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A STUDY OF THE EFFECTS OF FEAR OF COVID-19, LOCUS OF CONTROL,

AND GENDER ON DEPRESSION AMONG UNDERGRADUATES IN MALAYSIA

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A Study of the Effects of Fear of Covid-19, Locus of Control,

and Gender on Depression among Undergraduates in Malaysia.

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APPROVAL FORM

This research paper attached hereto, entitled "A Study of the Effects of Fear of Covid-19, Locus of Control, and Gender on Depression Among Undergraduates in Malaysia" prepared and submitted by H'ng Zhuang Hang, Wong Ker Yin, and Yau Chiow Yee in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

_____   Date: _____

Supervisor

(Dr. Pung Pit Wan)

Abstract

Suicide cases in Malaysia surged during the Covid-19 pandemic and depression remains a huge yet undiscovered cause to this situation, especially among the undergraduate's population. This study aims to identify the effects of fear of Covid-19 and locus of control on depression, as well as to explore the gender differences in depression among undergraduates in Malaysia. Using a cross-sectional survey design, the purposive sampling method was applied to recruit undergraduate respondents from universities and colleges in the entire Malaysia. A total of 343 participants were recruited through online communication platforms and 307 were retained for final analyses. The Fear of Covid-19 Scale (FCV-19S), Levenson's Multidimensional Locus of Control Scale, and Beck's Depression Inventory-II (BDI-II) were utilized for data collection. All 307 participants were 18 to 25 years old, with 55.6% females and 85% Chinese undergraduates. Findings revealed that fear of Covid-19 and all three dimensions of locus of control were associated with depression. However, only internal locus of control and external locus of control (chance) significantly predicted depression. Besides, no significant difference in depression was found in the sample. In short, the current study revealed new insights to the literature of depression in the Malaysia context, shed light on potential ways of addressing depression among undergraduates, and set the foundation for future research to explore different protective factors that can buffer the effects of Covid-19 pandemic on depression.

Keywords: Fear of Covid-19, Locus of control, Depression, Undergraduates

DECLARATION

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

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Table of Contents

Appendices

List of Tables

List of Figures

<center>**Chapter I**</center>

<center>**Introduction**</center>

Background of Study

Depression is one of the greatest chronic medical illnesses that is estimated to influence more than 320 million people globally (Pilania et al., 2019; Torres, 2020). It is known to result in various negative outcomes such as school dropout (Keles et al., 2020), diseases (Islam et al., 2018), and suicide (Razali et al., 2019). Depression among undergraduates has always been a serious issue in Malaysia. The prevalence of depression among undergraudates is significantly higher compared to the older aged-groups or the general population (Islam et al., 2018; Kasim et al., 2021; Minhat et al., 2019; Yusof et al., 2020). Fata Nahas et al., (2019) explained undergraduates are forced with difficult life decisions, academic stress, and even relationships; the struggle in adapting to the transition from adolescence to adulthood may be the cause.

Recently, there has been a spike in the depression rates in Malaysia. According to Dr Noor Hisham, the pandemic has greatly affected the mental health of many Malaysians (Choong, 2021), causing the depression rate to increase (Wong et al., 2020). This is especially evident in the urban population (Abdullah et al., 2021). In addition, gender differences were constantly found in studies of depression. Females tend to be reported as having higher levels of depression as compared to males across different studies (Mao et al., 2019; Salk et al., 2017). The outcomes suggest that the Covid-19 epidemic has a negative consequence on the population's mental well-being, stressing the cruciality to study the factors leading to the increase among undergraduate students.

One of the factors that may have led to an increase in depression rate during this situation is the fear of Covid-19. In a research study done by Colizzi et al. (2020), the feeling of fear towards being infected by the virus may worsen and trigger prior mental health

problems or anxiety reactions on the extreme level. A study done by Rodríguez-Hidalgo et al. (2020) found a positive and direct association between depression and fear towards the coronavirus as well as stress. Additionally, when studying the psychometric characteristics of the Hebrew version of the Fear of Covid-19 scale (FCV-19S), the researchers concluded that the scale is related positively to anxiety, depression as well as stress (Tzur Bitan et al., 2020). The researchers also stated in their study that gender, sociodemographic status, chronic ailment, having a higher risk of contracting the virus, experiences of losing a family due to the virus may result in fear of the virus (Tzur Bitan et al., 2020). The limited studies, especially in the context of undergraduates in Malaysia, stresses a need to study fear of Covid-19 and depression.

Beck's (1996) cognitive theory on depression suggested that pessimistic thoughts about an event are predictive of depressive symptoms of a person. If a person holds negative beliefs and judgements about a life event, in that one has no control over the outcome of the event, this makes that person highly vulnerable to depression. In other words, having an external locus of control makes a person vulnerable to depression. This theory justified Khumalo and Plattner's (2019) claim that depression can be understood from the perspective of locus of control. Levenson (1981) explained the locus of control using a multidimensional model of internal and external factors. Internal locus of control refers to a human's belief that events in their lifetime are largely the products of personal behaviours and decisions, while the external locus of control is defined by a person's beliefs that events and situations of their life are controlled by two types of external forces including powerful others and chance. High beliefs in powerful others refers to people who think that their life events are controlled by people with higher authorities while high beliefs in chance refers to people who think that their fates are controlled by the nature of the world. Locus of control is able to help explain why certain undergraduates are able to cope finely with their challenges in their university

while some students suffer from depression. Students with an external locus of control display passive-styled behaviour and emotional distress. The sense of helplessness, passivity, lack of passion and hopelessness will increase the likelihood of a student developing depression (Khumalo & Plattner, 2019). Studies from China and Botswana found that depression and externalised locus of control are positively correlated (Khumalo & Plattner, 2019; Yu & Fan, 2014). A Malaysian study also concluded that breast cancer survivors with internalised locus of control experienced lower levels of depression (Sharif, 2017). The studies were mainly done in other countries or non-undergraduates, leaving the studies focusing on Malaysian undergraduates rather scarce.

Thus, this research aims to identify whether fear of Covid-19 and locus of control predict depression among undergraduates in Malaysia, as well as to examine the gender differences of depression among undergraduates in Malaysia

Problem Statement

Depression is a common mental issue that has affected over 264 million people worldwide (World Health Organization, 2020). Despite the already-high prevalence rate, the current Covid-19 pandemic puts even more strain on the mental health of the global residents.

The Malaysian government had reported that, in the first three months of year 2021 alone, 336 cases of suicide were recorded. This is equivalent to four cases per day, and depression remains an undeniable factor to this issue (Choong, 2021). Indeed, the prevalence rate of depressive symptoms among the Malaysian urban population increased three-fold after the announcement of a Movement Control Order (MCO) due to the Covid-19 pandemic (Abdullah et al., 2021). A similar situation was found among undergraduates in Malaysia. Studies in Malaysia suggested that undergraduates reported high levels of depressive symptoms even before the pandemic. For example, Hamzah et al. (2019) discovered that 21% of undergraduates were moderately or extremely depressed. Similarly, different prevalence

rates of depression among Malaysian undergraduates were reported, ranging from 28.2% (Ahmed et al., 2020) to the highest of 47.4% (Yusof et al., 2020). In addition, during this pandemic, studies by Wong et al. (2021) and Kassim et al. (2021) further highlighted that undergraduates have a higher chance than the older populations and non-undergraduates to develop mental health issues such as depression. Such a statement was supported by Kalok et al. 's (2020) finding that one in three Malaysian undergraduates suffered from different levels of depression (with a majority at the moderate level) during the Covid-19 pandemic. Such statistics urged for close attention to this vulnerable population as undergraduates who reported depressive symptoms were 11 times more likely to have suicidal thoughts (Mubasyiroh et al., 2020).

Additionally, studies of gender differences in depression yielded inconsistent results. Many identified significant differences between both gender of undergraduates (Hou et al., 2020; Mao et al., 2019; Salk et al., 2017), but some did not (Gao et al., 2020; Islam et al., 2018; Radeef & Faisal, 2020). Knowing if gender differences in depression exist as well as the factors contributing to depression among undergraduates in Malaysia is an urgent matter.

Although the correlation and the effects of fear of Covid-19 on depression were extensively studied in foreign countries (Ahorsu et al., 2020; Alyami et al., 2020; Tsang et al., 2020, & Tzur Bitan et al., 2020), related research in Malaysia were rather scarce. Only a few Malaysian studies related to fear of the coronavirus and depression can be found across primary databases such as Google Scholar, SpringerLink, Frontiers, SceinceDirect, JSTOR, and Sage Journals from the year 2020 onwards. For example, Wong et al. (2021) examined the fear and the progression of mental health disorders among Malaysian adults during this period of pandemic. Another study by Kassim et al. (2021) only examined the significant differences in terms of demographic variables such as age, gender, and job status. Others studied the effects of several variables on depression, but not fear of Covid-19 (Fadzil et al.,

2020; Samsudin et al., 2021). Similarly, while the correlation between locus of control and depression was extensively researched (Aarts et al., 2015; Khumalo & Plattner, 2019; Samani et al., 2016), related research in Malaysia is scarce. As far as the current study is concerned, only two up-to-date studies (from 2017 onwards) about locus of control and depression are available. For instance, the study by Sharif (2017) examined the relationships between locus of control and depression among Malaysian breast cancer patients. Another study by Yeoh et al. (2017), although it examined the predictive effect of locus of control on depression, it targeted Malaysian adults instead of undergraduate students. Taken together, these suggested a need to look into the effects of fear of Covid-19 and locus of control on depression among undergraduates as well as if gender differences of depression exist in this population, given the fact that undergraduates are highly vulnerable to depression. A cross-sectional, quantitative research is necessary to be carried out to fill up this knowledge gap.

Research Questions

Q1: Is there a significant relationship between fear of Covid-19 and depression among undergraduates in Malaysia?

Q2: Is there a significant relationship between internal locus of control and depression among undergraduates in Malaysia?

Q3: Is there a significant relationship between external locus of control (powerful others and chance) and depression among undergraduates in Malaysia?

Q4: Does fear of Covid-19 significantly predict depression among undergraduates in Malaysia?

Q5: Does internal locus of control significantly predict depression among undergraduates in Malaysia?

Q6: Does external locus of control (powerful others and chance) significantly predict depression among undergraduates in Malaysia?

Q7: Is there a significant difference in the level of depression between male and female undergraduates in Malaysia?

Research Hypotheses

H₁: There is a significant relationship between fear of Covid-19 and depression among undergraduates in Malaysia.

H₂: There is a significant relationship between internal locus of control and depression among undergraduates in Malaysia.

H₃: There is a significant relationship between external locus of control (powerful others and chance) and depression among undergraduates in Malaysia.

H₄: Fear of Covid-19 significantly predicts depression among undergraduates in Malaysia.

H₅: Internal locus of control significantly predicts depression among undergraduates in Malaysia.

H₆: External locus of control (powerful others and chance) significantly predict depression among undergraduates in Malaysia.

H₇: There is a significant difference in the level of depression between male and female undergraduates in Malaysia.

Significance of Study

This study is significant to fill the literature gap regarding the consequence of fear of Covid-19 and locus of control towards the prevalence of depression among undergraduate students in Malaysia. The study will allow researchers in Malaysia to discover how undergraduate students' perceived control affects their mental well-being. Studies done overseas have proved a significant relationship for locus of control and depression. However, no recent studies can be found regarding the connection between locus of control and depression among Malaysian undergraduates. Thus, this study will allow researchers to

understand the impact of locus of control on depression, allowing them to develop effective cures or interventions for depression when locus of control is the cause.

Other than that, the study will provide an additional insight to the cause of depression among undergraduates in Malaysia. To date, there is still limited study regarding the impact of fear towards the coronavirus on depression among Malaysian undergraduates. Most of the studies focusing on Covid-19 fear studied its impact on general mental well-being as a whole. There are limited studies focusing only on depression as the effect of fear towards the coronavirus. Which is why this study will be able to provide insight to how fear of Covid-19 is able to positively impact the prevalence of depression among the Malaysian undergraduate community. Other than that, studies have shown that females are more prone to suffer from depression compared to males, this study is important to confirm if the findings are true for the context of Malaysian undergraduates.

Universities or specific mental health sectors can use this study as a reference to host workshops that focus on targeting change in locus of control or fear through behaviour modification methods such as classical and operant conditioning, shaping and so on to deal with depression predicted by locus of control or fear of Covid-19. By training students to have more autonomy over their life and effectively resolving their fears, it might decrease emotional distress or passive behaviour that will lead to depression.

Conceptual Definitions

According to Bernard (2018), depression refers to a type of mental condition that is characterized by feelings of sadness, painfulness, guiltiness, and hopelessness. People who are depressed tend to become demotivated, isolated, apathetic, have low self-esteem, insomniac, distracted, and dysfunctional in carrying out daily activities.

Fear of the coronavirus is conceptualized by Ahorsu et al. (2020) as the feeling of fear towards being infected by the novel coronavirus, Covid-19.

Levenson (1981) defined the locus of control using a multidimensional model of internal and external factors. Internal locus of control can be explained as people's beliefs that the events that happened in their lives are largely the products of personal behaviours and decisions. External locus of control is defined by a person's beliefs that events and situations of their life are controlled by external forces including powerful others and chance.

Lastly, according to Cambridge University (n.d.), undergraduates refer to students who are undertaking their first degree in a university or a college.

Operational Definitions

This study operationalizes depression as a type of mental condition that negatively impacts one's feelings, perceptions, and thoughts. Depression can be assessed by Beck's Depression Inventory-II (Beck, 1996), using 21 sets of self-reported statements to monitor the respondents' severity of depressive symptoms. Respondents who score high are indicative of having more severe depression.

In this study, fear of Covid-19 is defined as feelings of distress towards the probability getting the Covid-19 virus (Ahorsu et al., 2020), which can be assessed by using the Fear of Covid-19 Scale (FCV-19S) which consists of 7 items. Higher score signifies a higher level of fear towards Covid-19.

Thirdly, locus of control refers to the degree to which people perceive the events in their lives as the outcomes of either personal behaviours (internal) or powerful others and chance (external). Locus of control will be measured using Levenson's Multidimensional Locus of Control Scale (1981). The scale contains 24 items that measure three different subscales including internal locus of control, powerful others, and chance. Higher scores in the subscale indicate stronger internal or external locus of control.

Lastly, undergraduates are operationalized as students who are studying at a college or a university in Malaysia, with their age ranging between 18 - 25 years old.

Chapter II

Literature Review

Depression

Depression refers to a mental condition listed as the top three causes of disability worldwide (König et al., 2019). It involves interference in an individual's emotions and is characterized by symptoms such as depressed mood that is clearly observable, significantly diminished interests in previously enjoyed activities, weight loss without dieting, loss of appetite, insomnia, excessive guilt, and more (American Psychiatric Association (APA), 2013). Depression affects almost all populations globally, and due to a lack of objective representation of symptoms, it is often difficult to diagnose, to treat, and to recover from (Islam et al., 2018; Pilania et al., 2019). That being said, depression has always been a global health concern that requires substantial healthcare investments and will continue to pose a challenge to future policymakers.

Research on depression has yielded a massive amount of information related to its risk factors and possible consequences. Risk factors of depression may include a combination of bio-psycho-social factors as well as environmental factors (Razali et al., 2019). These include negative cognitive styles, academic pressure, satisfaction with education, alcohol and cigarette addiction (Mao et al., 2019), limited work and financial resources (Razali et al., 2019), high frequency and long time spent on social media (Keles et al., 2020), sleep deprivation, unfamiliarity with the immediate environment and lack of family support (Islam et al., 2018), and many more. In terms of outcomes, it was concluded that depression may cause impaired academic activities, educational attainment, social activities such as establishing new relationships and expanding social network (Clayborne et al., 2019), large

sum of healthcare costs (König et al., 2019), lowered job performance, increased morbidity as well as suicide (Pilania et al., 2019).

Gender Differences in Depression

Recent studies of depression among Malaysian undergraduates suggested the prevalence rate ranged from 21% to 47.4% (Ahmed et al., 2020; Yusof et al., 2020). Such a high prevalence is because undergraduates are in a phase of life where they struggle to adapt to changes and make important life decisions (Fata Nahas et al., 2019). Moreover, research on gender variations in depression consistently pointed to the fact that females showed a higher chance of expressing depressive symptoms regardless of geographical differences. For example, studies in China affirmed that female undergraduates were more likely to experience depression due to biological differences, greater anxiety sensitivity, or difference in cognitive styles (Sun et al., 2017; Tang & Dai, 2018). Sakib et al. (2021) in their study of depression using a Bangladesh population, along with Saparudin and Soh (2021) in Malaysia, yielded the same results. However, a minority of study did not find any significant gender differences (Gao et al., 2020; Islam et al., 2018; Radeef & Faisal, 2020). Therefore, in accordance with the majority, the current study hypothesized that there is a significant difference in the level of depression between male and female undergraduates in Malaysia.

Fear of Covid-19

According to Ahorsu et al. (2020), fear of Covid-19 refers to the feelings of fear towards being infected by the coronavirus, Covid-19. People who are reported to have high levels of fear of Covid-19 tend to feel afraid and uncomfortable when they think of Covid-19, to show psychological responses such as anxiety and panic when they receive information about Covid-19 and to have low quality of sleep as they worry about contracting Covid-19. Fear is the major emotional response that contributes largely to forthcoming threats such as

the coronavirus (Bavel et al., 2020). Additionally, fear also refers to the psychological arousals and emotional responses that are in negative terms, aroused when people overestimate threats and underestimate the positive consequences from certain behaviours or events (Alyami et al., 2020).

Fear of Covid-19 may bring multiple effects on human's thoughts and behaviors. According to Harper et al. (2020), fear of infecting the corona virus motivated people to change their behaviours in the pandemic of Covid-19. Specifically, the fear of infecting the coronavirus has contributed to enhanced social distancing and hand hygiene, and this suggested that fear is crucial for people to comply with Covid-19 health measures hence facilitating the prevention of Covid-19. Other than that, fear of Covid-19 can also be used to promote social presences, in which people are more prone to seek for acceptances, likes and social information (Addo et al., 2020).

However, the fear of being infected with the coronavirus can bring negative consequences towards people's thoughts, emotions and behaviours as well. According to Arora et al. (2020), fear of the coronavirus can lead people to be over-concern on their health conditions, to feel stressful on their personal and occupational losses, to perform more behaviours that are safety-seeking and reassuring, to avoid taking public transportation and visiting public places, and to have negative influences in their daily functions. Other than that, Ahorsu et al. (2020) also claimed that high levels of fear towards the coronavirus can lead people to present anxiety symptoms and to have high risks of developing psychological problems such as depression.

Locus of Control

Locus of control can be defined as a person's generalized expectancy or beliefs on whether their lives are dominated by their own behaviors and capabilities (internalised

control) or external factors like third parties, destiny or opportunities (externalised control). It is said that the locus of control a person displays may be different in terms of situation and events, but there will always be a more consistent and generalized control that will be displayed by a person in their life course (Rotter, 1966). People with internalised locus of control have a greater sense of self-efficacy, are more likely to bear the responsibilities for their actions, depend on themselves to achieve life goals, and are reported to be more independent and happier. Contradictory, people with an externalised locus of control are more prone to experience learned helplessness, often perceive life as hopeless and powerless, often credit external factors for any chances of success or failure and believe that they are incapable of changing their situation (Lopez, 2009). Hanna Levenson proposed a multidimensional construct for locus of control using a three-dimensional model (Levenson; 2019). Her proposed control scale includes three subscales: internal locus of control, powerful others and chances (Levenson 1981; 2019). Powerful others and chances are an indication of an externalised locus of control (Levenson 1981; 2019). Levenson believes that there are two types of influence on the external locus of control, she explains that people who perceive the world as out of order and chaotic thinks and behaves in a different manner compared to people who perceived the world to be controlled by powerful others in an ordered world (Levenson, 1974; 2019).

Locus of control has long been an area of interest for researchers. A study stated that men are more likely to have internal locus of control compared to women (Awaworyi Churchill et al., 2020). Although an individual's locus of control was found to be stable in the short term, one's locus of control will eventually shift to greater internality as they age (Hovenkamp-Hermelink et al., 2019). Fukuzawa and Inamasu (2020) did a study to determine the locus of control for East Asian and Western countries to identify the difference and its relevance with culture. The study showed that collectivistic behaviour and action is

positively associated with internalised control, all the more so among East Asians (Koreans with low interest in politics, Taiwanese and Japanese from the lower income group compared to westerners).

Studies on locus of control also allowed researchers to link it to individuals' life outcomes. For example, Kobayashi and Farrington (2020) in their study of Japanese high schoolers discovered that externalised locus of control was related with increased likelihood of bullying. Besides, Khumalo and Plattner (2019) also stated that students' abilities to cope with university life are linked to their locus of control. Students with an externalised locus of control will be emotionally distressed and act passively when facing difficulties as their belief systems are set on the fact that they have no control or autonomy over the situation. A person becomes vulnerable to develop depression when they are engulfed by a heightened sense of helplessness, passivity, and hopelessness, which is caused by perceived loss of control.

Fear of Covid-19 and Depression

As discussed earlier, fear of Covid-19 can impact an individual's mental health negatively and lead to psychological issues such as depression. In their study of the Fear of Covid-19 Scale (FCV-19S), Ahorsu et al. (2020) discovered a positive, significant relationship between fear of Covid-19 and depression, anxiety, perceived infectability as well as germ loathing. Other studies on the psychometric properties of the FCV-19S across different countries also reported a significant positive correlation between the scale with depression and anxiety (Alyami et al., 2020; Tzur Bitan et al., 2020).

Other than that, a study was done to study the association between personal exposure to Covid-19, fear of Covid-19, and depression using 732 pairs of adult twins as their sample. The researchers reported that there was a positive relationship between fear of Covid-19 and depression (Tsang et al, 2020). Similar findings were reported in Sakib et al.'s (2021) study

as well. The authors reported a significant association between fear of Covid-19 and depression, and further justified that this association was due to the unpredictability and uncertainty of the disease. Additionally, Slijivo et al. (2020) investigated the levels of fear of Covid-19 and depressive symptoms during the pandemic and found out that greater fear towards the Covid-19 were linked to having intermediate to serious symptoms of depression. Lastly, in a study by Yıldırım et al. (2021) using the Arab population, it was concluded that fear of Covid-19 was a positive predictor of depression.

All the studies reported a significant positive association and effect between fear of Covid-19 and depression. Thus, the current study hypothesized that depression is significantly correlated with fear of Covid-19 and is significantly predicted by fear of Covid-19.

Locus of Control and Depression

Locus of control is crucial in affecting people's psychological well-being and it may lead people to suffer from psychological issues including depression. A study conducted by Khumalo and Plattner (2019) among 272 undergraduates from Southern Africa examined and found that students who depended on chances or powerful others are more likely to develop depression. In line with these findings, Okwaraji et al. (2018) in their research study of the relationship regarding locus of control, self-esteem as well as depression among Nigerian adolescents also concluded that the respondents who showed highly internalised locus of control were less prone to display depressive symptoms. Similar findings were also reported across studies that used the Malaysian population as samples. For example, both Sharif's (2017) study using breast cancer patients and Yeoh et al. 's (2017) study using Malaysian adults all pointed to the fact that higher levels of internal locus of control tends to be associated with lower levels of depressive symptoms. This may be due to the fact that when

people believe that they hold autonomy in their own lives and are inclined to address their stressful events in more proactive ways, they may not produce negative thoughts and are less prone to suffer from depression (Khumalo & Plattner, 2019).

Oppositely, when people have the belief that they have no control over their own lives, they are more likely to believe in chances and depend on others (adopt an external locus of control) in order to solve difficulties. As a result, they tend to feel helpless and are more likely to suffer from depression. Agreeing to the statements, Okwaraji et al. (2018) claimed that adolescents with greater externalised locus of control tend to display depressive symptoms because they rely on their parents to satisfy their needs. When the parents failed to do so, they experienced stress and became depressed. Similarly, Khumalo and Plattner (2019) identified a moderately positive correlation between external locus of control and depression among undergraduates. Surprisingly, the study of Yeoh et al. (2017) found a contrasting result in Malaysia, in that the participants were less prone to display depressive symptoms as they had the belief that their life events were being controlled by people who had more power than them. The authors explained that Malaysia, as a collectivist country, has a high level of power distance. So, Malaysians tend to expect to be cared for and patronized by people who have more power and privileges, and they are more comfortable with this way of living.

All in all, major findings suggested that locus of control was significantly associated with depression and people who have high levels of external locus of control tend to display depressive symptoms. Therefore, this study hypothesized that locus of control is significantly correlated with depression, and locus of control significantly predicts depression among undergraduates in Malaysia.

Conceptual Framework

Figure 2.1

Conceptual Framework of the Current Study
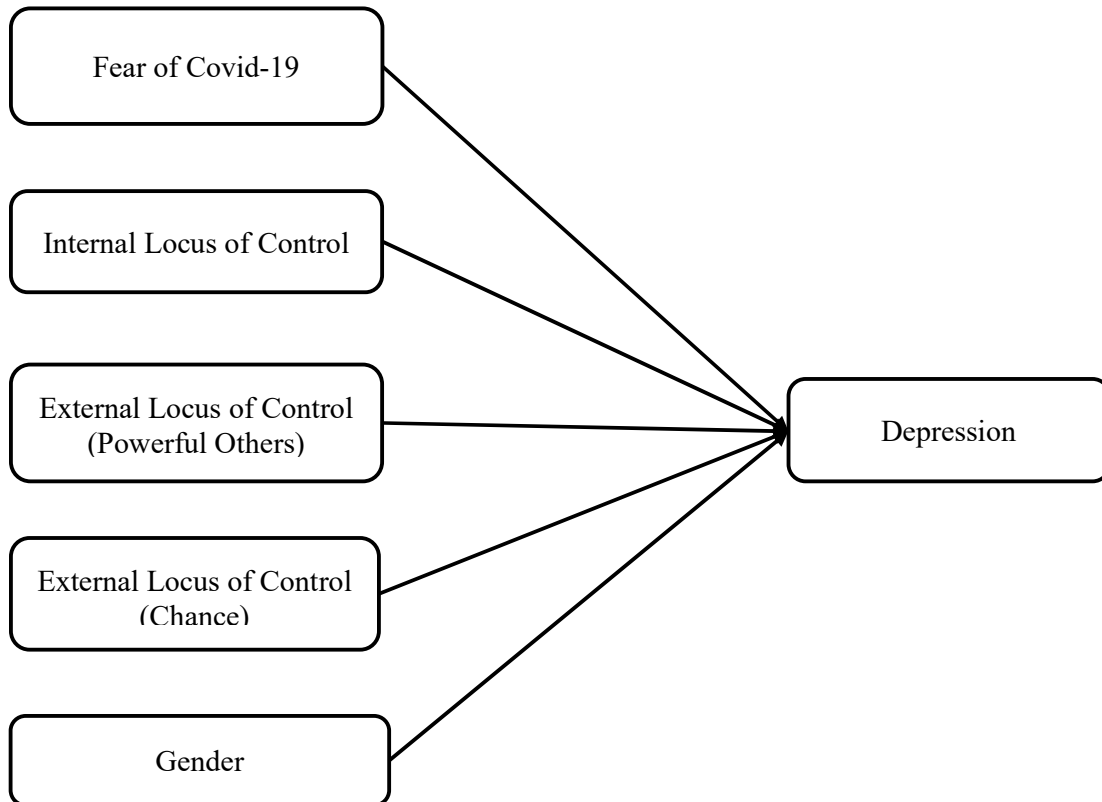
Figure 2.1 illustrates the conceptual framework of the current study. In this study, three constructs, namely the fear of Covid-19, locus of control, and gender serve as the independent variables of the study. On the other hand, the dependent variable of this study is depression. We hypothesized that fear of Covid-19 and locus of control significantly predict depression, and there is a significant difference in the level of depression between male and female undergraduates in Malaysia.

Theoretical Framework

Beck's Cognitive Theory of Depression

The current study uses the cognitive theory of depression by Beck (1967) to explain the correlation between fear of Covid-19 and depression as well as the relationship between locus of control and depression. This theory proposed that a total of three cognitive mechanisms played important roles in the onset of depression among individuals. The cognitive triad, being one of the most important mechanisms in this theory, posits that three forms of negative thinking style makes an individual vulnerable to develop depressive symptoms, which ultimately lead to depression. Figure 2.2 shows the components of the cognitive triad, which are negative views of self, negative views of the future, as well as negative views of the world. These three styles of thinking work automatically and hand-in-hand to make a person feel depressed.

Figure 2.2

Components of Beck's Cognitive Triad
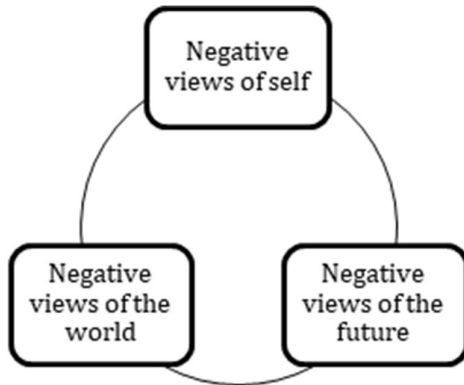
Note. The three components of Beck's cognitive triad include negative views about the self, the future, and the world, which work inter-relatedly to cause depression.

The first component is negative views of self, reflecting the dysfunctional belief that one is helpless, inadequate, and is incapable of making changes to negative life events (McLeod, 2015). Secondly, the negative views of the future represent the beliefs that the future is hopeless, and negative life events will never end. In this Covid-19 pandemic, people who fear the virus may arouse negative thoughts such as the event is endless and out of control, one has insufficient capabilities to change the situation, and concerns about health (Lai et al., 2020). This is where the negative views of the self and the future come to play, making these individuals vulnerable to depression. Lastly, the third component is the negative views of the world which implies a person's belief that the world is unrealistically negative and is full of obstacles. Therefore, what happens in the world is out of one's control and personal efforts make no changes to life events. This component links to the concept of locus of control. People with external locus of control believe that events in life happen as a result

of external factors instead of personal behaviors, and hence are prone to have depression, as this theory suggests.

Indeed, both fear of Covid-19 and locus of control had been proven to have an effect on depression. As an example, a research study by Yıldırım et al. (2021) concluded that fear of Covid-19 predicted depression using an Arab population. People who are more fearful towards contraction of Covid-19 tend to show higher levels of depression. In addition, Khumalo and Plattner (2019) also demonstrated the predictive effect of locus control on depression. External locus of control leads to higher levels of depression, while internal locus of control predicts otherwise.

Chapter III

Methodology

Research Design

This study utilized a cross-sectional, quantitative research design. The required data such as respondents' demographic data, fear of Covid-19, locus of control, and depressive symptoms were collected using self-administered questionnaires. A cross-sectional study is effective for understanding the prevalence of a targeted variable and it allows the researchers to analyze different risk factors and consequences (Edmonds & Kennedy, 2016; Kesmodel, 2018; Setia, 2016; Wang & Cheng, 2020). As the present study utilized a cross-sectional design, data were collected at once during the recruitment campaign which was carried out online from 14th of October 2021 to 27th of October 2021, lasting a total of 14 days.

Sampling Procedures

Sampling Technique

In this study, the purposive sampling method was applied. It is a non-probability sampling technique that allows the researchers to collect data in a cost-efficient, timesaving, as well as convenient way. By using purposing sampling technique, participants will be selected based on certain criteria, qualities, and experiences that are related to the objectives of a research (Etikan et al., 2016; Taherdoost, 2016; & Palinkas, 2013). Considering the time restrictions and the characteristics of the target population being known, purposive sampling emerged as an ideal option for data sampling. The current study therefore utilized the purposive sampling technique to obtain data from undergraduates from universities and colleges in Malaysia within the age range of 18 to 25 years old.

Location of Study

The current study was conducted online, covering the whole of Malaysia. Respondents were recruited from local public and private universities or colleges in Malaysia via online communication platforms such as WeChat, WhatsApp, Facebook, and Microsoft Teams. By doing so, the current study aimed to obtain a more generalized and representative sample of the Malaysian undergraduate population.

Ethical Clearance Approval

Before the commencement of the current study, the researchers had applied for ethical clearance approval from the Scientific and Ethical Review Committee of University Tunku Abdul Rahman. A complete set of questionnaires (refer to Appendix A, pg. 65) along with an application form were submitted to the committee. The current study was approved to be conducted (Reference number: U/SERC/223/2021) by the committee (refer to Appendix B, pg. 79).

Sample Size, Power, and Precision

In the current study, G* Power calculator was used to generate the required sample size (Faul et al., 2009). By adopting an effect size of .437, the margin of error set at a .05 level, and the power set at a .95 level, an estimated sample size of 276 participants were yielded (refer to Appendix C, pg. 81). In anticipation of responses that are incomplete or do not fulfill the inclusion criteria of the current study, the researchers collected 343 responses in total. The response rate of the current study was below around 80% where the survey was distributed to about 420 individuals and 343 responses were collected.

In this study, three statistical tests, namely the Pearson Product Moment Correlation test, Multiple Linear Regression test and the Independent Sample *t*-test were carried out. The required sample sizes of all three tests were computed and, as the rule of thumb, the test that

yielded a greater estimated sample size should guide the decision of the required sample size for the current study. Consequently, this study adopted Cohen's *d* effect size of .437 as reported in Ul Haq et al.'s (2017) study of gender differences in an undergraduate sample. According to Cohen (1988), an effect size of .437 is considered small.

Data Collection Procedures

Inclusion/ Exclusion Criteria

The target population selected for this study was Malaysian undergraduates because studies of fear of Covid-19 and locus of control on this population were lacking in the current literature. Besides, other students, such as international students or Malaysians studying in a foreign university may have characteristics that are different from the current population and may jeopardize the result. In this study, only data that fulfilled the inclusion criteria were included for data processing, these criteria included: Respondents must be a Malaysian aged 18 - 25 years old, and at the point of data collection was studying in either a local or a private university or college in Malaysia. Additionally, only responses that were answered fully were included for data processing. In contrast, exclusion criteria of this study were respondents that are non-Malaysians, respondents who are not in the 18 - 25 age group, Malaysians studying in foreign universities or colleges, as well as responses that were not answered fully.

Participants

A total of 343 respondents were recruited online using purposive sampling technique. After initial filtering of data, 32 of responses that were incomplete or did not fulfill the inclusion criteria of the study were found and removed. The remaining 311 responses were checked for missing values or outliers and four cases were further removed. Finally, there were 307 responses remaining.

Among the 307 respondents, there were 137 males (44.4%) and 170 females (55.6%). In terms of ethnicity, the sample consisted of 85% Chinese, 9.1% Indians, 4.9% Malays, and 1% from other ethnicities such as Kadazan, Sikh, and Bumiputera Sabah. Besides, the age range of the respondents were from 18 to 25 (M= 21.36, SD= 1.222). All respondents were undergraduates who are currently pursuing their studies in a Malaysia university or college.

Procedures

Before the commencement of the actual study, a pilot study was first conducted. In the pilot study, a total of 60 responses were collected from the target population to test the reliability of the instruments used. The number of responses required was calculated using a sample-size calculator dedicated for pilot studies (Viechtbauer et al., 2015) and fulfilled the general rule of thumb that suggests at least 30 responses to be included in a pilot study (Browne, 1995). Through the pilot study, the researchers ensured all items in the instruments used were meaningful to the population involved and the data collection procedures were flawless.

Upon completion of the pilot study, the actual full-scale study was carried out. An online survey form was created using Qualtrics, an online software that allows users to create and distribute survey forms efficiently through an anonymous link. The survey form was administered in English and was distributed to Malaysian undergraduates through several online social media or communication platforms, these include WeChat, WhatsApp, Facebook, and Microsoft Teams. The recruitment campaign lasted 14 days, started on 14th October 2021 and ended on 27th October 2021. During this process, materials such as posts and posters were utilized to recruit participants (refer to Appendix D, pg. 82).

Before the participants could participate in the survey, they were presented with a participant information sheet and a consent form that informed them about the nature of the study, their rights, researchers' contact information, as well as other important information

related to the study. Only participants who agreed to the consent statements were allowed to answer the online survey form. After providing their consent, the participants were then invited to answer a series of questions distributed over several sections in the survey form. They were asked to indicate their demographic data, report their degrees of fear of Covid-19 and locus of control, as well as report their depressive symptoms over the past two weeks. All data collected were strictly kept confidential and were only accessible by the researchers involved in this study.

Data Cleaning

After data collection was completed, data cleaning was performed by removing all information that was irrelevant to the purpose of the study. Then, the remaining responses were assigned a number (Case ID) each for a more precise record tracking and processing. After that, incomplete responses, responses that fell in the exclusion criteria, as well as responses identified as univariate outliers were removed. Specifically, 32 responses were incomplete or did not fulfil the inclusion criteria, and four cases were identified as univariate outliers. Finally, 307 responses were retained for further data analysis.

Instruments

Demographic Data

The first section of the questionnaire included a set of questions aimed at collecting the demographic data of respondents. Questions in this section prompted for respondents' age, gender, ethnicity, religions, and their university or college of study. These data were useful to assist in filtering and removing responses that did not fulfil the inclusion criteria of the study.

Fear of Covid-19 Scale (FCV-19S)

The next section was the FCV-19S created by Ahorsu et al. (2020). The FCV-19S was used to evaluate the respondents' feelings of distress towards the probability of being infected by the Covid-19 virus. The scale has seven items scored on a Likert-type scale with five levels of indicators ranging from 1=*strongly disagree* to 5=*strongly agree*. The final score was generated by totalling the scores of each item and can range from 7 to 35, by which a higher final score suggests that the respondents had a higher level of fear of Covid-19. The scale was reported with a good concurrent validity (Ahorsu et al., 2020). Additionally, the scale showed good internal consistency among the items (α = .873).

Levenson's Multidimensional Locus of Control Scale

The third section of the questionnaire consisted of the Multidimensional Locus of Control Scale (Levenson, 1973) which measured the degree to which respondents believed that their lives are under their personal control (internal locus of control) or are controlled by external factors including chances or people with greater power (external locus of control; Khumalo & Plattner, 2019). The scale had 24 items separated into the internal subscale, chance subscale, and powerful others subscale, each of which was made up of eight items. The items were scored on a 6-point Likert-type scale ranging from -3= *Strongly Disagree* to +3= *Strongly Agree*. Total score of the individual subscales was summed and added by 24 to prevent negative values (ranging from 0 to 48). The subscale with the highest total score represents the dimension of locus of control a respondent has. The scale was reported with good convergent validity (Maroufizadeh et al., 2018). All subscales reported reliability from .628 to .789 in the current sample, which are considered acceptable (Wim et al., 2008). According to Herman (2015), in a scale with less than 10 items, the reported value tends to underestimate the true internal consistency of the scale.

Beck's Depression Inventory-II (BDI-II)

The last section of the questionnaire was the BDI-II developed by Beck (1996) that was used in this study to screen the respondents' severities of depressive symptoms. The scale contains 21 sets of self-reported statements on a scale of four points ranging from 0 to 3. The final score was generated by summing up the score of individual items and can range from 0 to 63. The total score was used to differentiate the severity levels of depressive symptoms showed by respondents, whereby a total score of more than 40 represent an extreme level of depressive symptoms, 31 to 40 indicate severe depressive symptoms, 21 to 30 indicate moderate depressive symptoms, 17 to 20 indicate borderline clinical depressive symptoms, 11 to 16 indicate mild mood disturbances and a score of below 10 indicate that normal symptoms. The BDI-II was reported with good convergent and discriminant validities (Khumalo & Plattner, 2019). In addition, the reliability of the inventory in the current sample was excellent ($\alpha = .916$).

Data Analysis

The current study used the IBM SPSS version 26 as the main tool to perform statistical analyses on the data. Multiple levels of statistical analyses were performed to test the hypotheses in this study. In this study, fear of Covid-19, internal locus of control, external locus of control (powerful others and chance), and gender were used as the independent variables while depression was the dependent variable. A pilot study was first carried out to test the reliabilities of all scales used (reported using Cronbach's alpha) and was evaluated using the rule of thumb suggested by George and Mallery (2003) where reliability coefficients above .90, between .80 and .89, as well as between .70 and .79, indicates "excellent", "good", and "fair" reliability respectively.

Before running data analysis on the variables, normality assumptions of the data were checked. Specifically, five different indicators were used to assess the normality of data. These include visual displays such as histogram and Q-Q plots as well as numerical displays such as skewness, kurtosis, and Kolmogorov-Smirnov test. To begin with, histogram was generated by plotting the observed values against the respective frequencies. This revealed the distribution of data in graphical form of a bell-shaped curve when data is in normal distribution (Ghasemi & Zahediasl, 2012). Then, Q-Q plots, an indicator that plots the distribution of data (observed values) in quantiles with respect to the expected normal distribution (a diagonal line), were used to assess the normality of data. If all observed values lie closely to the diagonal line of Q-Q plots, the data is said to be normally distributed. After that, skewness, kurtosis, and Kolmogorov-Smirnov test (K-S test) were used as indicators to assess normality of data and the results were reported in numerical values. Particularly, the tailedness of distribution of a variable was measured by skewness and kurtosis, and a value between -2 to 2 is usually considered acceptable and indicates approximately normal distribution (George & Mallery, 2003). Lastly, the K-S test was applied to test the assumption of normality in large samples. The K-S test compares sample scores to another set of scores that has identical mean and standard deviation and is normally distributed. In this test, the null hypothesis is that the sample distribution is not significantly different from a normal distribution. A non-significant result of the K-S test then indicates that the sample data is normally distributed (Ghasemi & Zahediasl, 2012).

After checking the normality assumptions, descriptive statistics of the data were analysed. Data such as the participants' age, gender, and ethnicities were presented in terms of mean values and standard deviations.

In terms of inferential statistics, Pearson Product Moment Correlation test was first conducted to identify the associations between variables. Then, Multiple Linear Regression

was applied to identify the effects of fear of Covid-19, internal locus of control, and external

locus of control (powerful others and chance) on depression. Prior to conducting Multiple

Linear Regression, multivariate outliers were identified. First, casewise diagnostics of the

sample data was performed to detect potential multivariate outliers. Identified cases were

then examined using Cook's distance, Mahalanobis distance, and Leverage values to decide if

removal of case data was necessary. According to Cook and Weisberg (1982), cases with

Cook's distance above one are considered as potential outliers. Besides, the cut-off for

Mahalanobis distance for a sample larger than 400 was suggested to be more than 15

(Bluman, 2017), whereas Stevens (1992) suggested potential outliers with more than three

times the Leverage value to be investigated.

       Then, the seven assumptions of Multiple Linear Regression proposed by Berry (1993)

were checked. First, all predictors and the outcome variable must be continuous data. Next,

data observed must be unrelated (independent) of another observation. Third,

multicollinearity, defined as the inter-correlations between each predictor, must not be high.

Two indicators, namely Tolerance and Variance Inflation Factor (VIF) were applied to check

multicollinearity. The cut-off thresholds of Tolerance and VIF were suggested to be less

than .10 and more than 10 for the identification of collinearity (Hair et al., 2010; Pallant,

2010). Fourth, independence of errors assumes that the observed residuals were distributed

independent of other observations and was measured using the Durbin-Watson test. The

value of the test should be within the range of 1 to 3 and is close to 2 to be considered non-

violation of the assumption. The last three assumptions, namely homoscedasticity, normality

of residuals, and linearity of residuals were examined using scatterplots. To meet all three

assumptions, the residuals should be distributed randomly and evenly in the scatterplot.

       Lastly, an Independent Sample *t*-test was used to identify if significant differences

exist in depression between male and female undergraduates in our sample. Prior to that,

assumptions for the statistical test were checked. To conduct a t-test, the data were assumed

to be independent of each other, normally distributed, continuous, and random (Maverick,

2021). Above all, an additional assumption was that both independent groups (male and

female) had equal variances (homogeneity of variance) and was checked using the Levene's

test (Bluman, 2017). The null hypothesis of the test is that the variances in two different

groups are equal, therefore a non-significant result suggests homogeneity of variance between

groups.

Table 3.1

Reliability of Instruments

Instrument	No. of Items	Cronbach's Alpha	
		Pilot Study	Actual Study
Fear of Covid-19	7	.872	.873
Internal Locus of Control	8	.688	.628
External Locus of Control (Powerful Others)	8	.805	.789
External Locus of Control (Chance)	8	.668	.696
Depression	21	.929	.916

Chapter IV

Results

Assumptions of Normality

There were five normality indicators applied in testing the normality assumptions (assumptions of parametric data). The indicators of normality for histogram and Q-Q plot were displayed visually, while skewness, kurtosis, and Kolmogorov-Smirnov (K-S) test were displayed numerically.

Skewness and Kurtosis

Table 4.1 contains the findings of skewness and kurtosis for fear of Covid-19, depression, internal locus of control, external locus of control (powerful others), and external locus of control (chance). The values for skewness and kurtosis were all in the acceptable range of ± 2 (George & Mallery, 2003), therefore the variables did not violate skewness and kurtosis indicators.

Test of Normality (Kolmogorov-Smirnov Test)

Table 4.1 showed the results of the K-S test for all variables. According to the results, only external locus of control (chance) was normal and significant. The distribution of the sample was not significantly different from the normal distribution. Oppositely, fear of Covid-19, internal locus of control, external locus of control (powerful others), and depression were significantly not normal. Therefore, the sample distributions differ significantly from the normal distribution. The assumption of K-S test is violated.

Table 4.1

Skewness, Kurtosis, and Kolmogorov-Smirnov Test of the Variables

| | N | Skewness | | Kurtosis | | Kolmogorov-Smirnov[a] | | |
| | | | Std. | | Std. | | | |
	Statistic	Statistic	Error	Statistic	Error	Statistic	df	Sig.
Fear of Covid-19	307	**-.078**	.139	**-.066**	.277	.069	307	**.001**
Internal Locus of Control	307	**-.396**	.139	**-.105**	.277	.081	307	**.000**
External Locus of Control (Powerful Others)	307	**.132**	.139	**-.218**	.277	.070	307	**.001**
External Locus of Control (Chance)	307	**-.061**	.139	**-.191**	.277	.044	307	**.200***
Depression	307	**.641**	.139	**-.253**	.277	.103	307	**.000**
Valid N (listwise)	307							

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

Histogram

Figure 4.1 to 4.5 (refer to Appendix E, pg. 85) showed that the histograms for all five variables were normally distributed, as indicated by the bell-shaped curve. Hence, all the variables did not violate the normality indicator of histogram.

Q-Q Plot

Figure 4.6 to 4.10 (refer to Appendix F, pg. 88) showed that the normality for the five variables were normal because the values observed for all variables are not largely deviated from the diagonal line (expected values). The Q-Q Plot normality indicator was not violated as the observed data of the five variables fell closely to the diagonal line, that refers to the expected data.

Conclusion for Assumptions of Normality

Based on the results of the five normality indicators, the histogram, Q-Q Plot, skewness, and kurtosis did not violate assumption of normality, only Kolmogorov- Smirnov Test showed violation for the normality assumption. Since only one normality indicator showed violation, it was concluded that all five variables achieved normal distributions.

Descriptive Statistics

Table 4.2 showed the demographic variables for the sample of 307, the descriptive data were presented in table form. There were 4.9% Malays, 85% Chinese, 9.1% Indians and 1% others. The sample consisted of 44.6% (137) males and 55.4% (170) females. The age range of the sample was between 18 to 25 ($M =21.36$, $SD =1.222$).

Table 4.2

Demographic Variables of the Sample

	N	Percentage	Minimum	Maximum	Mean	Std. Deviation
Age	307	100%	18	25	21.36	1.222
Gender						
Male	137	44.6%				
Female	170	55.4%				
Ethnicity						
Malay	15	4.9%				
Chinese	261	85.0%				
Indian	28	9.1%				
Others	3	1.0%				

Table 4.3 showed the descriptive statistics for all five variables. The table displayed the means and standard deviations of the four predictors, fear of Covid-19 ($M = 20.21$; $SD = 5.434$), internal locus of control ($M = 33.07$; $SD = 5.567$), external locus of control (powerful

others) (*M* = 24.33; *SD* = 8.068) and external locus of control (chance) (*M* = 26.56; *SD* =

7.122). The table also showed the mean and standard deviation for the outcome variable,

depression (*M* = 14.28, *SD* = 10.135).

Table 4.3

Descriptive Statistics of the Variables

	N	Minimum	Maximum	Range	Mean	Std. Deviation
Fear of Covid-19	307	7	35	28	**20.21**	**5.434**
Internal Locus of Control	307	15	46	31	**33.07**	**5.567**
External Locus of Control (Powerful Others)	307	4	48	44	**24.33**	**8.068**
External Locus of Control (Chance)	307	7	46	39	**26.56**	**7.122**
Depression	307	0	44	44	**14.28**	**10.135**
Valid N (listwise)	307					

Inferential Statistics

Pearson's Product Moment Correlation Test

Pearson's correlation coefficient was computed to test the linear relationship between

the five variables. Referring to Table 4.4, fear of Covid-19, $r(305) = .132$, $p < 0.05$, external

locus of control (powerful others), $r(305) = .218$, $p < 0.01$, and external locus of control

(chance), $r(305) = .316$, $p < 0.01$, correlated significantly and positively with depression.

Meanwhile, internal locus of control, $r(305) = -.129$, $p < 0.05$, correlated significantly and

negatively with depression.

Table 4.4

Correlation Among Variables

	1	2	3	4	5
1. Fear of Covid-19	-				
2. Internal Locus of Control	.185**	-			
3. External Locus of Control (Powerful Others)	.448**	.256**	-		
4. External Locus of Control (Chance)	.302**	.180**	.666**	-	
5. Depression	**.132***	**-.129***	**.218****	**.316****	-
Valid N (listwise)					

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

　　　 * Correlation is significant at the 0.05 level (2-tailed).

Multiple Linear Regression

Influential Cases (Outliers). Table 4.5 is the casewise diagnostic to identify potential outliers among the sample of 307 participants. As shown, there were 16 cases identified as exceeding ± 2 standard deviations.

Table 4.5

Casewise Diagnostic for Depression

Case Number	Std. Residual	Depression	Predicted Value	Residual
12	2.411	43	20.20	22.805
14	2.067	40	20.45	19.552
34	2.256	30	8.66	21.338
35	2.212	42	21.08	20.918
81	2.499	33	9.36	23.638
153	2.478	38	14.56	23.436
179	2.325	40	18.01	21.993
182	2.697	40	14.49	25.507
198	2.265	39	17.58	21.423
201	2.102	29	9.12	19.885

203	-2.060	0	19.48	-19.480
213	2.109	32	12.05	19.951
217	2.079	38	18.33	19.667
219	2.087	28	8.26	19.744
280	2.222	25	3.99	21.013
303	2.180	31	10.38	20.622

Note: Dependent Variable: Depression

The case summaries, as shown on Table 4.6 (refer to Appendix G, pg. 91) displays the three residual statistics to identify outliers. All 16 cases of outliers identified in Table 4.6 did not show violation for Mahalanobis distance, Cook's distance, and Leverage. The Mahalanobis distance for the 16 cases were below 15 (Bluman, 2017), that is below the suggested cut-off which is >15 for a sample of 307. Cook's distance for the 16 cases were within the cut-off point which is >1 (Cook and Weisberg, 1982). The value of Leverage for the 16 cases were below the value of 0.0391, consistent with the suggestion of Stevens (1992) which is three times of leverage value [$(\frac{4}{307} * 3) = 0.0391$].

Since the 16 cases showed no violation in the three indicators, they were not identified as influential cases and were not removed from the sample data.

Assumptions of Multiple Linear Regression (MLR). Seven assumptions were tested for multiple linear regression (MLR). First, the predictors and outcome variables are continuous data as the total scores were used for data analysis. Not only that, the data observed were assumed to be unrelated to other observations. The results of independence of errors, multicollinearity, homoscedasticity, normality of residual and linearity of residual are shown below.

Independence of Errors. The value of Durbin-Watson that is applied in testing the assumption of independence of errors can be seen at Table 4.7. The value obtained indicated

no violations of the assumption as the value was more than one, lesser than three, and close to two (Durbin & Watson 1950, 1951). Thus, assumption of independent error was not violated.

Table 4.7

Durbin-Watson Test for Independence of Errors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.375[a]	.140	**.129**	9.459	**1.876**

Note. a. Predictors: (Constant), Fear of Covid-19, Internal Locus of Control, External Locus of Control (Powerful Others), External Locus of Control (Chance)

    b. Dependent Variable: Depression

Multicollinearity. Table 4.8 showed that the values of tolerance and Variance Inflation Factor (VIF) for fear of Covid-19, internal locus of control, external locus of control (powerful others) and external locus of control (chance). The assumption of multicollinearity was tested by using the tolerance and VIF values.

Based on the tolerance value shown in the table, all the variables did not violate multicollinearity assumption as the tolerance value of the four variables were more than 10% (.10). Meanwhile, the VIF ($\frac{1}{tolerance}$) for the four predictors were within 10. Referring to Hair et al. (2010) and Pallant (2010), the cut-off value for tolerance is below .10 while the cut-off value for VIF is above 10. There was no violation in multicollinearity assumption as the tolerance and VIF values for all four predictors were greater than .10 and below 10 respectively.

Table 4.8

Tolerance and Variance Inflation Factor (VIF) Assumption of Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Fear of Covid-19	.794	1.260
	Internal Locus of Control	.928	1.078
	External Locus of Control (Powerful Others)	.479	2.088
	External Locus of Control (Chance)	.557	1.796

Note. a. Dependent Variable: Depression

Homoscedasticity, Normality of Residual and Linearity of Residual. Figure 4.11 (refer to Appendix H, pg. 99) showed the scatterplot for the assumptions of homoscedasticity, normality, and linearity of residuals. The residuals for normality were seen to be distributed randomly and evenly, the residuals for linearity appeared linear, while the homoscedasticity of the residuals appeared close to equal variances, indicating equal distributions on both sides of "0". Thus, it was inferred that the distribution of residuals appeared close to an oval shape with approximately random and even distribution. Hence, the assumptions are met for homoscedasticity, normality of residual and linearity of residual.

Multiple Linear Regression (MLR) Analysis. Table 4.9 and 4.10 showed the results of MLR analysis that was applied to test if fear of Covid-19, internal locus of control, external locus of control (powerful others), and external locus of control (chance) significantly predicted depression among undergraduates in Malaysia. Referring to the tables, the model was statistically significant as a minimal of one predictor was significant, $F(4, 302) = 12.327$, $p < .001$, and accounted for 12.9% of the variance (see Table 4.7). The table also showed that only internal locus of control ($\beta = -.206$, $p < .001$) and external locus of control

(chance) (β = .310, *p* < .001) were significant predictors of depression. Meanwhile, fear of

Covid-19 (β = .060, *p* = .319) and external locus of control (powerful others) (β = .037, *p*

= .629) did not significantly predict depression.

Table 4.9

Summary of Anova for Regression Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4411.349	4	1102.837	12.327	**.000[b]**
	Residual	27018.996	302	89.467		
	Total	31430.345	306			

Note. a. Dependent Variable: Depression

b. Predictors: (Constant), Fear of Covid-19, Internal Locus of Control, External Locus of Control (Powerful Others), External Locus of Control (Chance)

Table 4.10

Coefficients Summary Table for Multiple Linear Regression (MLR) Analysis

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.571	3.769		3.070	.002
	Fear of Covid-19	.111	.112	.060	.998	**.319**
	Internal Locus of Control	-.375	.101	-.206	-3.715	**.000**
	External Locus of Control (Powerful Others)	.047	.097	.037	.484	**.629**
	External Locus of Control (Chance)	.441	.102	.310	4.332	**.000**

Note. a. Dependent Variable: Depression

Independent Sample t-Test

Table 4.11 showed the findings of Levene's test used for testing the homogeneity of variance and independent sample *t*-test. According to the Levene's test, homogeneity of variance (*p* > .05) was achieved for the sample. There was no significant difference, *t*(305) = -1.863, *p* = .063 in depression among male and female undergraduates in Malaysia. The mean depression score for male (*M*= 13.09; *SD*= 10.118) was slightly lower than the mean depression score for female (*M*= 15.25; *SD*= 10.075).

Table 4.11

Results for Levene's Test and Independent Sample t-Test

	Levene's Test for Equality of Variances		Male		Female		*t*(305)	*p*
	F	Sig.	*M*	*SD*	*M*	*SD*		
Depression	.032	**.858**	**13.09**	**10.118**	**15.25**	**10.057**	**-1.863**	**.063**

Chapter V

Discussion & Conclusion

Discussion of Findings

The current study investigated whether fear of Covid-19 and locus of control (internal, powerful others, and chance) significantly associate with and predict depression among undergraduates in Malaysia. In addition, this study also explored whether male and female undergraduates in Malaysia differ significantly in their levels of depression.

H₁: There is a significant relationship between fear of Covid-19 and depression among undergraduates in Malaysia.

Results from the current study pointed out that fear of Covid-19 has a significant association with depression. The first hypothesis is supported. The result is similar to past studies which discovered a significant positive association between fear of Covid-19 and depression (Ahorsu et al., 2020; Alyami et al., 2020; Sakib et al., 2021; Tsang et al., 2020). The Covid-19 pandemic is a once-in-a-lifetime experience for most people, and the fears created by this pandemic can put a toll on the public's mental health through different ways. One probable explanation to the linkage between the two variables is due to the highly unpredictable and uncertain outcomes of being infected (Sakib et al., 2021). Intolerance to uncertainty and the negative effects experienced during the Covid-19 pandemic were said to be some powerful predictors of depression (Sandin et al., 2021). When little is known about the virus, people experience elevated fear that, when paired with the different social and economic outcomes brought forth by the pandemic, can facilitate an individual's irrational thought processes and lead to the onset of depression.

H2: There is a significant relationship between internal locus of control and depression among undergraduates in Malaysia.

Supporting the hypothesis, results from this study revealed that internal locus of control is significantly correlated with depression. This result is in line with past studies that reported significant associations between internal locus of control and depression across different populations (Okwaraji et al., 2018; Sharif, 2017; Yeoh et al., 2017). This may be due to the fact that people with an internal locus of control believe they hold autonomy in their own lives, and they are more inclined to address stressful events in more proactive ways instead of producing negative thoughts about themselves, the world, and the future (Clark et al., 1994). In addition, Beck's cognitive triad theory affirmed that people's negative thoughts about themselves, the world, and the future may lead people to suffer from depression (Beck, 1976). In other words, people with internal locus of control are less prone to suffer from depression due to their more proactive thinking and coping styles.

H3: There is a significant relationship between external locus of control (powerful others and chance) and depression among undergraduates in Malaysia.

In support of the hypothesis, the current study showed that both dimensions of external locus of control (powerful others and chance) have significant, weak positive relationships with depression. This result is similar to past studies which found that external locus of control was significantly associated with depression (Khumalo & Plattner, 2019; Okwaraji et al., 2018; Yeoh et al., 2017). According to Brown et al. (2015), people who have high external locus of control may perceive the events that happened in their lives as the results of external factors, while their own efforts will not make a change. For instance, they believe that things that happen in their

lives are chiefly controlled by people who are more powerful than them or the nature of the world. Such beliefs create a sense of powerlessness and uncertainty on whether they are able to control their own life, all of which eventually facilitate the development of depression (Sharif, 2017).

H_4: Fear of Covid-19 significantly predicts depression among undergraduates in Malaysia.

This study revealed that fear of Covid-19 did not significantly predict depression. The hypothesis is not supported. This was contradictory to past research which suggested fear of Covid-19 as a significant predictor of depression (Rossi et al., 2020; Yıldırım et al., 2021), but is consistent with Sandin et al. 's (2021) finding of non-significant predictive effect of fear of Covid-19 on depression. One plausible reason for this result is that the effect was buffered by other protective factors that have stronger effects on depression. For example, engagement in physical activities, practicing adaptive coping strategies, and maintaining consistency of personal interests were found to be strong protective factors that can buffer the detrimental effects of Covid-19 related fears on public's mental wellbeing (Masuyama et al., 2021; Sandin et al., 2021; Wright et al., 2021). Along with the implementation of vaccination programs, the Malaysian government had gradually opened more public sectors, spaces, and infrastructures, allowing more people to engage in outdoor physical activities. In addition, relevant authorities also strived to promote the well-being of university students by organizing online seminars and workshops to promote proactive usage of adaptive coping styles to cope with the stressful circumstances. These efforts may have exposed the students to more resources, thereby altering the effects of Covid-19 related fears on university student's mental health.

H5: Internal locus of control significantly predicts depression among undergraduates in Malaysia.

In support of this hypothesis, the current study identified internal locus of control as a factor that significantly predicts depression. This was in line with Khumalo and Plattner's (2019) finding of internal locus of control as a significant predictor of depression. According to Clark et al. (1994), individuals with high internal locus of control are encouraged to address their stressful life events in proactive ways that can prevent them to think negatively about themselves, the world, and the future. These negative thoughts facilitate the onset of depressive symptoms (Beck, 1976). In other words, people with internal locus of control are less susceptible to depression. Khumalo and Plattner (2019) explained that undergraduates high in internal locus of control may think that the life events that they encountered are opportunities for them to develop personal growth rather than threats that may trigger or activate depressive symptoms.

H6: External locus of control (powerful others and chance) significantly predict depression among undergraduates in Malaysia.

This study revealed that only external locus of control (chance), but not external locus of control (powerful others), significantly predicted depression. The hypothesis is not supported. This is contradictory to the results of Flores et al. (2020) who identified both dimensions of external locus of control significantly predict depression. According to Burger (1984), people who perceive that their life events are controlled by chance tend to suffer from depression. This is because people who believe in chance potentially feel more helpless and tend to develop depression as chance is basically uncontrollable (Khumalo & Plattner, 2019). Meanwhile, development of depression due to beliefs in powerful others depends on individual or cultural

differences. In relation to this, Yeoh et al. (2017) conducted a Malaysian study and they found out that the participants were less prone to display depressive symptoms as they had the belief that their life events were being controlled by people who had higher power than them. This is due to the factor of cultural difference as Malaysia is a collectivist country that has a high level of power distance. Hence, Malaysians tend to expect to be cared for and patronized by people who have more power and privileges, and they are more comfortable with this way of living (Gale, 2006).

H_7: There is a significant difference in the level of depression between male and female undergraduates in Malaysia.

Results from the present study revealed no significant differences in depression among male and female undergraduates in Malaysia. The hypothesis is not supported. The result was contradictory to the general findings that females showed significantly higher levels of depression than males (Sakib et al., 2021; Saparudin & Soh, 2021; Sun et al., 2017; Tang & Dai, 2018). Previous studies revealed that females are more prone to depression due to the physiological differences such as genetic vulnerabilities and hormone levels, female's tendency to react more sensitively to emotionally arousing events, perceived low status in the academy, as well as relatively fewer resources to cope with stress. One possible explanation to this contradicting result is due to the exposure to a more similar number of stressors and coping resources during the online learning period as compared to physical learning before the Covid-19 pandemic. Indeed, Radeef and Faisal (2020) who found no significant gender differences in their study of Malaysian undergraduates' depressive symptoms proposed that the implementation of online learning had diminished the factors that previously caused female undergraduates to be more vulnerable to depression. For instance, both genders are now exposed to similar levels of

academic stressors and opportunities to connect with peers, putting both genders on an equal

pane to develop depression. Similarly, a study by Chen et al. (2013) in a Chinese university also

proposed that exposure to a similar level of pressures and job opportunities will flatten the

difference in depressive symptoms between both gender groups.

Implications of the Study

Theoretical Implications

The study has filled up the literature gap in regard to the outcomes of fear of Covid-19

and locus of control towards depression among undergraduates in Malaysia. The study allowed

researchers in Malaysia to discover how undergraduates' perceived locus of control will affect

their mental well-being. As mentioned in chapter one, very limited studies can be found

regarding the associations and effects between locus of control and depression among Malaysian

undergraduates. Thus, this study has allowed researchers to understand how locus of control

impacts depression.

Other than that, the study provided an additional insight to another cause of depression

among Malaysian undergraduates. To date, studies regarding the impact of fear towards the

coronavirus on depression among Malaysian undergraduates is still limited. Most of the studies

focusing on fear of Covid-19 in Malaysia studied its impact on general mental well-being as a

whole. Although past studies suggested fear of Covid-19 as a significant predictor of depression,

the current study concluded the opposite. This extends the knowledge in this area of research and

sheds light to the importance of future studies to explore possible pathways of how different risk

and protective factors can alter the effects of fear of Covid-19 on depression. Additionally, this

study also denied the statement that females have a higher prevalence to suffer from depression

among Malaysian undergraduates, showing that females do not have a higher level of depression compared to male. This contradictory finding again reveals a new way of understanding gender differences in depression among Malaysian undergraduates, especially during the online learning period.

Practical Implications

The study can act as a reference to universities and mental health sectors when hosting workshops aiming to deal with depression that is predicted by locus of control or fear of Covid-19 by targeting a change in locus of control through applied behavioral analysis (ABA) or other behavioral modification methods. Moreover, the study will allow researchers to see the significance in training people to take up autonomy for their life to effectively resolve fears in order to decrease emotional distress or passive behaviour that will lead to depression. Furthermore, the study will allow researchers to develop effective cures or interventions for depression that is predicted by locus of control or fear of Covid-19.

Limitations

First, the current study used Multiple Linear Regression as the statistical test to identify the effects between variables, leaving other factors that may potentially alter the effects of one variable on another untapped. These undiscovered factors may have led to the contradictory results in the current study. Secondly the reliability of the study might be negatively affected due to possibilities of response bias with the use of self-reported measures. Thirdly, the sample in this study was not representative of the actual ethnicity distribution of Malaysian undergraduates as recruitment of participants was done through online platforms. The study consisted largely of

Chinese respondents and there were limited participants from the Malay and Indian ethnicity, causing the findings of this study to have relatively low generalizability.

Recommendations

Additional studies have to be done to identify or rule out potential moderating or mediating factors that may affect the association between variables. Besides, reverse-coded questions or attention check items can be included to the questionnaire to minimise response bias and serve as a way to screen responses that are not answered carefully. For example, questions such as "please select Disagree for this question" can be included as attention check items. Lastly, it is also important to ensure the future sample of participants recruited has to be representative of the ethnicity distribution in Malaysia to ensure the generalizability of the study. This can be achieved by exploring other sampling methods such as quota sampling.

Conclusion

In conclusion, the current study revealed that fear of Covid-19 and all three dimensions of locus of control were associated with depression among undergraduates in Malaysia. However, only internal and external locus of control (chance) predicted depression. In addition, no significant gender differences in depression were found. These findings not only painted a new picture of the mental health condition of Malaysian undergraduates under the influence of Covid-19 pandemic and online learning, but it shed light to the existence of potential factors that may have altered the link between fear of Covid-19 and depression as well. Lastly, the current study provided clues for future studies to explore different protective factors of depression during the Covid-19 pandemic and provided directions for future interventions.

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Appendix A

Questionnaire

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 H'ng Zhuang Hang (hang34562@1utar.my), Wong Ker Yin (colaky@1utar.my), or Yau Chiow Yee (ychiowy@1utar.my).

Demographic Information

Please fill in:

1. Your Age: _____ (years)

2. Gender:

      Male   Female

3. Ethnicity:
      Malay   Chinese
      Indian   Others: _____

4. Religion:
      Muslim   Buddha
      Hindu   Christian
      Others: _____

5. Are you an undergraduate who is currently studying in university/college in Malaysia? If yes,

please indicate your institution in full:

(e.g. Universiti Tunku Abdul Rahman)

      Yes: _____   No

Fear of Covid-19 Scale

Please respond to each item by selecting one of the five responses that reflects how you feel, think or act towards Covid-19.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am most afraid of Corona.					
It makes me uncomfortable to think about Corona.					
My hands become clammy when I think about Corona.					
I am afraid of losing my life because of Corona.					
When I watch news and stories about Corona on social media, I become nervous or anxious.					
I cannot sleep because I'm worrying about getting Corona.					
My heart races or palpitates when I think about getting Corona.					

Levenson's Multidimensional Locus of Control Scale

For each of the following statements, indicate the extent to which you agree or disagree by selecting the appropriate option.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Whether or not I get to be a leader depends mostly on my ability.					
2. To a great extent my life is controlled by accidental happenings.					
3. I feel like what happens in my life is mostly determined by powerful people.					
4. Whether or not I get into a car accident depends mostly on how good a driver I am.					
5. When I make plans, I am almost certain to make them work.					
6. Often there is no chance of protecting my personal interests from bad luck.					
7. When I get what I want, it's usually because I'm lucky.					
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.					
9. How many friends I have depends on how nice a person I am.					
10. I have often found that what is going to happen will happen.					
11. My life is chiefly controlled by powerful others.					

12. Whether or not I get into a car accident is mostly a matter of luck.					
13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.					
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.					
15. Getting what I want requires pleasing those people above me.					
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.					
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.					
18. I can pretty much determine what will happen in my life.					
19. I am usually able to protect my personal interests.					
20. Whether or not I get into a car accident depends mostly on the other driver.					
21. When I get what I want, it's usually because I worked hard for it.					
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.					

23. My life is determined by my own actions.					
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.					

Beck's Depression Inventory II

This questionnaire consists of 21 groups of statements. Please read each group of statements carefully. And then pick out the one statement in each group that best describes the way you have been feeling during the ***PAST TWO (2) WEEKS*** including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

	0. I do not feel sad.
	1. I feel sad much of the time
	2. I am sad all the time.
	3. I am so sad or unhappy that I can't stand it.

2. Pessimism

	0. I am not discouraged about my future.
	1. I feel more discouraged about my future than I used to.
	2. I do not expect things to work out for me.
	3. I feel my future is hopeless and will only get worse.

3. Past Failure

	0. I do not feel like a failure.
	1. I have failed more than I should have.
	2. As I look back, I see a lot of failures.
	3. I feel I am a total failure as a person.

4. Loss of Pleasure

	0. I get as much pleasure as I ever did from the things I enjoy.
	1. I don't enjoy things as much as I used to.
	2. I get very little pleasure from the things I used to enjoy.
	3. I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

	0. I don't feel particularly guilty.
	1. I feel guilty over many things I have done or should have done.
	2. I feel quite guilty most of the time.
	3. I feel guilty all of the time.

6. Punishment Feelings

	0. I don't feel I am being punished.
	1 I feel I may be punished.
	2. I expect to be punished.
	3. I feel I am being punished.

7. Self-Dislike

	0. I feel the same about myself as ever.
	1. I have lost confidence in myself.
	2. I am disappointed in myself.
	3. I dislike myself.

8. Self-Criticalness

	0. I don't criticize or blame myself more than usual.
	1. I am more critical of myself than I used to be.
	2. I criticize myself for all of my faults.
	3. I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

	0. I don't have any thoughts of killing myself.
	1. I have thoughts of killing myself, but I would not carry them out.
	2. I would like to kill myself.
	3. I would kill myself if I had the chance.

10. Crying

	0. I don't cry any more than I used to.
	1. I cry more than I used to.
	2. I cry over every little thing.
	3. I feel like crying, but I can't.

11. Agitation

	0. I am no more restless or wound up than usual.
	1. I feel more restless or wound up than usual.
	2. I am so restless or agitated, it's hard to stay still.
	3. I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

	0. I have not lost interest in other people or activities.
	1. I am less interested in other people or things than before.
	2. I have lost most of my interest in other people or things.
	3. It's hard to get interested in anything.

13. Indecisiveness

	0. I make decisions about as well as ever.
	1. I find it more difficult to make decisions than usual.
	2. I have much greater difficulty in making decisions than I used to.
	3. I have trouble making any decisions.

14. Worthlessness

	0. I do not feel I am worthless.
	1. I don't consider myself as worthwhile and useful as I used to.
	2. I feel more worthless as compared to others.
	3. I feel utterly worthless.

15. Loss of Energy

	0. I have as much energy as ever.
	1. I have less energy than I used to have.
	2. I don't have enough energy to do very much.
	3. I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

	0. I have not experienced any change in my sleeping.
	1a. I sleep somewhat more than usual.
	1b. I sleep somewhat less than usual.
	2a. I sleep a lot more than usual.
	2b. I sleep a lot less than usual.
	3a. I sleep most of the day.
	3b. I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

	0. I am not more irritable than usual.
	1. I am more irritable than usual.
	2. I am much more irritable than usual.
	3. I am irritable all the time.

18. Changes in Appetite

	0. I have not experienced any change in my appetite.
	1a. My appetite is somewhat less than usual.
	1b. My appetite is somewhat greater than usual.
	2a. My appetite is much less than before.
	2b. My appetite is much greater than usual.
	3a. I have no appetite at all.
	3b. I crave food all the time.

19. Concentration Difficulty

	0. I can concentrate as well as ever.
	1. I can't concentrate as well as usual.
	2. It's hard to keep my mind on anything for very long.
	3. I find I can't concentrate on anything.

20. Tiredness or Fatigue

	0. I am no more tired or fatigued than usual.
	1. I get more tired or fatigued more easily than usual.
	2. I am too tired or fatigued to do a lot of the things I used to do.
	3. I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

	0. I have not noticed any recent change in my interest in sex.
	1. I am less interested in sex than I used to be.
	2. I am much less interested in sex now.
	3. I have lost interest in sex completely.

Appendix B

Ethical Approval for Research Project

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

Re: U/SERC/223/2021

1/2

4 October 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.	The Influence of Sensation Seeking Behavior and Social Media Addiction on Happiness among Young Adults in Malaysia	1. Ashwinie Nair a/p Sridharan Nair 2. Maria Peter a/p Micheal 3. Titus a/l David Rasahpandy	Ms Sarvarubini a/p Nainee	
2.	Academic Self-Efficacy, Perceived Social Support and Perfectionism as Predictors in Academic Procrastination among E-learning Undergraduates in Malaysia during COVID-19 Pandemic	1. Chee Vane Yen 2. Foong Kar Whey 3. Tay Xiao Ying	Ms T'ng Soo Ting	
3.	A Study of The Relationship Between Perceived Stress, Sleep Quality and Life Satisfaction Among Malaysian Working Adults During Covid-19 Pandemic Outbreak	1. Chin Kah Leng 2. Kuguneshwari a/p Muthu 3. Tan Cher Shan	Dr Gan Su Wan	4 October 2021 - 3 October 2022
4.	The Mediating Role of Self-esteem in The Relationship Between Parenting Style and Academic Dishonesty Among Undergraduates in Malaysia	1. Khoo Zhi Yin 2. Melanie Soo Yu Teng 3. Ong Li Ying	Ps Natasha Amira Binti Hushairi	
5.	A Study of the Effects of Fear of Covid-19, Locus of Control, and Gender on Depression among Undergraduates in Malaysia	1. H'ng Zhuang Hang 2. Wong Ker Yin 3. Yau Chiow Yee	Dr Pung Pit Wan	

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

Appendix C

Sample Size Calculation

Table 4 Factors associated with depression, anxiety, and stress. SD standard deviation

Variables	Frequency (%)	Depression mean (SD)	Anxiety mean (SD)	Stress mean (SD)
Gender				
Male	170 (47.1)	8.02 (5.256)	9.68 (4.057)	9.87 (4.105)
Female	191 (52.9)	5.98 (3.993)	7.49 (4.351)	9.03 (3.861)
		$t = 4.165^{***}$	$t = 4.929^{***}$	$t = 2.01^{*}$
Family system				
Nuclear	243 (67.3)	6.66 (4.605)	8.44 (4.615)	9.28 (4.063)
Joint	118 (32.7)	7.52 (4.962)	8.70 (3.756)	9.72 (3.849)
		$t = -1.620$	$t = -0.530$	$t = -0.993$
Type of accommodation				
Hostel	161 (44.6)	5.81 (4.072)	8.13 (4.608)	8.94 (3.517)
Living at home	200 (55.4)	7.86 (5.033)	8.85 (4.113)	9.81 (4.309)
		****		*

Appendix D

Promotional Materials

Qualtrics Survey | Qualtrics Experience Management
Survey Software, Enterprise Survey software for enterprise feedback
management and CRM solutions. Enables high-quality data collection, panel
utarpsy.au1.qualtrics.com

Calling for Participants!!

Hello! We are a group of undergraduates from UTAR who is pursuing Bachelor of Social Science (Hons) Psychology. We are currently conducting a survey as our final year thesis. In this survey, you will be asked about topics including your Fear towards Covid-19, Locus of Control, and Depressive symptoms. We sincerely appreciate if you could spare 5 – 10 minutes of your time to help us out!

Who is eligible for the survey?
- Malaysian undergraduate studying in any local university/ college
- Aged 18 – 25

Note: All data will be processed as group data and your responses will be completely anonymous & kept confidential.
Link to the survey: https://utarpsy.au1.qualtrics.com/jfe/form/SV_8BTjKtiniZj8wu2

For further inquiries, please contact
H'ng Zhuang Hang (hang34562@1utar.my)
Wong Ker Yin (colaky0306@1utar.my)
Yau Chiow Yee (ychiowy@1utar.my)

2:53 pm

Appendix E

Histogram

Figure 4.1

Histogram for Variable Fear of Covid-19
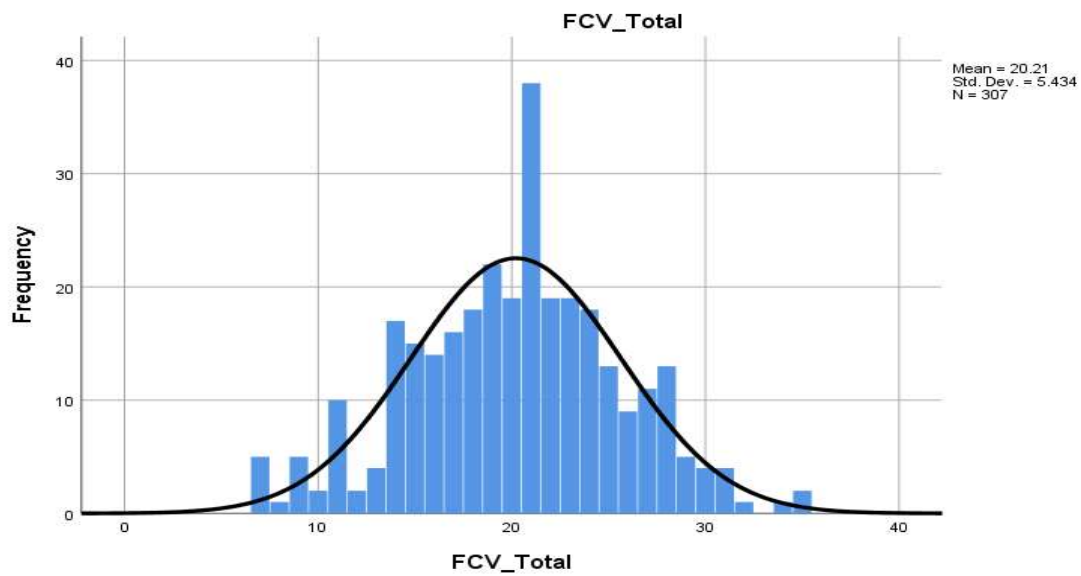
Figure 4.2

Histogram for Variable Depression
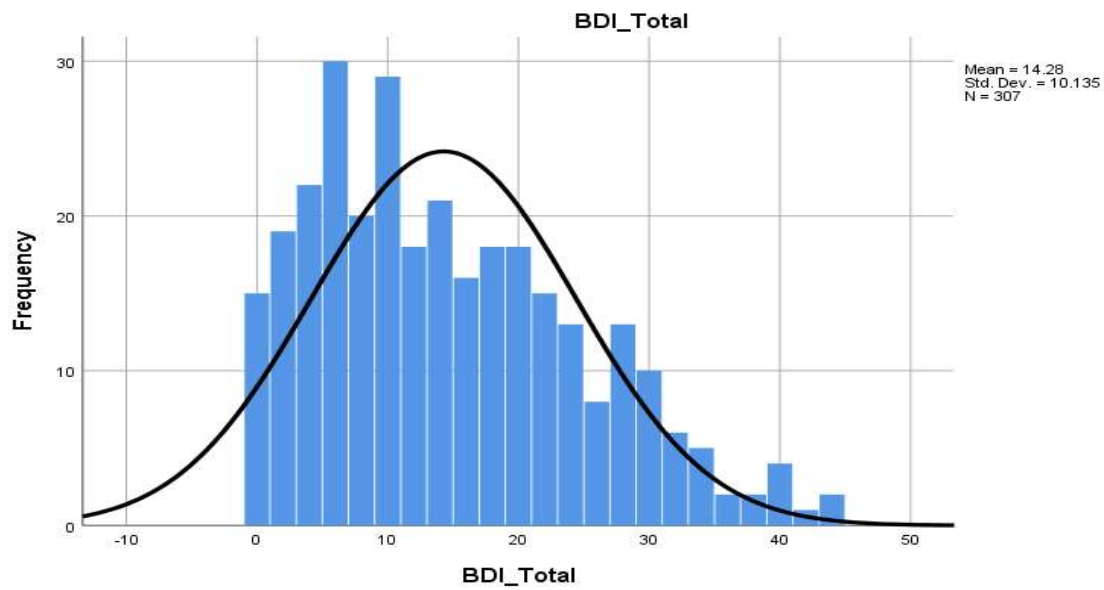
Figure 4.3

Histogram for Variable Internal Locus of Control
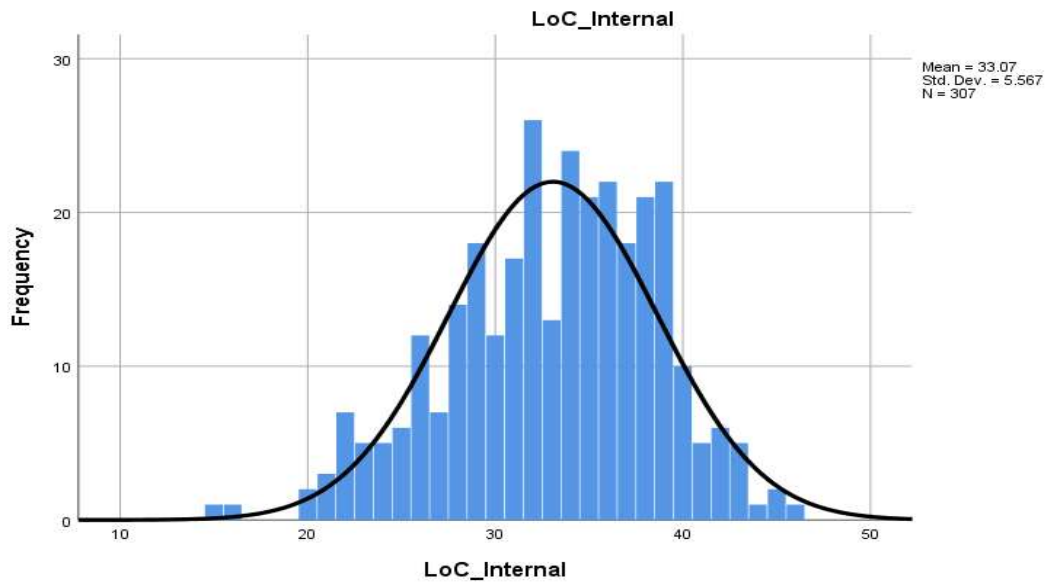
Figure 4.4

Histogram for Variable External Locus of Control (Powerful Others)
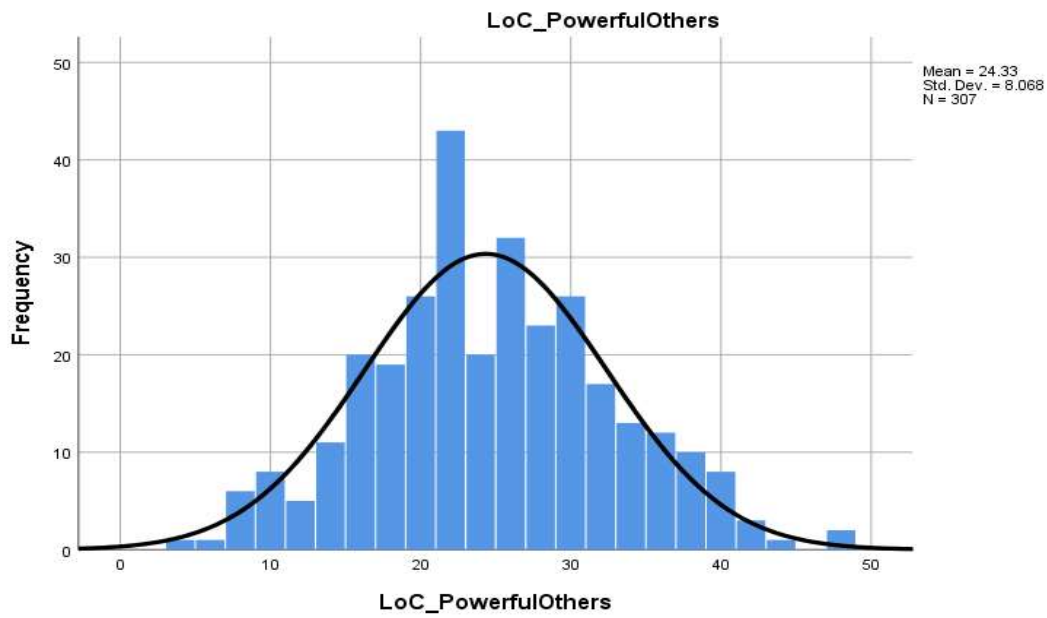
Figure 4.5

Histogram for Variable External Locus of Control (Chance)
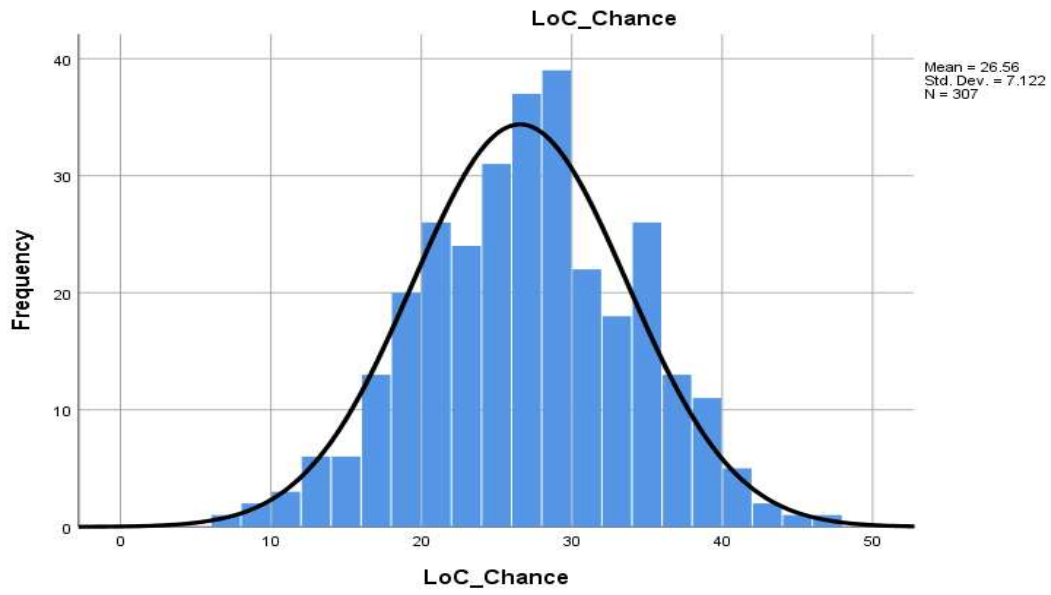
Appendix F

Q-Q Plot

Figure 4.6

Q-Q Plot for Variable Fear of Covid-19

Normal Q-Q Plot of FCV_Total
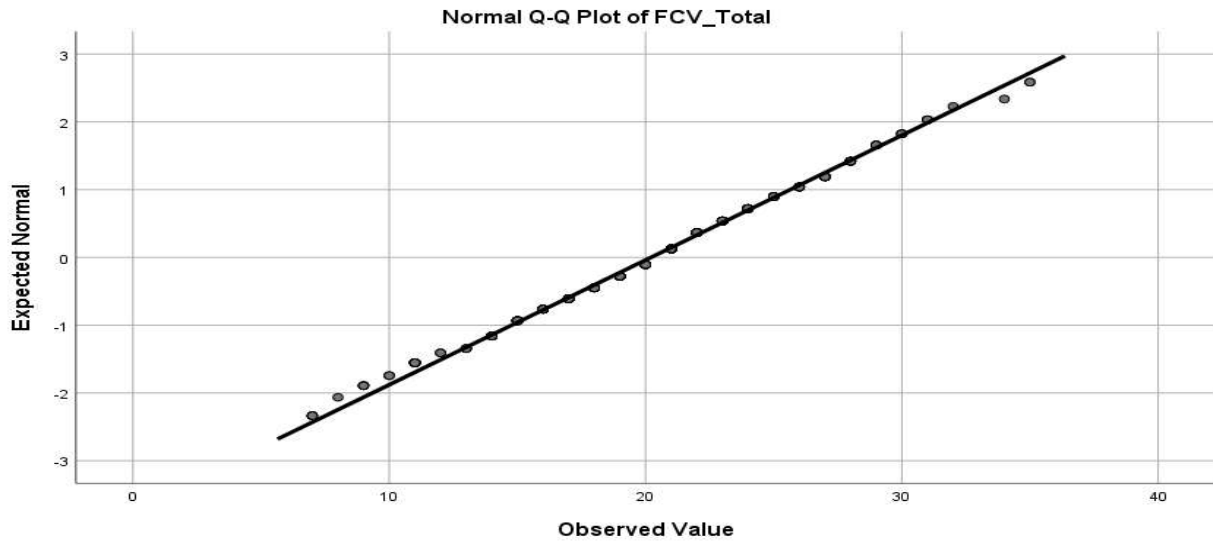
Figure 4.7

Q-Q Plot for Variable Depression

Normal Q-Q Plot of BDI_Total
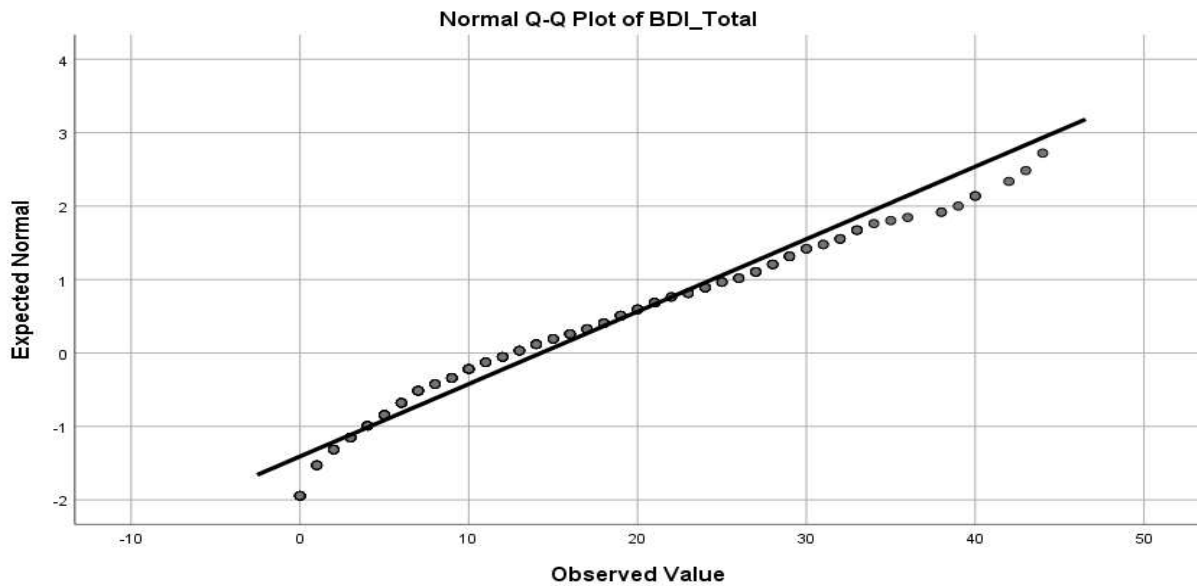
Figure 4.8

Q-Q Plot for Variable Internal Locus of Control
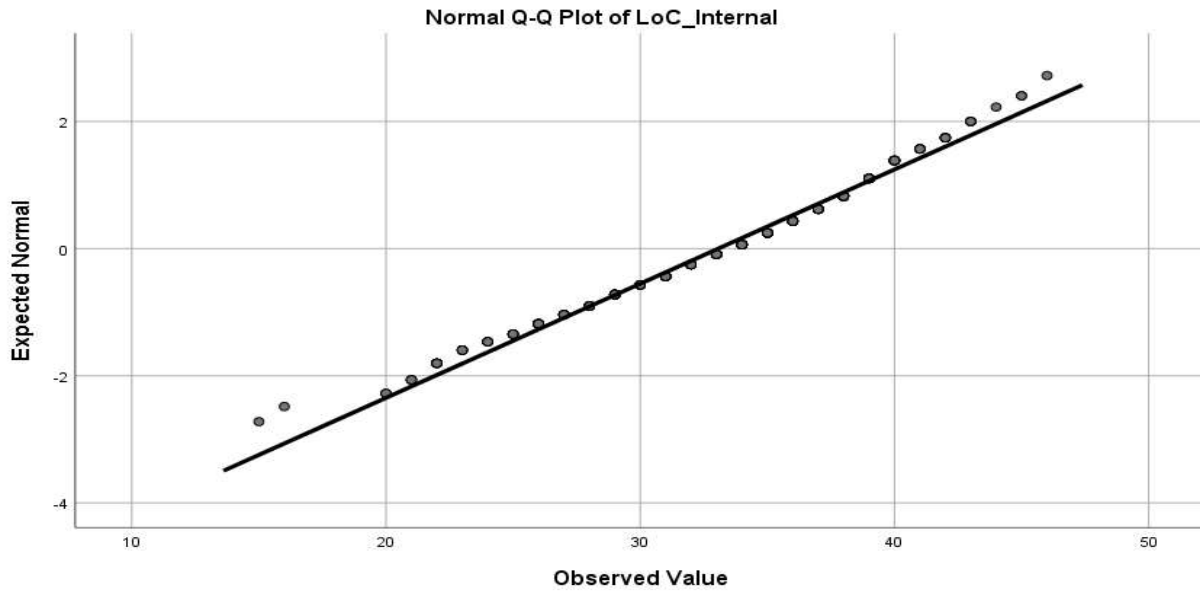
Figure 4.9

Q-Q Plot for Variable External Locus of Control (Powerful Others)
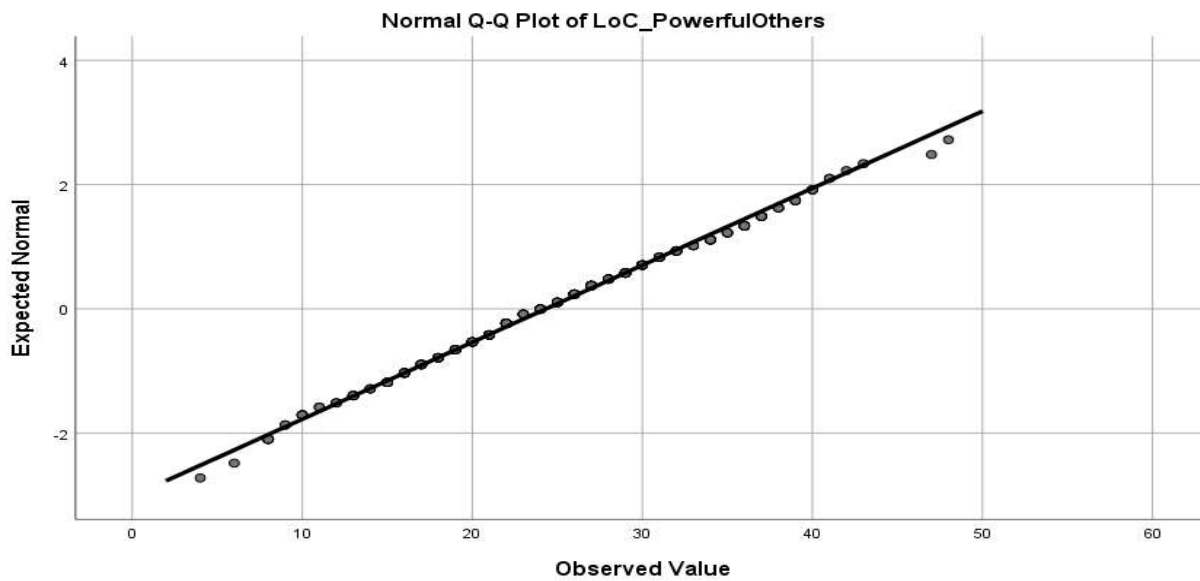
Figure 4.10

Q-Q Plot for Variable External Locus of Control (Chance)
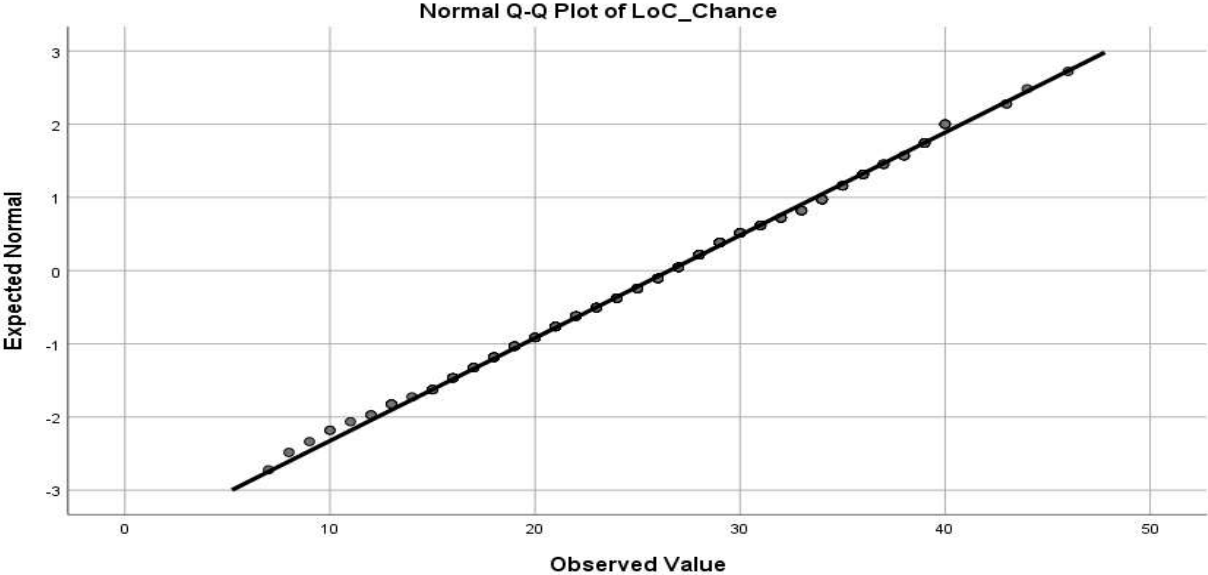
Appendix G

Multivariate Outliers Test Results

Table 4.6

Case Summaries for Depression

	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
1	1	6.33722	.01440	.02071
2	2	4.63501	.00194	.01515
3	3	1.02771	.00051	.00336
4	4	1.29483	.00174	.00423
5	5	3.33017	.00021	.01088
6	6	6.02480	.00459	.01969
7	7	12.39061	.01768	.04049
8	8	3.34144	.00002	.01092
9	9	4.21337	.00354	.01377
10	10	1.25774	.00258	.00411
11	11	2.49669	.00033	.00816
12	12	11.30906	.05075	.03696
13	13	2.47499	.00189	.00809
14	14	5.03213	.01752	.01644
15	15	6.08713	.00225	.01989
16	16	5.15141	.01046	.01683
17	17	6.06595	.00101	.01982
18	18	4.18646	.00601	.01368
19	19	3.71078	.00198	.01213
20	20	1.03360	.00020	.00338
21	21	1.41297	.00146	.00462
22	22	1.58208	.00158	.00517
23	23	4.09983	.00000	.01340
24	24	.65461	.00000	.00214
25	25	8.21363	.00010	.02684
26	26	3.29852	.00045	.01078
27	27	1.25956	.00000	.00412
28	28	1.41954	.00021	.00464
29	29	1.59208	.00190	.00520
30	30	6.05723	.00543	.01979
31	31	5.98923	.00388	.01957
32	32	6.90350	.01068	.02256

33	33	.88705	.00168	.00290
34	34	2.86027	.01316	.00935
35	35	4.49071	.01819	.01468
36	36	4.65923	.00004	.01523
37	37	5.05838	.00112	.01653
38	38	4.08595	.00515	.01335
39	39	4.02453	.00692	.01315
40	40	4.93518	.00083	.01613
41	41	.64453	.00008	.00211
42	42	5.12132	.00051	.01674
43	43	3.76123	.01153	.01229
44	44	6.39421	.00000	.02090
45	45	2.76499	.00013	.00904
46	46	.71317	.00000	.00233
47	47	3.36799	.00001	.01101
48	48	2.89530	.00099	.00946
49	49	.97819	.00039	.00320
50	50	3.27196	.00015	.01069
51	51	5.85967	.00353	.01915
52	52	3.85922	.00072	.01261
53	53	2.64733	.00121	.00865
54	54	2.43255	.00099	.00795
55	55	1.97371	.00046	.00645
56	56	1.17582	.00032	.00384
57	57	1.48451	.00100	.00485
58	58	2.00623	.00014	.00656
59	59	2.79162	.00069	.00912
60	60	2.30379	.00118	.00753
61	61	11.52806	.01064	.03767
62	62	3.12701	.00317	.01022
63	63	.75617	.00001	.00247
64	64	2.95129	.00043	.00964
65	65	2.44579	.00356	.00799
66	66	7.08008	.00546	.02314
67	67	2.31272	.00339	.00756
68	68	1.15998	.00033	.00379
69	69	3.49985	.00025	.01144
70	70	.79490	.00227	.00260
71	71	4.14627	.00132	.01355
72	72	1.22704	.00499	.00401

73	73	1.51083	.00157	.00494
74	74	.71479	.00068	.00234
75	75	8.41517	.00035	.02750
76	76	3.71440	.00385	.01214
77	77	5.58840	.00823	.01826
78	78	2.05905	.00002	.00673
79	79	7.89103	.00003	.02579
80	80	4.47508	.00003	.01462
81	81	3.52518	.01902	.01152
82	82	.98217	.00034	.00321
83	83	2.92312	.00171	.00955
84	84	5.91292	.00108	.01932
85	85	3.06649	.00774	.01002
86	86	7.58498	.00017	.02479
87	87	2.90767	.00001	.00950
88	88	3.97528	.00415	.01299
89	89	2.09574	.00085	.00685
90	90	.46891	.00013	.00153
91	91	1.39676	.00007	.00456
92	92	10.53997	.00418	.03444
93	93	2.56954	.00707	.00840
94	94	7.62882	.00125	.02493
95	95	3.28297	.00029	.01073
96	96	7.13411	.00003	.02331
97	97	3.69173	.00558	.01206
98	98	3.73324	.00075	.01220
99	99	4.25444	.00000	.01390
100	100	1.13967	.00212	.00372
101	101	2.45626	.00074	.00803
102	102	4.93373	.00880	.01612
103	103	2.17187	.00228	.00710
104	104	4.89329	.00051	.01599
105	105	15.74053	.00001	.05144
106	106	1.09146	.00241	.00357
107	107	2.03648	.00013	.00666
108	108	2.10306	.00133	.00687
109	109	.71074	.00126	.00232
110	110	.28144	.00029	.00092
111	111	2.64445	.00064	.00864
112	112	5.52575	.00327	.01806

113	113	4.87378	.00020	.01593
114	114	2.49457	.00003	.00815
115	115	5.75545	.00063	.01881
116	116	2.37078	.00057	.00775
117	117	.12885	.00012	.00042
118	118	5.20496	.01643	.01701
119	119	1.58120	.00315	.00517
120	120	13.19277	.00578	.04311
121	121	2.20280	.00001	.00720
122	122	3.38897	.00329	.01108
123	123	6.53687	.00177	.02136
124	124	1.32221	.00028	.00432
125	125	2.98804	.00011	.00976
126	126	.59179	.00033	.00193
127	127	5.03829	.00060	.01647
128	128	5.33974	.00884	.01745
129	129	7.44275	.00969	.02432
130	130	8.49095	.00443	.02775
131	131	5.94395	.00038	.01942
132	132	18.14552	.00048	.05930
133	133	3.15334	.00145	.01031
134	134	3.92998	.00095	.01284
135	135	1.32083	.00165	.00432
136	136	4.99820	.00508	.01633
137	137	6.45065	.00298	.02108
138	138	2.75852	.00020	.00901
139	139	5.16414	.00800	.01688
140	140	.99130	.00071	.00324
141	141	7.33585	.00822	.02397
142	142	3.64030	.00077	.01190
143	143	2.06995	.00009	.00676
144	144	2.53265	.00040	.00828
145	145	6.17891	.01057	.02019
146	146	1.27785	.00164	.00418
147	147	.15679	.00109	.00051
148	148	3.80314	.00056	.01243
149	149	1.79194	.00006	.00586
150	150	10.13093	.00761	.03311
151	151	5.19012	.00034	.01696
152	152	3.15685	.00354	.01032

153	153	4.42489	.02255	.01446
154	154	4.07794	.00000	.01333
155	155	5.26051	.01486	.01719
156	156	6.88458	.00007	.02250
157	157	4.00982	.00741	.01310
158	158	.79701	.00104	.00260
159	159	.47027	.00026	.00154
160	160	1.28362	.00000	.00419
161	161	5.73154	.00211	.01873
162	162	20.18150	.00273	.06595
163	163	4.56498	.00385	.01492
164	164	4.84651	.00000	.01584
165	165	3.20480	.00042	.01047
166	166	4.83854	.00016	.01581
167	167	1.82682	.00001	.00597
168	168	.84501	.00216	.00276
169	169	1.97312	.00100	.00645
170	170	2.07902	.00023	.00679
171	171	1.18655	.00035	.00388
172	172	1.79873	.00002	.00588
173	173	2.10414	.00081	.00688
174	174	10.32954	.00360	.03376
175	175	5.87961	.00431	.01921
176	176	4.35966	.00397	.01425
177	177	4.59949	.00197	.01503
178	178	8.47403	.00050	.02769
179	179	2.08226	.01110	.00680
180	180	1.91565	.00126	.00626
181	181	8.91915	.00352	.02915
182	182	4.33406	.02624	.01416
183	183	7.01880	.00379	.02294
184	184	1.66236	.00234	.00543
185	185	.40823	.00142	.00133
186	186	1.32277	.00025	.00432
187	187	6.55441	.01106	.02142
188	188	4.79515	.00297	.01567
189	189	.70383	.00008	.00230
190	190	3.43966	.00137	.01124
191	191	3.27964	.00517	.01072
192	192	3.39233	.00092	.01109

193	193	2.09898	.00135	.00686
194	194	5.61601	.00017	.01835
195	195	7.64692	.00000	.02499
196	196	6.16936	.00011	.02016
197	197	2.27623	.00093	.00744
198	198	1.50823	.00854	.00493
199	199	.37397	.00068	.00122
200	200	9.12710	.00835	.02983
201	201	2.23926	.00955	.00732
202	202	2.49057	.00524	.00814
203	203	6.89123	.02304	.02252
204	204	1.31288	.00006	.00429
205	205	5.28687	.00433	.01728
206	206	15.79436	.04471	.05162
207	207	1.90733	.00003	.00623
208	208	3.84914	.00109	.01258
209	209	4.13935	.00376	.01353
210	210	7.60834	.00213	.02486
211	211	4.07607	.00000	.01332
212	212	3.58967	.00393	.01173
213	213	3.29139	.01283	.01076
214	214	.54245	.00184	.00177
215	215	8.51157	.00199	.02782
216	216	14.47110	.00104	.04729
217	217	3.23962	.01231	.01059
218	218	.73558	.00017	.00240
219	219	6.03452	.02098	.01972
220	220	4.98318	.00435	.01628
221	221	1.66696	.00000	.00545
222	222	4.75467	.00039	.01554
223	223	4.14657	.00577	.01355
224	224	1.77877	.00018	.00581
225	225	.76009	.00106	.00248
226	226	2.39869	.00279	.00784
227	227	3.30348	.00269	.01080
228	228	3.39195	.00836	.01108
229	229	5.51414	.01560	.01802
230	230	5.62035	.00237	.01837
231	231	1.85880	.00000	.00607
232	232	3.25392	.00715	.01063

233	233	7.33606	.00296	.02397
234	234	1.14510	.00064	.00374
235	235	.26548	.00044	.00087
236	236	4.50659	.00014	.01473
237	237	1.50420	.00065	.00492
238	238	1.62540	.00328	.00531
239	239	2.51972	.00096	.00823
240	240	4.52815	.00100	.01480
241	241	1.71509	.00198	.00560
242	242	3.45610	.00012	.01129
243	243	2.37818	.00098	.00777
244	244	3.49084	.00026	.01141
245	245	4.30715	.00097	.01408
246	246	3.66093	.00140	.01196
247	247	7.22109	.01690	.02360
248	248	6.57905	.01315	.02150
249	249	2.26448	.00008	.00740
250	250	5.71985	.00918	.01869
251	251	2.74151	.00165	.00896
252	252	1.62014	.00000	.00529
253	253	4.46369	.00044	.01459
254	254	1.34412	.00232	.00439
255	255	.90622	.00179	.00296
256	256	2.64758	.00004	.00865
257	257	10.82523	.00009	.03538
258	258	2.51093	.00010	.00821
259	259	3.12533	.00001	.01021
260	260	10.91506	.00832	.03567
261	261	1.62387	.00457	.00531
262	262	3.98882	.00003	.01304
263	263	2.01850	.00437	.00660
264	264	1.63118	.00148	.00533
265	265	1.06906	.00004	.00349
266	266	6.85847	.00600	.02241
267	267	2.76347	.00157	.00903
268	268	4.94649	.00091	.01616
269	269	3.85790	.00246	.01261
270	270	.72968	.00109	.00238
271	271	2.95652	.00121	.00966
272	272	3.38235	.00026	.01105

|				
273	273	10.56235	.01288	.03452
274	274	3.78683	.00570	.01238
275	275	9.64056	.00661	.03151
276	276	1.41909	.00049	.00464
277	277	1.94923	.00126	.00637
278	278	7.69738	.00916	.02515
279	279	2.84591	.00023	.00930
280	280	10.41367	.03971	.03403
281	281	.46943	.00097	.00153
282	282	2.99962	.00071	.00980
283	283	5.03012	.00314	.01644
284	284	.45746	.00030	.00149
285	285	3.59286	.00214	.01174
286	286	3.97209	.00117	.01298
287	287	1.75261	.00152	.00573
288	288	3.83475	.00021	.01253
289	289	6.34994	.00543	.02075
290	290	1.37342	.00232	.00449
291	291	2.31756	.00578	.00757
292	292	3.02574	.00000	.00989
293	293	3.12924	.00720	.01023
294	294	2.16876	.00103	.00709
295	295	2.20097	.00065	.00719
296	296	8.74788	.00908	.02859
297	297	1.20057	.00073	.00392
298	298	5.28897	.00700	.01728
299	299	17.18101	.03536	.05615
300	300	2.45459	.00219	.00802
301	301	1.34813	.00003	.00441
302	302	1.59735	.00000	.00522
303	303	4.76519	.01859	.01557
304	304	1.48432	.00278	.00485
305	305	5.52230	.00290	.01805
306	306	1.85049	.00016	.00605
307	307	1.10009	.00033	.00360
Total		307	307	307

Note: Limited to first 400 cases.

Appendix H

Scatterplot

Figure 4.11

Scatterplot for Assumption of Homoscedasticity, Normality of Residual, and Linearity of Residual
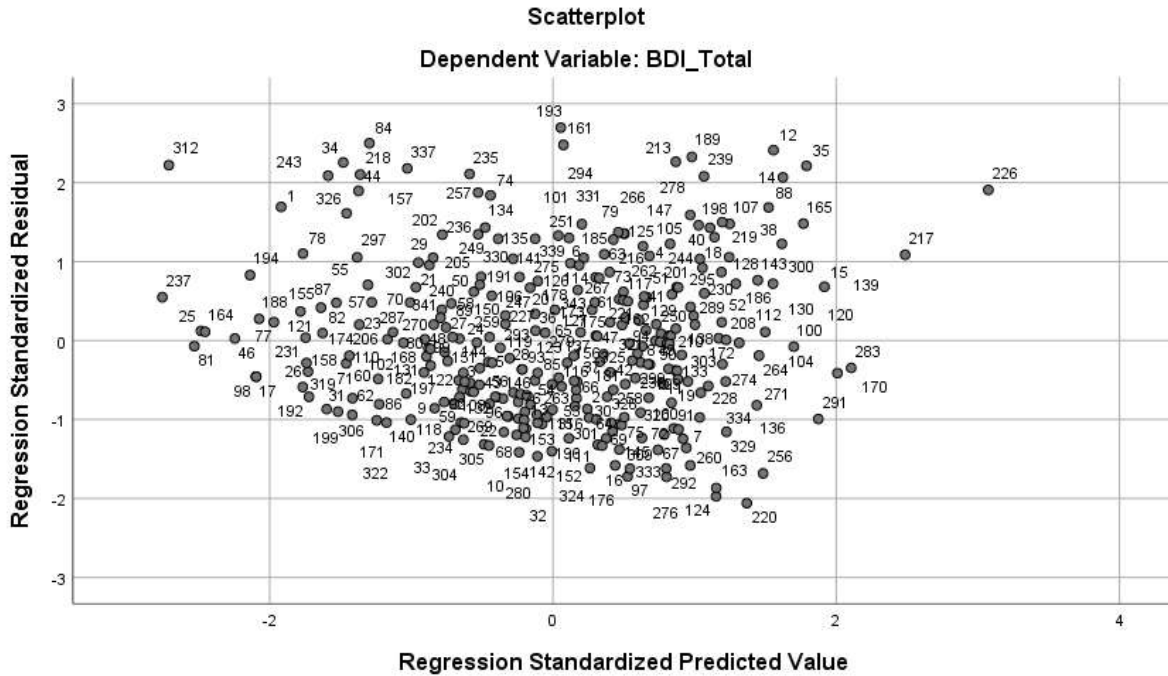
Appendix I

Turnitin Report

FYP2_H'ng Zhuang Hang

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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