale (BTPS; Smith et al., 2016) and Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990). In this study, perfectionism is represented by the total score for the Frost Multidimensional Perfectionism Scale-Brief (FMPS-B) developed by Burgess et al. (2016). It is the brief version of the 35-item Frost Multidimensional Perfectionism Scale (FMPS) by Frost et al. (1990), which assesses the tendency of perfectionism. The use of FMPS-B instead of 35-item FMPS is due to the reason that FMPS-B is proven as a simpler yet efficient assessment tool to assess perfectionism (Burgess et al., 2016). The two-dimensional structure of the FMPS-B is well-fitting over a diverse sample such as clinically diagnosed adult samples and undergraduates' representative samples from private colleges and public universities (Burgess et al., 2016). The FMPS-B has two subscales which consist of striving and evaluative concerns. The score of the 8-item FMPS-B ranges from 8 to 40, where a higher score represents a higher perfectionistic tendency.

Cognitive Flexibility

To measure cognitive flexibility, the scales that can be used included the Cognitive Flexibility Scale (CFS; Martin & Rubin, 1995) and Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010). With that, in the present study, cognitive flexibility is indicated by the total score for the Cognitive Flexibility Inventory (CFI) by Dennis and Vander Wal (2010). The scale is used to assess cognitive flexibility aspects, that are required to challenge maladaptive thinking effectively. The CFI includes two subscales: (1) alternative subscale, and (2) control subscale. The score of the CFI ranges from 20 to 140, by which an individual who has a higher score is suggested to have higher cognitive flexibility.

Suicide Ideation

There are several scales to measure suicide ideation such as Beck Scale for Suicide Ideation (BSSI; Beck & Steer, 1991, as cited in Brown, 2001), and The Suicidal Ideation

Attributes Scale (SIDAS; Van Spijker et al., 2014). The suicide ideation in the study is represented by the total score for the Scale for Suicidal Ideation (SSI), the self-report version developed by Beck et al. (1988). The content of the self-report version of the SSI is identical to the clinical interview version of SSI by Beck et al. (1979), which is used to measure individuals' suicide ideation levels. The score of the 19-item SSI ranges from 0 to 38, where the higher the score indicates increased severity of suicide ideation.

Chapter II

Literature Review

Perfectionism

Perfectionism is described as setting excessively high expectations, together with critical self-appraisals and a fear of failure (Hewitt & Flett, 1991). Dunkley et al. (2006) had identified two underlying causes of perfectionism which are personal standards perfectionism and evaluative concerns perfectionism. Individuals who pursue high personal standards and strive for excessive personal performance are described as personal standards perfectionism while evaluative concerns perfectionism refers to individuals who constantly and chronically harsh critical judgement on self-behaviour, inability to obtain a sense of satisfaction from one's successful performance, and persistent concerns about other people's judgement, criticism and expectations. A study by Bieling et al. (2003) pointed out that personal standards perfectionism is positively associated with a high level of positive affect. Similarly, Damian et al. (2014) also mentioned that personal standard perfectionism is associated positively with a higher level of life satisfaction. However, in terms of evaluative concerns perfectionism, previous studies pointed out that evaluative concerns perfectionism could lead to distress that may contribute to poor mental health, poor well-being and negative emotionality (Chang et al., 2004; Molnar et al., 2012; Smith et al., 2017).

A previous study by Hamilton and Schweitzer (2000) suggested that perfectionism is a trait with potentially negative consequences. It was consistent with the evidence provided in the study of Frost et al. (1990) who mentioned that compared with non-perfectionist, perfectionistic individuals tend to experience more negative affect while dealing with evaluative tasks as they have higher standards in their work and are unsatisfied with the outcome of their tasks. Other than that, previous studies have also pointed out that individuals with perfectionism reported having high levels of self-criticism, and are more likely to be

vulnerable to experiences of failure which result in an increased level of depression compared with individuals without perfectionism (Baumeister, 1990; Blatt, 1995; Frost et al., 1990).

Similarly, a study by Hewitt and Flett (1991) also mentioned that individuals with higher levels of perfectionism are reported to be more likely to experience increased frequency and a larger range of psychopathology compared to individuals with a lower level of perfectionism.

Cognitive Flexibility

Cognitive flexibility refers to the ability to modify ways of thinking to cope with uncontrollable stressful events (Troy et al., 2013). It is said to have an important role in different aspects of one's life as individuals with good cognitive flexibility showed better creativity (Chen et al., 2014) and resilience to negative and stressful life events (Genet & Siemer, 2011). Meanwhile, Baddeley (2003) stated that information provided in stressful situations is limited and individuals are forced to focus on this limited amount of information. In addition, stressful situations always come together with negative emotions which can lead to engaging limited information continuously (Gabrys et al., 2018). Since cognitive flexibility is associated with problem-solving (Beverdors et al., 1999; Kalia et al., 2019) and mechanisms that support effective regulation of emotions (Gross, 2007), this might then cause the individuals to become inflexible in generating coping strategies and difficult to regulate negative emotions (Gabrys et al., 2018). In this context, a study by Stange et al. (2017) reported that individuals with higher levels of cognitive flexibility are correlated with lower severity in depression. The researchers explained that the high level of cognitive flexibility allows an individual to properly adapt to different situations and ensure the achieving of desired outcomes even when encountered with some unpredicted situations. Moreover, it has been stated by Davis and Nolen-Hoeksema (2000) that individuals with low cognitive flexibility are correlated with maladaptive cognitions such as rumination.

Individuals with low cognitive flexibility may ruminate due to focusing on negative emotions and the ability to problem-solving has decreased (Davis & Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 2008).

Suicide Ideation

The annual report of the National Suicide Registry Malaysia (NSRM) in 2009 recorded a total of 245 suicide cases that happened between 2007 and 2009. The ethnic breakdown of the suicide cases was reported to be 53% (131 persons) of Chinese, 27.3% (67 persons) of Indian, 13.5% (34 persons) of Malay and 5.3 (13 persons) of other ethnicities. According to the study by Anderson and Smith (2005), suicide is the third leading cause of mortality among individuals aged from 15 to 24 years old. It was also mentioned by Schwartz (2006) that suicide is the second common cause of death among college students. In Malaysia, it is shown that 7% of adolescent students aged between 12 to 19 years old experienced suicidal ideation (Chen et al., 2005). Besides, Kok and Goh (2011) also stated that compared to other age groups, individuals aged from 16 to 25 years old are reported to have the highest risk for suicide attempts in Malaysia.

Suicide ideation plays a major role in public health significance as it is considered to be the precursor to the later attempt suicide and completed suicide (Brent et al., 1993). The study by Arria et al. (2009) showed that the lack of social is a prominent risk factor of suicide ideation among college students and parent-students relationships are correlated with the college students' suicidal ideations. The result was consistent with the study by Brener et al. (1999) where college students who perceived more social support were reported to be less likely to experience suicidal ideation. The study by Harris and Molock (2000) also supported that parent-student relationships are associated with students' suicide ideation as the results indicated that individuals who reported a higher level of conflicts with their parents tend to

have a higher likelihood of suicide ideation. Other than that, Arria et al. (2009) also indicated that parental supervision, family cohesion and quality time spent with family are the protective factors for youth suicidal behaviour. Poor communications with parents, perceived low level of social and perceived low parental approval are marked as the risk factors for suicide ideation among college students (Gould et al., 1996; Fergusson & Lynskey, 1995; Harter et al., 1992).

Perfectionism and Suicide Ideation

Perfectionism is being associated with suicidal ideation in several past studies (Blatt, 1995; Hamilton & Schweitzer, 2000; Hewitt et al., 1992). A study by Muyan and Chang (2015) found that the dimensions of perfectionism constantly appeared as the predictor of suicide ideation among Turkish college students. Some studies provided an explanation where perfectionists are trapped in an endless loop of self-defeating over-striving (DiBartolo et al., 2007; Struman et al., 2008) as a result of their own worst critics in which good enough is never enough (Hewitt & Flett, 1991). Besides, it is also suggested that individuals who are high in perfectionism are more prone to suicidal ideation as a result of perceiving inevitable life events as failure or unsatisfied with events in their lives (Blatt, 1995; Hewitt & Flett, 1991). Speaking of the catastrophic consequences of perfectionistic behaviour, according to Blatt (1995), it is suggested that the perception of failure initiates the self-destructive process including self-devaluation and interest punitiveness, which will lead to depression and anxiety and ultimately suicidality. Other than that, in a taxonomy of factors that are connected to suicidality, a study by Orbach (1997) also mentioned that perfectionism is a significant precursor to suicide behaviour as it is frequently linked to a variety of stressors such as interpersonal rejection, failure, and sense of losses that underlie suicide behaviour. Moreover, in addition to impulsivity, pessimism, and general psychopathology, Arie et al.

(2005) also hypothesised that perfectionism and the inability to tolerate failure and imperfection comprise the onset of personality that may lead to suicidality. On the other hand, as a result of being incapable to fulfil the expectations and perfection they believe others hold on them, individuals who are high in evaluation concerns perfectionism tend to perceive higher sense of disappointing others, which leads to higher suicide ideation and attempts (Smith et al., 2017). Consistently, the findings of Hewitt et al. (1992) also indicated that individuals with higher levels of perfectionism are associated with higher levels of hopelessness which leads to increased suicidal ideation.

Cognitive Flexibility and Suicide Ideation

Cognitive flexibility was shown to be correlated with suicide ideation according to some past studies (Hausman et al., 2020; Patsiokas et al., 1979; Schotte & Clum, 1987; Schotte & Clum, 1982). It is said that individuals who are unable to generate coping strategies due to minimum information during stressful situations are considered cognitive inflexible and it might lead to suicide ideation (Patsiokas et al., 1979; Schotte & Clum, 1987; Schotte & Clum, 1982). Besides, a study by Hausman et al. (2020) also indicated that cognitive flexibility is negatively associated with suicide ideation and this finding was consistent with Schotte and Clum (1982). Both studies by Hausman et al. (2020), and Schotte and Clum (1982) mentioned that individuals who have difficulty maintaining their cognitive flexibility would have a higher risk of suicide ideation. This is because they are unable to think in a flexible manner to generate solutions when facing any problems or difficulties (Ellis & Rutherford, 2008). Other than that, cognitive flexibility is essential for slowing down and recognising alternatives to current activities that provide more satisfactory outcomes (Hausman et al., 2020). Therefore, people who have difficulty maintaining cognitive flexibility would increase the likelihood of impulsive suicide thoughts and behaviours.

Alternatively, Schotte and Clum (1982) suggested that individuals who are unable to solve problems effectively in their life would experience helplessness and it raises their chance of having suicidal thoughts. A study by Neuringer (1964) also reported that a suicidal person finds it challenging to come up with new or different approaches to crippling emotional challenges due to his or her rigid ways of thinking. As a result, the person feels helpless and is left with no choice except to suicide in order to escape an intolerably anxious situation. Next, Schotte and Clum (1987; 1982), and Dixon et al. (1994) showed that young people who have difficulty in generating effective coping strategies also known as cognitive inflexibility and it would lead to suicide ideation.

Theoretical Framework

Self-Determination Theory (SDT; Deci & Ryan, 2000) is a theory of human motivation and the development of personality (Fraguela-Vale et al., 2020). It provides a thorough understanding of one's motivation and functioning (Legault, 2017). The SDT suggests that humans have innate drives toward growth and achievements (Deci & Ryan, 2000). According to Deci and Ryan (2000), when the three basic psychological needs (autonomy, competence and relatedness) are fulfilled, only then can the individuals successfully conquer the obstacles and achieve their psychological growth. For the three innate psychological needs, autonomy refers to the need to experience self-directed behaviours rather than being forced or pressured (Legault, 2017). Whereas competence is the need to experience mastery and effectiveness in the interaction with the engaging social environment, while relatedness is the need to feel socially connected, cared and important to others (Vansteenkiste et al., 2020). To fulfil these basic psychological needs, individuals with perfectionism are highly motivated to strive for the unrealistic goals they set, whereas those with high cognitive flexibility are motivated to propose creative solutions when facing any

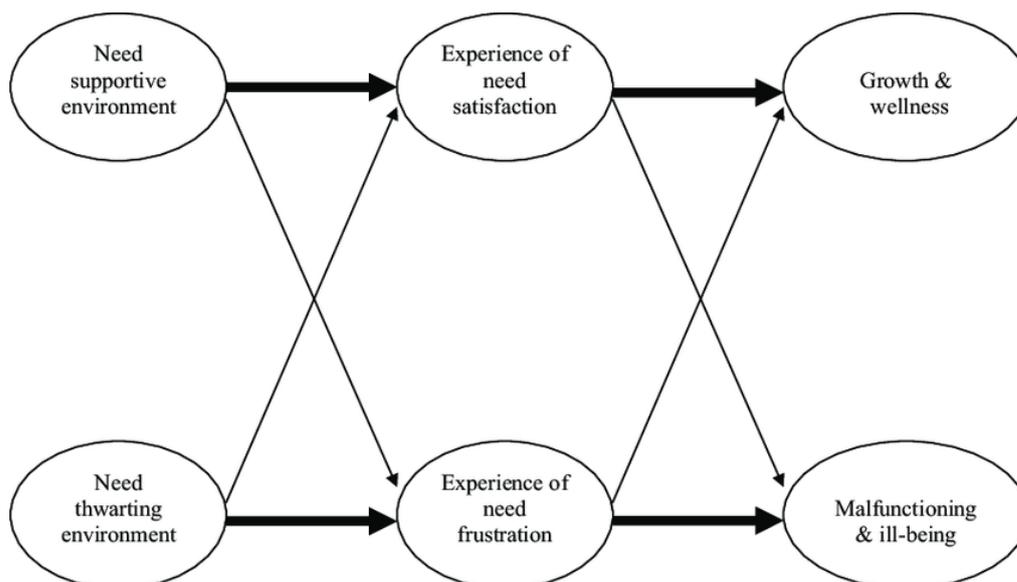
obstacles which then enable them to adapt to different circumstances in life. However, SDT also highlights that social and environmental factors can affect whether the three innate psychological needs are fulfilled or thwarted (Britton et al., 2014). It is because the theory supports the idea that humans are constantly involved in the active interaction with the social environment (Legault, 2017). Hence, in a supportive social environment such as sufficient resources provided, individuals' psychological needs can be fulfilled which then ensures their growth. In contrast, deficient resources will hinder the psychological needs of the individuals and interfere with their development (Legault, 2017).

With that, a sub-theory of SDT, the Basic Psychological Needs Theory (BPNT) which describes more precisely the importance of the three basic psychological needs to one's health and well-being (Ryan & Deci, 2000) was used in the present study. This theory includes both psychological need satisfaction and frustration (Vansteenkiste et al., 2020). It states that satisfaction of the three innate psychological needs will contribute to one's well-being, in contrast thwarting any of these needs will lead to destructive well-being (Ryan & Deci, 2000). In other words, individuals who fulfil their needs for autonomy, competence and relatedness will show an increased level of mental and physical health. For those whose needs are thwarted, they are more likely to have poorer mental and physical health which will result in maladaptive outcomes. The two primary directions of the model are (1) from the demand supportive context to need satisfaction experience followed by wellness and growth, and (2) from the demand thwarting context to need frustration experience followed by ill-being and malfunctioning. In the present study, it seems that one with high perfectionism has a relatively greater possibility to thwart their basic psychological needs as they tend to set unreasonable targets that could be difficult to achieve. In the same way, those with a lower level of cognitive flexibility are more likely to diminish their need for autonomy, relatedness or competence when they are unable to solve problems or adapt to different environments.

Both of these conditions could then negatively impact the individuals' psychological well-being as proposed by the theory. However, the BPNT is not a one-size-fits-all perspective as there are differences in how individuals perceive and support their needs (Vansteenkiste et al., 2020). The variation in the need supportive ways and perceptions can be due to personality or socio-cultural differences (Vansteenkiste et al., 2020). With that, the model includes some cross-paths even though the relationship might be weaker compared to the primary paths (Vansteenkiste & Ryan, 2013). In the present study, perfectionism and cognitive flexibility could be perceived differently by each person. Some people might see them as positive or important characteristics while some consider them as negative or unnecessary features. In this way, the discrepancy could result in different relationships between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation. Thus, the cross-paths in the model are also included in our study to explain different relationships that could occur other than the hypothesised relationships.

Figure 2.1

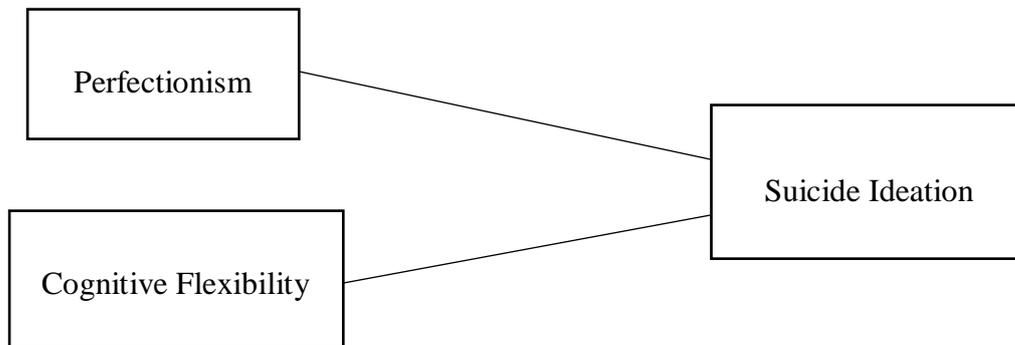
Model of Basic Psychological Needs Theory (Vansteenkiste & Ryan, 2013)



Conceptual Framework

Figure 2.2

Conceptual Framework of the Relationship between Perfectionism, Cognitive Flexibility, and Suicide Ideation



The proposed framework in the present study is guided by the Basic Psychological Need Theory (BPNT; Figure 2.1). From the perspective of this theory, our research aims to study the relationship between perfectionism, cognitive flexibility and suicide ideation among Malaysian undergraduates. Specifically, perfectionism and cognitive flexibility represent both the need supportive and thwarting environment. As perfectionism is about setting excessively high expectations and motivation to achieve goals (Hewitt & Flett, 1991), it is potentially attributed to perfectionists never feeling satisfied and becoming susceptible to negative outcomes when the standards are unable to achieve (Overholser & Dimaggio, 2020). While cognitive flexibility is the ability to adaptably shift the cognitive sets in different contexts (Dennis & Vander Wal, 2010). When one is unable to see things from different perspectives in a changed situation, it can cause negative feelings in the person (Miranda et al., 2013). This can lead to ill-being or maladaptive behaviours, such as suicidal ideation.

Based on the proposed framework (Figure 2.2), the model focuses on the relationship between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation. It is hypothesized that perfectionism positively predicts suicide ideation, while cognitive flexibility negatively predicts suicide ideation among Malaysian undergraduates.

Chapter III

Methodology

Research Design

The present study deployed the cross-sectional correlational research design. Specifically, the type of correlational design employed was the predictive design. The cross-sectional research design was when a study intends to examine certain prevalence characteristics or relationships of certain variables in a population at a specific point in time (Setia, 2016). Besides, it enables researchers to collect the data across different demographic statuses at once and it is relatively faster and cheaper to conduct it (Setia, 2016). Whereas, the correlational predictive design will only be used when the objective of the research is to predict some outcomes in a variable from other variables that act as predictors (Apuke, 2017). Hence, this research design is suitable for this research as the purpose of the study was to determine the predictive relationships between the predictors which are perfectionism and cognitive flexibility, and the outcome variable which is suicide ideation, among Malaysian undergraduates at a particular time. To collect the data of the study, a set of online questionnaire with selected self-report scales that assess participants' perfectionism, cognitive flexibility and suicide ideation was constructed and distributed to the potential participants.

Sampling Procedures

Sampling Method

The purposive sampling method, which is in the category of non-probability sampling method was used to conduct this research. This sampling method was employed as it enables researchers to focus on an interested population whose characteristics are defined for the justifications that are relevant to the study (Andrade, 2020), and at the same time, it is

inexpensive and time-effective. The eligible participants for this study were those who satisfied the inclusion criteria that were set by the researchers (refer to Data Collection Procedures).

The young adult undergraduates aged between 18 to 25 years old were targeted because the continuous rising of the standard of society's expectations by the meritocracy nowadays has caused the level, especially in educational achievement, to become unrealistic and unachievable by today's young people (Curran & Hill, 2019). The cohort analysis done by both the researchers showed an escalation in perfectionism reported by young adult university students in some Western countries. Besides, some past studies suggested that cognitive flexibility is vital for undergraduates as it could impact them in deciding on academic paths and understanding more complex concepts or problems throughout their undergraduate journeys (Kercood et al., 2017; Rhodes & Rozell, 2017). In addition, suicide is stated as the second greatest cause of death among people aged 15 to 29 years old according to WHO (2019) and thus suicide ideation, which is defined as the thoughts and desires with death and suicide, is essential to be acknowledged. In this context, young adults are often referred to as those aged between 18 to 25, according to Moran (2016) and Po et al. (2020). Therefore, it attracted interest to study the predictive relationship of perfectionism and cognitive flexibility on suicide ideation among Malaysian undergraduates aged 18 to 25 years old.

Location of Study

In this study, Malaysian undergraduate students from both private and public universities in Malaysia were recruited. The research participants in the present study were mainly from Universiti Tunku Abdul Rahman (UTAR), both Kampar and Sungai Long campuses (51.9%). Then followed by universities in Selangor, for example, Universiti

Kebangsaan Malaysia (UKM) (6.9%) and in Kuala Lumpur such as Universiti Malaya (UM) (5.7%).

Procedures of Ethical Clearance Approval

After the finalisation of the research proposal, the ethical clearance approval was acquired from the Scientific and Ethical Review Committee (SERC) of UTAR (Re: U/SERC/299/2021; see Appendix D). The procedures of data collection was only started after the ethical clearance approval was obtained from the relevant authorities in order to guarantee the present study was ethically conducted.

Sample Size, Power and Precision

Sample Size

The target population of this research study was undergraduates aged 18 to 25 from both public and private universities in Malaysia. The required sample size for this study was computed with G*Power, a power analysis program for various statistical tests used in behavioural and social studies (Faul et al., 2007). To calculate the effect size, the formula of $f^2 = R^2 / (1 - R^2)$ which was proposed by Cohen (1988) was used. The correlation coefficient values of the relationship between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation were inserted into this formula. The effect size, $f^2 = .067$ was obtained by averaging the two effect size values (see Appendix A). Based on the computed result in G*Power, it showed that a sample of 245 participants was needed for the effect size of .064, target power of .95 and alpha level of .05 (see Appendix A).

Actual Sample Size

A total of 281 participants were initially enrolled in this study. However, 19 responses had been excluded due to missing data, impossibly fast response times and incompleteness of the final section in the questionnaire. The exclusion of these 19 responses was to prevent

erroneous results. With that, there were in total of 262 completed responses remaining as the final sample size in the current study.

Research Procedures

Inclusion and Exclusion Criteria

The inclusion criteria for the present study included: (i) Malaysian nationality, (ii) young adults aged between 18-25 years old, and (iii) currently enrolling and pursuing bachelor's degrees in Malaysia. While as exclusion criteria, those who are pursuing bachelor's degrees overseas, joining exchange programmes and never completing the online survey were excluded from data analysis.

Procedures for Obtaining Consent

The informed consent was obtained from respondents with the consent form for Research Participation and Personal Data Protection, which was attached to the first part of the online questionnaire (see Appendix B). The form encompassed sufficient details such as the purpose of the research, survey process, voluntary participation, possible risks or consequences of participation, inclusion criteria of participants and the contact information of the researchers. Respondents were informed that they have the right to withdraw from the study at any time as their participations were wholly voluntary and the information collected will be retained confidential and anonymous.

Data Collecting Procedures

Before collecting data for the present study, a pilot study was conducted. A pilot study is an initial and fundamental step in a research process (Simkus, 2022; In, 2017) which is conducted to evaluate the feasibility of the main study (Thabane et al., 2010). It assists researchers in planning and revising the main studies that can then improve the probability of success and minimise errors in full-scale studies (Thabane et al., 2010). With that, a total

number of 40 Malaysian undergraduates were recruited for the pilot study. The online questionnaire was developed with Qualtrics, an online survey tool, and distributed through social media platforms such as Meta and WhatsApp. The period of the data collection for the pilot study was approximately three weeks. As shown in Table 3.1, the Cronbach alpha values for the FMPS-B, CFI and SSI were .80, .85 and .83 respectively, which were considered good reliability (George & Mallery, 2003).

After conducting the pilot study that yielded the results of good reliability of the studied variables, the data collection procedures for the present study was initiated. The link to access the questionnaire was shared through online platforms such as Meta, WhatsApp and Microsoft Teams. Besides, participants were encouraged to share the questionnaire with people around them who also meet the requirements for this research, so that more potential respondents can be recruited to reach our target number of participants. Since the study might trigger psychological discomfort among participants, the information regarding the risks and discomfort was attached to the last part of the survey questionnaire.

The data collection process lasted from June 2022 to the end of July 2022. The collected data were then processed and analysed with IBM SPSS Statistics version 23. The Multiple Linear Regression analysis was conducted to examine the predictive relationships among the three variables. However, the responses with impossibly fast response times, missing data and incomplete final section of the questionnaire were removed from the data analysis process.

Table 3.1*Reliability of Each Instruments in Pilot Study (N = 262)*

Scales	Cronbach's Alpha
FMPS-B	.80
CFI	.85
SSI	.83

Note. FMPS-B = Frost Multidimensional Perfectionism Scale-Brief, CFI = Cognitive

Flexibility Inventory, SSI = Scale for Suicide Ideation.

Instrumentation

Frost Multidimensional Perfectionism Scale-Brief (FMPS-B)

The FMPS-B (Burgess et al., 2016), the brief version of the 35-item Frost Multidimensional Perfectionism Scale (FMPS) by Frost et al. (1990), was used to measure undergraduates' perfectionism (see Appendix C). According to Burgess et al. (2016), the two-dimensional structure of FMPS-B is suitable for various samples, such as adult samples for clinical diagnosis and representative samples of undergraduates from both private and public universities. The scale included 8-items which were rated on a 5-Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). It consists of two subscales which are evaluative concerns (EC) and striving (S). Each subscale was composed of four items. Some samples of items included "If I fail at work/school, I am a failure as a person" and "I have extremely high goals". The total score of this scale ranges from 8 to 40, where higher scores indicated more perfectionistic tendencies. The FMPS-B was reported to have satisfactory internal consistency where the Cronbach's alpha value was .83 in the study by Woodfin et al. (2020). While in the present study, the Cronbach alpha value was .84.

Cognitive Flexibility Inventory (CFI)

The CFI was created by Dennis and Vander Wal (2010), and was used in this study to measure undergraduate students' cognitive flexibility based on three aspects: (a) the tendency to perceive difficult situations as controllable, (b) the ability to perceive multiple alternative explanations for life occurrences and human behaviours, and (c) the ability to generate multiple alternative solutions to difficult situations (see Appendix C). This scale consists of two subscales which are the alternative subscale and the control subscale. The alternative subscale was composed of 13 items to assess aspects (b and c) while the control subscale is composed of 7 items to assess aspect (a). The CFI included 20 items with a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Some sample items of the scale were "I consider multiple options before making a decision" and "When I encounter difficult situations, I feel like I am losing control". The item 2, 4, 7, 9, 11, and 17 in the scale were reverse-scored items. The total score ranges from 20 to 140, where higher scores indicated a higher level of cognitive flexibility. The CFI was shown to have high internal consistency as the Cronbach's alpha value was .91 in the study by Dennis and Vander Wal (2010), while it reported the value of .91 in the present study.

Scale for Suicide Ideation (SSI)

In the present study, the self-report version of SSI that was devised by Beck et al. (1988), was used to measure undergraduates' suicide ideation levels (see Appendix C). The initial version of the scale included 30 items, however, Beck and his colleagues eliminated some overlapping items. They improved the accuracy and wording of the remaining items and eventually came out with the 19 items scale for suicide ideation (Beck et al., 1979). Each item consists of three statements rated on a 3-point scale from 0 to 2, with different anchors depend on the statements, for example "Wish to die: 0 = *Moderate to strong*, 1 = *Weak*, 2 = *None*; Duration of suicide ideation/wish: 0 = *Brief, fleeting periods*, 1 = *Longer periods*, 2 =

Continuous (chronic) or almost continuous". Some other examples of the scale items were "Wish to live" and "Reasons for living/dying". The total score of this scale ranges from 0 to 38, where higher scores indicated a higher severity of suicide ideation. The SSI reported a high internal consistency as its Cronbach's alpha value was .89 in Beck et al.'s (1988) study. For our study, Cronbach's alpha value was .75.

Chapter IV

Results

Descriptive Statistics

Demographic Characteristics

Table 4.1 showed the demographic information of the study sample in the present study. The sample consisted of 262 participants, with 142 females (53.8%) and 121 males (46.2%), whose age ranged from 18 to 25 ($M = 22.18$, $SD = 1.256$). The majority of the participants were Chinese (48.5%) followed by Indians (27.1%) and Malay (24.4%). Besides, most of the participants were Buddhist (39.7%), followed by Muslim (24.4%), Hindu (22.5%), Christian (11.8%) and other religions (1.5%) such as Atheist and free thinkers.

On the other hand, most of the participants were from UTAR (51.9%), followed by Universiti Kebangsaan Malaysia (6.9%) and Universiti Malaya (5.7%). The other participants were also recruited from universities including Asia Pacific University of Technology and Innovation (APU), Brickfields Asia College (BAC), International Medical University Malaysia (IMU), Multimedia University (MMU), Monash University Malaysia, Management and Science University (MSU), Segi College Subang Jaya, Sunway College, Sunway University, Tunku Abdul Rahman University College (TARUC), Taylor University, UCSI University, Universiti Teknologi MARA (UiTM), Universiti Malaysia Pahang (UMP), Universiti Malaysia Perlis (UniMAP), Universiti Malaysia Sarawak (UNIMAS), University of Nottingham Malaysia, Universiti Putra Malaysia, Universiti Pendidikan Sultan Idris (UPSI), Universiti Sains Malaysia (USM), Universiti Tun Hussein Onn Malaysia (UTHM) and Universiti Utara Malaysia (UUM).

The respondents in this study were from a broad range of degree courses, such as psychology (21.4%), computer science (5.7%), architecture (3.8%), English education (3.4%), guidance and counselling (3.4%) and public relations (3.1%). Some other courses

included accounting, actuarial science, banking and finance, biomedical science, business administration, civil engineering, dentistry, dietetics, early childhood education, laws, microbiology, quantity survey and so on (see Table 4.1).

Table 4.1

Descriptive Statistics of the Sample (n = 262)

Variables	<i>n</i>	%	<i>M</i>	<i>SD</i>	Min	Max
Age			22.18	1.256	19	25
18	0	.0				
19	6	2.3				
20	28	10.7				
21	32	12.2				
22	73	27.9				
23	96	36.6				
24	23	8.8				
25	4	1.5				
Gender						
Male	121	46.2				
Female	141	53.8				
Ethnicity						
Chinese	127	48.5				
Malay	64	24.4				
Indian	71	27.1				
Religion						
Buddhist	104	39.7				
Muslim	64	24.4				
Hindu	59	22.5				
Christian	31	11.8				
Others	4	1.5				

Name of University

APU	1	.4
BAC	1	.4
IMU	2	.8
MMU	2	.8
Monash University Malaysia	1	.4
MSU	6	2.3
SEGI College Subang Jaya	1	.4
Sunway College	1	.4
Sunway University	10	3.8
TARC	1	.4
Taylor University	1	.4
UCSI University	1	.4
UiTM	11	4.2
UKM	18	6.9
UM	15	5.7
UMP	1	.4
UniMAP	3	1.1
UNIMAS	1	.4
University of Nottingham	3	1.1
UPM	10	3.8
UPSI	3	1.1
USM	13	5.0
UTAR	136	51.9
UTHM	8	3.1
UUM	12	4.6

Program of Study

Accounting	6	2.3
Accounting and Finance	1	.4
Actuarial Science	2	.8
Analytical Chemistry	1	.4
Aquatic Science	1	.4

Architecture	10	3.8
Aviation Management and Piloting	2	.8
Bachelor of Economics	2	.8
Bachelor of Music	2	.8
Bachelor of Risk Management and Insurance	1	.4
Bachelor of Science	2	.8
Aquaculture		
Banking and Finance	3	1.1
Biochemistry	1	.4
Biology	3	1.1
Biomedical Science	3	1.1
Biotechnology	1	.4
Business Administration	8	3.1
Business Information Systems	1	.4
Business Management	3	1.1
Business Mathematics	6	2.3
Chemical Engineering	1	.4
Chemistry	4	1.5
Chinese Language and Linguistics	1	.4
Chinese Language with Education	2	.8
Chinese Medicine	1	.4
Chinese Studies	2	.8
Civil Engineering	3	1.1
Computer Engineering	1	.4
Computer Science	15	5.7
Construction Management	1	.4
Conventions and Events Management	1	.4
Creative Multimedia	1	.4

Data Science	1	.4
Decision Science	1	.4
Dentistry	2	.8
Dietetics	5	1.9
Early Childhood Education	6	2.3
Early Years Education	1	.4
Economics and International	2	.8
Economics		
Electrical Engineering	2	.8
Electronic Engineering	2	.8
Engineering Entrepreneurship	1	.4
English Education	9	3.4
English Language	6	2.3
English Language and	2	.8
Literature Studies		
Estate Management	6	2.3
Finance	5	1.9
Financial Economics	2	.8
Food Science	3	1.1
Guidance and Counselling	9	3.4
Industrial Chemistry	1	.4
Information and Technology	1	.4
Journalism	1	.4
Laws	6	2.3
Management	4	1.5
Marketing	4	1.5
Mathematics	3	1.2
Medicine	5	1.9
Microbiology	7	2.7
Multimedia	1	.4
Nutrition	2	.8
Political Science	1	.4
Psychology	56	21.4

Public Relations	8	3.1
Quantity Survey	1	.4
Special Education	1	.4
Sports and Recreation	2	.8
Town and Regional Planning	1	.4

Note. n = Number of cases; % = Percentage; M = Mean, SD = Standard deviation, Min = Minimum value; Max = Maximum value.

Topic-Specific Characteristics

Table 4.2 displayed the frequency distribution of the participants on topic-specific variables, which were perfectionism, cognitive flexibility and suicide ideation. In terms of the perfectionism variable, the interpretation of the scores was based on the percentile of the total scores Stober (1998). The score that is closer to or equal to the 50th percentile indicates an average or moderate level of perfectionism, whereas the scoring that is higher than the 50th percentile represents higher levels of perfectionism (Stober, 1998). Therefore, using the second quartile formula, the value of the 50th quartile was 24, which was used as a cut-off point to categorise the participants into either lower and moderate or higher levels of perfectionism.

Meanwhile, the interpretation of the scoring for the variable of cognitive flexibility was also based on the normative percentile, where scoring below the percentile of 25 indicates low cognitive flexibility, while above the 50th percentile represents higher levels of cognitive flexibility (Dennis & Vander Wal, 2010). Hence, the values of the 25th, 50th and 75th quartile of cognitive flexibility were 88, 100 and 109 respectively, which served as the cut-off points to categorise the responses into either low, moderate or high cognitive flexibility levels. For the variable of suicide ideation, the cut-off point of ≥ 6 indicates moderate to serious suicide ideation (Sokero, 2003).

As a result, 47.3% of the participants ($n = 124$) showed a low and moderate level of perfectionism, while 52.7% of them ($n = 138$) had a high level of perfectionism. Meantime,

24.8% of the participants ($n = 65$) had low level of cognitive flexibility, 48.1% ($n = 126$) had moderate level of cognitive flexibility whereas 27.1% ($n = 71$) showed high level of cognitive flexibility. For the variable of suicide ideation, 33.2% of the respondents ($n = 87$) had low severity of suicide ideation, while 66.8% ($n = 175$) had moderate to severe suicidal ideation.

Table 4.2

Frequency Distribution of Topic-Specific Characteristics (Perfectionism, Cognitive Flexibility and Suicide Ideation) ($n = 262$)

	<i>n</i>	%	<i>M</i>	<i>SD</i>	Min	Max
Perfectionism			23.67	5.23	12	34
Low and moderate (< 24)	124	47.3				
High (≥ 24)	138	52.7				
Cognitive Flexibility			98.50	14.72	61	134
Low (< 88)	65	24.8				
Moderate (< 109)	126	48.1				
High (≥ 109)	71	27.1				
Suicide Ideation			7.34	3.47	0	15
Low (< 6)	87	33.2				
Moderate to high (≥ 6)	175	66.8				

Note. *n* = Number of cases; % = Percentage; *M* = Mean, *SD* = Standard deviation, Min = Minimum value; Max = Maximum value.

Data Diagnostic and Missing Data

Frequency and Percentages of Missing Data

A total number of 281 participants were initially recruited for the current study. However, 19 missing data (6.76%) were identified with the use of SPSS software. According to the minimum sample size of 245, which was calculated by using G*Power, removing the 19 missing data can still achieve the minimum sample size. Hence, after the removal of 19 missing data, the final sample size that remained for the data analysis was 262 in total.

Criteria for Post Data-collection Exclusion of Participants

All the collected data were checked through before running the data analysis and they all fulfilled the inclusion criteria that were set by the researchers. Thus, no responses were excluded.

Data Transformation

There was only one out of three instruments, which was the CFI, used in the current study had reverse-scored items. The reverse-scored items in the scales are items 2, 4, 7, 9, 11 and 17. The scores that were recorded for these seven items were reversed based on the 7-point Likert scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). Specifically, the score of 1 was reversed to 7; 2 was reversed to 6 and 3 was reversed to 5. After the data transformation, the total score was computed to proceed to further statistical analysis.

Normality Assumptions

The normality of assumptions for each variable in this study was tested with histogram, Q-Q plot, skewness, kurtosis and Kolmogorov-Smirnov test.

Histogram. The histogram for all the three variables were nearly symmetrical and a bell-shaped curve was shown for each graph. Thus, the results indicated that the variables were normally distributed in the present study (see Appendix E).

Q-Q Plot. The results of the Q-Q plot for the variables showed no violation of the normality assumption as most of the observed data points fell near the diagonal line on the Q-Q plot (see Appendix E).

Skewness and Kurtosis. Both skewness and kurtosis values of all the three variables were within the accepted range of between ± 2 , as mentioned by Gravetter and Wallnau (2014). The skewness and kurtosis values for perfectionism were -.057 and -.796, for cognitive flexibility were -.280 and -.491, and for suicide ideation were -.070 and -.542

respectively. These results suggested a normal data in the present study and the normality assumption was not violated (see Table 4.3).

Kolmogorov-Smirnov Test. For the Kolmogorov-Smirnov test, the results of the perfectionism variable, $D(262) = .052$, $p = .079$ demonstrated a normal distribution data as the significant value was $p > .05$. Cognitive flexibility, $D(262) = .056$, $p = .047$ and suicide ideation, $D(262) = .087$, $p = .000$ showed significant value, which was $p < .05$. These results indicated that these two variables were significantly different from normal distribution (See Appendix E).

Conclusion of Normality Assumptions. Based on the results of the normality assumptions above, all the five normality indicators were met by the variable of perfectionism. Whereas, four out of five indicators, which were Q-Q plot, histogram, skewness and kurtosis, were satisfied by both the variables of cognitive flexibility and suicide ideation. Thus, the results suggested that the three variables were normally distributed since at least four out of five assumptions were met.

Table 4.3

Skewness and Kurtosis for Each Variable (N = 262)

	Skewness		Kurtosis	
	Statistic	SE	Statistic	SE
Perfectionism	-.057	.150	-.796	.300
Cognitive Flexibility	-.280	.150	-.491	.300
Suicide Ideation	-.070	.150	-.542	.300

Note. SE = Standard error.

Defining and Processing of Statistical Outliers

From the normality assumptions tests, there was no statistical outlier being detected in the boxplot results for the three variables (see Appendix E). With that, there was no removal of the data and the valid data included in the statistical analysis remained as 262.

Multiple Linear Regression Assumptions

Independence of Errors Test

Table 4.4 shows the value of Durbin-Watson in the present study was 1.647. According to Durbin & Watson (1971), the assumption of independence of errors is fulfilled when the value is closer to 2 and violated if the value is < 1 and > 3 . Since the Durbin-Watson value of 1.647 was close to 2 and was between 1 and 3, it suggested that the variables were independent of each other.

Multicollinearity Test

The tolerance value and variance inflation value (VIF) were used to examine the multicollinearity of perfectionism and cognitive flexibility (see Appendix F). The tolerance values for both perfectionism and cognitive flexibility were .996, which indicated no violation as the values were $> .10$ (Hair et al., 2010). Next, the VIF values of 1.004 for perfectionism and cognitive flexibility showed no violation as the values are within the cut-off value of VIF, which is < 10 (Hair et al., 2010).

Test of Normality of Residuals, Linearity of Residuals and Homoscedasticity

The residuals were fairly and randomly distributed which displayed an oval shape in the scatterplot (see Appendix F). Therefore, the normality, linearity of residuals and homoscedasticity assumptions were not violated.

Conclusion of Multiple Linear Regression Assumptions

Based on the results of the assumptions above, the independence of errors, multicollinearity, normality and linearity of residuals and homoscedasticity were not violated and thus, the multiple linear regression assumptions were met and satisfied.

Table 4.4*Test for Independence of Errors*

Model	<i>R</i>	<i>R</i> square	Adjusted <i>R</i> Square	Std. Error of the Estimate	Durbin-Watson
1	.226 ^a	.051	.044	3.394	1.647

Note. ^a Predictors: (Constant), Perfectionism, Cognitive Flexibility.

Influential Cases

In the present study, casewise diagnostic was performed to identify the outliers and influential cases. Of the total of 262 respondents, six cases exceeded ± 2 standard deviations that appeared to be potential outliers were cases 7, 8, 51, 59, 146 and 216 (see Appendix F). The Mahalanobis Distance, Cook's distance and Leverage values were used to analyse the influential cases. The results of Mahalanobis Distance for the six potential outliers were not larger than the value of 25, which is the cut-off value for the sample of 500. The results of the Cook's distance showed no violation because the values fall within the cut-off point of 1 (Cook & Weisberg, 1982). The leverage values of the six cases were within 0.023, which was derived from the calculation of 2 times its leverage value [$(\frac{2+1}{262}) \times 2 = 0.023$] (Hoaglin & Welsh, 1978). Since all the six outliers showed no violation of the assumptions for Mahalanobis Distance, Cook's distance and Leverage values, the outliers were not removed in the present study.

Statistical Analysis

In the present study, there were two research hypotheses to be determined. The results were discussed accordingly.

H₁: Perfectionism positively predicted suicide ideation among Malaysian undergraduates.

Before conducting the Multiple Linear Regression (MLR), the MLR assumptions that included the independence of errors, multicollinearity, normality of residuals, linearity of residuals and homoscedasticity, and influential cases were tested to check the generalization of the regression model (see section Multiple Linear Regression Assumptions).

The MLR was conducted to evaluate whether perfectionism significantly predicted suicide ideation among Malaysian undergraduate students. Based on the results in Table 4.5, the model is statistically significant, $F(2, 259) = 6.956, p = .001$. A total of 4.40% variance in suicide ideation among Malaysian undergraduates was explained by perfectionism. The effect size of $f^2 = .064$ was calculated with the formula of $f^2 = R^2 / (1 - R^2)$ and it suggested a small effect size by Cohen (1988). Based on the result of MLR, perfectionism was found to be the significant positive predictor of suicide ideation ($\beta = .157, p = .010$) among Malaysian undergraduates (see Table 4.5). Thus, the H_1 was supported.

H₂: Cognitive flexibility negatively predicted suicide ideation among Malaysian undergraduates.

The MLR assumptions were tested to ensure the regression model fit to the observed data (see section Multiple Linear Regression Assumptions).

MLR was conducted to examine whether cognitive flexibility significantly predicted suicide ideation among Malaysian undergraduate students. Based on Table 4.5, the model is statistically significant, $F(2, 259) = 6.956, p = .001$ and accounted for 4.40% of variance. The effect size was computed with the formula, $f^2 = R^2 / (1 - R^2)$ and the value of $f^2 = .064$ indicated a small effect size (Cohen, 1988). From Table 4.4, cognitive flexibility was found to be the significant predictor of suicide ideation ($\beta = -.152, p = .013$) (see Table 4.5). It negatively predicted suicide ideation among Malaysian undergraduates. Consequently, the H_2 was supported.

Table 4.5*Regression Model Summary*

	<i>df</i>	<i>F</i>	<i>p</i>	Adj. <i>R</i> ²	<i>R</i> ²
Regression	2	6.956	.001 ^b	.044	0.51
Residual	259				
Total	261				

Note. b. Predictors: (Constant), Perfectionism, Cognitive Flexibility, *df* = Degree of freedom

Chapter V

Discussion and Conclusion

This study was conducted to examine the predictive relationship between perfectionism, cognitive flexibility and suicide ideation among Malaysian undergraduates. Based on the results of the statistical analysis, H_1 and H_2 were supported.

Perfectionism and Suicide Ideation

H_1 : Perfectionism positively predicted suicide ideation among Malaysian undergraduates.

The present finding supported our first hypothesis, H_1 , where perfectionism was reported to positively predict suicide ideation among Malaysian undergraduate students. The findings suggested that individuals with higher levels of perfectionism can predict a higher level of suicidal ideation. Blatt (1995) and Flett and Hewitt (2002a; 2002b) believed that individuals with higher levels of perfectionistic strivings are only satisfied when they perceived their life events are perfect, in contrast, suicidal ideation could develop if they perceived their life events are not perfect. Likewise, Hewitt et al. (2006) and Smith et al. (2016) both indicated that individuals with higher levels of perfectionism feel that others have extremely high expectations of them, which makes them perceive difficulties to meet those standards. As a result, people with high levels of perfectionism frequently experience rejection in their social environments and feel that others are disappointed in them. This sense of disappointing others may amplify the suicidal ideation and suicide attempts of individuals who are with higher levels of perfectionism (Hewitt et al., 2006; Smith et al., 2016). It was consistent with the findings by Roxborough et al. (2012), where it showed that youths who have higher levels of perfectionism are often characterized by the tendency to present themselves as perfect and avoid revealing or disclosing flaws are associated with suicide outcomes. Similarly, Heisel et al. (2003) also mentioned that people with higher levels of perfectionism who are unable to live up to expectations and lack of self-disclosure might

predict suicide ideation as it will lead to a sense of isolation, higher level of loneliness and suffering.

The results in our study can be explained by using the Basic Psychological Needs Theory (BPNT), which posits that the three psychological needs: autonomy, competence, and relatedness are essential to be met as they are directly associated with an individual's sense of well-being. For instance, when individuals with perfectionism perceive a sense of rejection and disappointment from others, it might devitalize their sense of relatedness with others. When their relatedness needs are not met, it will increase the likelihood of developing negative outcomes such as suicidal ideation and suicidal behaviour. It was supported by Groholt et al. (2000) who indicated that perceived low relatedness is associated with a higher rate of suicide ideation and attempts. Besides, perfectionism was found to significantly predict need thwarting where individuals with higher levels of perfectionism are pushed into actions by their sensitivity to the information that is related to ego-threatening and tend to rigidly follow the unrealistic standards they set, which in turn escalated their vulnerability to the failure experience and exhibit a maladaptive form of functioning (Boone et al., 2014). Likewise, Britton et al. (2014) also pointed out the satisfaction of competence, relatedness, and autonomy needs are linked with a greater sense of well-being that will decrease the risk of suicidal ideation and suicidal behaviour. Individuals with higher levels of perfectionism also often experience the fear of making mistakes and make use of productivity and accomplishments to measure their self-worth. Lack of personal worth is the result of failing to achieve perfectionists' goals (Frost et al., 1990; Ellis, 2002). The BPNT also explained the situation where the needs for autonomy and competence will be affected if the values and beliefs of the individuals with higher levels of perfectionism are not congruent as a result of not achieving the goals they set for themselves. When they fall short of their unrealistic expectations, they tend to withdraw, become overly self-critical, and lose motivation. Thus,

this never-ending cycle results in lower self-esteem, anxiety, depression, and these self-defeating thoughts in them can predict later suicidal ideation (Tucker & Wingate, 2014).

Additionally, those with higher levels of perfectionism often worry about others' opinions and think that if they admit their imperfections, they won't be accepted (Kaur & Rani, 2012). These erroneous beliefs might result in the feeling of unpleasant emotions like guilt, humiliation, and embarrassment (Tangney, 2002). Besides, Hollender (1965) noted that individuals with higher levels of perfectionism who are constantly unable to achieve unrealistic goals can predict a higher possibility of suicide ideation. It is suggested that individuals with higher levels of perfectionism frequently exhibit an all-or-nothing mentality, where they only consider a task as a success when there is no single mistake made during the process, and have rigid ideas of what success and failure are. Individuals who perceive themselves as autonomous and competent have a higher level of physical and mental health which are antithetical to the suicidal state. In other words, when an individual's basic psychological needs are not fulfilled, it predicts the increased of chances developing maladaptive functioning or behaviours such as suicide ideation (Britton et al., 2014).

Apart from that, another theory such as Baumeister's Escape Theory (1990), can also be used to explain the results in the present study. The theory included six steps for how an individual develops suicidal ideation and behaviours which involved: (1) falling short of expectations, (2) self-attributions, (3) high self-awareness, (4) negative effects and emotions, (5) cognitive deconstruction, and (6) consequences of deconstruction (Dean & Range, 1999). The theory mentioned that the development of one's suicidal thoughts begins when individuals believe that their current circumstances fall far below standard and the sense of negative self-implications such as low self-esteem will then be developed. It is shown in the work of Burns and Beck (1978) where they found a connection between perfectionism, negative self-implication, self-blame and internal attributions. After that, the individual will

develop a high self-awareness where they will perceive themselves as inadequate, or incompetent and constantly observe their behaviours for any deviations from the expectation, which in turn arise their negative affect and emotions such as anxiety and depression, and suicide ideation (Dean & Range, 1999). This was supported by Adkins and Parker's (1996) work where they found that perfectionism is empirically related to suicidality. The fifth step, which is cognitive deconstruction, is a result of individuals shifting from negative effects to a state of cognitive deconstruction in which hopelessness becomes critical (Dean & Range, 1999). Helplessness developed as a result of constantly expecting negative outcomes and could not foresee a pleasant acceptable future (Baumeister, 1990). It is also one of the predictors of suicidal behaviours and ideation other than depression (Beck, 1986). Eventually, as the consequence of cognitive deconstruction, individuals with higher levels of perfectionism will experience a decrease in inhibitions, which results in the removal of certain internal barriers to suicide, such as the reason for living. Hence, in line with our current findings, perfectionism positively predicted suicide ideation.

Cognitive Flexibility and Suicide Ideation

H₂: Cognitive flexibility negatively predicted suicide ideation among Malaysian undergraduates.

The present findings supported the second hypothesis, H_2 , where cognitive flexibility was reported to negatively predict suicide ideation among Malaysian undergraduate students. Our findings aligned with the study by Hausman et al. (2020) which showed that people with difficulties in maintaining cognitive flexibility would increase the likelihood of impulsive suicide thoughts and behaviours. Cognitive flexibility is important in slowing down mindset and recognising alternatives to current activities that provide more satisfactory outcomes (Hausman et al., 2020). With that, individuals with higher levels of cognitive flexibility tend

to have a better ability in generating solutions when they face challenges, which decreases the likelihood of developing ill-being and maladaptive behaviour such as suicide ideation.

Meanwhile, the BPNT can be applied to explain the condition where the fulfilment of the needs for competence can presumably lead to the feelings of being alive, prepared, and confident in cognitively flexible individuals (Mustafa, 2018, as cited in Algharaibeh, 2020). In other words, when individuals have a sense of competence, they will have a higher confidence in their abilities to achieve their goals and complete the tasks in their daily life (Britton et al., 2014). Besides, a study by Algharaibeh (2020) proved that students with higher cognitive flexibility can easily change their cognitive structures, which aids in problem-solving and enhances their perceptions of competence. In other words, individuals with higher levels of cognitive flexibility are more likely to solve problems effectively and adapt to various challenging situations. Similarly, another study showed that students with high cognitive flexibility can organise and adapt their knowledge to achieve their desired results even when they are in challenging situations (Zimmerman & Schunk, 1989, as cited in Algharaibeh, 2020). Therefore, based on the proposed theory, when the needs for autonomy, competence and relatedness are satisfied, an individual's psychological well-being is less likely to be affected and it can predict lower maladaptive outcomes (Ryan & Deci, 2000), including suicide ideation. Research suggested that competence and autonomy are important in an individual's physical and psychological well-being (Britton et al., 2014). With that, individuals with higher levels of competence and autonomy have an improved quality of life, higher level of happiness in life, and lower levels of depression and anxiety (Ng et al., 2012). Hence, people who achieve the needs for autonomy and competence have a better physical and mental health because they are expected to be less likely to think about suicide ideation (Britton et al., 2014).

Moreover, cognitive flexibility is implicated in mechanisms that support the effective regulation of emotions (Ochsner & Gross, 2007). By that, individuals are unconsciously using the emotion regulation techniques to cope and overcome difficult situations by applying them to various circumstances with the purpose to adapt to the demands of the environment (Rolston & Lloyd-Richardson, 2016). It means that those with higher levels of cognitive flexibility are more likely to have better coping mechanisms, which in turn decreases the probability of developing ill-being and predicts suicide ideation. Contradictory, individuals with poorer cognitive flexibility tend to focus on negative emotions due to their inability in generating solutions when they encounter new and unexpected conditions or situations. Other than that, people with lower cognitive flexibility may find it difficult to break free from thinking about the causes and consequences of negative emotions (Miranda et al., 2013). Consequently, they might perceive helplessness as for them, they are left with no choice except to suicide to escape this intolerably anxious situation. Therefore, consistent with our research findings, cognitive flexibility is shown to negatively predict suicide ideation.

Implications of Study

Theoretical Implications

The current study filled the research gap by focusing on both perfectionism and cognitive flexibility to examine their predictive relationships with suicide ideation among Malaysian undergraduates. The contribution to the literature review could be considered important as the insight regarding the roles of both perfectionism and cognitive flexibility in suicide ideation are insufficient and ambiguous as of now (Lai et al., 2018; Smith et al., 2017; Shahnaz et al., 2018). To explain this, there is very limited or almost none of the literature in the Malaysian context focused on both perfectionism and cognitive flexibility as the predictors of suicide ideation, instead the majority of them focused on other variables across

different populations. For instance, a study by Chan et al. (2016) showed that psychosocial distress such as anxiety, loneliness, hopelessness and involvement in high-risk behaviours such as physical fighting and sexual activity are linked to the increased risk of suicidal thoughts among Malaysian adolescents. Besides, depression (Chin & Wu, 2020; Ibrahim et al., 2014) and self-esteem (Chin & Wu, 2020) are also reported as the predictors of suicide ideation among Malaysian adolescents. Other than that, Foo et al. (2019) found that spiritual intelligence and psychological well-being significantly predicted suicide ideation among Malaysian emerging adults. Thus, the present study provided new insight by discovering the significant predictive relationship between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation among undergraduates in Malaysia.

Practical Implications

The present study revealed that perfectionism positively predicted suicide ideation, whereas cognitive flexibility negatively predicted suicidal thoughts among undergraduates. This empirical finding could serve as a reference for professional practitioners in designing a program to educate society about the potential risk factors of suicide ideation and appropriate strategies to reduce the risks. It is because perfectionism remains a controversial personality trait until today due to the inconsistent findings which stated that it can be both adaptive and maladaptive (Ruggeri, 2018), while cognitive flexibility that plays a vital role in one's problem-solving skills has an unclear role in suicide ideation as well (Lai et al., 2018). Rather than including common risk factors of suicide ideation such as experiencing negative life events, depression and anger (Bae et al., 2013), practitioners could further introduce more potential risk factors such as perfectionism and cognitive flexibility. Moreover, based on the study by Stanley et al. (2021), coping strategies such as positive or distractive-based activities that included socialising and doing something the person enjoys, and also mindfulness-based activities are proved to be effective in reducing suicidal thoughts.

Apart from that, the findings of the present study could also assist professional counsellors and relevant authorities in educational settings to detect and support undergraduate students who show a higher level of perfectionism or low level of cognitive flexibility as they could have a greater tendency to develop suicide ideation. This is critical as suicide ideation can serve as the antecedent to the future suicide attempt and completed suicide (Brent et al., 1993), where strong suicidal thoughts will lead to suicide attempts (Klonsky et al., 2016). Importantly, in university, students tend to set higher targets for themselves (Curran & Hill, 2019) but at the same time struggle to graduate with flying colours and increase their chances for better job opportunities. Thus, higher education institutions could be more vigilant toward this at-risk group by providing suitable strategies and resources to better support them. For instance, programmes that incorporate the concepts of perfectionism and cognitive flexibility, validation of emotions, normalising failure, or trainings to increase cognitive flexibility could be proposed by relevant units in the university. It could assist university students to improve their coping skills which in turn lowers the risk of developing suicide ideation. Furthermore, counsellors in university could offer counselling sessions according to the mode that is preferred by the students, either through online or face-to-face sessions, to increase the effectiveness and accessibility of the services. In sum, the empirical evidence of the present study could serve as a reference for relevant authorities in different settings to create interventions regarding the discussed topic.

Limitations of Study

There were a few limitations in the current study. First and foremost, the use of purposive sampling, which is a type of non-probability sampling method, can reduce the generalisability of the findings to the general population. The purposive sampling method was utilised in the present study where particular inclusions were set by the researchers.

However, this sampling method can lead to selection bias because the recruited respondents are selected by the researchers and most of them are also persons who are convenient and easier to reach out to (Baxter et al., 2015). Therefore, the findings of purposive sampling could be biased and inappropriate to represent the whole population but only the subpopulation that the sample was recruited (Andrade, 2020). As a consequence, the generalisation of the findings of our study was bound up with this limitation.

Besides, the use of an online self-report survey might lead to response bias. The online survey helps researchers to access a particular group easily due to time saving and low-cost research (Wright, 2006). However, it is difficult for researchers to determine the participant's response rate (Durga Prasad Nayak & Narayan, 2019). Although researchers send the online survey link or QR code to participants through social media such as WhatsApp and Meta, participants have the right to choose whether they want to answer the survey. As a result, researchers do not know whether the participants have answered the online survey. Additionally, participants who answer the online survey by choosing midpoints for all the statements in the scales can also lead to response bias (Durga Prasad Nayak & Narayan, 2019). This situation occurs when participants want to quickly complete the online survey or do not bother to read the statements one by one throughout the questionnaire, and thus they tend to simply choose the midpoints of the scales. Other than that, the online self-report survey could increase the tendency of participants to provide socially preferred responses (Brenner & DeLamater, 2016) as well which can affect the reliability of the results.

Furthermore, socio-demographics such as age, gender, marital status, education level, socioeconomic status and so on were not considered as the other factors that could contribute to an individual's suicide ideation. According to WHO (2014), the suicide rate of men is approximately three times the number of suicides of women, and the disparity is even

obvious in high-income countries. Although children and young adults have lower overall suicide rates, a disproportionately high percentage of deaths in these age groups are caused by suicide. In addition, suicide is the number two killer of people between the ages of 15 and 29 and the number one killer of girls between the ages of 15 and 19 (Patton et al., 2009). All these might indicate that the socio-demographic could be a mediating role or an independent factor that affects one's suicide ideation. Therefore, as the present study was only based on the assessment of cognitive flexibility and perfectionism as the study variables, it might overlook the impact of the socio-demographic in the data analysis process, which might lead to inaccuracy and affect the preciseness of the results of the study.

Recommendations of Study

It is recommended that future study could employ the probability sampling method, in which everyone in the sample population has an equal chance to be randomly recruited into the research study (Wisniowski et al., 2020). This is due to the reason that probability, also known as the random sampling method, can assure the generalisation of the research findings to the whole target population (Andrade, 2020). For example, researchers could consider adopting a cluster sampling method, where undergraduate students are divided into separate clusters according to existing characteristics such as geographic locations, and the clusters will then be randomly chosen. Thus, the likelihood that the findings are appropriate to represent the entire target population is enhanced since it can yield less biased results (Bornstein et al., 2013).

Meanwhile, to reduce the response bias, it is recommended that researchers could consider utilising a mixed-mode survey by using several methods in data collection (De Leeuw, 2005). It is because every data collection method has its strengths and limitations (De Leeuw, 2005). Thus, this mode of the survey that combines the beneficial aspects of different data collection techniques and counterbalances the weaknesses can aid in decreasing errors or

biases in the results compared to using only a single method in collecting data (De Leeuw, 2005; Guinaliu & De Rada, 2020). For instance, researchers can combine the online survey with other assessment methods such as paper-based surveys, face-to-face interviews or telephone interviews so that those who have no access to the internet or are unable to be reached out to physically have equal chances to participate in the study. Besides, researchers could make use of indirect questioning in designing the questionnaire to minimise the response bias. A study by Fisher (1993) proved that indirect questions help to reduce the social desirability bias when dealing with sensitive issues, such as suicide ideation. Apart from that, future studies are also recommended to include the socio-demographics in the data analysis since they could have certain roles in the study variables. Thus, it could yield more accurate results and increase the credibility of the research.

Conclusion

To conclude, the present study was conducted with the purpose to examine the predictive relationship between perfectionism and suicide ideation, and between cognitive flexibility and suicide ideation among Malaysian undergraduate students. Despite the limitations, the findings revealed that a higher level of perfectionism positively predicted suicide ideation among undergraduates in Malaysia. At the same time, cognitive flexibility appears to predict suicide ideation negatively. The current study provided an insight into the relationship between perfectionism, cognitive flexibility and suicide ideation. Future research was recommended to conduct more in-depth studies and consider more variables that might yield a change in the relationships of perfectionism and cognitive flexibility with suicide ideation in the general population.

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Appendices**Appendix A****Sample Size Calculation***Effect Size of Perfectionism*

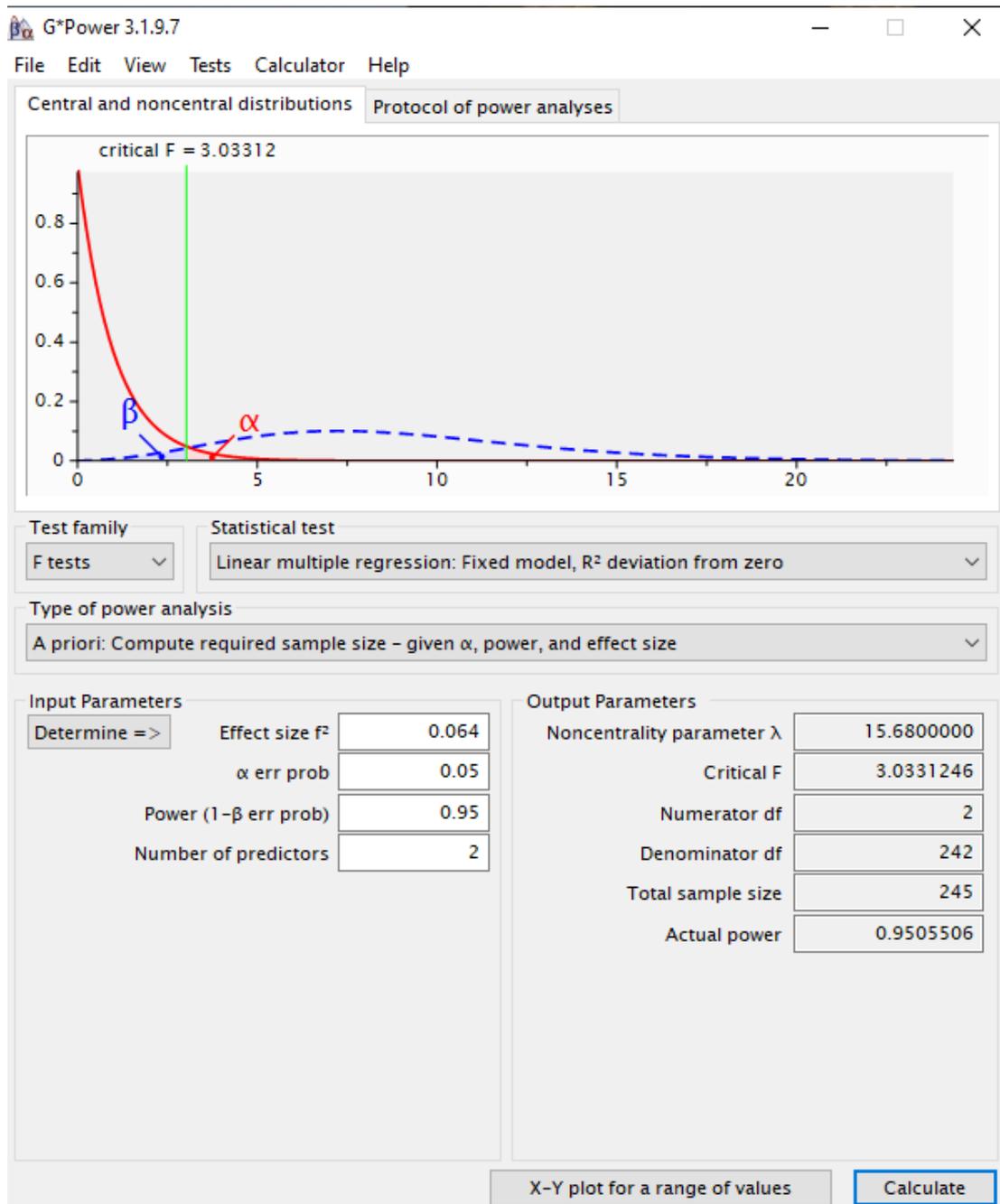
$$f^2 = \frac{(-0.28)^2}{1 - (-0.28)^2} = 0.085$$

Effect Size of Cognitive Flexibility

$$f^2 = \frac{(0.20)^2}{1 - (0.20)^2} = 0.042$$

Average Effect Size

$$f^2 = \frac{(0.085 + 0.042)}{2} = 0.064$$



Appendix B

Informed Consent Form

PERSONAL DATA PROTECTION NOTICE

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.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:
 - a) Name
 - b) Identity card
 - c) Place of Birth
 - d) Address
 - e) Education History
 - f) Employment History
 - g) Medical History
 - h) Blood type
 - i) Race
 - j) Religion
 - k) Photo
 - l) Personal Information and Associated Research Data
2. The purposes for which your personal data may be used are inclusive but not limited to:
 - a) For assessment of any application to UTAR
 - b) For processing any benefits and services
 - c) For communication purposes
 - d) For advertorial and news
 - e) For general administration and record purposes
 - f) For enhancing the value of education
 - g) For educational and related purposes consequential to UTAR
 - h) For replying any responds to complaints and enquiries
 - i) For the purpose of our corporate governance
 - j) For the purposes of conducting research/ collaboration
3. 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.
4. 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.

5. 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.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.
7. 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.
8. You may access and update your personal data by writing to us at _____.

Acknowledgment of Notice

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

.....
Name:
Date:

Appendix C

Online Questionnaire



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Default Question Block

Thank you for your interest in participating in this study on the relationship between perfectionism, cognitive flexibility and suicide ideation.

We are looking for participants with criteria listed below:

1. Undergraduate student
2. Aged 18 to 25 years old
3. Malaysian

This online survey will take approximately 10-15 minutes to complete. Your opinion is valuable to us, regardless how much or little you know about the topic. Kindly read and answer questions carefully. There is no right or wrong answer; we simply want to know your personal opinion about the topic. Your data will be treated with strict confidentiality and will only be analysed by the research team. Participation in this study is completely voluntary and the researchers do not foresee any risks. You can terminate your participation at any time. However, please be aware that you will not be able to withdraw any of the data you provided upon submitting the questionnaires. The study has been reviewed by Universiti Tunku Abdul Rahman Scientific and Ethical Committee.

PERSONAL DATA PROTECTION NOTICE

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.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

- a) Name
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- h) Blood type
- i) Race
- j) Religion
- k) Photo
- l) Personal Information and Associated Research Data

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

- a) For assessment of any application to UTAR
- b) For processing any benefits and services
- c) For communication purposes
- d) For advertorial and news
- e) For general administration and record purposes
- f) For enhancing the value of education
- g) For educational and related purposes consequential to UTAR
- h) For replying any responds to complaints and enquiries
- i) For the purpose of our corporate governance
- j) For the purposes of conducting research/ collaboration

3. 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.

4. 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.

5. 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.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.

7. 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.

8. You may access and update your personal data by writing to us at oohsl@utar.edu.my (Dr. Ooh Seow Ling) or zoe1317@1utar.my (Ms Zoe Chng Woon Chin) or keeyeeliew15@1utar.my (Ms Liew Kee Yee) or wjie5113@1utar.my (Ms Tiong Wei Jie).

Acknowledgment of Notice

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

Demographic Profile

Demographic Profile

1. Age

2. Gender

- Male
- Female

3. Ethnicity

- Malay
- Chinese
- Indian
- Others:

4. Religion

- Muslim

- Buddhist
 Hindu
 Christian
 Others:

5. Name of University:
(Eg. UTAR)

6. Program of Study:

Block 2

Part I: Frost Multidimensional Perfectionism Scale - Brief (FMPS-B)

Instructions: Please answer the following questions in relation to how much they apply to you. Do not spend too much time on any one question.

1. If I fail at work/school, I am a failure as a person.

- Strongly disagree
 Disagree

- Neutral
- Agree
- Strongly agree

2. I set higher goals than most people.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

3. If someone does a task at work/school better than I do, then I feel as if I failed the whole task.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

4. I have extremely high goals.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

5. Other people seem to accept lower standards from themselves than I do.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

6. If I do not do well all the time, people will not respect me.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

7. I expect higher performance in my daily tasks than most people.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

8. The fewer mistakes I make, the more people will like me.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Part II: 20-Item Cognitive Flexibility Inventory (CFI)

Instruction: Please use the scale below to indicate the extent to which you agree or disagree with the following statements.

1. I am good at “sizing up” situations.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

2. I have a hard time making decisions when faced with difficult situations.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

3. I consider multiple options before making a decision.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

4. When I encounter difficult situations, I feel like I am losing control.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

5. I like to look at difficult situations from many different angles.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

6. I seek additional information not immediately available before attributing causes to behaviour.

- Strongly disagree

- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

7. When encountering difficult situations, I become so stressed that I cannot think of a way to resolve the situation.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

8. I try to think about things from another person's point of view.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

9. I find it troublesome that there are so many different ways to deal with difficult situations.

- Strongly disagree

- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

10. I am good at putting myself in others' shoes.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

11. When I encounter difficult situations, I just don't know what to do.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

12. It is important to look at difficult situations from many angles.

- Strongly disagree
- Disagree
- Somewhat disagree

- Neutral
- Somewhat agree
- Agree
- Strongly agree

13. When in difficult situations, I consider multiple options before deciding how to behave.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

14. I often look at a situation from different viewpoints.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

15. I am capable of overcoming the difficulties in life that I face.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral

- Somewhat agree
- Agree
- Strongly agree

16. I consider all the available facts and information when attributing causes to behavior.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

17. I feel I have no power to change things in difficult situations.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

18. When I encounter difficult situations, I stop and try to think of several ways to resolve it.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral

- Somewhat agree
- Agree
- Strongly agree

19. I can think of more than one way to resolve a difficult situation I'm confronted with.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

20. I consider multiple options before responding to difficult situations.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Agree
- Strongly agree

Block 4

Part III: Scale for Suicide Ideation (SSI)

*Instructions: Please carefully read each statement below. Mark the one statement that **best** describe how you have been feeling in the lifetime. Be sure to read all the statement before making a choice.*

1. Wish to live

- Moderate to strong
- Weak
- None

2. Wish to die

- None
- Weak
- Moderate to strong

3. Reasons for living or dying

- For living outweigh for dying
- About equal
- For dying outweigh for living

4. Desire to make active suicide attempt

- None
- Weak
- Moderate to strong

5. Passive suicidal desire

- Would take precautions to save life
- Would leave life/death to chance
- Would avoid steps necessary to save/maintain life

6. Time dimension: Duration of suicide ideation or wish

- Brief, fleeting periods
- Longer periods
- Continuous (chronic) or almost continuous

7. Time dimension: Frequency of suicide

- Rare, occasional
- Intermittent
- Persistent or continuous

8. Attitude toward ideation or wish

- Rejecting
- Ambivalent; indifferent
- Accepting

9. Control over suicidal action or acting-out wish

- Has sense of control
- Unsure of control
- Has no sense of control

10. Deterrents to active attempt (e.g., family, religion, irreversibility)

- Would not attempt because of a deterrent
- Some concern about deterrents
- Minimal or no concern about deterrents

11. Reason for contemplated attempt

- To manipulate the environment; get attention; revenge
- Combination of 0 and 2
- Escape, surcease, solve problems

12. Method: Specificity/planning of contemplated attempt

- Not considered
- Considered; but details not worked out
- Details worked out/well formulated

13. Method: Availability/opportunity for contemplated attempt

- Method not available; no opportunity
- Method would take time/effort; opportunity not readily available
- Method and opportunity available
- Future opportunity or availability of method anticipated

14. Sense of "capability" to carry out attempt

- No courage, too weak, afraid, incompetent
- Unsure of courage, competence

Sure of competence, courage

15. Expectancy/anticipation of actual attempt

- No
- Uncertain, not sure
- Yes

16. Actual preparation for contemplated attempt

- None
- Partial (e.g., starting to collect pills)
- Complete (e.g., had pills, loaded gun)

17. Suicide note

- None
- Started but not completed; only thought about
- Completed

18. Final acts in anticipation of death (e.g., insurance, will)

- None
- Thought about or made some arrangements
- Made definite plans or completed arrangements

19. Deception/concealment of contemplated suicide

- Revealed ideas openly
- Held back on revealing
- Attempted to deceive, conceal, lie

Block 5

Risks and Discomfort

The use of deception might possibly arouse psychological discomfort. Through this full debriefing, we hope to relieve the uncomfortable feelings. However, if the discomfort remains, please do not hesitate to email us at ooosl@utar.edu.my (Dr. Ooh Seow Ling) or zoe1317@1utar.my (Ms Zoe Chng Woon Chin) or keeyeeliew15@1utar.my (Ms Liew Kee Yee) or wjie5113@1utar.my (Ms Tiong Wei Jie). Other than that, you can reach to UTAR Counselling Guidance Unit via email at cgukpr@utar.edu.my (UTARian) or contact Befrienders 24-hours hotline at 603-76272929 (non-UTARian).

Appendix D

Ethical Approval Letter for Research Project



UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/299/2021

30 December 2021

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 projects from Bachelor of Social Science (Hons) 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.	Social Loafing Behaviour in Collaborative Group Work Among University Students in Malaysia: Self-Efficacy, Group Cohesion and Task Interdependence	1. Dheenosheemi a/p Maganthrin Kumar 2. Khoo Jing Wen 3. Kishuvan a/l Marimuthu	Dr Chie Qiu Ting	30 December 2021 - 29 December 2022
2.	Examining the Role of Materialism, Perceived Stress and Gender Difference in Compulsive Buying Behavior Among Young Adults in Malaysia	1. Looi Ke Xin 2. Tan Kai Ni 3. Tee Geok Hong		
3.	The Mediating role of Social Anxiety on Perceived Stress and Internet Addiction Among Undergraduate Students in Malaysia	1. Chong Khai-Juen 2. Lai Ming Han 3. Len Wan Qi		
4.	The Association of Psychological Distress and Burnout on Job Satisfaction Among Frontliners in The Healthcare Industry During the Pandemic COVID-19 in Malaysia	1. Loochana a/p Krishna Rao 2. Adrianna a/l P Silvarajah 3. Visshan a/l Miyanthan	Dr Nurul Iman binti Abdul Jalil	
5.	Perceived Stress and Emotional Intelligence as Predictors of Life Satisfaction Among Undergraduates in Malaysia	1. Ooi Yu Jie 2. Lim Syi Wei 3. Cham Han Tein		
6.	The Mediating Role of Money Desire in Death Anxiety Toward Materialism Among Young Adults in Malaysia	1. Britney Bong Sue Fun 2. Jemimah Choong Giet Hee 3. Kwok Koh Yee		
7.	Social Anxiety, Perceived Stress Level and Perceived Social Support as Predictors of Smartphone Addiction Among Undergraduate Students in Malaysia	1. Chua Pei Yi 2. Chuah Yi Ting 3. See Jie Sheng	Mr Tay Kok Wai	
8.	The Relationship Between Intrinsic Motivation, Extrinsic Motivation on Job Performance and Job Satisfaction Among Academic Staff in Malaysia	1. Chen Chi Shan 2. Ishwinder Kaur a/p Jasper Singh 3. Jessica Teoh Wan Jie		
9.	Cognitive Behavioral Therapy Informed Workshop on Sleep: A Preliminary Randomized Controlled Trial	1. Joanna Eileen Chan 2. Michele Chu Hiew Mun 3. Sanjeetra a/p Ravindharan		

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my



No	Research Title	Student's Name	Supervisor's Name	Approval Validity
10.	Cognitive Behavioral Therapy Informed Workshop on Procrastination: A Preliminary Randomized Controlled Trial	1. Phuah Wai Hong 2. Wong Weng Han	Mr Tay Kok Wai	30 December 2021 - 29 December 2022
11.	Relationship Between Self-Esteem, Fear of Covid-19 and Instagram Addiction Among Undergraduates in Malaysia	1. Lee Jia Jie 2. Loon Ling Lee 3. Thio Kai Qi	Ms Evelyn Toh Kheng Lin	
12.	The Relationship Between Perfectionism, Cognitive Flexibility and Suicide Ideation Among Malaysian Undergraduates	1. Zoe Chng Woon Chin 2. Liew Kee Yee 3. Tiong Wei Jie		
13.	The Relationship Between Depression, Anxiety, Perceived Social Support and Suicidal Intention Among Gay and Lesbian Young Adults' Community	1. Fo Han Sien 2. Gabriel Chai Yeet Jher 3. Beh Jin Ying		
14.	Knowledge, Risk Perception and Protective Behaviour Among Malaysian Young Adults During COVID-19 Pandemic	1. Gan Hui Min 2. Jeanette Elena Tan 3. Swi Zi Qing	Dr Gan Su Wan	
15.	Online Social Support, Offline Social Support and Academic Readiness as Predictors of Academic Resilience Among Undergraduates in Malaysia	1. Kenny Ng Kai Feng 2. Ng In Yan 3. Karthiyaini a/p Sathiyaseelan		
16.	Big 5 Personality Traits as the Predictors of Psychological Well-being Among Adults Working from Home (WFH) in Malaysia During COVID-19 Pandemic	1. Liew Qian Qi 2. Lim Yee Wen	Ms Sanggari a/p Krishnan	
17.	Impact of Psychological Distress, Fear, Changes in Lifestyle-Related Behavior and Life Satisfaction Among Working Adults During Movement Control Order (MCO) in Malaysia	1. Chua Wan Yi 2. Koo Yu Wen 3. Ng Pui Ye		

The conduct of this research is subject to the following:

- (1) The participants' informed consent be obtained prior to the commencement of the research;
- (2) Confidentiality of participants' personal data must be maintained; and
- (3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.
- (4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,



Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Arts and Social Science
Director, Institute of Postgraduate Studies and Research

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 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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Appendix E

Normality Assumptions

Figure E1

Histogram of Perfectionism

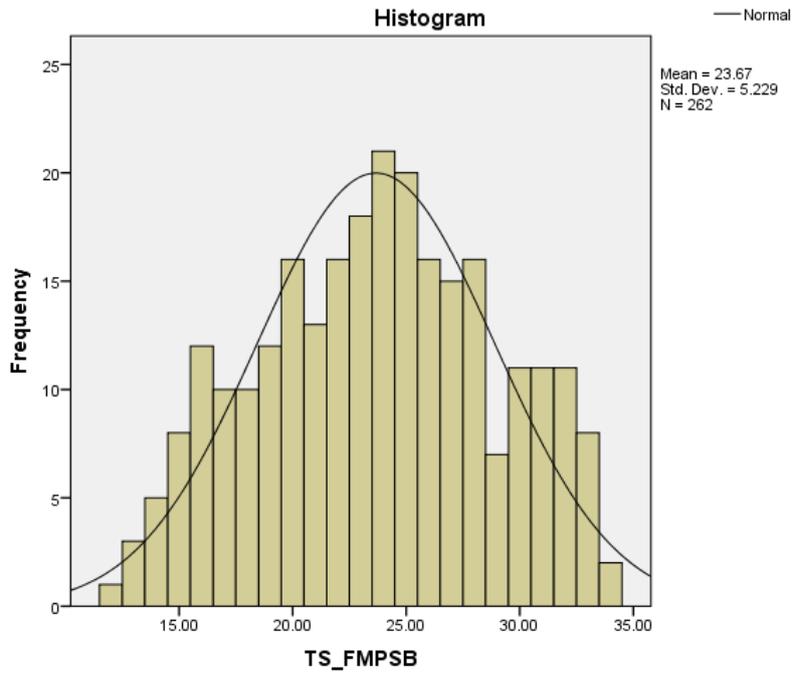


Figure E2

Histogram of Cognitive Flexibility

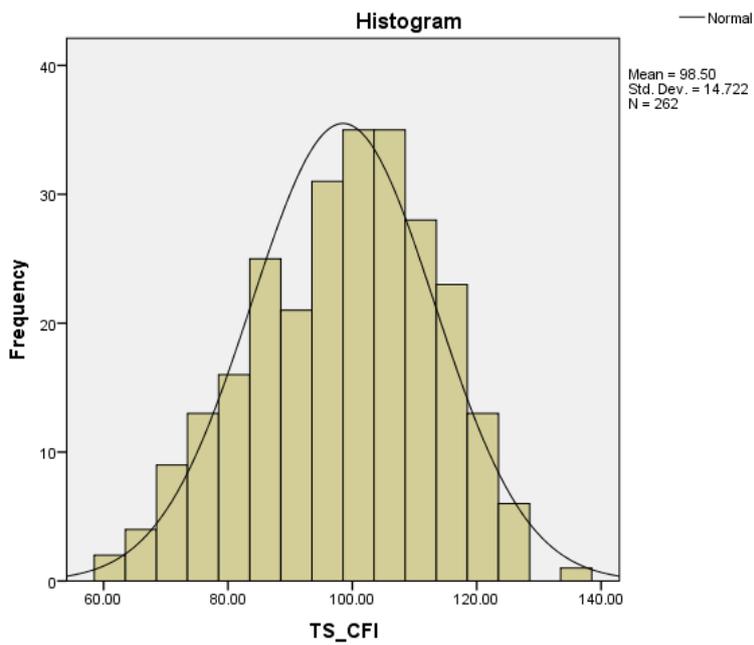


Figure E3

Histogram of Suicide Ideation

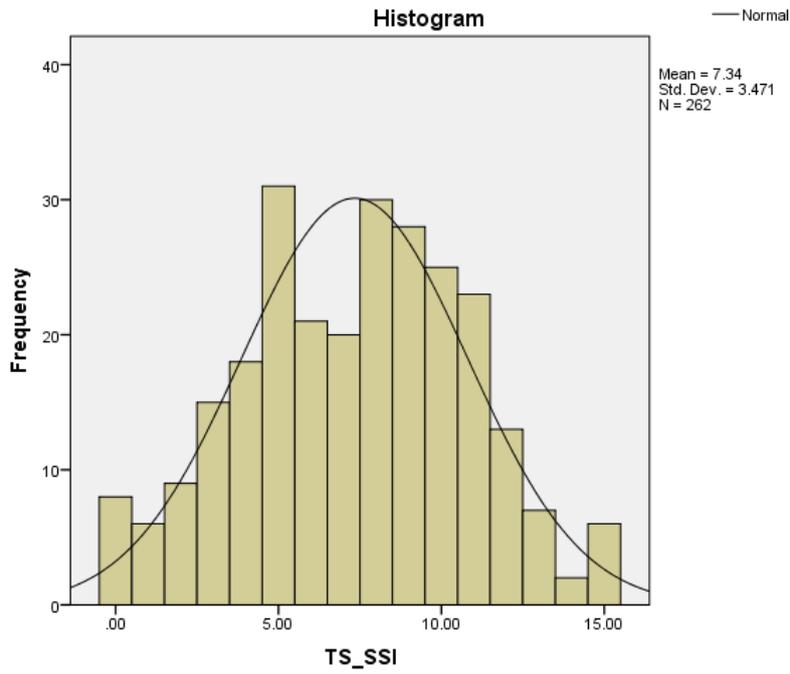


Figure E4

Q-Q Plot of Perfectionism

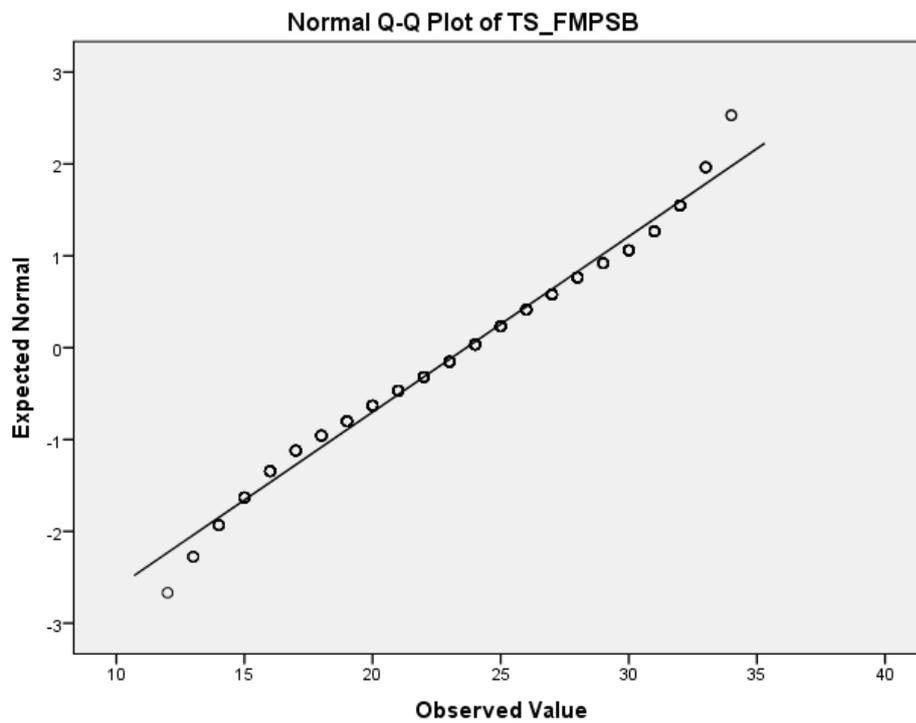


Figure E5

Q-Q Plot of Cognitive Flexibility

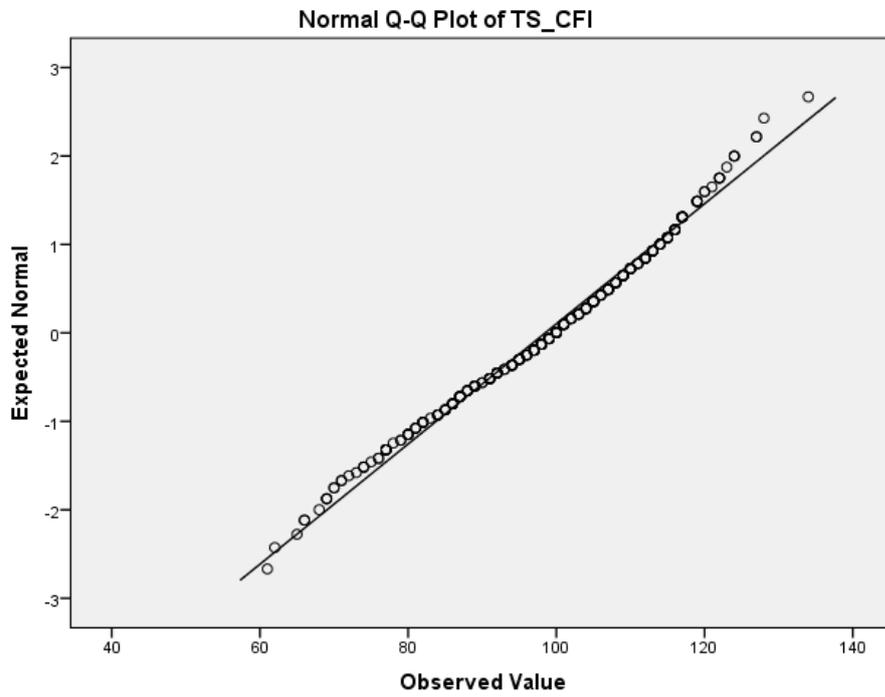


Figure E6

Q-Q Plot of Suicide Ideation

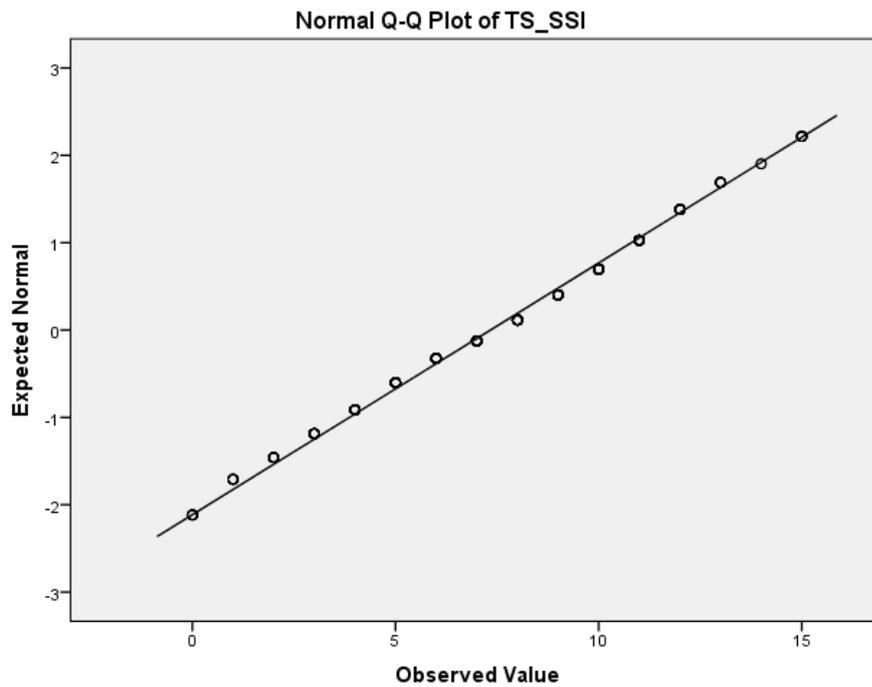


Figure E7

Boxplot of Perfectionism

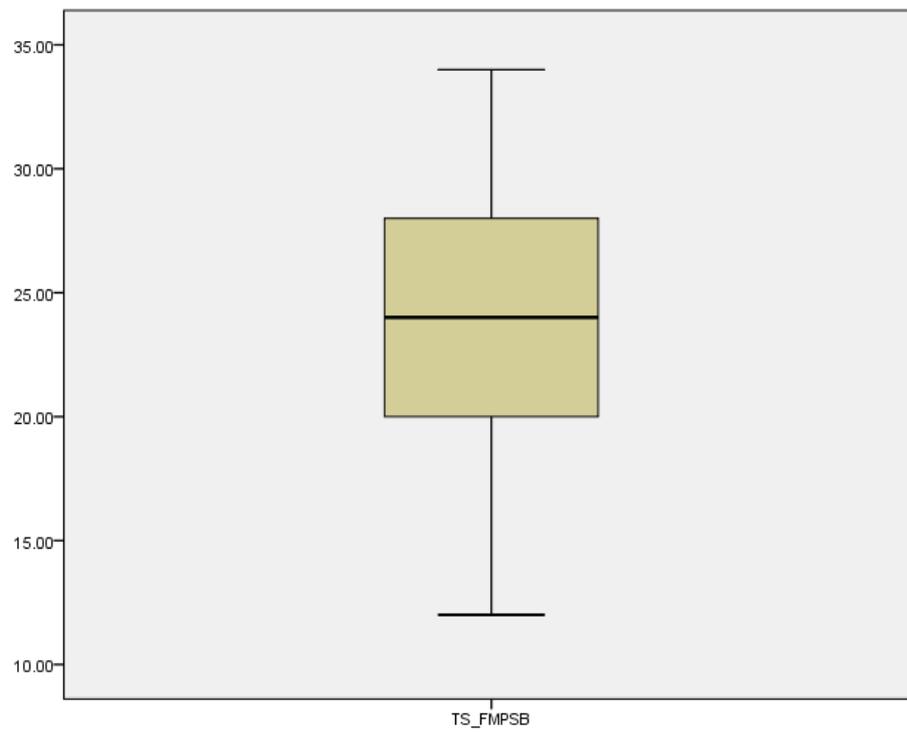


Figure E8

Boxplot of Cognitive Flexibility

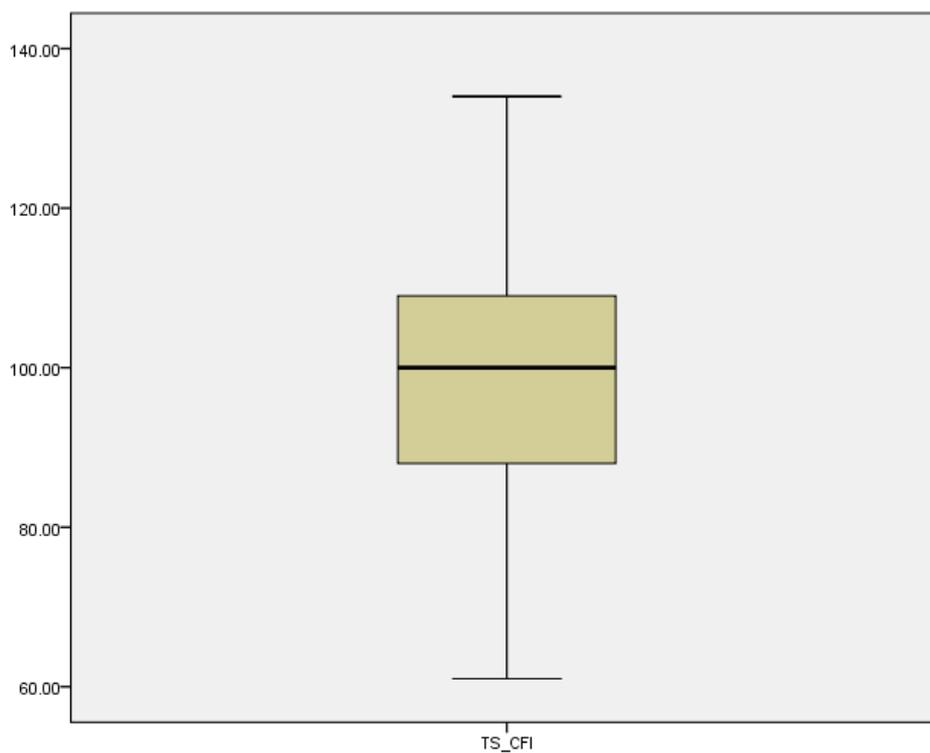
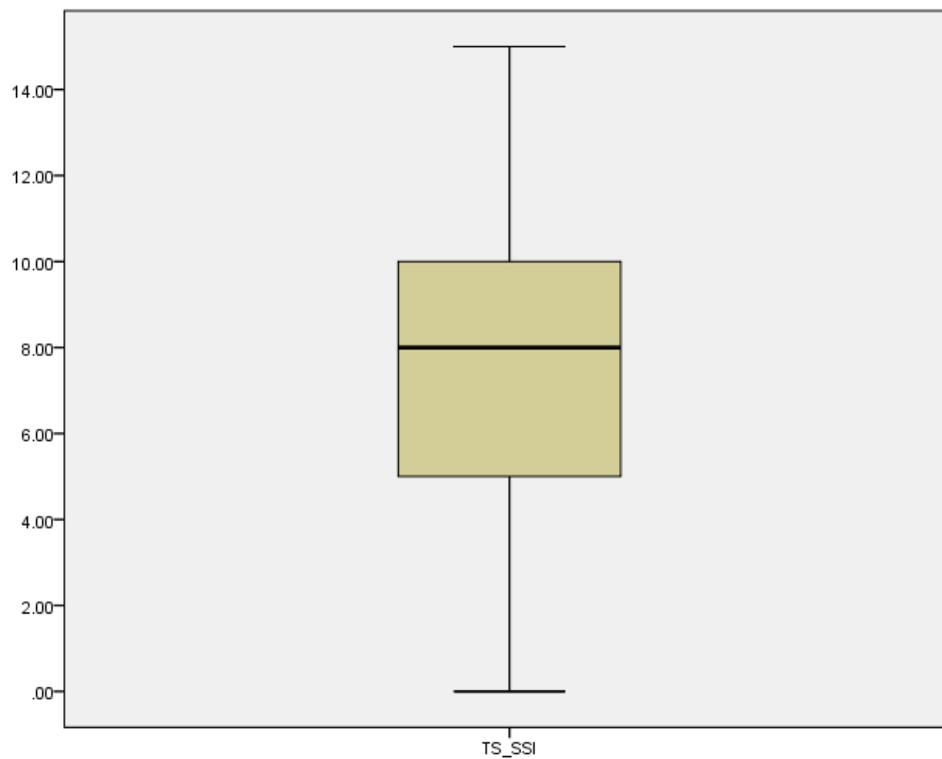


Figure E9*Boxplot of Suicide Ideation***Table E1***Kolmogorov-Smirnov Test for Each Variable*

	Statistic	<i>df</i>	<i>p</i>
Perfectionism	.052	262	.079
Cognitive flexibility	.056	262	.047
Suicide Ideation	.087	262	.000

Note. *df* = Degree of freedom

Appendix F

Multiple Linear Regression Assumptions

Table F1

Test of Multicollinearity

Model		<i>p</i>	Collinearity Statistics	
			Tolerance	VIF
1	(Constant)	.000		
	TS_FMPSB	.010	.996	1.004
	TS_CFI	.013	.996	1.004

Note. Dependent Variable: Suicide Ideation

Table F2

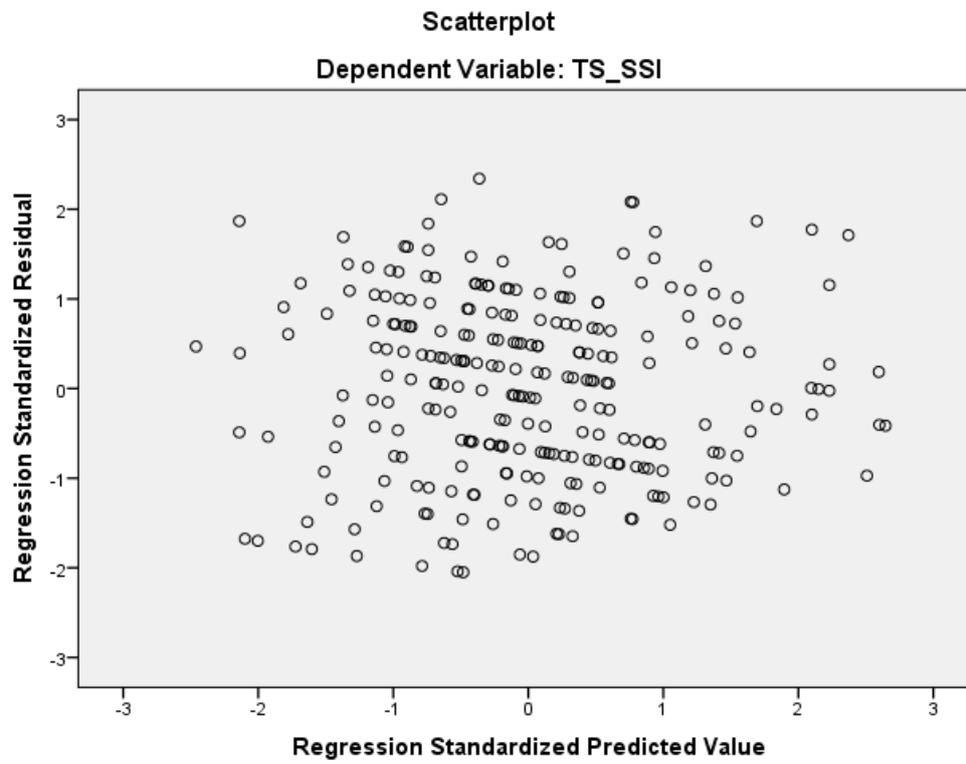
Influential Cases

Case Number	Standard Residual	Suicide Ideation Score	Predicted Value	Residual
7	2.112	14.00	6.830	7.170
8	2.342	15.00	7.052	7.948
51	-2.040	.00	6.925	-6.925
59	2.083	15.00	7.930	7.070
146	2.079	15.00	7.944	7.056
216	-2.050	.00	6.958	-6.958

Note. Dependent Variable: Suicide Ideation.

Figure F1

Scatterplot for Normality of Residual, Linearity of Residual and Homoscedasticity



Appendix G

Turnitin Report

FYP 2

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