RELATIONSHIP BETWEEN LONELINESS, SELF-ESTEEM, AND BINGE EATING AMONG UNDERGRADUATES IN MALAYSIA

LIM WEI FANG
NG CHIEN YI
ONG TING WEI

A RESEARCH PROJECT
SUBMMITTED IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE BACHELOR OF SOCIAL SCIENCE (HONS) PSYCHOLOGY
FACULTY OF ARTS AND SOCIAL SCIENCE
UNIVERSITI TUNKU ABDUL RAHMAN
APR 2022

Relationship Between Loneliness, Self-Esteem, and Binge Eating Among Undergraduates in Malaysia

Lim Wei Fang, Ng Chien Yi, Ong Ting Wei

Universiti Tunku Abdul Rahman

This research project is submitted in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology, Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman. Submitted in April 2022

DECLARATION

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

Name : Lim Wei Fang

Student ID: 19AAB03381

Signature : 

Date : 10th April 2023

Name : Ng Chien Yi

Student ID: 19AAB01928

Signature : 

Date : 10th April 2023

Name : Ong Ting Wei

Student ID: 19AAB03264

Signature : 

Date : 10th April 2023

APPROVAL FORM

This research paper attached hereto, entitled "Relationship Between Loneliness, Self-Esteem, And Binge Eating Among Undergraduates In Malaysia" prepared and submitted by Lim Wei Fang, Ng Chien Yi, and Ong Ting Wei in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

Date: 7th April 2023

Supervisor

(Ms. Liza Hartini binti Rusdi)

Table of Contents

Abstract 1

Introduction 2

Background 2

Research Hypothesis 4

Research Questions 4

Significance of the study 5

Problem Statement 6

Conceptual definition 8

Loneliness 8

Self-esteem 8

Binge Eating 8

Operational definition 9

Loneliness 9

Self-esteem 9

Binge Eating 9

Literature Review 9

Binge Eating 10

Loneliness and Binge Eating 10

Self-esteem and Binge Eating 12

Conceptual Framework 15

Theoretical Framework 16

Transdiagnostic Cognitive Behavioural Model of Eating Disorders 16

Methodology 17

Design of the study 18

Sampling method 18

Location of Study 19

Ethical Clearance Approval 19

Sample Size 20

Inclusion and exclusion criteria 20

Procedure of obtaining consent and data collection 20

Instrument 21

UCLA Loneliness Scale (UCLA) 21

Rosenberg Self-esteem Scale (SES) 22

Binge Eating Scale (BES) 22

Results 23

Data Cleaning 23

Boxplot 23

Multivariate Outliers 23

Assumptions on Normal Distribution 24

Skewness and Kurtosis 24

P-P Plot and Q-Q Plot 25

Histogram 25

Kolmogorov-Smirnov test (K-S test) 25
Assumptions for Multiple Linear Regression 26
Types of Variables 26
Multicollinearity 26
Residual Normality, Residual Linearity, and Homoscedasticity 27
Descriptive Statistics 27
Multiple Linear Regression 28
Summary of Findings 29
Discussion 30
Constructive discussion of findings 30
Implication 32
Theoretical Implication 32
Practical Implication 33
Limitation 33
Recommendation 35
Conclusion 36
References 37
Appendix A 49
Appendix B 50
Appendix C 51
Appendix D 52

Appendix E 54

Appendix F 59

Appendix G 60

Appendix H 61

Appendix I 62

Appendix J 63

Appendix K 64

List of Tables

Table 1 *Residuals Statistics* 24

Table 2 *Summary of Skewness Value and Kurtosis Value* 24

Table 3 *Collinearity Statistics* 26

Table 4 *Independent Error Test* 26

Table 5 *Demographic Information of Respondents* 28

Table 6 *ANOVAa Table of Multiple Linear Regression* 29

Table 7 *Model Summary of Multiple Linear Regression* 29

Table 8 *Coefficient Table of Multiple Linear Regression* 29

Table 9 *Table of Result Summary* 29

List of Figures

Figure 1 *Scatterplot showed Residual Normality, Residual Linearity and Homoscedasticity among the variables.* 27

List of Abbreviation

ARFID	Avoidant/restrictive food intake disorder
BED	Binge eating disorder
BES	Binge Eating Scale
BMI	Body Mass Index
BN	Bulimia Nervosa
DSM	Diagnostic and Statistical Manual of Mental Disorders
K-S test	Kolmogorov-Smirnov test
LOC	Loss-of-control
MLR	Multi-linear regression
PDPA	Personal Data Protection Act
PSI	Perceived social isolation
SERC	Scientific and Ethical Review Committee
SES	Self-esteem Scale
SOSE	Self-Organizing Self-Esteem
SPSS-27	Statical Package for Social Science Version 27
UCLA	UCLA Loneliness Scale
UTAR	Universiti Tunku Abdul Rahman
VIC	Variance inflation factor

Abstract

Numerous studies have established that loneliness and low self-esteem can contribute to the development of binge eating. This cross-sectional study aimed to investigate the predictive effects of loneliness and self-esteem on binge eating among undergraduates in Malaysia. The study recruited 147 participants aged between 18 and 25 years old, mostly female (63.9%) and of Chinese ethnicity (89.1%). The study participants were selected through purposive sampling, which involved distributing an online Qualtrics survey link and QR code through various social media platforms. The study found that both loneliness and self-esteem significantly predicted binge eating among undergraduates in Malaysia, fulfilling the study hypotheses. Multi-linear regression (MLR) analysis showed a statistically significant positive relationship between loneliness and binge eating ($\beta = 0.215$, $p < .005$). In addition, a statistically significant negative relationship was observed between self-esteem and binge eating ($\beta = -0.225$, $p < .005$). The study concludes that it fills a literature gap on the relationship between loneliness, self-esteem, and binge eating among undergraduates in Malaysia. The findings may serve as a reference for practitioners and policymakers to implement interventions and policies to alleviate binge eating problems among undergraduates in Malaysia.

Keywords: loneliness, self-esteem, binge eating, undergraduates, university students

Introduction

Background

Eating disorders are a type of mental illness defined as abnormal eating patterns. Anorexia nervosa, bulimia nervosa (BN), binge eating disorder (BED), pica, rumination disorder, and avoidant/restrictive food intake disorder (ARFID) are the six basic feeding and eating disorders specified by the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013). Among these, the DSM-5 criteria described binge eating episodes as a disorder that takes place, on average, at least once per week for the last three months. Also, consuming excessively large quantities of food in a short period of time while feeling out of control (5th ed.; DSM–5; American Psychiatric Association, 2013). According to the estimations of Keski-Rahkonen (2021), DSM-5 BED affects 0.3% of men and 1.5% of women globally while 0.6-1.8% of women and 0.3-0.7% of men claim receiving a lifetime diagnosis of DSM-5 BED. The prevalent type of ED and one of the most frequently diagnosed disorders among teenagers is BED (Nicholls & Barrett, 2015). Also, the onset of EDs, including BED, is most prone to happen during adolescence, during the developmental stage of transition marked by quick and profound changes in physical, psychological, and brain development (Anderson & Nicolay, 2016). Youths go through rapid neurobiological and physical changes during this period, which may be accompanied by an increase in concern and attention for body size and shape as awareness of societal pressures to be thin and the importance of relationships with peer's increases, raising concerns about peer acceptance (Rajagopalan & Shejwal, 2014).

Since the inception of psychology as a field, the study of self-esteem has had a rich and multifaceted background (Park & Crocker, 2013). Low self-esteem has been identified as a symptom or having an associated characteristic of a number of emotional and personality disorders, although not classified as a psychiatric disorder in and of itself. Low self-esteem, negative self-evaluation, and high levels of self-criticism are associated with 21 distinct disorders in the DSM-5 as either diagnosis or associated characteristics, comorbidities, or consequences.

This comprises BED, among several other disorders (5th ed.; DSM–5; American Psychiatric Association, 2013). In the 19th and 20th centuries, James and Rosenberg believed that one's perception of competence to accomplish particular life goals affected their degree of self-esteem (Noordenbos et al., 2014). According to Brown (2014), self-esteem indicates how much one likes themselves as the evaluative component of the self. People are referred to as possessing high levels of self-esteem when the appraisal is generally positive, and low levels of self-esteem when it is negative. Besides, the Self-Organizing Self-Esteem (SOSE) Model by De Ruiter et al. (2017) is a recent model that examines the evolution of self-esteem over time and its embedding in the nomological network of conceptions. Throughout this model, they explain how a person's experiences in ordinary circumstances are combined at a meso-level to form their level of self-esteem. The state affects how an individual reacts to upcoming circumstances. Additionally, the level links with trait self-esteem attractor states, a higher macro-level. It is associated with the personality quality of self-esteem. In general, the paradigm contends that self-esteem emerges as a result of prior experiences and develops progressively over time (De Ruiter et al., 2017). Alternatively, it can be assumed that the way people around one believes in binge eating may influence one's perception of binge eating and self-esteem.

Loneliness is a significant predictor of well-being as well as a major social concern (*"Social isolation and loneliness in older adults: Opportunities for the Health Care System",* 2020). It is defined as frustration driven on by a perceived gap between desired and actual social relationships, has linked to increased rates of suicide thoughts (Beutel et al., 2017) and a 30% higher mortality risk (Rico-Uribe et al., 2018). In general, it is suggested that personal loneliness refers to the lack of a social media platform, the absence of a group of people that enables an individual to develop a sense of belonging, of organization, and of being a member of a community, as well as refers to the absence of an attachment relationship (along with feelings of isolation). Different scholars have referred to "loneliness" and "social isolation" ambiguously, both in everyday life and in the field of research. Others, however, believe that the two phrases are extremely distinct from one another. A precise definition of loneliness is necessary in order to make reliable assessments, with special

attention to its multidimensionality and differences from notions that are related (social isolation or a lack of social support) (Yanguas et al., 2018).

According to Lim et al. (2020), the effects of loneliness on an individual, the people surrounding them, the community they interact with, and the general public have thus far received little attention. There is growing research that has found that the factors that contribute to loneliness, as well as isolation, have an impact on our health and wellness (Campagne, 2019). And it is currently being emphasised as an escalating public health issue in both developed and developing countries (Holt-Lunstad et al., 2017). There are numerous ways to interpret the association between disordered eating and loneliness. It has been hypothesised that disordered eating may have its roots in loneliness. According to the Interpersonal Model of EDs (Burke et al., 2017), people who are lonely may engage in bulimic behaviour and binge eating in an effort to both distract themselves from their negative feelings and to meet any emotional or social needs they may be experiencing (Levine, 2012). Moreover, according to Van Beljouw et al. (2014), perceived social isolation (PSI), another description for loneliness, is a global issue since it affects people of all ages and has a more detrimental effect on their health than obesity. It is acknowledged that loneliness is a clinically significant cognitive state that has been shown to have detrimental impacts on both physical and mental health (Van Beljouw et al., 2014). With this emerging concern, there are outstanding questions around whether the prevalence of loneliness has increased over time and if so, what has contributed to this trend.

Research Hypothesis

H1: There is a significant relationship between loneliness and binge eating among undergraduates in Malaysia.

H2: There is a significant relationship between self-esteem and binge eating among undergraduates in Malaysia.

Research Questions:

1. Is there a relationship between loneliness and binge eating among undergraduates in Malaysia?
2. Is there a relationship between self-esteem and binge eating among undergraduates in Malaysia?
3. Does loneliness and self-esteem predict binge eating among undergraduates in Malaysia?

Significance of the study

This study attempted to investigate the study's applicability in terms of its academic contribution and any potential practical implications that may be drawn from the results. This section will cover the study's contribution to undergraduates, society, and knowledge given the relationship between BED, self-esteem, and loneliness among today's undergraduates. This study's data will be utilised to examine and shed light on the problems raised above regarding the connection between undergraduates' binge eating, loneliness, and self-esteem.

Eating disorders, including binge eating, are a severe public health concern. University students in particular are at an increased risk for eating disorders in young adulthood (Pike & Dunne, 2015). Several studies have noted the prevalence of eating disorders. In Malaysia, a survey of 279 medical students indicated that 42.7% of the students had eating disorders (Rasman et al., 2018), while a study of 263 medical students discovered that 11% of the students were at risk for getting eating disorders (Ngan et al., 2017). In short, by comprehending the connection between binge eating and low self-esteem and loneliness, the study's findings may aid social workers or educators in creating and implementing a social programme.

Self-esteem is typically seen by psychologists as a persistent personality trait, a component of every person's personality (Torkaman et al., 2020), loneliness is also a common issue for undergraduate students (Vasileiou et al., 2019), as well as binge eating is on the rise (Ngan et al., 2017). As a result, the research study will be beneficial in examining how binge eating and these two characteristics are related. The findings of this study will assist to fill a gap in the body of

information on the outcomes of loneliness, self-esteem, and how to deal with BED in both academic and general literature. By undertaking this study, the knowledge gap about binge eating and its associated variables may be addressed.

Last but not least, it offers the opportunity to investigate how each element affects binge eating. Similarly, the general population can have a better understanding of specific persons who binge eat. The current study can also contribute to readers' knowledge and understanding of binge eating by examining additional domains and regions that may contribute to someone's propensity to engage in binge eating. This study has the potential to increase public knowledge of binge eating, which among undergraduate students appears to be on the rise recently, as well as of the desire to binge eat and its correlates.

Problem Statement

Studies and research on the topic of binge eating have been plentiful in the context of Western culture. However, the studied-on binge eating has been scantily represented under the context of Asian or specifically Malaysian context, even though; the symptoms of binge eating were more likely to be endorsed by Asians when compared to Westerners (Lee-Winn et al., 2014). Additionally, factoring the influence of the surge in exposure to Western context and globalisation, binge eating and other unhealthy eating behaviour has started to be more pervasive within the context of Asia (Gan et al., 2018) especially in the present moment as in Asian countries such as Malaysia, the currents of industrialization have triggered more lifestyle and environmental changes which inevitably pave the way to non-communicable disease which includes eating disorder such as binge eating (Pike & Dune, 2015).

However, even with the increase in the prevalence of binge eating behaviour in Asian countries, not many studies have been done within the Asian context where social and cultural factors may affect the findings of the studies. Studies on binge eating behaviour within Malaysia were also rarely inclusive with most of the studies only recruiting medical students as their target participants (Chan et al., 2020) and findings regarding the behaviour have resulted in some mixed

claims which warrant further future studies. Thus, to better understand the behaviour of binge eating in Malaysia, the present studies aim to conduct the study based on the population of undergraduates in Malaysia and contribute to the literature gap on binge eating behaviour in the Malaysian context. Binge eating behaviour has been found to be a public health concern and is prevalent among adolescents with severe mental as well as physical health consequences (Gan et al., 2018). Some studies have also evidently suggested its association with health problems such as obesity and psychological disorders such as anxiety, depression, intoxication, drug abuse and gambling (Lee-Winn et al., 2016). According to a study conducted by Gan et al. (2011a), about 18% of university students in Malaysia exhibit a risk of disordered eating such as binge eating. That indicates that almost 1 in every 5 university students is at risk of the disorder. What's more, is that university students which are typically adolescents between the age of 18 to 25 years old often cultivate deep-rooted health-related behaviour problems within this period which means that their choice and autonomy in nutritional intake and food-related habits during these ages are likely to be long-lasting (Allman-Farinelli et al., 2016). With this in mind, the behaviour of binge eating may sabotage the nutritional status of university students. According to a study conducted by Thu et al. (2019), participants that exhibited behaviourism of binge eating are also found to have a higher Body Mass Index (BMI) compared to those participants that didn't exhibit any binge eating behaviour. However, participants that reported severe cases of binge eating behaviour have been classified under normal weight BMI which leads to speculations of the use of extreme measures of compensatory measures such as ingesting laxatives and self-induced vomiting which can lead to permanent health conditions and altercation to prevent weight gain.

Although self-esteem as a predictor of an eating disorder such as binge eating has been extensively researched and studied by researchers, the findings might have the presence of Western bias. This is because eating disorders such as binge eating are more likely to differ across cultures as the disorder are highly associated with the Western context which is why the universality of the findings should be cleared up now that it is ubiquitous across cultures, especially among non-western culture (Yusoff & Shukri, 2020). Loneliness as a predictor however has not been

extensively researched, even though; it has been reported that it has an association with disordered eating in cross-sectional research (Mason et al., 2016) and is regarded as an under-researched discussion within the literature of disordered eating behaviour.

Conceptual definition

Loneliness

Loneliness is defined as the psychological distress aroused when an individual perceives the lacking in the quantity or, more importantly, the quality of their relationships to satisfy their social needs (Hawkley & Cacioppo, 2010). Hawkley and Cacioppo (2010) also added that loneliness increases one's awareness against threat while fostering the desire to reconnect. According to Tiwari (2013), loneliness can be categorised into 3 types, namely situational loneliness, developmental loneliness, and internal loneliness.

Self-esteem

Self-esteem is defined as a worldwide barometer of self-evaluation that consists of cognitive appraisals about one's overall self-worth and affective experiences of oneself that are associated with these worldwide appraisals (Murphy et al., 2005). Simply put, self-esteem refers to an individual's overall evaluation of their personal worth and personal value (Hepper, 2016).

Binge Eating

Binge eating is a key symptom of BED whereby an individual chronically consumes excessive amounts of food as well as experiences loss of control (LOC) over the strong desire for rapid food consumption (Berkman et al., 2015).

Operational definition

Loneliness

Loneliness is measured by a revised version of UCLA Loneliness Scale (UCLA). It is a 20-item self-report instrument, involving descriptive statements of feelings of loneliness and non-loneliness, to assess subjective feelings of loneliness or social isolation. UCLA is measured on a 4-point Likert scale with 4 potential options (1 = *never*; 2 = *rarely*; 3 = *sometimes*; 4 = *often*). Items 1, 5, 6, 9, 10, 15, 16, 19, and 20 are reverse-scored. The possible total score of each participant is computed, ranging from 20 to 80. The higher the score, the higher the level of loneliness an individual experiences.

Self-esteem

Self-esteem is measured by the Rosenberg Self-esteem Scale (SES). It is a 10-item self-report instrument that measures global self-worth by measuring both positive and negative feelings about the self. SES is measured on a 4-point Likert scale with 4 potential options (0 = *strongly agree*; 1 = *agree*; 2 = *disagree*; 3 = *strongly disagree*). Items 2, 5, 6, 8, and 9 are reverse-scored. The possible total score of each participant is computed, ranging from 10 to 30. The higher the score, the higher the level of self-esteem in an individual.

Binge Eating

Binge Eating is measured by the Binge Eating Scale (BES). It is a 16-item self-report instrument, consisting of descriptive statements that reflect a range of severity for a plethora of binge-eating-related characteristics. BES is measured on the 4-point Likert scale with 4 potential options, ranging from 0 = *indicates no binge eating problem* to 3 = *reflects severe binge eating problem*. There is no reverse-scored item. The possible total score of each participant is computed, ranging from 0 to 48. The higher the score, the higher the severity of binge-eating problems.

Literature Review

Binge Eating

Binge Eating is a key symptom of BED, which is recognized as a chronic health illness that induces the craving for large amounts of food in an individual. Research shows that women are reported to be more prone to engage in binge eating as compared to men (Sonneville et al., 2013). According to a recent study (Kelly et al., 2016), 230 young adults aged 8 to 17, 28% of participants reported experiencing both objective and subjective gradual stages of binge eating in the month before the assessment. Correspondingly, Sehm and Warschburger (2018) found that adolescents ranging from 16.5% to 29.4% reported performing at least once binge eating within a month before the assessment. Various studies discovered the main contributing factor of BED is loss-of-control (LOC) whereby an individual presents little to no control over food consumption study (Berkman et al., 2015; Colles et al., 2008). In a study by Colles et al. (2008), it was discovered that those who experienced severe emotional disturbance as a consequence of LOC reported a higher tendency of experiencing depressive symptoms and poorer quality of life (QoL) which is closely related to mental health. Besides, there are numerous contributing factors of binge eating, namely low self-esteem, emotional dysregulation (Cella et al., 2022), and anxiety (Duarte-Guerra et al., 2022; Sawaoka et al., 2012). BED is also strongly associated with obesity (Agüera et al., 2021). In the following paragraphs, the correlations between loneliness and binge eating and between self-esteem and binge eating are discussed further along with relevant supporting studies.

Loneliness and Binge Eating

While the research on loneliness is gradually expanding, the definition of the term seemingly starts to vary across studies. Loneliness does not merely refer to the condition of being alone. Some may stay physically alone without feeling lonely; some may be in a crowd while feeling lonely. Generally speaking, the feeling of loneliness is typically aroused when an individual distressingly feels isolated while urging for connection with the social world (Hawkley & Cacioppo, 2010). This is mainly due to our survival instincts that are largely encoded in our genes through passing down of ancestry (Cacioppo et al., 2006). Studies found loneliness is associated

with several negative symptoms, namely depression (Brailovskaia et al., 2021; Lapane et al., 2022), binge eating (Mason et al., 2016; Portingale et al., 2023). Additionally, a study by Portingale et al. (2023) discovered that loneliness predicted greater body dissatisfaction, and negative mood aroused by body dissatisfaction predicted greater urges for overeating. The urge for overeating is most likely due to the consumption of contemplating comfort foods, which are usually high in calories, might reduce feelings of loneliness (Mason et al., 2016). As aforementioned, social isolation is one element of the social environment that may be crucial in the initiation or maintenance of eating disorders like binge eating. Social isolation may be actual or imagined. While imagined social isolation, often known as loneliness, refers to a person's assessment of the calibre of social ties, objective social isolation has been described as a numerical absence of social contacts (Friedler et al., 2014). Levine (2012) asserted that there is a continuous relationship between loneliness and the symptoms of eating disorders, despite the fact that there is minimal research exploring the connection between social isolation and disordered eating practices. According to Chao et al. (2015), loneliness may have an effect on binge eating by lowering the ability to self-regulate, or it may work like a negative effect, with people utilising binge eating as a coping mechanism for loneliness. Researchers have discovered that individuals who report feeling more socially isolated frequently exhibit higher levels of disordered eating habits in clinical and community samples (Mason et al., 2016).

Loneliness (or feeling disconnected from others) appears to be often related with eating habits and/or binge-eating habits, whether they are part of an ED (such as BED, BN) or found in non-clinical settings (Mason et al., 2016). Therefore, despite the fact that some study has looked at loneliness in ED, it has mostly focused on how this emotion may be a predictor of binge-eating episodes or behaviour (Wiedemann et al., 2018). The majority of subjects reported emotional overeating as a result of boredom, whereas those with BED reported emotional overeating as a result of emotions of loneliness. In addition, those with BED reported real emotional overeating more frequently than people without BED, which is consistent with other studies showing that people with BED had more frequent tendencies to do so (Schulz & Laessle, 2012). Greater

precisely, when compared to those without BED, people with BED also reported more bouts of emotional overeating in reaction to emotions including loneliness, anxiousness, depression, exhaustion, pleasure, and boredom.

Similar to other research, found that emotional dysregulation, bulimia, and BED are all related to loneliness (Southward et al., 2013). This study sought to determine if loneliness mediates the link between emotion dysregulation and BED. UCLA's Loneliness Scale and Difficulties in Emotion Dysregulation Scale were used to examine 107 women who had BN or BED. It was discovered that emotional dysregulation did not moderate the relationship between loneliness and BN or binge eating, but loneliness did. As a result, if loneliness is addressed, the emotional component of eating disorders can be cured. Therefore, literature has shown that when loneliness develops, harmful eating behaviours including food addiction and BED also increase. In conclusion, there is a positive association between loneliness and harmful eating habits.

Past studies on the correlation between loneliness and binge eating were mostly conducted in other countries such as the United Kingdom (Vuillier et al., 2021), the United States (Sonneville et al., 2013), Australia (Portingale, 2023), and etc. However, there are limited to no studies conducted in the Malaysian context. Therefore, it is precedent to establish the relationship between loneliness and binge eating among undergraduates in Malaysia.

Self-esteem and Binge Eating

Self-esteem is a prominent aspect of the symptoms of eating disorders, including BED (Pennesi & Wade, 2016). Various eating disorders models establish the linkage between low self-esteem and eating symptoms, namely the transdiagnostic model, the functional analysis model, and the cognitive and behavioural model (Lo Coco et al., 2020). Poor self-esteem is linked to body image disturbance (Lydecker et al., 2017) and anxiety (Sawaoka et al., 2012) which contributes to greater eating disorder symptoms. According to a study by Portingale et al. (2023), the interpersonal model of binge eating postulates that social interaction difficulties may arouse unpleasant emotions and low self-esteem in an individual. As a consequence, the individual will

attempt to avoid, control, or lessen the psychological distress by engaging in binge eating behaviours. This may lead to a maladaptive vicious cycle as multiple studies suggested the eating disorder symptomatology further exacerbates poor levels of self-esteem (Cella et al., 2019; Vesco et al., 2021) which may, again, in turn result in binge eating behaviours (Karam et al., 2020).

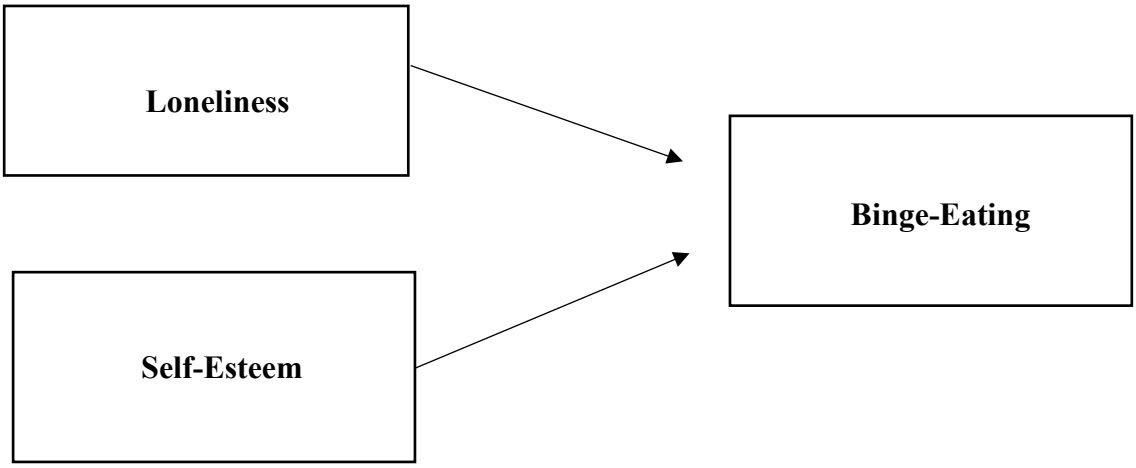
As stated above, the development of EDs is vulnerable to low self-esteem, according to empirical data (Cella et al., 2017). A growing amount of research data shows that negative self-esteem and the ways adolescents interpret their physical appearance may predispose them to binge eating in adolescence (Gan et al., 2018). The view is supported by the study conducted by Cella et al. (2019), stating that binge eating symptoms were correlated with lower levels of self-esteem. Also, the view is supported by several eating disorder models, assuming that in the cognitive and behavioural model of binge eating, and low self-esteem is correlated with eating symptoms (Burton & Abbott, 2019). Same as the interpersonal model of binge eating maintenance is also applicable to the concept of low self-esteem. According to the eating disorder-specific model of interpersonal psychotherapy (IPT-ED; Rieger et al., 2010), poor social recognition can lead to low self-esteem and related negative impact, which in turn can lead to eating disorder behaviours and cognitions including an excessive judgment of body size and weight (Karam et al., 2020). A maladaptive maintenance loop is created when eating disorder symptoms enhance low self-esteem and have negative impacts (Raykos et al., 2017).

This also worked on a meta-analysis conducted by Colmsee et al. (2021), which examined the longitudinal effects of eating disorders on self-esteem. Low self-esteem has consistently been shown to increase the likelihood of young people developing unhealthy eating patterns. While the reversed direction of disordered eating on self-esteem remained below the threshold of practical importance (r =.20), the overall impact of self-esteem on eating disorders was of practical relevance with (r =.23). The total impact of the partial correlations was also significant (p =.09), which supports the idea that low self-esteem causes problematic eating to develop more often over time. It also accords with the findings of other meta-analyses that highlight the significance of self-

esteem in the management and avoidance of eating disorders (Vall & Wade, 2015). Moreover, there is some evidence to support the positive effects of treatment for eating disorders on self-esteem. Self-esteem increases after psychotherapy for BN and BED considerably outperformed control circumstances (g = 0.44 and 0.20, respectively) and there was evidence that guided self-help for BED led to the most achievements. Such self-esteem increases might be a result of patients feeling empowered and responsible when they put to use or master particular abilities (such as problem-solving and interpersonal communication) that were taught to them throughout the psychotherapy process (Linardon et al., 2019). Similarly, in this context, a 5-year longitudinal study has demonstrated a positive relationship between self-esteem and the likelihood of discontinuing binge eating (Goldschmidt et al., 2014).

However, self-esteem showed a significant negative overall influence on controlled eating and binge eating only in women (Brechan & Kvalem, 2015) while males showed a larger protective role of self-esteem against eating disorder behaviours and cognitions in the study (Micali et al., 2015). Although the indirect impact was only tangentially significant in males, depression was a mediator of the indirect detrimental effect of low self-esteem on binge eating. Low self-esteem can lead to food restrictions in both men and women, but depression can prevent restricted eating in males since depression grows low self-esteem. The discovery was that depression mediated the relationship between binge eating and self-esteem (Brechan & Kvalem, 2015). However, it is notable that these studies conducted among adults and the elderly (Cella et al., 2019; Karam et al., 2020; Vesco et al., 2021) may not reflect the experience of young adults. Therefore, the objective of this study is to examine the relationship between self-esteem and binge eating among undergraduates in Malaysia.

Conceptual Framework



Conceptual Framework of present studies

This present study attempts to investigate the predictive effect of loneliness and self-esteem on binge eating behaviour among the target population of undergraduates in Malaysia. Loneliness, self-esteem and binge eating are the variables that will be examined in the present studies. Loneliness and self-esteem are the independent variables while binge eating is the dependent variable as illustrated in the conceptual framework above. The present studies hypothesized that loneliness will be able to positively predict binge-eating behaviour among undergraduates in Malaysia. Furthermore, self-esteem is hypothesized to be able to negatively predict binge-eating behaviour among undergraduates in Malaysia.

Theoretical Framework

Transdiagnostic Cognitive Behavioural Model of Eating Disorders

Transdiagnostic cognitive behavioural theory is proposed by Fairburn et al. (2003) with overvaluation of weight, shape, eating and their control as the core psychopathology. According to the author, one or more maintaining factors will usually be present that will maintain disordered eating which is core low self-esteem, clinical perfectionism, interpersonal difficulties and finally mood intolerance (Hoiles et al., 2012). These aforementioned maintaining factors interact with the core eating disorder maintaining mechanism and when this happens, it prompt furthers obstacles to change (Cooper & Dalle Grave, 2017).

Clinical Perfectionism

The self is rated according to success in the valued areas of eating, weight, and shape, boosting dietary constraint efforts and overrating the significance of weight and shape (Lampard et al., 2012). It is hypothesized that perfectionism will make these domains even more overvalued and thus promote dysfunctional behaviours that support the psychopathology of eating disorders (Wade, 2019). Clinical perfectionism is essentially the overvaluation of pursuing and meeting one's high standards despite unfavourable outcomes. When present, these strict standards are used to manage food, weight, and form, which makes certain features of the eating disorder worse (Cooper & Grave, 2017).

Core Low Self-esteem

The model implies that the risk of over-evaluation of the body can be heightened by overall self-esteem which leads to eating disorders stemming from negative eating behaviour (Bradley and

Daffin, 2022). It is hypothesised that fundamentally poor self-esteem drives people to strive for success in the highly regarded area of weight and shape management to boost emotions of self-worth, perpetuating an overvaluation of weight and form (Lampard et al., 2012).

Interpersonal Difficulties

There is no question that interpersonal dynamics play several roles in maintaining eating disorders. The phrase "interpersonal difficulties" is wide and refers to a variety of problems with relationships and interactions with other people (Wade, 2019). According to the transdiagnostic hypothesis of eating disorders, interpersonal difficulties frequently support the pathology of eating disorders. For instance, as a person's reaction to the urge to retake control or cope with the unpleasant feelings resulting from the dispute, relationship difficulties may heighten dietary constraints or cause a binge eating episode.

Mood Intolerance

Mood intolerance is the inability to cope with unpleasant or strong emotions, which amplifies discomfort and is linked to the propensity to use unhealthy coping mechanisms (Wade, 2019). These patients engage in "dysfunctional mood modulatory behaviour" rather than accepting mood changes and responding to them correctly. This lessens and neutralises their knowledge of the triggering emotional state (and related cognitions), but at a personal cost (Fairburn et al., 2003).

According to the transdiagnostic hypothesis, not all eating disorder patients have functioning sustaining mechanisms, and some maintaining mechanisms can be more crucial for some people than others. It's important to note that when preserving mechanisms, the transdiagnostic hypothesis contends that while sustaining mechanisms may the individual level, they do not differ at the diagnostic level shape (Lampard et al., 2012).

Methodology

Design of the study

The present study adopted a quantitative, cross-sectional design to analyse the relationship between binge eating, self-esteem, and loneliness among Malaysian undergraduates. The quantitative study is a technique of assembling and analysing numerical data that are frequently implemented in the natural and social sciences (Bhandari, 2022). This study methodology aims to examine the responses to the questions of how much, how many, and to what degree (Rasinger, 2013). It has been chosen because a quantitative study on informal hypotheses helps generate empirical data supporting the efficacy of alternative solutions, which can take into account and aid in objectivity (Fryer et al., 2018). Given that the greater sample was chosen randomly, the quantitative results are likely to be generalised to the entire population or a subpopulation (Rahman, 2016).

A cross-sectional study, on the other hand, is an empirically based discussion in which information collected is accumulated over a predetermined period of time (Asiamah et al., 2019). The design of cross-sectional studies is highly pertinent for evaluating the incidence of disease, patients and health professional attitudes and practices, comparing different measurement instruments, and reliability investigations (Kesmodel, 2018). It has been chosen because cross-sectional designs ought to be regarded as a fundamental tool for study. They are often inexpensive to perform, have a great potential for time efficiency for both researchers and participants and are capable of providing sufficient results to a wide range of issues (Spector, 2019). The goal to implement a cross-sectional study includes developing new ideas that might be evaluated in subsequent research as well as gathering correct data that would enable legitimate conclusions to be drawn (Zangirolami-Raimundo et al., 2018).

Sampling method

The present study has decided to adopt a non-probability sampling method to recruit the participants. Non-probability sampling technique utilises non-randomized practice to select the

sample and as this method predominantly calls for the judgement of the researchers, it is deemed as highly accessible due to the lack of randomization (Showkat & Parveen, 2017). Purposive sampling is specifically chosen as the preferred sampling method as it allows the researchers to pick the samples who have specific knowledge of or expertise with the subject of the empirical investigation (Campbell et al., 2020).

In addition, according to Robinson (2014), purposive sampling has a lengthy history of development, and although opinions on its simplicity and complexity are equally divided, this technique is often utilised due to the fact that because it better matches the sample to the goals and objectives of the research: thus, enhancing the study's rigour and the reliability of the data and findings. Credibility, transferability, dependability, and confirmability are the four components of this notion that have previously been discussed.

Moreover, the purposive sampling method is also indisputably more cost-efficient and economical as well as highly convenient for the researchers which is why the present study has decided to utilise this sampling technique. In addition, with any of the sampling methods, there is no way to guarantee that the sample is actually representative of the population, therefore the researcher's capacity to evaluate the population's element parts is given additional weight (Showkat & Parveen, 2017).

Location of Study

The present study made use of Qualtrics survey links to gather responses from the participants via social media and communication platforms such as WhatsApp, Instagram, Facebook, and Microsoft Teams. This is to avoid the hassle of distributing the survey form physically and the survey forms can be shared more widely across Malaysia to reach more of the target participants across various universities while still being cost-efficient.

Ethical Clearance Approval

Before the commencement of the data collection process, an application for data collection was sent to Tunku Abdul Rahman University’s (UTAR) Scientific and Ethical Review Committee

(SERC). A copy of the survey questionnaire (Appendix E) was attached together with the application form together with a brief description of the instruments and the project as well as the project title.

Sample Size

G*Power software is a sample size calculator which is fairly simple to operate around to obtain power and sample size for numerous statistical methods (Kang, 2021). The power analysis is set on a few determinants namely the power, effect size, type of statistical analysis, and finally the significance level. The calculated effect size came out to be about f^2=0.15 which is considered to be a small effect size with an error probability level of 0.05 as well as a statistical power of 0.95. With the aforementioned values, the minimum sample size calculated using G*Power as the sample size calculator results in a minimum of 104 participants for the present studies (Appendix A) with Malaysian undergraduates as the target sample.

Inclusion and exclusion criteria

The participants recruited in this study must be Malaysian citizens who are between the ages of 17 to 25. The participants must be undergraduate students who are currently pursuing a bachelor's degree from either public or private university. The targeted participants are not restricted to any gender, races, and religion. Meanwhile, participants who fall under these criteria will not be eligible to participate in this study: international undergraduates in Malaysia, Malaysians who are pursuing a bachelor's degree in foreign country, ex-students who dropped out of university, students who are aged below 17 and above 25, students who are currently pursuing foundation studies, master's degree, or PhD.

Procedure of obtaining consent and data collection

Before conducting the study, relevant documents were submitted to seek consent from UTAR Scientific and Ethical Review Committee. A survey was then created using Qualtrics, and an anonymous link to the survey were then generated and distributed to the targeted participants across various social media channels including Email, Facebook, Microsoft Team, and WhatsApp.

The survey consists of three sections in an orderly manner, namely, the informed consent form, demographic information, and three measurement scales (Appendix E). Under the section of the informed consent form, we will emphasise that all information or data collected will be kept confidential while strictly adhering to the Personal Data Protection Act of 2010 (PDPA-2010). Prior to beginning the survey, participants were required to read the study's description, comprehend it, and voluntarily agree to participate by selecting the "I agree to participate" option. After selecting the option, the participants were able to start answering the survey. For those who do not agree with the terms stated in the informed consent form, they are granted with the permission to withdraw from the study on their will. The data collection lasts until sufficient responses are collected. Subsequently, the collected data were analysed using Statical Package for Social Science Version 27 (SPSS-27).

Instrument

UCLA Loneliness Scale (UCLA)

UCLA was initially developed by Russell et al. (1978) and was revised later (Rusell et al., 1980) (Appendix B). The revised UCLA is a 20-item self-reported questionnaire designed to assess subjective feelings of loneliness and social isolation. The measure uses a 4-point Likert scale with four response options: 1 = never, 2 = rarely, 3 = sometimes, and 4 = often. Items 1, 5, 6, 9, 10, 15, 16, 19, and 20 are reverse scored. The possible total score of each participant is computed, ranging from 20 to 80. The total score of each participant ranges from 20 to 80, with higher scores indicating higher levels of loneliness. The categorization of scores ranges from low loneliness (20-34), moderate loneliness (35-49), moderately high loneliness (50-64), and high loneliness (65-80). UCLA has shown strong internal reliability, with a Cronbach's alpha ($\alpha = .92$) when administered

to 487 college students from a private university in Lebanon (Russell, 2010). In the present study, the UCLA achieved a good reliability score of Cronbach's alpha (α = .866).

Rosenberg Self-esteem Scale (SES)

The SES, developed by Rosenberg (1965), is a self-report measure comprising 10 items that assess an individual's overall self-worth by examining positive and negative feelings towards oneself (Appendix C). The measure uses a 4-point Likert scale with four response options (0 = strongly agree; 1 = agree; 2 = disagree; 3 = strongly disagree). Items 2, 5, 6, 8, and 9 are reverse-scored. The total score is calculated by summing the responses and ranges from 0 to 30, where higher scores indicate higher levels of self-esteem. The scores are categorized into low (0-14), moderate (15-25), and high (26-30) levels of self-esteem. In a study with 652 Greek university students (Galanou et al., 2014)., the SES demonstrated satisfactory internal consistency, with a Cronbach's alpha (α =.80). In the present study, the SES exhibited good internal reliability, with a Cronbach's alpha (α = .801).

Binge Eating Scale (BES)

Gormally et al. (1982) developed the BES, a 16-item self-report tool that assesses a range of severity for various binge-eating-related characteristics (Appendix D). BES is measured on the 4-point Likert scale with four response options, ranging from 0 = no binge eating problem to 3 = severe binge eating problem. There are no reverse-scored items. Participants' total scores range from 0 to 48, with higher scores indicating more severe binge-eating problems. BES categorizes scores as minimal BE problems (0-17), moderate BE problems (18-26), and severe BE problems (27-48). When administered to 561 university students from Islamic Azad University in Iran, BES showed acceptable to high internal consistency scores ranging from .76 to .92 (Ahmadi et al., 2014). In this study, BES demonstrated good reliability with a Cronbach's alpha (α = .884).

Results

Data Cleaning

The study initially included 185 respondents. However, 14 incomplete responses, 17 responses with univariate outliers, and seven responses exceeding the maximum age limitation were excluded, remaining 147 respondents for the analysis.

Boxplot

Upon reviewing the boxplot for each variable, it was found that there were 17 instances of univariate outliers, and they were subsequently eliminated from the analysis. Further analysis was conducted to confirm the absence of any additional univariate outliers in each variable (Appendix F).

Multivariate Outliers

In order to meet the requirements of the MLR model, the detection and removal of multivariate outliers are necessary. In this study, Mahalanobis distance, Cook's distance, and Centered Leverage value were employed to identify potential multivariate outliers. Cases that exceeded at least two of the three distances were deemed potential outliers. After checking the cut-off values for Mahalanobis Distance (Barnett & Lewis, 1978), Cook's distance (Cook & Weisberg,

1982), and Leverage (Steven, 1992), five potential outliers were identified in the dataset. These cases were then evaluated based on their Mahalanobis distance, Cook's distance, and Leverage Value. The maximum values obtained for Mahalanobis distance, Cook's distance, and Leverage value were 10.735, 0.085, and 0.074, respectively (refer to Table 1). Upon further analysis, these potential outliers were not identified as true outliers.

Table 1

Residuals Statistics[a]

	Maximum
Mahal. Distance	10.735
Cook's Distance	.085
Centered Leverage Value	.074

a. Dependent Variable: Binge Eating

Assumptions on Normal Distribution

Several measures are available to assess the normal distribution assumptions. In this study, SPSS version 27 was used to perform the following measures: skewness and kurtosis, P-P plot histogram, and the Kolmogorov-Smirnov test (K-S test).

Skewness and Kurtosis

Table 4.2 displays the skewness and kurtosis values for all variables. These values fall within the acceptable range for normal distribution, as per Trochim and Donnelly's (2006) guidelines, which state that skewness values between -2 and +2 and kurtosis values between -2 and +2 are acceptable. Therefore, all variables in this study can be considered normally distributed in terms of both skewness and kurtosis.

Table 2

Summary of Skewness Value and Kurtosis Value

	Loneliness	Self-esteem	Binge Eating

Skewness	.149	-.003	.678
Kurtosis	-.345	-.286	-.634

P-P Plot and Q-Q Plot

Appendix G to I illustrated that in the present study, two independent variables, namely loneliness and self-esteem, appeared to meet the assumption of normality, as evidenced by the points clustering closely along the diagonal line. In contrast, the dependent variable, binge eating, violated the assumption of normality, as evidenced by the points not falling along the diagonal line.

Histogram

Appendix G to I revealed that the distribution of variables in this study is not normal, as indicated by the histograms displaying a one-sided-skewed curve. Specifically, Appendix B showed that loneliness was slightly right-skewed, Appendix C showed that self-esteem was slightly left-skewed, and Appendix D showed that binge eating was left-skewed.

Kolmogorov-Smirnov test (K-S test)

The Kolmogorov-Smirnov test (K-S test) indicated that none of the variables met the criteria for normality. Specifically, the results indicated that loneliness had a result of $D(147)=.057$, $p=.200$, self-esteem had a result of $D(147)=.085$, $p=.012$, and binge eating had a result of $D(147)=.137$, $p<.001$, all of which were statistically significant and non-normal (Appendix K). Ghasemi and Zahediasl (2012) have suggested that if the test is significant, then the distribution is non-normal. However, it should be noted that a significant result for the K-S test is commonly obtained from larger sample sizes, as reported in a study by Orcan (2020).

Assumptions for Multiple Linear Regression

Types of Variables

The variables examined in the present study were using continuous measurements which are aligned with the assumptions of multiple linear regression. Thus, it can be inferred that the assumption has been adequately satisfied.

Multicollinearity

The collinearity statistics were used to examine multicollinearity, with variance inflation factor (VIF) and tolerance values analysed for each independent variable. The cut-off values are below 10 for VIF and above 0.1 for tolerance (Yeo et al, 2018). Based on Table 3, the values of VIF and Tolerance were reported to be 1.288 and .766 respectively. Therefore, no multicollinearity issue was present in this study.

Table 3

Collinearity Statistics

	Tolerance	VIF
Loneliness	.776	1.288
Self-esteem	.776	1.288

Independence of Error

The Durbin-Watson test was performed to examine the assumption regarding the independence of errors in a regression model in the present study. A benchmark value of between one and three is recommended for this test, with a preference for a value close to two (Reddy & Sarma, 2015). Table 2 showed that the independence of errors was 1.743. These results suggest that the residuals were independent of one another, which is an important assumption for the validity of regression analyses. Thus, there is an absence of violation in error independence.

Table 4

Independent Error Test

Model	Durbin-Watson
1	1.743

a. Predictors: (Constant), Loneliness, Self-esteem

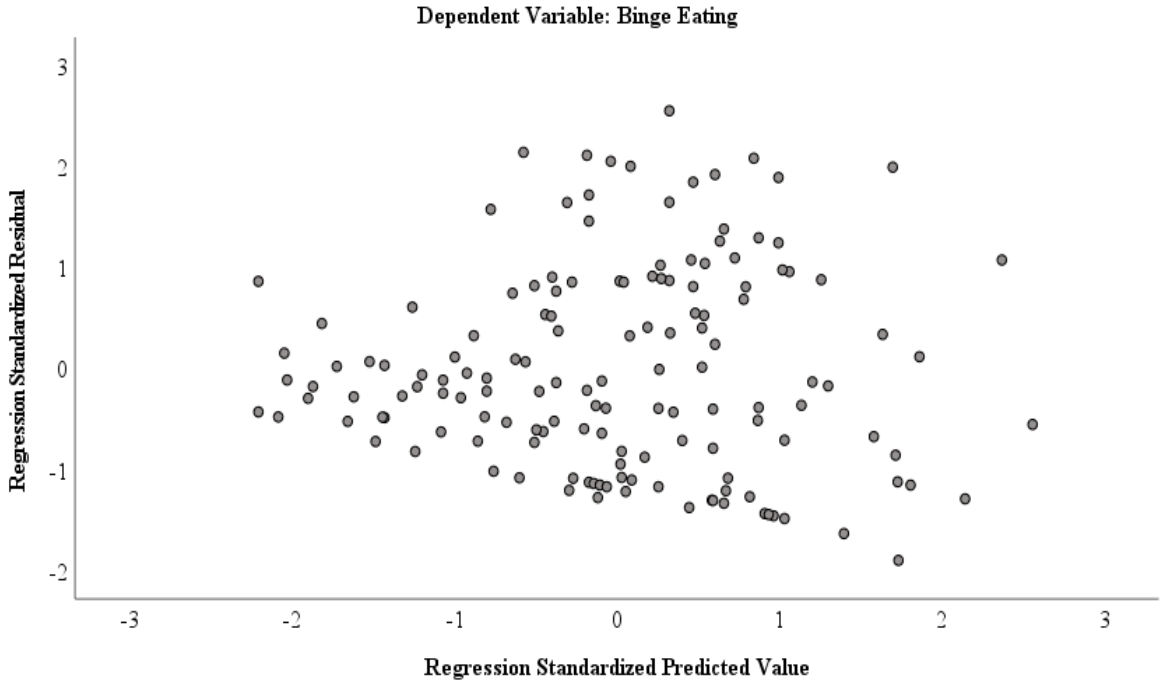
b. Dependent Variable: Binge Eating

Residual Normality, Residual Linearity, and Homoscedasticity

The evaluation of the assumptions of linearity, residual normality, and homoscedasticity was examined by constructing a scatterplot. Figure 1 revealed that the residuals were mostly clustered around the zero line, with randomly dispersed surrounding residuals. Thus, the assumptions of linearity, residual normality, and homoscedasticity have been met.

Figure 1

Scatterplot showed Residual Normality, Residual Linearity and Homoscedasticity among the variables.



Descriptive Statistics

The respondents comprised 147 university students aged between 18-25, with 63.9% (*N*=94) being female and 89.1% (*N*=131) being of Chinese ethnicity. The remaining respondents were 6.1% (*N*=9) Malay and 4.8% (*N*=7) Indian. The participants' background was analysed to gain a comprehensive understanding of the distribution within each category, as shown in Table 5.

Table 5

Demographic Information of Respondents (*N*=147)

Variable	n	%
Age (18 - 25)	147	100
Sex		
Male	53	36.1
Female	94	63.9
Race		
Malay	9	6.1
Chinese	131	89.1
Indian	7	4.8
Others		
University		
HELP	3	2.0
INTI University	2	1.4
MAHSA University	4	2.7
Sunway University	9	6.1
TARUMT	2	1.4
Taylor's University	4	2.7
UCSI	6	4.1
UITM	3	2.0
UKM	3	2.0
UM	3	2.0
UOW	3	2.0
UPSI	1	.7
USM	10	6.8
UTAR	93	63.3
UTM	1	.7

Multiple Linear Regression

Multiple regression analysis was utilized to examine whether there was a significant prediction of binge eating by loneliness and self-esteem. Table 7 demonstrated the model achieved statistical significance, $F(2,144) = 12.026$, $p < .001$ and explained 13.1% of the variance. Table 8 revealed that binge eating was significantly predicted by loneliness ($\beta = .251$, $p = .015$) and self-

esteem (β = -.225., p = .011). Therefore, the current study supported both hypotheses (refer to Table 9).

Table 6

ANOVA[a] Table of Multiple Linear Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1440.810	2	720.405	12.026	<.001[b]
	Residual	8626.373	144	59.905		
	Total	10067.184	146			

a. Dependent Variable: Binge Eating

b. Predictors: (Constant), Loneliness, Self-esteem

Table 7

Model Summary of Multiple Linear Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.378[a]	.143	.131	7.740

a. Predictors: (Constant), Loneliness, Self-esteem

b. Dependent Variable: Binge Eating

Table 8

Coefficient Table of Multiple Linear Regression

Coefficient[a]

		Unstandardized Coefficient		Standardized Coefficient		
	Model	B	Std. Error	Beta	t	Sig
1	(Constant)	8.260	5.926		1.394	.166
	Loneliness	.211	.086	.251	2.461	.015
	Self-esteem	-.461	.179	-.225	-2.574	.011

b. Dependent Variable: Binge Eating

Summary of Findings

Table 9

Table of Result Summary

Hypotheses	Standardized Beta - β	*p*-value	Decision
H1: There is a significant relationship between loneliness and binge eating among undergraduates in Malaysia.	.215	.015	Supported
H2: There is a significant relationship between self-esteem and binge eating among undergraduates in Malaysia.	-.225	.011	Supported

Discussion

The present study aims to investigate the predictive effect of loneliness and self-esteem on binge eating among undergraduate students in Malaysia. The study will discuss the main findings, as well as practical and theoretical implications, along with any limitations and recommendations for future research.

Constructive discussion of findings

H1*: *There is a significant relationship between loneliness and binge eating among undergraduates in Malaysia.

The first hypothesis of the present study is supported as evidently proven by the multi-linear regression model which found a significant as well as a positive predictive effect of loneliness on binge eating behaviour among undergraduates in Malaysia. This is consistent with the findings of past studies inferring that loneliness has a statistically significant and positive

relationship with the behavior of binge eating (Mason et al., 2016; Portingale et al., 2023; Vuillier et al., 2021; Sonneville et al., 2013; Portingale, 2023) as aforementioned in the literature review.

This finding is also consistent with the findings of Cortés-García (2022) which formulated that loneliness could have a predictive effect on symptoms of disordered eating behaviour as young adults that suffer from loneliness typically live alone at that age and are free from the supervision of their parents. This puts an end to the social control their parents had over them while they were still under their roof and care which would normally make eating disorder behaviours such as binge eating harder to sustain. Binge eating may also act as a temporary relief and getaway for those that practice self-isolation away to take their mind off their shortcoming in their interpersonal relationship or relationship difficulties with other people.

Additionally, dos Santos Quaresma et al. (2021) have also suggested that social isolation and loneliness can exacerbate adverse emotions such as anxiety, sadness as well as fear. The stress caused by the adverse emotions prompts unhealthy food dependency such as binge eating as compensatory behaviour which manifests itself as comfort for the patient as it can help ease some of the adverse emotions.

H2*: *There is a significant relationship between self-esteem and binge eating among undergraduates in Malaysia

The second hypothesis of the present study is also supported as evidently proven by the multi-linear regression model which found a significant as well as a negative predictive effect of self-esteem on binge eating behaviour among undergraduates in Malaysia. This is consistent with the findings of past studies inferring that self-esteem has a significant and negative relationship with the behaviour of binge eating (Pennesi & Wade, 2016; Cella et al., 2019; Karam et al., 2020; Vesco et al., 2021; Burton & Abbott, 2019) as previously discussed in the literature review.

A few other past findings have also hinted at the significant negative relationship between self-esteem and binge eating behaviour (Mantilla & Birgegård, 2015; Soledad Cruz-Sáez, 2020; Rosewall et al., 2018). According to Soledad Cruz-Sáez, (2020), the result of the findings goes

hand in hand with the transdiagnostic model by Fairburn et al. (2003) which insinuated that low self-esteem is one of the contributing components that help sustain eating psychopathology. According to this model, low self-esteem can heighten the overall risk of over-evaluating the body which can give rise to adverse eating behavior and disorder eating. This means that over-evaluation of the body combined with a decline in self-esteem can lead Malaysian undergraduates to achieve impossible standards in weight and form that they set for themselves due to the harsh evaluation of their body and appearance. This contributes to the development of eating disorders as a means to achieve their goal.

Mantilla & Birgegård (2015), also discussed that the foundation for self-evaluation and self-esteem is provided by sociocultural values such as the thin ideal, family values, behaviours, and bonding style which associate low self-esteem, perfectionism, body discontent, and dieting with insecure attachment, inadequate maternal care, overprotective parental bonds, negative social pressure, and internalization of the thin ideal. These aforementioned factors will then later factor into the later progression of an eating disorder such as binge eating.

Implication

Theoretical Implication

This study contributes to the further development and measuring of psychological insights. As it could support pre-existing ideas on the association between binge eating, loneliness, and low self-esteem as well as establish a more comprehensive theoretical model for further generalized psychological issues. Besides, this study potentially provides valuable direction for therapy and intervention. The findings can somehow shed light on both cultural and social difficulties. Understanding the linkage between binge eating, self-esteem, and loneliness among Malaysian university students may contribute to gaining a clearer picture of adolescent mental health issues along with how to address them in particular cultural and social settings.

Practical Implication

This study helps provide mental health practitioners with the valuable understanding they require to undertake psychological intervention programmes among Malaysian university students. The findings assist prevent and treat mental health issues associated with loneliness, low self-esteem, and binge eating in clinical practise, including psychotherapy and pharmacotherapy, as well as the creation of preventative psychological interventions. The study's findings also aid decision-makers in creating policies and initiatives that address mental health problems among Malaysian university students. In order to teach personnel and provide adequate mental health resources to promote mental health, these policies and programmes may specifically include involvement from educational institutions and healthcare organisations. Furthermore, the findings from this study could boost social assistance to aid Malaysian university students in better coping with problems including binge eating, loneliness, and low self-esteem. By encouraging greater awareness of mental health concerns in society as a whole and lowering the social stigma associated with mental health difficulties, the findings could build social bonds and improve communication among family and friends. Last but not least, the study may serve as an inspiration for multidisciplinary research, particularly in the fields of fitness, diet, and mental health. Multidisciplinary research could allow researchers to interpret issues related to mental health, develop appropriate preventative and treatment strategies, and lay the groundwork for future research by combining information and expertise from several domains.

Limitation

Undeniably, the present study has some presenting flaws and limitations that should be brought to light. For starters, the present study seems to have a lack of diversity of demographics in the response collected among the respondents. Being that Malaysia is a multiracial country comprising of Malays, Indians, Chinese, Bumiputera, Sikh, and many more, the demographic of the present studies fails to reflect that with over 89% of the respondent comprising respondents of Chinese ethnicity while Malay and Indian respondents combined just make up about 11% of the total respondents.

Additionally, there is also a disparity in the ratio between the male and female respondents with a whopping almost 64% of female respondents and only about 36% of male respondents which can skew the results as females are not only more likely to report lower self-esteem (Gao et al., 2022) but they are also more likely than their male counterpart to engage in binge eating behaviour (Gan et al., 2018) which can lead to biased findings in the present study.

Besides, a big fraction of the data was collected from undergraduates of private universities, especially from undergraduates of Universiti Tunku Abdul Rahman (UTAR) which once again can lead to bias in the findings as it is supposed to be generalized to undergraduates in Malaysia. To clarify, undergraduates from private universities made up over 70 % of the data collected with UTAR students making up about 63% of the total respondents. Thus, this can be a limitation as most of the respondents originate from the same location and socioeconomic background instead of dispersing all over Malaysia. The lack of diversity in terms of gender, race, and the university of the respondents may decrease the generalizability of the findings towards undergraduates in Malaysia as well as poses a threat to the validity of the findings.

Some other limitations can be derived from the instruments used in the present study. For most Malaysian undergraduates, the English language might not be their mother tongue or first language. Thus, some of them might not fully understand the meaning of the questionnaire while answering the survey form, especially the Binge Eating Scale (BES) which constitutes a lot of jargon and unfamiliar terms to Malaysian such as “famine”, “blew it”, “gobble down”, and “bolting down”. Considering that reading deficiency is a major problem among undergraduates in Malaysia and most of them have difficulty capturing the main idea as they read (Edward et al., 2021), their level of English comprehension may pose difficulty for them to precisely comprehend the questionnaire and answering them correctly which might affect the results of the findings.

In addition, all the scales, namely SES, BES, and UCLA, comprise absolute questions which force the respondents to choose any of the options such as either “agree” or “disagree” instead of having the option for “prefer not to answer” or “neutral”. As some of the questions

might be uncomfortable, triggering, or not applicable for some of the respondents, they might opt to answer randomly or even drop out of the survey prematurely as there are no options for "neutral" or "prefer not to answer" which might lead to invalid responses.

Lastly, the present study also has a small sample size. Although it has exceeded the requirement of 104 participants calculated via G-Power, compared to a few hundred thousand students currently pursuing their undergraduates, it is still an insubstantial amount of data collected from the population. Due to the time constraint, the present study was only able to collect less than 150 responses from the respondents after excluding the outlier and invalid responses.

Recommendation

To counter the aforementioned limitations, a few recommendations can be suggested. For starters, the present study recommends recruiting an equal distribution of ethnicity, gender as well as the university they belong to. This is so that a more heterogeneous demographic and background of respondents can be acquired for the findings while also eliminating bias. This can also be achieved through a stratified sampling method to ensure that the findings of the study reflect the current demographic; hence, increasing the generalizability of the study while also reducing sampling bias.

Furthermore, the present study also encourages a collection of a bigger sample size as it will reflect a much more precise representation of the population of undergraduates in Malaysia; thus, yielding much more accurate results of the findings (Andrade, 2020).

To address the limitation of the scale of instruments used in the present study, it is recommended that future studies opt for instruments or scales in which the validity has been tested in the Malaysian context to better suit the population or switch out the jargon as well as unfamiliar terms that might confuse the respondents as it has been aforementioned that reading deficiency has been a major problem even among undergraduates in Malaysia. Another viable alternative will be to provide the respondents with Bahasa Melayu, Mandarin, or Hindi translation of the questionnaire to aid their comprehension of the questionnaire.

Additionally, an instrument with a “neutral” or “prefer not to answer option” is a much more preferable alternative as it eradicates the bias that absolutes questions may bring which forces the participant to only choose the option of either agree or disagree even when the item may not be applicable to them. As the mention of binge eating may be a triggering topic, providing an option for them to not answer some of the items or be “neutral” can decrease the chances of dropping the questionnaire prematurely as well as obtain much more accurate results.

Conclusion

In short, both the first and second hypothesis in the present study is supported: i) There is a significant relationship between loneliness and binge eating among undergraduates in Malaysia, ii) There is a significant relationship between self-esteem and binge eating among undergraduates in Malaysia. The present study has helped to fill the literature gap in understanding the association between loneliness as well as self-esteem on binge eating among undergraduates in Malaysia. Besides, the present study can serve as a reliable credential for practitioners and policymakers to address important changes through policy change and effective intervention that can help alleviate the predicament of binge eating that is affecting Malaysian undergraduates.

References

Agüera, Z., Lozano-Madrid, M., Mallorquí-Bagué, N., Jiménez-Murcia, S., Menchón, J. M., & Fernández-Aranda, F. (2021). A review of binge eating disorder and obesity. *Neuropsychiatrie*, *35*(2), 57-67. https://doi.org/10.1007/s40211-020-00346-w

Allman-Farinelli, M., Partridge, S. R., & Roy, R. (2016). Weight-related dietary behaviors in young adults. *Current obesity reports*, *5*(1), 23-29. https://doi.org/10.1007/s136 79-016-0189-8

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Anderson, N. K., & Nicolay, O. F. (2016). Eating disorders in children and adolescents. *Seminars in Orthodontics*, *22*(3), 234–237. https://doi.org/10.1053/j.sodo.2016.05.010

Asiamah, N., Mends-Brew, E., & Boison, B. K. (2019). A spotlight on cross-sectional research: Addressing the issues of confounding and Adjustment. *International Journal of Healthcare Management*, *14*(1), 183–196. https://doi.org/10.1080/20479700.2019.1621022

Berkman, N. D., Brownley, K. A., Peat, C. M., Lohr, K. N., Cullen, K. E., Morgan, L. C., ... & Bulik, C. M. (2015). Management and outcomes of binge-eating disorder [Internet].

Beutel, M. E., Klein, E. M., Brähler, E., Reiner, I., Jünger, C., Michal, M., Wiltink, J., Wild, P. S., Münzel, T., Lackner, K. J., & Tibubos, A. N. (2017). Loneliness in the general population: Prevalence, determinants and relations to mental health. *BMC Psychiatry*, *17*(1). https://doi.org/10.1186/s12888-017-1262-x

Bhandari, P. (2022, November 24). *What is quantitative research?: Definition, uses & methods*. Scribbr. Retrieved November 29, 2022, from https://www.scribbr.com/methodology/quantitative-research/

Blomquist, K. K., & Grilo, C. M. (2015). Family histories of anxiety in overweight men and women with binge eating disorder: A preliminary investigation. *Comprehensive psychiatry*, *62*, 161-169. https://doi.org/10.1016/j.comppsych.2015.07.007

Brailovskaia, J., Bierhoff, H. W., & Rohmann, E. (2021). Loneliness and depression symptoms: The moderating role of narcissism. *Journal of Affective Disorders Reports*, *6*, 100264.

Brechan, I., & Kvalem, I. L. (2015). Relationship between body dissatisfaction and disordered eating: Mediating role of self-esteem and depression. *Eating Behaviors*, *17*, 49–58. https://doi.org/10.1016/j.eatbeh.2014.12.008

Bridley, A., & Daffin Jr, L. W. (2022). Fundamentals of Psychological Disorders. https://opentext.wsu.edu/abnormal-psych/chapter/module-10-eating-disorders/

Brown, J. (2014). The self. https://doi.org/10.4324/9780203837641

Burke, N. L., Karam, A., Tanofsky-Kraff, M., & Wilfley, D. E. (2017). Interpersonal psychotherapy for the treatment of eating disorders. *Oxford Handbooks Online*. https://doi.org/10.1093/oxfordhb/9780190620998.013.16

Burton, A. L., & Abbott, M. J. (2019). Processes and pathways to binge eating: Development of an integrated cognitive and behavioural model of binge eating. *Journal of Eating Disorders,* 7, 18. https://doi.org/10.1186/s40337-019-0248-0

Cacioppo, J. T., Hawkley, L. C., Ernst, J. M., Burleson, M., Berntson, G. G., Nouriani, B., & Spiegel, D. (2006). Loneliness within a nomological net: An evolutionary perspective. *Journal of research in personality*, *40*(6), 1054-1085. https://doi.org/10.1016/j.jrp.2005.11.007

Campagne, D. M. (2019). Stress and perceived social isolation (loneliness). *Archives of Gerontology and Geriatrics*, *82*, 192–199. https://doi.org/10.1016/j.archger.2019.02.007

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., ... & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of research in Nursing*, *25*(8), 652-661. https://doi.org/10.1177/1744987120927206

Cella, S., Cipriano, A., Aprea, C., & Cotrufo, P. (2022). Risk factors for binge eating severity among adolescent girls and boys. A structural equation modeling approach. *Appetite*, *169*, 105825. https://doi.org/10.1016/j.appet.2021.105825

Cella, S., Cipriano, A., Iannaccone, M., & Cotrufo, P. (2017). Identifying predictors associated with the severity of eating concerns in females with eating disorders. *Research in Psychotherapy: Psychopathology, Process and Outcome*, *20*(1). https://doi.org/10.4081/ripppo.2017.199

Cella, S., Fei, L., D'Amico, R., Giardiello, C., Allaria, A., & Cotrufo, P. (2019). Binge eating disorder and related features in bariatric surgery candidates. *Open Medicine*, *14*(1), 407–415. https://doi.org/10.1515/med-2019-0043

Chan, Y. L., Samy, A. L., Tong, W. T., Islam, M. A., & Low, W. Y. (2020). Eating disorder among Malaysian university students and its associated factors. *Asia Pacific Journal of Public Health*, *32*(6-7), 334-339. https://doi.org/10.1177/1010539520947879

Chao, A., Grey, M., Whittemore, R., Reuning-Scherer, J., Grilo, C. M., & Sinha, R. (2015). Examining the mediating roles of binge eating and emotional eating in the relationships between stress and metabolic abnormalities. *Journal of Behavioral Medicine*, *39*(2), 320–332. https://doi.org/10.1007/s10865-015-9699-1

Colles, S. L., Dixon, J. B., & O'brien, P. E. (2008). Loss of control is central to psychological disturbance associated with binge eating disorder. *Obesity*, *16*(3), 608-614. https://doi.org/10.1038/oby.2007.99

Colmsee, I.-S. O., Hank, P., & Bošnjak, M. (2021). Low self-esteem as a risk factor for eating disorders. *Zeitschrift Für Psychologie*, *229*(1), 48–69. https://doi.org/10.1027/2151-2604/a000433

Cooper, Z., & Dalle Grave, R. (2017). Eating disorders: Transdiagnostic theory and treatment. In *The science of cognitive behavioral therapy* (pp. 337-357). Academic Press. https://www.researchgate.net/deref/http%3A%2F%2Fdx.doi.org%2F10.1016%2FB978-0-12-803457-6.00014-3

Duarte-Guerra, L. S., Kortchmar, E., Maraviglia, E. C. S., da Silva Costa, T., Lasmar, C. M., Morin, R. M. R., ... & Wang, Y. P. (2022). Longitudinal patterns of comorbidity between anxiety, depression and binge eating symptoms among patients with obesity: A path analysis. *Journal of Affective Disorders*, *303*, 255-263. https://doi.org/10.1016/j.jad.2022.02.030

De Ruiter, N. M., Van Geert, P. L., & Kunnen, E. S. (2017). Explaining the "how" of self-esteem development: The self-organizing self-esteem model. *Review of General Psychology*, *21*(1), 49–68. https://doi.org/10.1037/gpr0000099

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: A "transdiagnostic" theory and treatment. *Behaviour research and therapy*, *41*(5), 509-528. https://doi.org/10.1016/S0005-7967(02)00088-8

Friedler, B., Crapser, J., & McCullough, L. (2014). One is the deadliest number: The detrimental effects of social isolation on cerebrovascular diseases and cognition. *Acta Neuropathologica*, *129*(4), 493–509. https://doi.org/10.1007/s00401-014-1377-9

Fryer, L. K., Larson-Hall, J., & Stewart, J. (2018). Quantitative methodology. *The Palgrave Handbook of Applied Linguistics Research Methodology*, 55–77. https://doi.org/10.1057/978-1-137-59900-1_3

Gan, W. Y., Mohamad, N., & Law, L. S. (2018). Factors associated with binge eating behavior among Malaysian adolescents. *Nutrients*, *10*(1), 66. https://doi.org/10.3390%2Fnu10010066

Gan, W. Y., Nasir, M. M., Zalilah, M. S., & Hazizi, A. S. (2011). Disordered eating behaviors, depression, anxiety and stress among Malaysian university students. *College Student Journal*, *45*(2), 296-310. https://link.gale.com/apps/doc/A259679614/AONE?u=tacoma_comm&sid=googleScholar&xid=f1ec6414

Goldschmidt, A. B., Wall, M. M., Loth, K. A., Bucchianeri, M. M., & Neumark-Sztainer, D. (2014). The course of binge eating from adolescence to young adulthood. *Health Psychology*, *33*(5), 457–460. https://doi.org/10.1037/a0033508

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of behavioral medicine*, *40*(2), 218-227. https://doi.org/10.1007/s12160-010-9210-8

Hepper, E.G. (2016).Self-Esteem.Reference Module in Neuroscience and Biobehavioral Psychology, 80–91. https://doi.org/10.1016/B978-0-12-397045-9.00076-8

Hoiles, K. J., Egan, S. J., & Kane, R. T. (2012). The validity of the transdiagnostic cognitive behavioural model of eating disorders in predicting dietary restraint. *Eating Behaviors*, *13*(2), 123-126. http://dx.doi.org/10.1016/j.eatbeh.2011.11.007

Holt-Lunstad, J., Robles, T. F., & Sbarra, D. A. (2017). Advancing Social Connection as a public health priority in the United States. *American Psychologist*, *72*(6), 517–530. https://doi.org/10.1037/amp0000103

Kang, H. (2021). Sample size determination and power analysis using the G* Power software. *Journal of educational evaluation for health professions*, *18*. https://doi.org/10.3352%2Fjeehp.2021.18.17

Karam, A. M., Eichen, D. M., Fitzsimmons-Craft, E. E., & Wilfley, D. E. (2020). An examination of the interpersonal model of binge eating over the course of treatment. *European Eating Disorders Review*, *28*(1), 66–78. https://doi.org/10.1002/erv.2700

Kelly, N. R., Tanofsky-Kraff, M., Vannucci, A., Ranzenhofer, L. M., Altschul, A. M., Schvey, N. A., ... & Yanovski, J. A. (2016). Emotion dysregulation and loss-of-control eating in children and adolescents. *Health Psychology*, *35*(10), 1110. https://doi.org/10.1037/hea0000389

Keski-Rahkonen, A. (2021). Epidemiology of binge eating disorder: Prevalence, course, comorbidity, and risk factors. *Current Opinion in Psychiatry*, *34*(6), 525–531. https://doi.org/10.1097/yco.0000000000000750

Kesmodel, U. S. (2018). Cross-sectional studies - what are they good for? *Acta Obstetricia Et Gynecologica Scandinavica*, *97*(4), 388–393. https://doi.org/10.1111/aogs.13331

Lampard, A. M., Tasca, G. A., Balfour, L., & Bissada, H. (2012). An evaluation of the transdiagnostic cognitive-behavioural model of eating disorders. *European Eating Disorders Review*, *21*(2), 99-107. https://doi.org/10.1002/erv.2214

Lapane, K. L., Lim, E., McPhillips, E., Barooah, A., Yuan, Y., & Dube, C. E. (2022). Health effects of loneliness and social isolation in older adults living in congregate long term care settings: A systematic review of quantitative and qualitative evidence. *Archives of Gerontology and Geriatrics*, 104728. https://doi.org/10.1016/j.archger.2022.104728

Lee-Winn, A. E., Reinblatt, S. P., Mojtabai, R., & Mendelson, T. (2016). Gender and racial/ethnic differences in binge eating symptoms in a nationally representative sample of adolescents in the United States. *Eating behaviors*, *22*, 27-33. https://doi.org/10.1016/j.eatbeh.2016.03.021

Lee-Winn, A., Mendelson, T., & Mojtabai, R. (2014). Racial/ethnic disparities in binge eating: disorder prevalence, symptom presentation, and help-seeking among Asian Americans and

non-Latino Whites. *American journal of public health*, *104*(7), 1263-1265. https://doi.org/10.2105%2FAJPH.2014.301932

Levine, M. P. (2012). Loneliness and eating disorders. *The Journal of Psychology*, *146*(1-2), 243–257. https://doi.org/10.1080/00223980.2011.606435

Lim, M. H., Eres, R., & Vasan, S. (2020). Understanding loneliness in the twenty-first century: An update on correlates, risk factors, and potential solutions. *Social Psychiatry and Psychiatric Epidemiology*, *55*(7), 793–810. https://doi.org/10.1007/s00127-020-01889-7

Linardon, J., Kothe, E. J., & Fuller-Tyszkiewicz, M. (2019). Efficacy of psychotherapy for bulimia nervosa and binge-eating disorder on self-esteem improvement: Meta-analysis. *European Eating Disorders Review*, *27*(2), 109–123. https://doi.org/10.1002/erv.2662

Lo Coco, G., Salerno, L., Ingoglia, S., & Tasca, G. A. (2021). Self-esteem and binge eating: Do patients with binge eating disorder endorse more negatively worded items of the Rosenberg Self-Esteem Scale?. *Journal of Clinical Psychology*, *77*(3), 818-836. https://doi.org/10.1002/jclp.23065

Makri, E., Michopoulos, I., & Gonidakis, F. (2022). Investigation of loneliness and social support in patients with eating disorders: A case-control study. *Psychiatry International*, *3*(2), 142–157. https://doi.org/10.3390/psychiatryint3020012

Mason, T. B., & Lewis, R. J. (2015). Minority stress and binge eating among lesbian and bisexual women. *Journal of Homosexuality*, *62*(7), 971–992. https://doi.org/10.1080/00918369.2015.1008285

Mason, T. B., Heron, K. E., Braitman, A. L., & Lewis, R. J. (2016). A daily diary study of perceived social isolation, dietary restraint, and negative affect in binge eating. *Appetite*, *97*, 94–100. https://doi.org/10.1016/j.appet.2015.11.027

Micali, N., De Stavola, B., Ploubidis, G., Simonoff, E., Treasure, J., & Field, A. E. (2015). Adolescent eating disorder behaviours and cognitions: gender-specific effects of child, maternal and family risk factors. *British Journal of Psychiatry*, *207*(4), 320–327. https://doi.org/10.1192/bjp.bp.114.152371

Murphy, C. M., Stosny, S. and Morrel, T. M. (2005). Change in self-esteem and physical aggression during treatment for partner violent men. *Journal of Family Violence*, *20*, 201-210. https://doi.org/10.1007/s10896-005-5983-0

Ngan, S. W., Chern, B. C., Rajarathnam, D. D., Balan, J., Hong, T. S., & Tiang, K.-P. (2017). The relationship between eating disorders and stress among medical undergraduate: A cross-sectional study. *Open Journal of Epidemiology*, *07*(02), 85–95. https://doi.org/10.4236/ojepi.2017.72008

Nicholls, D., & Barrett, E. (2015). Eating disorders in children and adolescents. *BJPsych Advances*, *21*(3), 206–216. https://doi.org/10.1192/apt.bp.114.014068

Noordenbos, G., Aliakbari, N., & Campbell, R. (2014). The relationship among critical inner voices, low self-esteem, and self-criticism in eating disorders. *Eating Disorders*, *22*(4), 337–351. https://doi.org/10.1080/10640266.2014.898983

Park, L.E., Crocker, J. (2013). Pursuing self-esteem: Implications for self-regulation and relationships, Zeigler-Hill, V. (Ed.), Self-Esteem. *Psychology Press, London.* 43– 59.

Pike, K. M., & Dunne, P. E. (2015). The rise of eating disorders in Asia: A Review. *Journal of Eating Disorders*, *3*(1). https://doi.org/10.1186/s40337-015-0070-2

Portingale, J., Eddy, S., Fuller-Tyszkiewicz, M., Liu, S., Giles, S., & Krug, I. (2023). Tonight, I'm disordered eating: The effects of food delivery app use, loneliness, and mood on daily body dissatisfaction and disordered eating urges. *Appetite*, *180*, 106310. https://doi.org/10.1016/j.appet.2022.106310

Rahman, M. S. (2016). The advantages and disadvantages of using qualitative and quantitative approaches and methods in language “Testing and assessment” research: A literature review. *Journal of Education and Learning*, *6*(1), 102. https://doi.org/10.5539/jel.v6n1p102

Rajagopalan, J., & Shejwal, B. (2014). Influence of sociocultural pressures on body image dissatisfaction. *Psychological Studies*, *59*(4), 357–364. https://doi.org/10.1007/s12646-014-0245-y

Rasinger, S. M. (2013). *Quantitative research in linguistics*. Google Books. Retrieved November 29, 2022, from https://books.google.com.my/books?hl=en&lr=&id=lcyOAQAAQBAJ&oi=fnd&pg=PP1&dq=Rasinger%2C%2BS.%2BM.%2B%282013%29.%2BQuantitative%2Bresearch%2Bin%2Blinguistics%3A%2BAn%2Bintroduction.%2BA%2B%26%2BC%2BBlack.&ots=SGSUEWfl_q&sig=wlTrJ7TxgzDaQiPyabcR3Peurlg#v=onepage&q&f=false

Rasman, N. S., Mohd Rashid Kay, N. A. K., Ahmed, S. U., & Ahmed, M. K. (2018). *Prevalence of eating disorders among medical students in Ipoh, Perak* . Research Gate. Retrieved November 21, 2022, from https://www.researchgate.net/publication/322498672_Prevalence_of_Eating_Disorders_among_Medical_Students_in_Ipoh_Perak_Malaysia

Raykos, B. C., McEvoy, P. M., & Fursland, A. (2017). Socializing problems and low self-esteem enhance interpersonal models of eating disorders: Evidence from a clinical sample. International Journal of Eating Disorders, 50, 1075–1083. https://doi. org/10.1002/eat.22740

Rico-Uribe, L. A., Caballero, F. F., Martín-María, N., Cabello, M., Ayuso-Mateos, J. L., & Miret, M. (2018). Association of Loneliness with all-cause mortality: A meta-analysis. *PLOS ONE*, *13*(1). https://doi.org/10.1371/journal.pone.0190033

Robinson, R.S. (2014). *Purposive Sampling. In: Michalos, A.C. (eds) Encyclopedia of Quality of Life and Well-Being Research*. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-0753-5_2337

Sawaoka, T., Barnes, R. D., Blomquist, K. K., Masheb, R. M., & Grilo, C. M. (2012). Social anxiety and self-consciousness in binge eating disorder: associations with eating disorder psychopathology. *Comprehensive psychiatry*, *53*(6), 740-745. https://doi.org/10.1016/j.comppsych.2011.10.003

Schulz, S., & Laessle, R. G. (2012). Stress-induced laboratory eating behavior in obese women with binge eating disorder. *Appetite*, *58*(2), 457–461. https://doi.org/10.1016/j.appet.2011.12.007

Sehm, M., & Warschburger, P. (2018). Prospective associations between binge eating and psychological risk factors in adolescence. *Journal of Clinical Child & Adolescent Psychology*, *47*(5), 770-784. https://doi.org/10.1080/15374416.2016.1178124

Showkat, N., & Parveen, H. (2017). Non-probability and probability sampling. *Media and Communications Study*, 1-9. https://www.researchgate.net/publication/319066480_Non-Probability_and_Probability_Sampling

Social isolation and loneliness in older adults: Opportunities for the Health Care System. (2020). *National Academies of Sciences, Engineering, and Medicine*. https://doi.org/10.17226/25663

Sonneville, K. R., Horton, N. J., Micali, N., Crosby, R. D., Swanson, S. A., Solmi, F., & Field, A. E. (2013). Longitudinal associations between binge eating and overeating and adverse outcomes among adolescents and young adults: does loss of control matter?. *JAMA pediatrics*, *167*(2), 149-155. https://doi.org/10.1001/2013.jamapediatrics.12

Southward, M. W., Christensen, K. A., Fettich, K. C., Weissman, J., Berona, J., & Chen, E. Y. (2013). Loneliness mediates the relationship between emotion dysregulation and Bulimia

Nervosa/Binge Eating Disorder Psychopathology in a clinical sample. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, *19*(4), 509–513. https://doi.org/10.1007/s40519-013-0083-2

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology*, *34*(2), 125–137. https://doi.org/10.1007/s10869-018-09613-8

Thu, Y. H., Yusof, B. N. M.,Siew, C. Y., Kiung, E., Ghani, R. A., Mottalib, A., & Hamdy, O. (2019). Nutrition-Related Factors and Binge Eating Behaviour in a Sample of Malaysian University Students. *Malaysian Journal of Health Sciences/Jurnal Sains Kesihatan Malaysia*, *17*(1). http://dx.doi.org./10.17576/JSKM-2019-1701-08

Tiwari, S. C. (2013). Loneliness: A disease? *Indian journal of psychiatry*, *55*(4), 320. https://doi.org/10.4103/0019-5545.120536

Torkaman, M., Farokhzadian, J., Miri, S., & Pouraboli, B. (2020). The effect of transactional analysis on the self-esteem of imprisoned women: A clinical trial. *BMC Psychology*, *8*(1). https://doi.org/10.1186/s40359-019-0369-x

Vall, E., & Wade, T. D. (2015). Predictors of treatment outcome in individuals with eating disorders: A systematic review and meta-analysis. *International Journal of Eating Disorders*, *48*(7), 946–971. https://doi.org/10.1002/eat.22411

Van Beljouw, I. M., van Exel, E., de Jong Gierveld, J., Comijs, H. C., Heerings, M., Stek, M. L., & van Marwijk, H. W. (2014). “being all alone makes me sad”: Loneliness in older adults with depressive symptoms. *International Psychogeriatrics*, *26*(9), 1541–1551. https://doi.org/10.1017/s1041610214000581

Vasileiou, K., Barnett, J., Barreto, M., Vines, J., Atkinson, M., Long, K., Bakewell, L., Lawson, S., & Wilson, M. (2019). Coping with loneliness at university: A qualitative interview study

with students in the UK. *Mental Health & Prevention*, *13*, 21–30. https://doi.org/10.1016/j.mhp.2018.11.002

Wade, S. (2019). *The transdiagnostic theory of eating disorders: Investigation of maintaining mechanisms and clinical utility* (Doctoral dissertation, University of Western Australia). https://api.research-repository.uwa.edu.au/ws/portalfiles/portal/77718949/TH20_30_THESIS_DOCTOR_OF_PHILOSOPHY_WADE_Stephanie_Robyn_2020.pdf

Wiedemann, A. A., Ivezaj, V., & Barnes, R. D. (2018). Characterizing emotional overeating among patients with and without binge-eating disorder in primary care. *General Hospital Psychiatry*, *55*, 38–43. https://doi.org/10.1016/j.genhosppsych.2018.09.003

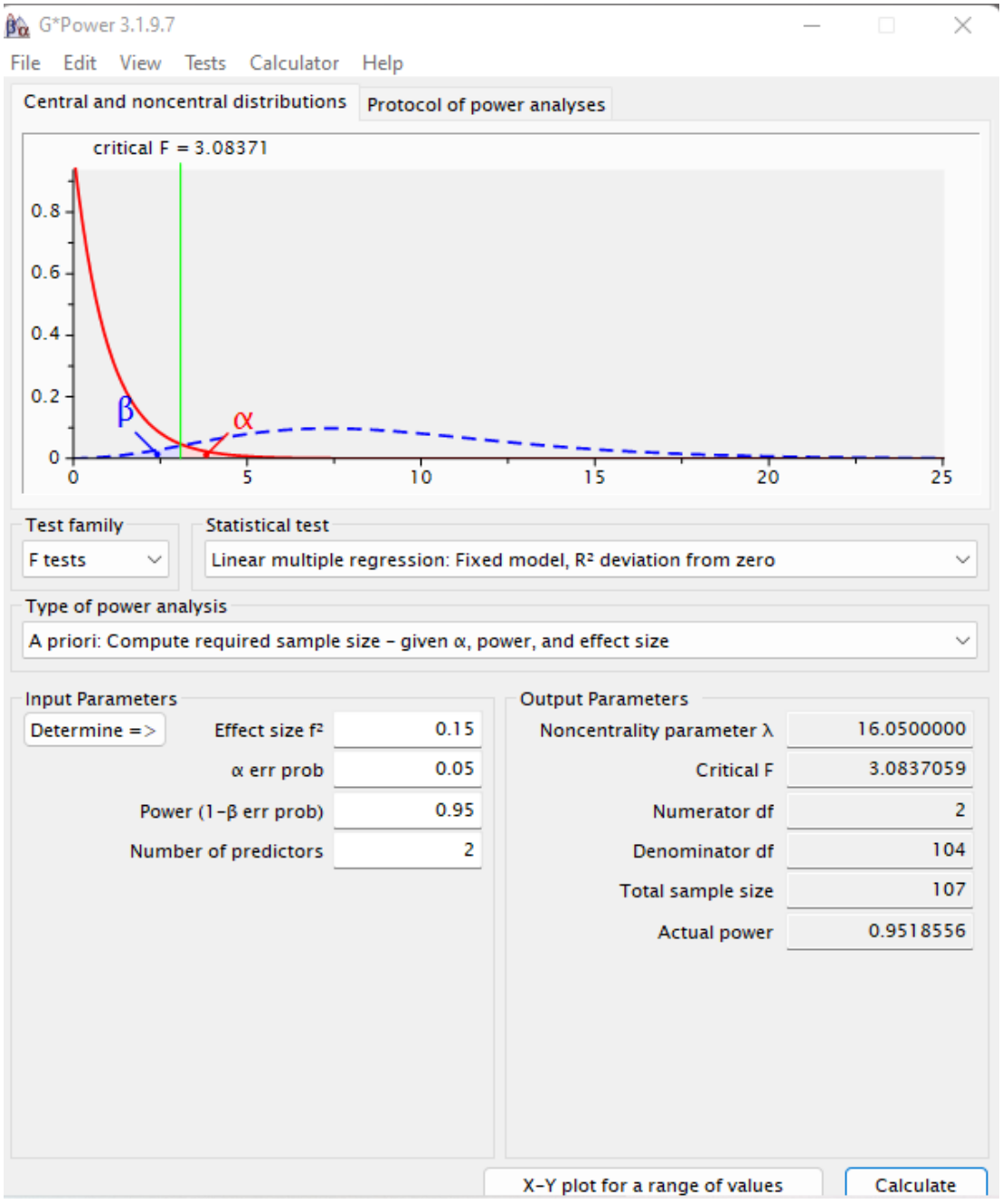
Yanguas, J., Pinazo-Henandis, S., & Tarazona-Santabalbina, F. J. (2018). *The complexity of loneliness*. Acta bio-medica : Atenei Parmensis. Retrieved November 21, 2022, from https://pubmed.ncbi.nlm.nih.gov/29957768/

Yusoff, N. R., & Shukri, M. (2020). Self-esteem and perfectionism as predictors of eating disorders among university students. *Universiti Malaysia Terengganu Journal of Undergraduate Research*, *2*(4), 115-122. https://doi.org/10.46754/umtjur.v2i4.185

Zangirolami-Raimundo, J., Echeimberg, J. D., & Leone, C. (2018). Research methodology topics: Cross-sectional studies. *Journal of Human Growth and Development*, *28*(3), 356–360. https://doi.org/10.7322/jhgd.152198

Appendix A

G*Power Sample Size Calculation for Multiple Regression



Appendix B

UCLA Loneliness Scale (UCLA)

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

Statement	Never	Rarely	Sometimes	Often
1. I feel in tune with the people around me	1	2	3	4
2. I lack companionship	1	2	3	4
3. There is no one I can turn to	1	2	3	4
4. I do not feel alone	1	2	3	4
5. I feel part of a group of friends	1	2	3	4
6. I have a lot in common with the people around me	1	2	3	4
7. I am no longer close to anyone	1	2	3	4
8. My interests and ideas are not shared by those around me	1	2	3	4
9. I am an outgoing person	1	2	3	4
10. There arc people I feel close to	1	2	3	4
11. I feel left out	1	2	3	4
12. My social relationships arc superficial	1	2	3	4
13. No one really knows me well	1	2	3	4
14. I feel isolated from others	1	2	3	4
15. I can find companionship when I want it	1	2	3	4
16. There are people who really understand me	1	2	3	4
17. I am unhappy being so withdrawn	1	2	3	4
18. People are around me but not with me	1	2	3	4
19. There are people I can talk to	1	2	3	4
20. There are people I can turn to	1	2	3	4

Scoring:
Items 1, 5, 6, 9, 10, 15, 16, 19, 20 are all reverse scored.
Keep scoring continuous.

Appendix C

The Rosenberg Self-esteem Scale (SES)

The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Scoring: SA=3, A=2, D=1, SD=0. Items with an asterisk are reverse scored, that is, SA=0, A=1, D=2, SD=3. Sum the scores for the 10 items. The higher the score, the higher the self esteem.

Appendix D

Binge Eating Scale (BES)

Instructions. Below are groups of numbered statements. Read all of the statements in each group and mark on this sheet the one that best describes the way you feel about the problems you have controlling your eating behavior.

#1
(0) 1. I don't feel self-conscious about my weight or body size when I'm with others.
(0) 2. I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
(1) 3. I do get self-conscious about my appearance and weight which makes me feel disappointed in myself.
(3) 4. I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself. I try to avoid social contacts because of my self-consciousness.

#2
(0) 1. I don't have any difficulty eating slowly in the proper manner.
(1) 2. Although I seem to "gobble down" foods, I don't end up feeling stuffed because of eating too much.
(2) 3. At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
(3) 4. I have the habit of bolting down my food, without really chewing it. When this happens I usually feel uncomfortably stuffed because I've eaten too much.

#3
(0) 1. I feel capable to control my eating urges when I want to.
(1) 2. I feel like I have failed to control my eating more than the average person.
(3) 3. I feel utterly helpless when it comes to feeling in control of my eating urges.
(3) 4. Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.

#4
(0) 1. I don't have the habit of eating when I'm bored.
(0) 2. I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off food.
(0) 3. I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off eating.
(2) 4. I have a strong habit of eating when I'm bored. Nothing seems to help me break the habit.

#5
(0) 1. I'm usually physically hungry when I eat something.
(1) 2. Occasionally, I eat something on impulse even though I really am not hungry.
(2) 3. I have the regular habit of eating foods, that I might not really enjoy, to satisfy a hungry feeling even though physically, I don't need the food.
(3) 4. Even though I'm not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat a food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my mouth hunger, I then spit the food out so I won't gain weight.

#6

(0) 1. I don't feel any guilt or self-hate after I overeat.
(1) 2. After I overeat, occasionally I feel guilt or self-hate.
(3) 3. Almost all the time I experience strong guilt or self-hate after I overeat.

#7

(0) 1. I don't lose total control of my eating when dieting even after periods when I overeat.
(2) 2. Sometimes when I eat a "forbidden food" on a diet, I feel like I "blew it" and eat even more.
(3) 3. Frequently, I have the habit of saying to myself, "I've blown it now, why not go all the way" when I overeat on a diet. When that happens I eat even more.
(3) 4. I have a regular habit of starting strict diets for myself, but I break the diets by going on an eating binge. My life seems to be either a "feast" or "famine."

#8

(0) 1. I rarely eat so much food that I feel uncomfortably stuffed afterwards.
(1) 2. Usually about once a month, I eat such a quantity of food, I end up feeling very stuffed.
(2) 3. I have regular periods during the month when I eat large amounts of food, either at mealtime or at snacks.
(3) 4. I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

#9

(0) 1. My level of calorie intake does not go up very high or go down very low on a regular basis.
(1) 2. Sometimes after I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I've eaten.
(2) 3. I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
(3) 4. In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems I live a life of either "feast or famine."

#10

(0) 1. I usually am able to stop eating when I want to. I know when "enough is enough."
(1) 2. Every so often, I experience a compulsion to eat which I can't seem to control.
(2) 3. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
(3) 4. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

#11

(0) 1. I don't have any problem stopping eating when I feel full.
(1) 2. I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.

Appendix E

Qualtrics Questionnaire

Introduction

This study aims to examine the relationship between loneliness, self-esteem, and binge eating among undergraduates in Malaysia.

Procedures and Confidentiality

The following questionnaire will require approximately 15 minutes to complete. All information provided will remain private and confidential. The information will only be reported as group data with no identifying information and only be used for academic purposes.

Participation

All the information gathered will remain anonymous and confidential. Your information will not be disclosed to any unauthorized person and will be accessible only to group members. Participation in this study is voluntary, you are free to withdraw with consent and discontinue participation at in any time without prejudice. Your responses will be coded numerically in the research assignment for the research interpretation. Your cooperation would be greatly appreciated. If you choose to participate in this project, please answer all the questions as honestly as possible and return the completed questionnaire promptly.

Personal Data Protection Statement

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

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:
- For assessment of any application to UTAR
- For processing any benefits and services
- For communication purposes
- For advertorial and news
- For general administration and record purposes
- For enhancing the value of education
- For educational and related purposes consequential to UTAR
- For the purpose of our corporate governance
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

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

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

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

Consent:

1. By submitting this form you hereby authorize and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you, or assist you in respect of the purposes and/or for any other purposes related to the purpose.

3. You may access and update your personal data by writing to us at:
Lim Wei Fang (weifanglim18@1utar.my),
Ng Chien Yi (ncy10040708@1utar.my),
Ong Ting Wei (twonthespot@1utar.my).

Acknowledgement of Notice:

	Yes	No
I agree for the data I provided to be archived at the UTAR Data Archive.	○	○
I understand that other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information.	○	○
I understand that other authenticated researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information.	○	○

→

Age

- < 18
- 18-25
- > 25

Gender

- Male
- Female

Ethnicity

- Malay
- Chinese
- Indian

University (Eg: UTAR)

Course / Program (Eg: Psychology)

Year and semester (Eg: Y1S1)

Section A: UCLA Loneliness Scale (ULS)

Indicate how often each of the statements below is descriptive of you.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)
1. I feel in tune with the people around me.	○	○	○	○
2. I lack companionship.	○	○	○	○
3. There is no one I can turn to.	○	○	○	○
4. I do not feel alone.	○	○	○	○
5. I feel part of a group of friends.	○	○	○	○
6. I have a lot in common with the people around me.	○	○	○	○
7. I am no longer close to anyone.	○	○	○	○
8. My interests and ideas are not shared by those around me.	○	○	○	○
9. I am an outgoing person.	○	○	○	○
10. There are people I feel close to.	○	○	○	○
11. I feel left out.	○	○	○	○
12. My social relationships are superficial.	○	○	○	○
13. No one really knows me well.	○	○	○	○
14. I feel isolated from others.	○	○	○	○
15. I can find companionship when I want it.	○	○	○	○
16. There are people who really understand me.	○	○	○	○
17. I am unhappy being so withdrawn.	○	○	○	○
18. People are around me but not with me.	○	○	○	○
19. There are people I can talk to.	○	○	○	○
20. There are people I can turn to.	○	○	○	○

Section B: The Rosenberg Self-Esteem Scale (RSES)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	Strongly disagree (0)	Disagree (1)	Agree (2)	Strongly Agree (3)
1. On the whole, I am satisfied with myself.	○	○	○	○
2. At times, I think I am no good at all.	○	○	○	○
3. I feel that I have a number of good qualities.	○	○	○	○
4. I am able to do things as well as most other people.	○	○	○	○
5. I feel I do not have much to be proud of.	○	○	○	○
6. I certainly feel useless at times.	○	○	○	○
7. I feel that I am a person of worth, at least on an equal plane with others.	○	○	○	○
8. I wish I could have more respect for myself.	○	○	○	○
9. All in all, I am inclined to feel that I am a failure.	○	○	○	○
10. I take a positive attitude toward myself.	○	○	○	○

Section C: Binge Eating Scale (BES)

Please indicate which statement in each group best describes how you feel.

1.

- ○ I do not feel self-conscious about my weight or body size when I am with others.
- ○ I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
- ○ I do get self-conscious about my appearance and weight which makes me feel disappointed in myself.
- ○ I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself, I try to avoid social contacts because of my self-consciousness.

2.

- ○ I do not have any difficulty eating slowly in the proper manner.
- ○ Although i seem to "gobble down" foods, I do not end up feeling stuffed because of eating too much.
- ○ At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
- ○ I have the habit of bolting down my food, without really chewing it. when this happens I usually feel uncomfortably stuffed because I have eaten too much.

3.

- ○ I feel capable to control my eating urges when I want to.
- ○ I feel like I have failed to control my eating more than average person.
- ○ I feel utterly helpless when it comes to feeling in control of my eating urges.
- ○ Because I feel so helpless about controlling my eating, I have become very desperate about trying to get in control.

4.

- I do not have the habit of eating when I am bored.
- I sometimes eat when I am bored, but often I am able to "get busy" and get my mind off food.
- I have a regular habit of eating when I am bored, but occasionally, I can use some other activity to get my mind off eating.
- I have a strong habit of eating when I am bored. Nothing seems to help me break the habit.

5.

- I am usually physically hungry when I eat something.
- Occasionally, I eat something on impulse even though I really am not hungry.
- I have the regular habit of eating food, that I might not really enjoy, to satisfy a hungry feeling even though physically, I do not need the food.
- Even though I am not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat a food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my mouth hunger, I then spit the food out so I will not gain weight.

6.

- I do not feel any guilt or self-hate after I overeat.
- After I overeat, occasionally i feel guilt or self-hate.
- Almost all the time I experience strong guilt or self-hate after I overeat,

7.

- I do not lose total control of my eating when dieting even after periods when I overeat.
- Sometimes when I eat a "forbidden food" on a diet, I feel like I "blew it" and eat even more.
- Frequently, I have the habit of saying to myself, "I've blown it now, why not go all the way" when I overeat on a diet. When that happens, I eat even more.
- I have a regular habit of starting strict diets for myself, but I break the diets by going on an eating binge. My life seems to be either a "feast" or "famine".

8.

- I rarely eat so much food that I feel uncomfortably stuffed afterwards.
- Usually about once month, I eat such a quantity of food, I end up feeling very stuffed.
- I have regular periods during the month when I eat large amount of food, either at mealtime or at snacks.
- I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

9.

- My level of calorie intake does not go up very high or go down very low on a regular basis.
- Sometimes after I overeat, I will try to reduce my calorie intake to almost nothing to compensate for the excess calories I have eaten.
- I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
- In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. I seems I live a life of either "feast or famine".

10.

- I usually am able to stop eating when I want to. I know when "enough is enough".
- Every so often, I experience a compulsion to eat when I cannot seem to control.
- Frequently, I experience strong urges to eat which I seem unable to control.
- I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

11.

- I do not have any problem stopping eating when I feel full.
- I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.
- I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.
- Because I have a problem not being able to stop eating when I want, I sometimes have to induce vomiting to relieve my stuffed feeling.

12.

- I seem to eat just as much when I am with others (family, social gatherings) as when I am by myself.
- Sometimes, when I am with other persons, I do not eat as much as I want to eat because I am self-conscious about my eating.
- Frequently, I eat only a small amount of food when others are present, because I am very embarrassed about my eating.
- I feel so ashamed about overeating that I pick times to overeat when I know no one will see me. I feel like a "closet eater".

13.

- I eat 3 meals a day with only an occasional between meal snack.
- I eat 3 meals a day, but I also normally eat snack between meals.
- When I am snacking heavily, I get in the habit of skipping regular meals.
- There are regular periods when I seem to be continually eating, with no planned meals.

14.

- I do not think much about trying to control unwanted eating urges.
- At least some of the time, I feel my thought are pre-occupied with trying to control my eating urges.
- I feel that frequently I spend much time think about how much I ate or about trying not to eat anymore.
- It seems to me that most of my waking hours are pre-occupied by thoughts about eating or not eating. I feel like I am constantly struggling not to eat.

15.

- I do not think about food a great deal.
- I have strong cravings for food but they last only for brief periods of time.
- I have days when i cannot seem to think about anything else but food.
- Most of my days seem to be pre-occupied with thoughts about food. I feel like I live to eat.

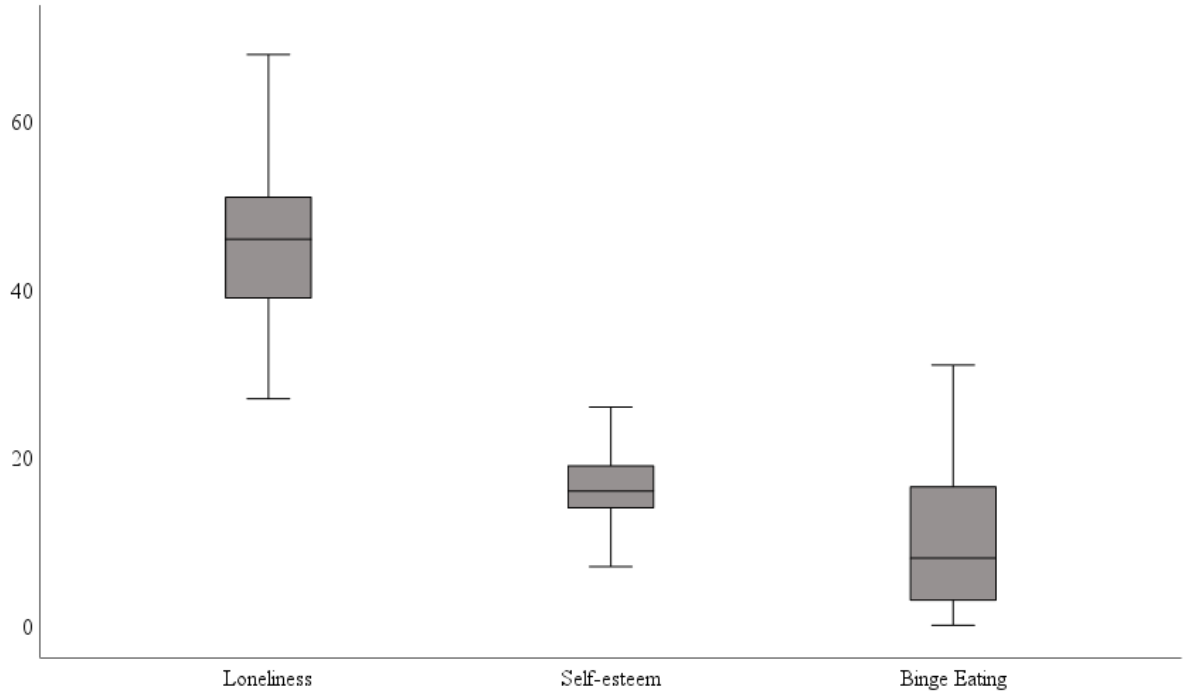
16.

- I usually know whether or not I am physically hunger. I take the right portion of food to satisfy me.
- Occasionally, I fell uncertain about knowing whether or not I am physically hungry. At these times it is hard to know how much food I should take to satisfy me.
- Even though I might know how many calories I should eat. I do not have any idea what is a "normal" amount of food for me.

We thank you for your time spent taking this survey.
Your response has been recorded.

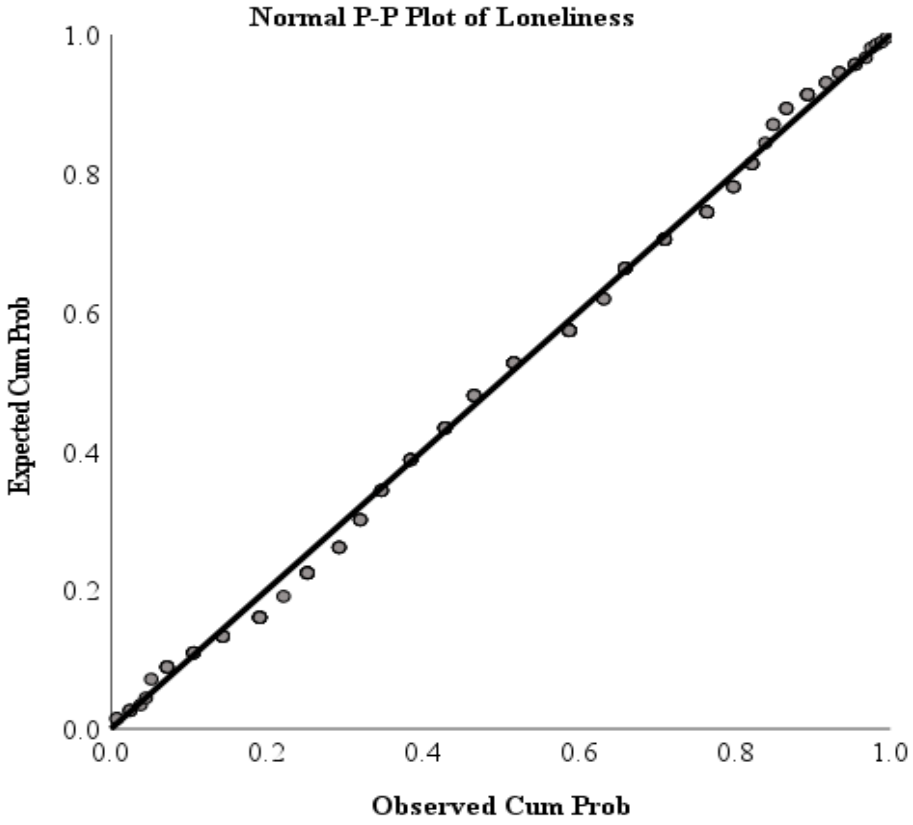
Appendix F

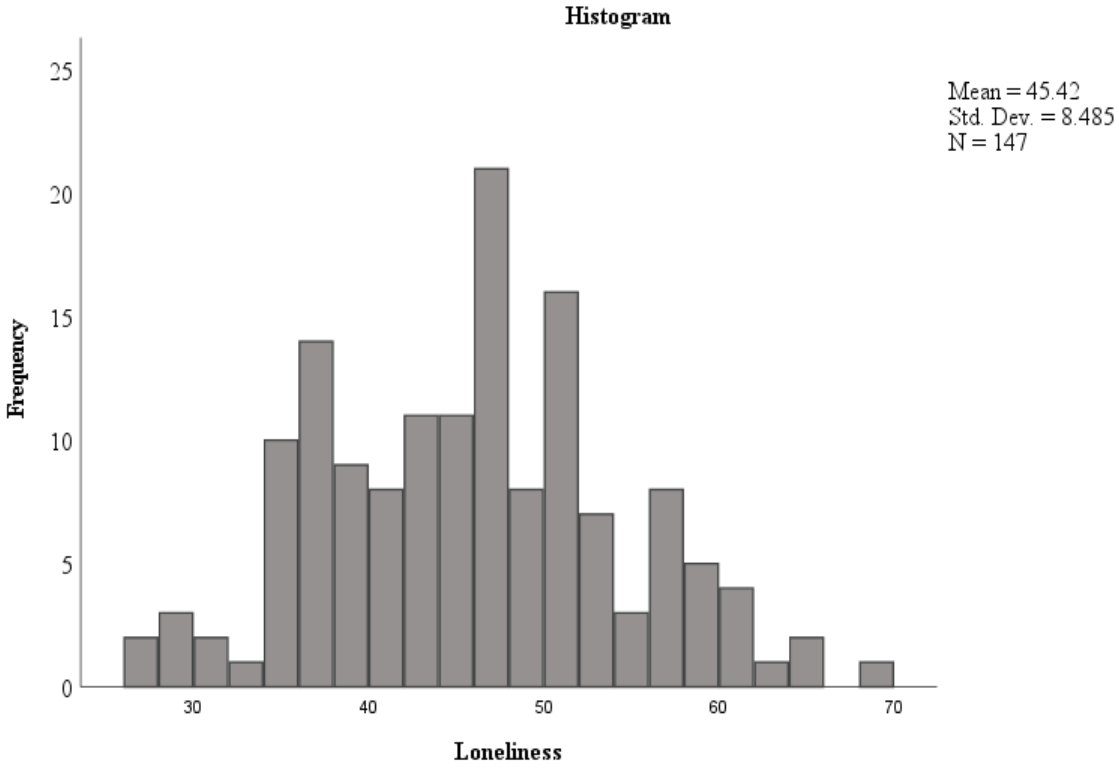
Boxplot After Univariate Outlier Cleaning



Appendix G

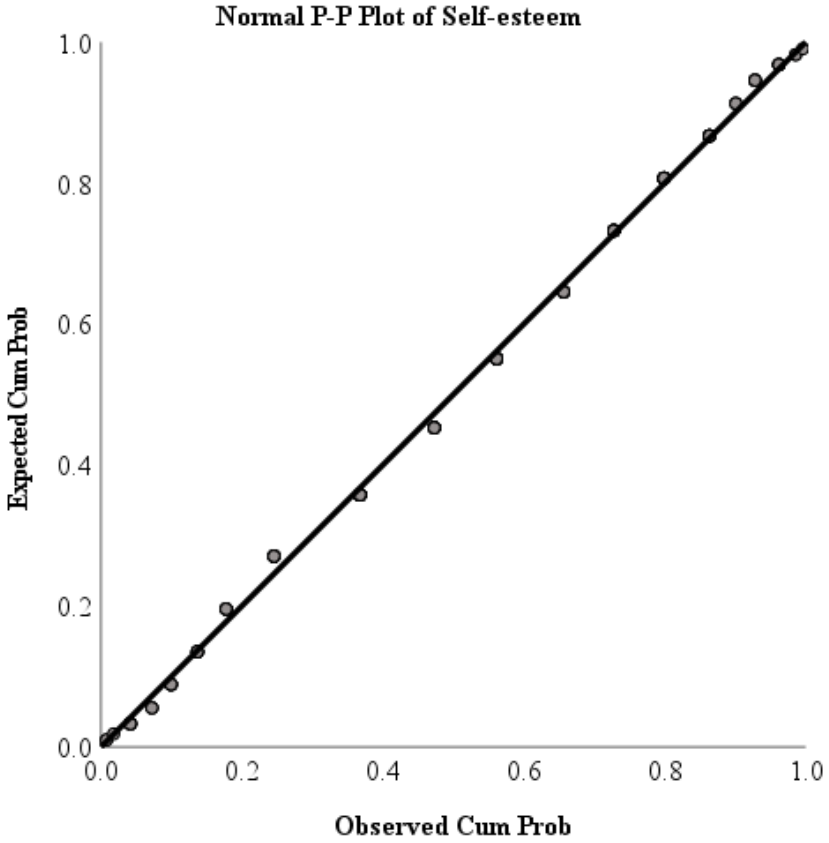
P-P Plot and Histogram of Loneliness

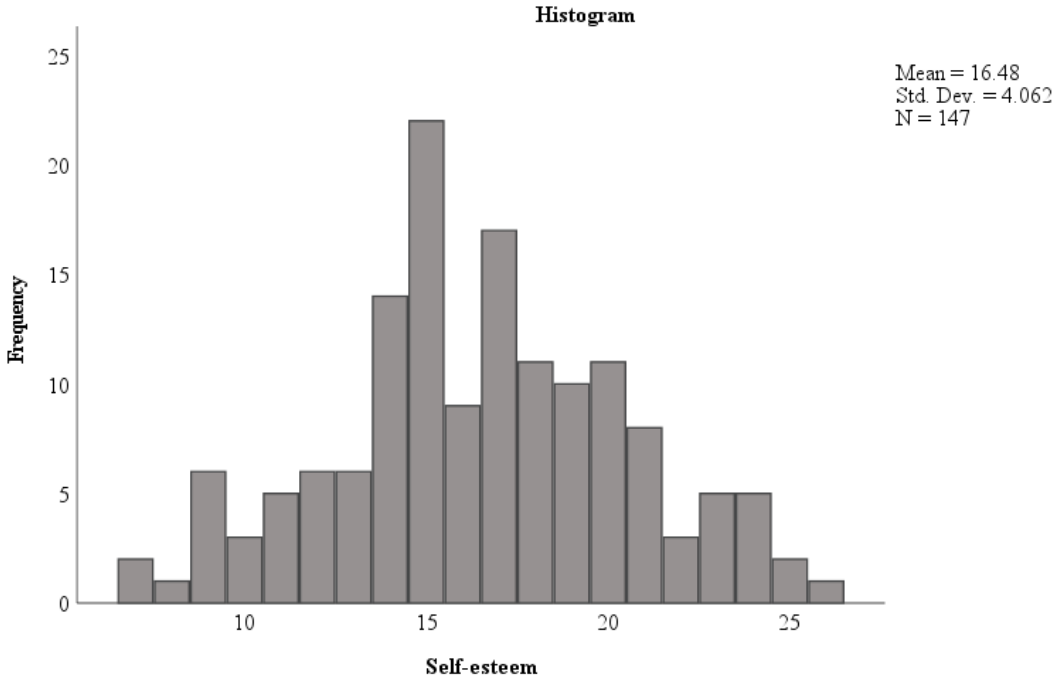




Appendix H

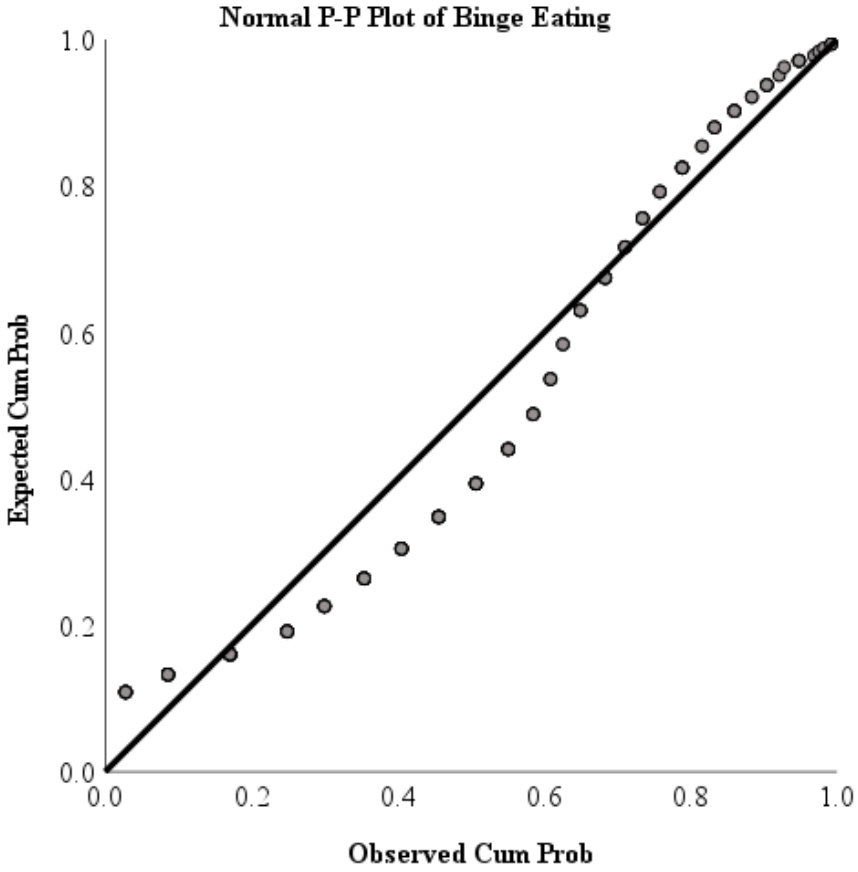
P-P Plot and Histogram of Self-esteem

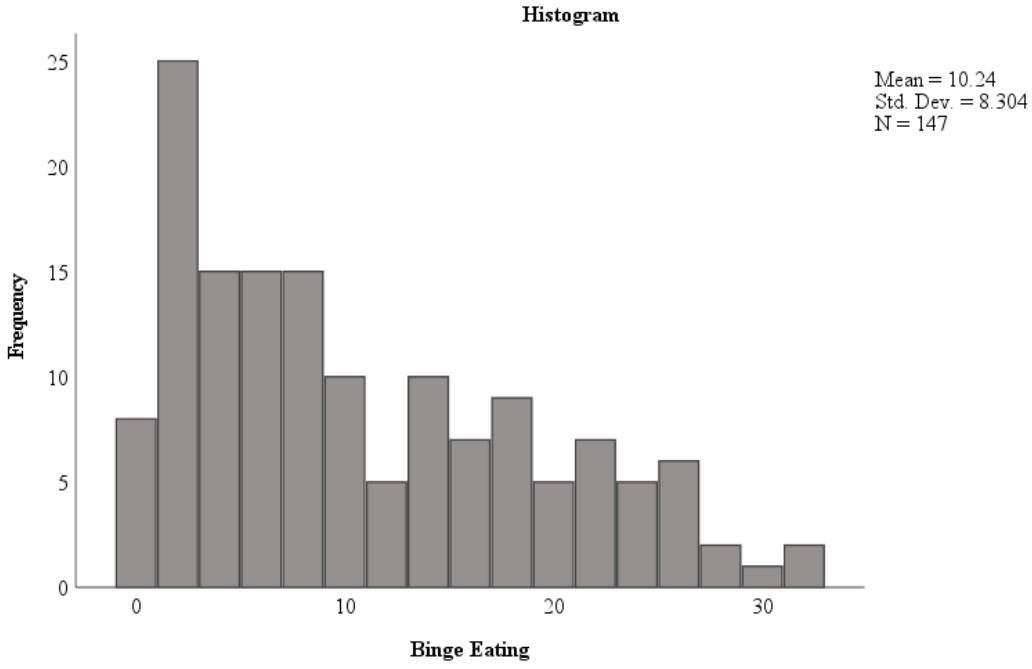




Appendix I

P-P Plot and Histogram of Binge Eating





Appendix J

Normality Test – Kolmogorov-Smirnov Test (K-S Test)

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Loneliness	.057	147	.200*
Self-esteem	.085	147	.012
Binge Eating	.137	147	<.001

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

Appendix K

Turnitin Originality Report

FYP 2

ORIGINALITY REPORT

16%	11%	5%	11%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Universiti Tunku Abdul Rahman Student Paper	6%
2	eprints.utar.edu.my Internet Source	2%
3	Submitted to Northcentral Student Paper	1%
4	www.ncbi.nlm.nih.gov Internet Source	1%
5	Submitted to University of Johannsburg Student Paper	1%
6	Submitted to UCSI University Student Paper	1%
7	123dok.com Internet Source	<1%
8	archive.cm.mahidol.ac.th Internet Source	<1%
9	Submitted to Xiamen University Student Paper	<1%

10	Submitted to University of Hong Kong Student Paper	<1%
11	Submitted to Victoria University Student Paper	<1%
12	Submitted to The University of the West of Scotland Student Paper	<1%
13	nrl.northumbria.ac.uk Internet Source	<1%
14	www.frontiersin.org Internet Source	<1%
15	files.eric.ed.gov Internet Source	<1%
16	scholarship.claremont.edu Internet Source	<1%
17	www.hindawi.com Internet Source	<1%
18	Isabella K Ferraro, Amanda M Taylor. "Adult attachment styles and emotional regulation: The role of interoceptive awareness and alexithymia", Personality and Individual Differences, 2021 Publication	<1%
19	Submitted to University of Derby Student Paper	<1%

20	www.idfr.gov.my Internet Source	<1%
21	Submitted to Bilkent University Student Paper	<1%
22	library.ndsu.edu Internet Source	<1%
23	people.ohio.edu Internet Source	<1%
24	studentsrepo.um.edu.my Internet Source	<1%
25	worldwidescience.org Internet Source	<1%
26	Habibi, Mojtaba, Khawaja, Nigar, Moradi, Shahram, Dehghani, Mohsen, Fadaei, Zahra. "University Student Depression Inventory: Measurement model and psychometric properties", 'Wiley', 2014 Internet Source	<1%
27	academic.oup.com Internet Source	<1%
28	core.ac.uk Internet Source	<1%
29	eprints.bbk.ac.uk Internet Source	<1%
30	repository.usfca.edu Internet Source	<1%
31	www.jipat.org Internet Source	<1%

UAPZ 3023 Final Year Project II

Qualitative Research Project Evaluation Form

TURNITIN: ***'In assessing this work you are agreeing that it has been submitted to the University-recognised originality checking service which is Turnitin. The report generated by Turnitin is used as evidence to show that the students' final report contains the similarity level below 20%.'***

Project Title: Relationship between Loneliness, Self-esteem and Binge Eating Among Undergraduates in Malaysia.	
Supervisor: Ms. Liza Hartini Binti Rusdi	
Student's Name: 1. Lim Wei Fang 2. Ng Chien Yi 3. Ong Ting Wei	Student's ID 1. 19AAB03381 2. 19AAB01928 3. 19AAB03264

INSTRUCTIONS:
Please score each descriptor based on the scale provided below:

1. Please award 0 mark for no attempt.

2. For criteria **7**:
Please retrieve the marks from "**Oral Presentation Evaluation Form**".

1. ABSTRACT (5%)	Max Score	Score
a. State the main research questions and research objectives.	5%	
b. Describe the methodology: • Research design • Type of participants • Sample size • Location of study • Interview protocol	5%	
c. Describe the characteristics of participants.	5%	
d. Highlight the significant findings of the study.	5%	
e. Conclusions, Implications • Practical implication of the knowledge generated form the study	5%	
Sum	25%	/25%
Subtotal (Sum/5)	5%	/5%
Remark:		

2. METHODOLOGY (25%)	Max Score	Score
a. Research design • Rationale for selected design	5%	
b. Sampling procedures: • Rationale sampling method and sample size • Describe the recruitment process • Procedures for ethical clearance and approval	5%	
c. Type of data collected • Describe the forms of data collected • Describe other data sources • Relevance of the collected data with the research objectives d. Validity of the data collection method (e.g., rigor) • How the validity of the data is established	5%	
e. Clear explanation of data collection procedures: • Inclusion and exclusion criteria • Procedures of obtaining consent • Description of data collection procedures • Describe questions asked in data collection, content and form of questions (e.g, open vs closed ended etc)	5%	
f. Describe the management or use of the reflexivity in the data-collection process	5%	
Subtotal	25%	/25%
Remark:		

3. RESULTS (20%)	Max Score	Score
a. Appropriate data analysis for research objective • Describe in detail the process of analysis (e.g coding, thematic analysis)	10%	
b. Thematic Analysis	10%	

• Describe research findings (themes, categories), the meaning and understanding derived from data analysis • Demonstrate the analytic process of reaching findings (e.g. Interview responses, observations, field notes, etc.) • Findings presented should include information to support the research objectives.		
Subtotal	20%	/20%
Remark:		

4. DISCUSSION AND CONCLUSION (20%)	**Max Score**	**Score**
a. Constructive discussion of findings: • Discuss the research findings and understanding from the results	5%	
b. Implication of the study: • Theoretical implication for future research. • Practical implication for programs and policies. • Reflect on any alternative explanation of the findings	5%	
c. Relevant limitations of the study.	5%	
d. Recommendations for future research.	5%	
Subtotal	20%	/20%
Remark:		

5. LANGUAGE AND ORGANIZATION (5%)	**Max Score**	**Score**
a. Language proficiency	3%	
b. Content organization	1%	
c. Complete documentation (e.g., action plan, originality report)	1%	
Subtotal	5%	/5%
Remark:		

6. APA STYLE AND REFERENCING (5%)	**Max Score**	**Score**
a. 7th Edition APA Style	5%	/5%
Remark:		

***ORAL PRESENTATION (20%)**	**Score**		
	Student 1	Student 2	Student 3
Subtotal	/20%	/20%	/20%
Remark:			

PENALTY	**Max Score**	**Score**

Maximum of 10 marks for LATE SUBMISSION (within 24hours), or POOR CONSULTATION ATTENDANCE with supervisor. *Late submission after 24hours will not be graded	10%		
	Student 1	Student 2	Student 3
****FINAL MARK/TOTAL**	/100%	/100%	/100%

*****Overall Comments:**

_____

_____

_____

_____

_____

Signature: _____ Date: _____

Notes:

1. **Subtotal**: The sum of scores for each assessment criterion
2. **FINAL MARK/TOTAL**: The summation of all subtotal score
3. Plagiarism is **NOT ACCEPTABLE**. Parameters of originality required and limits approved by UTAR are as follows:
   (i) **Overall similarity index is 20% or below**, and
   (ii) **Matching of individual sources listed must be less than 3%** each, and
   (iii) Matching texts in continuous block must **not exceed 8 words**

   Note: Parameters (i) – (ii) shall exclude quotes, references and text matches which are less than 8 words. Any works violate the above originality requirements will NOT be accepted. Students have to redo the report and meet the requirements in **SEVEN (7)** days.

*The marks of "Oral Presentation" are to be retrieved from **"Oral Presentation Evaluation Form".**
**It is compulsory for the supervisor/examiner to give the overall comments for the research projects with A- and above or F grading.

Universiti Tunku Abdul Rahman			
Form Title : Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)			
Form Number: FM-IAD-005	Rev No.: 0	Effective Date: 01/10/2013	Page No.: 1of 1

FACULTY OF ARTS AND SOCIAL SCIENCE

Full Name(s) of Candidate(s)	Ong Ting Wei, Ng Chien Yi, Lim Wei Fang
ID Number(s)	19AAB03264, 19AAB01928, 19AAB03381
Programme / Course	BACHELOR OF SOCIAL SCIENCE (HONOURS) PSYCHOLOGY
Title of Final Year Project	Relationship Between Loneliness, Self-Esteem, and Binge Eating Among Undergraduates in Malaysia.

Similarity	**Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)**
Overall similarity index:____16___% **Similarity by source** Internet Sources:____11___% Publications: ___5___% Student Papers: ___11___%	
Number of individual sources listed of more than 3% similarity:____1____	**Similarity detected: terms in Psychology**
Parameters of originality required and limits approved by UTAR are as follows: **(i) Overall similarity index is 20% and below, and** **(ii) Matching of individual sources listed must be less than 3% each, and** **(iii) Matching texts in continuous block must not exceed 8 words** ***Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.***	

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

Signature of Supervisor

Name: Liza Hartini Binti Rusdi

Date: 7th April 2023

Signature of Co-Supervisor

Name: _____

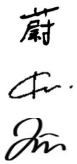
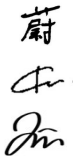
Date: _____

Action Plan Form

Action Plan of UAPZ 3023 (group-based)Final Year Project II for Jan & May trimester

Supervisee's Name: Ong Ting Wei, Ng Chien Yi, Lim Wei Fang

Supervisor's Name: Ms Liza Hartini binti Rusdi

Task Description	Duration	Date/Time	Supervisee's Signature	Supervisor's Signature	Supervisor's Remarks	Next Appointment Date/Time
Methodology, Data Collection & Data Analysis	W1-W2	03/02/2023 3.30 p.m.				28/02/2023 2.00 p.m.
Finding & Analysis Discuss Findings & Analysis with Supervisor Amending Findings & Analysis	W3-W6	28/02/2023 2.00 p.m.				21/03/2023 2.00 p.m.
Discussion & Conclusion Discuss Discussion & Conclusion with Supervisor Amending Discussion & Conclusion	W7-W9	21/03/2023 2.00 p.m.				
Submission of first draft*	Monday of Week 10	submit the first draft to Turnitin.com to check similarity rate				
Amendment	W10					
Submission of final FYP (FYP I + FYP II)*	Monday of W11	final submission to supervisor				
Oral Presentation		Oral Presentation Schedule will be released and your supervisor will inform you				

Notes:
1. **The listed duration is for reference only, supervisors can adjust the period according to the topics and content of the projects.**
2. ***Deadline for submission can not be changed, one mark will be deducted per day for late submission.**
3. **Supervisees are to take the active role to make appointments with their supervisors.**
4. **Both supervisors and supervisees should keep a copy of this record. 5. This record is to be submitted together with the submission of the FYP II.**

Universiti Tunku Abdul Rahman			
Form Title : **Sample of Submission Sheet for FYP/Dissertation/Thesis**			
Form Number : **FM-IAD-004**	Rev No: **0**	Effective Date: **21 June 2011**	Page No: **1 of 1**

FACULTY/INSTITUTE* OF ART AND SOCIAL SCIENCE
UNIVERSITI TUNKU ABDUL RAHMAN

Date: 10 April 2023

SUBMISSION OF FINAL YEAR PROJECT /DISSERTATION/THESIS

It is hereby to clarify that NG CHIEN YI (ID NO: 19AAB01928) has completed this final year project entitled ''Relationship between Loneliness, Self-esteem, Bing Eating among Undergraduates in Malaysia'' under the supervision of Ms. Liza Hartini Binti Rusdi (Supervisor) from the Department of Psychology and Counselling, Faculty of Art and Social Science.

I understand that University will upload softcopy of my final year project in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

Name: Ng Chien Yi

Universiti Tunku Abdul Rahman			
Form Title : **Sample of Submission Sheet for FYP/Dissertation/Thesis**			
Form Number : **FM-IAD-004**	Rev No: **0**	Effective Date: **21 June 2011**	Page No: **1 of 1**

FACULTY/INSTITUTE* OF ART AND SOCIAL SCIENCE
UNIVERSITI TUNKU ABDUL RAHMAN

Date: 10 April 2023

SUBMISSION OF FINAL YEAR PROJECT /DISSERTATION/THESIS

It is hereby to clarify that LIM WEI FANG (ID NO: 19AAB03381) has completed this final year project entitled ''Relationship between Loneliness, Self-esteem, Bing Eating among Undergraduates in Malaysia'' under the supervision of Ms. Liza Hartini Binti Rusdi (Supervisor) from the Department of Psychology and Counselling, Faculty of Art and Social Science.

I understand that University will upload softcopy of my final year project in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

lim

Name: Lim Wei Fang

Universiti Tunku Abdul Rahman			
~~Form Title : **Sample of Submission Sheet for FYP/Dissertation/Thesis**~~			
Form Number : **FM-IAD-004**	Rev No: **0**	Effective Date: **21 June 2011**	Page No: **1 of 1**

FACULTY/INSTITUTE* OF ART AND SOCIAL SCIENCE
UNIVERSITI TUNKU ABDUL RAHMAN

Date: 10 April 2023

SUBMISSION OF FINAL YEAR PROJECT /DISSERTATION/THESIS

It is hereby to clarify that ONG TING WEI (ID NO: 19AAB03264) has completed this final year project entitled ''Relationship between Loneliness, Self-esteem, Bing Eating among Undergraduates in Malaysia'' under the supervision of Ms. Liza Hartini Binti Rusdi (Supervisor) from the Department of Psychology and Counselling, Faculty of Art and Social Science.

I understand that University will upload softcopy of my final year project in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

Name: Ong Ting Wei