DEPARTMENT OF PSYCHOLOGY AND COUNSELING

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The Mediating Role of Emotion Regulation in The Relationship between Negative Emotions, Positive Emotions, and Emotional Eating among Young Adults in Malaysia

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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 on November 2021

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CHONG XUAN NI

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APPROVAL FORM

This research paper attached here to, entitled "The Mediating Role of Emotion Regulation in the relationship between Negative Emotions, Positive Emotions and Emotional Eating Among Young Adults in Malaysia", prepared and submitted by Chong Xuan Ni, Heng Wee Keat, and Ruan Yu in partial fulfillment of requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

_____ Date: 24 Aug 2022

Supervisor

(Dr Grace T'ng Soo Ting)

Abstract

Overweight and obesity have affected millions of lives around the world including about half of the Malaysian population. Although it has affected a lot of people, there have been limited studies done on the relationship between positive emotions, negative emotions, emotional eating, and emotion regulation. Thus, this study applied a cross-sectional research design to understand (1) the predictive role of positive and negative emotions on emotional eating and emotion regulation, (2) the predictive role of emotion regulation on emotional eating, (3) the mediator role of emotion regulation in the relationship between positive and negative emotions with emotional eating among young adults in Malaysia. In general, 638 participants were recruited using purposive sampling and responded to the online survey distributed through social media. However, only 484 responses that met the criteria were selected for the data analysis process. The criteria were the participants must be Malaysians aged between 18 to 40 years old (M = 22.7). In total, there were more females (N = 316; 65%) than males (N = 170; 35%). The result of this study revealed that positive and negative emotions positively predicted emotional eating. In addition, negative emotions negatively predicted emotion regulation while positive emotions positively predicted emotion regulation. Moreover, emotion regulation negatively predicted emotional eating. Lastly, emotion regulation served as a mediator in the association between negative and positive emotions with emotional eating. In conclusion, this study has provided valuable information on the relationship between positive emotions, negative emotions, emotional eating, and emotion regulation which would be useful for future research and healthcare professionals to develop a constructive intervention program to help their patients.

Keywords: Positive emotions, negative emotions, emotional eating, emotion regulation, young adults

DECLARATION

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

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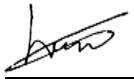
Signed: 

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Table of Contents

List of Tables

List of Figures

List of Abbreviations

Abbreviations	
APA	American Psychological Association
CD	Cook's Distance
CI	Confidence Interval
CL	Centered Leverage
DER	Difficulties in Emotion Regulation
DERS-SF	Difficulties in Emotion Regulation Scale Short Form
DW	Durbin Watson
EE	Emotional Eating
ED	Emotion Dysregulation
ER	Emotion Regulation
IKU	Institut Kesihatan Umum
K-S	Kolmogorov-Smirnov
MD	Mahalanobis Distance
MLR	Multiple Linear Regression
NE	Negative Emotions
PANAS	Positive and Negative Effect Schedule
PE	Positive Emotions
Q-Q	Quantile-Quantile
UTAR	Universiti Tunku Abdul Rahman
VIF	Variance Inflation Factor
WHO	World Health Organization

Chapter I

Introduction

Background of Study

Emotional eating (EE) traditionally describes that people overeat for their negative emotions (NE), such as anxiety, agitation, depression, loneliness, unhappiness, and worry (Henderson et al., 2019; Serin et al., 2018), rather than hunger (Frayn et al., 2018; Konttinen et al., 2019; Reichenberger et al., 2020; Van Strien, 2018). Whereas both NE and positive emotions (PE) can increase or decrease food intake, namely overeating and undereating (Annesi et al., 2016; Cardi et al., 2015; Devonport et al., 2019; Herle et al., 2017; Konttinen et al., 2019; Macht, 2008; Manchón et al., 2021; Reichenberger et al., 2020). The changes in eating behaviours (overeating or undereating) related to NE and PE exceed the traditional definition of EE. So, to comprehensively reveal the associations between the two types of emotions (NE and PE) and the two types of eating behaviours (overeating or undereating), EE is redefined in this study; EE means that people overeat or undereat due to their NE and PE.

EE does not occur regularly (Canetti et al., 2002) and may just show up by chance without any symptoms of physical hunger; the higher level of EE predicts the higher level of the motives to select food based on the eater's mood, the convenience of food, the taste and presentation of food, the price of food, and the familiarity of food (Serin et al., 2018). Emotional eaters prefer sweet food, fatty food, and salty food, rather than other types of food (Camilleri et al., 2014).

EE is a positive predictor of severe health issues (Musaiger et al., 2017), including

binge eating disorder (Escandón-Nagel et al., 2018), bulimia nervosa, poor diet (Sze et al., 2021), subsequent weight gain (Konttinen, 2020), recurrent weight gain (Elran Barak et al., 2021; Serin et al., 2018), obesity (Bilici et al., 2020; Konttinen et al., 2019; Van Strien et al., 2016; Vittengl, 2018), and abdominal obesity (Konttinen et al., 2019). EE contributes to the obesity epidemic (Elran Barak et al., 2021).

Problem Statement

The people who suffer from the outcomes of EE (binge eating and bulimia nervosa) usually also have comorbid mental health problems, such as depression disorders, personality disorders, and substance misuse (APA, 2013). Binge eating disorder is related to obesity (Bohon, 2019; Lee-Winn et al., 2016). Both binge eating and bulimia nervosa are studied most as eating disorders among obese people (Da Luz et al., 2018). In Malaysia, few population-based studies indicate the national prevalence of both binge eating and bulimia nervosa (Chan et al., 2020; Gan et al., 2018; Rasman et al., 2018); about 4.1% of secondary schools students in Selangor (Sandanasamy et al., 2015), roughly 35.4% of female adolescents (Soo et al., 2008), and nearly 10% of Malaysian university students (Yen et al., 2019) report binge eating; about 3% of Malaysians are estimated to have bulimia nervosa (Rasman et al., 2018).

Another non-negligible outcome of EE, Obesity (Bilici et al., 2020; Konttinen et al., 2019; Sze et al., 2021; Van Strien et al., 2016; Vittengl, 2018), has serious comorbidities, including cancer, angiocardiopathy, obstructive sleep apnea syndrome (Fruh et al., 2017), asthma, dental problems, sleeping problems (Pulgarón et al., 2013), and metabolic disorders (i.e., diabetes mellitus) (Eleazu et al., 2019). Compared to being underweight, being

overweight and obese is more related to deaths (World Health Organization (WHO), 2021). According to the data of the National Health and Morbidity Survey in different years, the prevalence of overweight and obesity among Malaysians aged 18 and over has kept rising from 1996 (21%) to 2019 (50.1%) (Institut Kesihatan Umum (IKU), 2006; IKU, 2011; IKU, 2015; IKU, 2019; Khambalia, 2010), shown in Appendix A.

In Malaysia, although there are studies involved in EE within five years (Cheng et al, 2021; Kristanto et al., 2016; Lim et al., 2020; Manaf et al., 2019; Rajib et al., 2019; Shukri & Mohd Noor, 2017; Tan et al., 2020; Tay et al., 2016), few findings indicate which group may have the highest prevalence of EE across Malaysia. EE is the most common eating style among 588 Malaysian Malays aged between 19 and 64 (Shukri & Mohd Noor, 2017). Thus, it is necessary to identify and focus on the group at the higher risk of EE for further research and intervention programs.

Adults are suggested at a higher risk of EE. EE is not prevalent in childhood (Jáuregui-Lobera et al., 2020; Sleddens et al., 2008; Van Strien & Oosterveld, 2008), usually emerges in puberty, and becomes common in adulthood (Bemanian et al., 2020; Debeuf et al., 2018; Geliebter et al., 2013; Madalı et al., 2021; Shriver et al., 2020; Vandewalle et al., 2014; Van Strien, 2018; Van Strien et al., 2010a; Van Strien et al., 2010b) perhaps because estrogen is activated since puberty (Klump, 2013; Klump et al., 2016). The high levels of hormones partly lead to the peak of EE scores; when the levels of estradiol and progesterone are both low or high, EE scores are higher than normal (Klump et al, 2014). As the levels of estradiol and progesterone are high and low respectively, EE scores are lowest (Klump et al., 2013).

Among adults, the prevalence of EE shows a downward trend when age increases

across countries (Bailly et al., 2012; Bemanian et al., 2020; Elran Barak et al., 2021; Elsner, 2002; Reicks et al., 2014; Samue & Cohen, 2018). Younger adults, like the ones aged between 18 and 39 (Bemanian et al., 2020) or between 21 and 39 (Elran Barak et al., 2021) or between 20 and 40 (Samue & Cohen, 2018), are reported at a higher risk of EE, compared to older adults. Besides, EE can be found among adults of both sexes and the prevalence of EE among females is usually higher than that among males in different countries (Bemanian et al., 2020; Guerrini Usubini et al., 2021; He et al, 2020; Hou et al., 2013; Madalı et al., 2021; Sze et al., 2021).

Taken together, young adults of both sexes may be the group at the higher risk of EE, compared to other groups in Malaysia. According to National Health and Morbidity Surveys (IKU, 2006; IKU, 2011; IKU, 2015; IKU, 2019), the minimum age for being adults in Malaysia is 18 (Khoo et al., 2021). In the Malaysian context, the maximum age for being young adults usually is 39 (Chan et al., 2017; Khoo et al., 2021; Ghaznavi et al., 2020; Shair et al., 2017; Tan et al, 2021) or 40 (Hickey & Mason, 2017; Mamun et al., 2020; Wan Puteh et al., 2018; Yunus, 2007). In short, Malaysians of both sexes aged between 18 and 40 are targeted in this study.

The focus of EE research is mainly on NE, whereas PE is also suggested to predict changes in eating behaviours, like overeating (Bongers et al., 2013; Cardi et al., 2015; Devonport et al., 2019; Evers et al., 2018; Manchón et al., 2021; Reichenberger et al, 2018; Sultson et al., 2017; Tchanturia et al., 2015). The most popular EE theories, like psychosomatic theory, learning-based EE theories, and physiological theories, just focus on the relationship between NE and EE, ignoring PE (Reichenberger et al., 2020). The lack of

focus on PE shapes a skewed understanding of the relationship between emotions and EE. Consequently, it needs to reduce the literature gap by studying and emphasizing PE.

An unclear indirect effect of emotion regulation (ER) on EE related to NE and PE exists. In terms of NE and EE, overeating and undereating due to NE is considered a problematic ER strategy (Herle et al., 2017; Macht & Simons, 2011) while justifications about how ER works on the inconsistent relationships between NE and EE lack; NE is stated to predict overeating positively (Annesi et al., 2016; Cardi et al., 2015; Devonport et al., 2019; Manchón et al., 2021; Reichenberger et al., 2020) and undereating positively (Macht, 2008; Reichenberger et al., 2020) while no relationship between NE and EE is reported (Reichenberger et al, 2018). Over PE and EE, although ER theories reveal EE may be a problematic strategy in response to PE (Brondino et al., 2020; Gross, 2014), justifications on how ER contributes to the inconsistent relationship between PE and EE lack; PE can decrease (Wedig & Nock, 2010) and increase (Bongers et al., 2013; Cardi et al., 2015; Devonport et al., 2019; Evers et al., 2018; Manchón et al., 2021; Reichenberger et al, 2018; Selby et al., 2019) food intake respectively. Hence, to address this literature gap, this study tries to explore how ER contributes to the connections between the two types of emotions (NE and PE) and emotional eating (overeating and undereating).

Research Questions

Q_1: Do negative emotions and positive emotions positively and significantly predict emotional eating (overeating and undereating)?

Q_2: Does emotion regulation work as a mediator in the correlation between the two types of emotions (negative emotions and positive emotions) and emotional eating

(overeating and undereating)?

Research Objectives

1. To explore the direct effects of negative emotions and positive emotions on emotional eating (overeating and undereating).

2. To investigate the indirect effect of emotion regulation on the correlations between the two types of emotions (negative emotions and positive emotions) and emotional eating (overeating and undereating).

Hypotheses

H_1: Negative emotions predict emotional eating positively.

H_2: Positive emotions predict emotional eating positively.

H_3: Negative emotions predict emotion regulation negatively.

H_4: Positive emotions predict emotion regulation positively.

H_5: Emotion regulation predicts emotional eating negatively.

H_6: The association between negative emotions and emotional eating is mediated by emotion regulation among Malaysians.

H_7: The association between positive emotions and emotional eating is mediated by emotion regulation among Malaysians.

Significance of Study

Theoretical Significance

Firstly, this study aims at attracting more attention to the relationship between PE and EE and tries to indicate the role of PE on EE. The mainstream of EE focuses on overeating in response to NE whereas research findings support PE can also predict overeating. The model

proposed in this study can avoid a skewed understanding of the relationship between different types of emotions and EE.

Secondly, this study is hoped to explain the inconsistent findings in the relationship between NE and EE by considering ER. There are respective studies that support NE to predict EE positively, or NE predicts undereating positively, or NE cannot predict any changes in eating behaviours. Although EE is commonly considered as a problematic ER strategy, there is a lack of explanations on how ER works on the complex relationship between NE and EE. To contribute to this knowledge gap, this model proposes that ER works as a mediator in the connection between NE and the two types of eating behaviours (overeating and undereating).

Thirdly, this study tries to indicate the indirect effect of ER in the connection between PE and EE, which is not studied much. ER works as a mediator in the link of NE and EE, which is supported by previous research whereas few research findings of EE discuss the effect of EE on the relationship between PE and EE. To contribute to this knowledge gap, this model provides new insight into ER and regards ER as a mediator in the link between PE and the two types of eating behaviours (overeating and undereating).

On top of that, this study suggests enriching the traditional definition of EE to correspond to research findings and avoid a limited perception of EE. The traditional definition of EE merely indicates that NE predicts overeating whereas the research findings show complex relationships between the two types of emotions (NE and PE) and the two types of changes in eating behaviours (overeating and undereating). Both NE and PE can predict overeating or undereating. A new defined EE in this study can be used to reveal the

link between emotions and eating behaviours comprehensively and precisely.

Practical Significance

This study can benefit the people who suffer from the serious outcomes of EE (i.e., binge eating disorder, bulimia nervosa, and obesity) and the Malaysian society in which the half population are overweight and obese. Useful information about how to prevent EE for relevant professions is provided in this study. This model indicates that ER is key to controlling EE. Relevant intervention programs on ER should be considered to manage EE and reduce the possibility of suffering from the harmful effects of EE.

Conceptual Definitions

Negative Emotions

Negative Emotions (NE) refer to anxiety, agitation, depression, loneliness, unhappiness, worry, and so on (Henderson et al., 2019; Serin et al., 2018).

Positive Emotions

Positive Emotions (PE) refer to joy, interest, contentment, love and other pleasant responses that are situational (Lopez & Snyder, 2009).

Emotion Regulation

Emotion Regulation (ER) describes how people modify a part or parts of emotional response; ER affects various domains of emotions, such as the type, state, occurrence time, duration, and expression (Peña-Sarrionandia et al., 2015). The process of ER can be conscious, effortful, automatic, or unconscious (Mauss et al., 2006). In addition, to express the lack and deficits of ER (Carpenter & Trull, 2013), Emotion dysregulation (ED), also known as difficulties in emotion regulation (DER) (Gratz & Roemer, 2004), is used in this

study.

Emotional Eating

In this study, emotional eating (EE) means people overeat or undereat due to their NE and PE.

Operational Definitions

Negative Emotions and Positive Emotions

To reflect NE and PE, the English version of Positive and Negative Effect Schedule (PANAS) (Watson & Clark, 1988) is applied. This scale aims at assessing emotions related to events in life at different times and durations (i.e., now, yesterday, weekly, and yearly) (Tran, 2013). This 5-point Likert scale has ten items for NE and PE respectively (Watson & Clark, 1988).

Emotion Regulation

To reveal the ability of ER, the English version of Difficulties in Emotion Regulation Scale Short Form (DERS-SF) is utilized; it can measure adults' problems in ER (Kaufman et al., 2016). In this 5-point Likert scale, there are six subscales and each subscale has three items (Gouveia et al., 2019).

Emotional Eating

To identify the level of EE, the subscale for EE in the English version of the Dutch Eating Behavior Questionnaire (DEBQ) is selected (Van Strien, 2002); the 5-point Likert subscale for EE in DEBQ covers two factors, namely the eating behaviours related to diffuse and labelled emotions, and consist of 13 items (Van Strien et al., 1986).

Chapter II

Literature Review

Theoretical Framework

The theory of a five-way model shown in Appendix C developed by Macht (2008) emphasizes and describes the effects of both different emotions and individual differences on eating behaviours; different emotions and individual differences make important contributions to the changes in eating behaviours. The changes are divided into five ways: (1) the emotions that are directly triggered and provoked by food can decide individual choices in food; (2) when emotions are intense and extreme, undereating shows up as eating cannot be compatible with high levels of emotions, resulting in the suppression in eating; (3) both NE and PE can dispute and impair restrained eaters' persistence on their restrained eating and promote disinhibition in eating; (4) emotional eaters are prone to have unhealthy but tasty food (i.e., sweet dessert and high -calorie fast food) to regulate NE; (5) for the eaters who are not restrained eaters or emotional eaters, emotions can drive eating behaviours to fit the features of emotions in cognitive and motivational level (Macht, 2008). In other words, Macht (2008) argues that no changes in eating behaviours would happen if all the conditions below are met: (1) emotions are not related to food; (2) emotions are not intense; (3) eating patterns are not related to emotions among restrained eaters and emotional eaters; (4) emotions fail in affecting eating to match the corresponding features of emotions in cognition or motivation for normal eaters.

In way 1, the emotions that are paired with certain food decide individual selections in food (Macht, 2008). Similar to other primate species (Kano et al., 2018), based on

physiological reactions to NE and PE, humans tend to eat more when having mouth-watering food induces PE (Devonport et al., 2019); when having unpalatable, insipid, and bitter food that makes people feel negative emotions, people tend to refuse to eat (Mennella & Bobowski, 2015). Emotions attached to food can influence eating behaviours (Wehling & Lusher, 2019).

In way 2, similar to the findings from animal experimentation (McMillan, 2013), humans tend to eat less when feeling intense emotions; for instance, long-term stress from family predicts being underweight positively for both children and adults (Stenhammar et al., 2010). The physical and behavioural consequences of intense emotions reduce eating motivation naturally (Macht, 2008); for example, when people face a task, a problem, or a situation, NE is related to the motivation to drive people to defend themselves by flight or fight (Yamaguchi & Chen, 2019), resulting in a decrease in the motivation to eat (Macht, 2008).

Way 3 and way 4 both describe that different emotions and habitual eating patterns together decide the changes in eating behaviours among restrained eaters and emotional eaters; the mental controls on eating behaviours that are interfered with NE and PE are focused on in way 3 and way 4 (Macht, 2008). In way 3, according to the theory of restrained and unrestrained eating (Herman & Mack, 1975), NE damage or weaken the ability to keep restrained eating as restrained eaters feel they need to tackle the factors contributing to NE prior to restrained eating, resulting in overeating (Herman & Mack, 1975); similarly, due to PE, the mental control on restrained eating is disturbed and then promotes overeating (Evers et al., 2018). In way 4, according to EE theory, eating is used to regulate NE which

eventually contributes to obesity; the tendency to eat is assumed primarily to raise due to NE, resulting in the following eating behaviours (Macht & Simons, 2011). Similar to the findings from animal research (Delius et al., 1976), to reduce NE, displacement behaviours (humans' eating after NE) may be the result of the changes in body fluid which are caused by NE (Delius, 1970; Delius, 1967).

Way 5 supports that emotions can influence the changes in eating behaviours to match the characteristics of emotions in the cognitive and motivational level among normal eaters (Macht, 2008). According to the mood-congruent effect (Lin et al., 2021), Macht (2008) thinks that different emotions have different features to drive people to overeat or undereat. For instance, when people feel lonely, they may have no changes in eating; when feeling happy, people tend to overeat; when NE (i.e., fear and anger) come, undereating is more likely to occur (Alalwan et al., 2019).

The application of the five-way model is diversified as it provides rationales to explain those inconsistent findings on the connection between the two types of emotions (NE and PE) and the two types of eating behaviours (overeating and undereating) by considering both the features of emotions and individuals. The potential mechanism of eating behaviours related to emotions and individual differences in this five-way framework may explain why NE predicted overeating (Annesi et al., 2016; Devonport et al., 2019; Manchón et al., 2021; Reichenberger et al., 2020), undereating (Macht, 2008; Reichenberger et al., 2020), and no changes in eating (Reichenberger et al, 2018), as well as why PE can predict overeating (Bongers et al., 2013; Devonport et al., 2019; Evers et al., 2018; Manchón et al., 2021; Reichenberger et al, 2018; Selby et al., 2019) and undereating (Wedig & Nock, 2010).

In this five-way model, ER plays a significant role in the changes of eating behaviours related to emotions and individual differences. According to this five-way model, overeating or undereating due to emotions can be explained in three types: (1) emotions interfere in eating, resulting in overeating or undereating; (2) overeating or undereating happens as a by-product of emotions; (3) overeating or undereating occurs to regulate emotions and such two types of eating behaviours regulate corresponding emotions in return (Macht, 2008).

Over type 1, namely the interference of emotions on eating behaviours, Macht (2008) stated that way 2 and way 3 were examples: in way 2, extreme emotions predicted behavioural and physical factors that intervened in eating; for instance, when people are extremely sad, their behaviours, like undereating, aim at withdrawing from the external world, rather than eating (interacting with the environment). Way 3 show that overeating is the failure in processing emotions for restrained eaters; enough mental ability is required to persist in restrained eating; when restrained eaters process emotions, they have to pay attention to emotions, which works as a distractor to limit their mental ability on keeping restrained eating; that is, if people use higher levels of mental ability to hold restrained eating, they are more likely to overeat due to the limited attention on restrained eating when they are distracted (Macht, 2008).

In terms of type 2 that discusses the by-product of emotions related to eating behaviours, way 5 sets an example; similar to the mood-congruent effect (Lin et al., 2021), emotions can also have certain characteristics related to eating behaviours and drive people to behave so (Macht, 2008). For example, fear reduces the motivation of eating while happiness promotes eating behaviours (Alalwan et al., 2019).

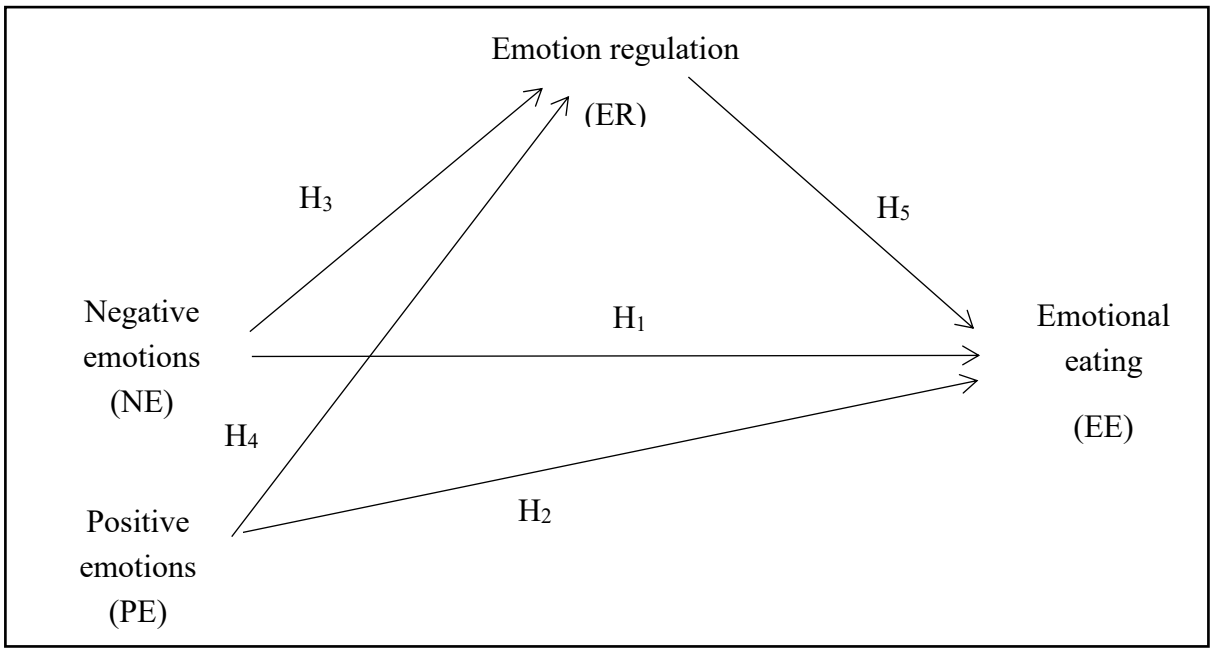
When it comes to type 3 (the effects of ER process), way 1 and way 4 are examples; in way 1, due to the physiological reactions to PE and NE, people tend to eat more when having delicious food makes them feel PE and eat less when eating terrible food makes experience NE respectively; the emotions related to food drive people to select the food that reduces NE and promote PE; consequently, emotions can decide what to eat significantly (Macht, 2008). In way 4, according to EE theory (Macht & Simons, 2011), NE evokes overeating and such overeating reduces NE; then eating after NE becomes a negative reinforcer and an ER strategy to tackle NE (Booth, 1994; Thayer, 1989, 2001).

In a word, the three types of changes in eating behaviours in the five-way model reveal the potential mediating role of ER in the model that involved NE, PE, and EE (overeating and undereating) in this study.

Conceptual Framework

Figure 2.1

The Conceptual Framework of Present Study



In the present study, NE and PE are positive predictors of EE and negative predictors of ER while ER is the negative predictor of EE. ER is hypothesized as a mediator in the link between the two types of emotions (NE and PE) and the two types of EE (overeating and undereating).

The five-way model (Macht, 2008) is applied in this study and it is a useful theoretical framework to support the connections among NE, PE, ER, and EE, as well as the indirect effect of ER. According to different emotions and different individual features in the five-way model, both overeating or undereating can occur due to NE and PE through ER (Macht, 2008). This five-way model not only explains previous research findings on the link between NE or PE and EE but also suggests an important and mediating role of ER.

This study aims at discovering the associations among NE, PE, ER (or ED), and EE, as well as the indirect effect of ER. NE includes guilt, depression, sadness, worry, and so on which can constantly prompt eating behaviours beyond the scope of nutritional recommendations (Devonport et al., 2017); that is, NE predicts EE (Macht & Mueller, 2007). PE refer to individual temporary and positive feelings, such as being enthusiastic, active, and alert (Lopez & Snyder, 2009); PE predict EE significantly (Barends et al., 2013; Devonport et al., 2017). ER described the process that people control or monitor their emotional states (Peña-Sarrionandia et al., 2015); ER has a negative effect on EE (Favieri et.al., 2021); different people have different ER strategies which predict different eating behaviours (Evers et al., 2013). ED stands for the deficits in the abilities of ER (Carpenter & Trull, 2013); NE predict ED positively (Michopoulos et al., 2015; Khodabakhsh et al., 2015; Selby et al., 2019; Usubini et.al., 2021). EE, in this study, means people overeat or undereat due to their NE and

PE. The indirect effect (mediation) of ER on the connection between NE and EE, as well as between PE and EE, is supported by a similar mediation model of ER in the connection between psychological distress and EE (Guerrini Usubini et al., 2021).

The current study tries to contribute to the literature gaps, namely (1) the lack of focus on PE in EE studies, (2) the unclear indirect effect of ER on EE related to NE, (3) the unclear indirect effect of ER on PE. On top of that, the limitations in the definition of EE is considered in this study as well. To address these problems and support the model proposed in this study, the five-way model is applied as the theoretical framework and relevant research findings are discussed below.

Conceptualizing on Negative Emotions

Pam (2013) defined NE as unpleasant emotions, which can cause personal negative effects on events or people. In other words, NE are described as any feeling that causes sadness and misery. NE reflect the tendency to experience unpleasant emotional states, including mood and feelings, such as anger, fear, anxiety, disgrace, and disgust (Watson, Clark, & Tellegen, 1988). It can be seen that the NE variable in the five-way model are very useful in measuring the eating behaviour which negatively reinforced a particular behaviour. It also can measure the behaviour of food intake which impair cognitive eating control. NE produces a physiological sensation similar to the feeling of fullness where we naturally expect that our appetite and food intake will decrease under this sensation (Wing et al., 1990).

Conceptualizing on Positive Emotions

PE are one of the variables in the five-way model. The variable includes the measures of food intake behaviour PE under the impairment of cognitive control. Food enjoyment and

healthy food consumption are increased by PE (Macht et al., 2002). Brodino et al. (2020) defined high PE as a state of energy, engrossed, and enjoyable participation. In this case, a person feels passionate, enthusiastic, and aware. When people are having PE, it might lead to having a pleasant situational response in behaving certain actions.

Conceptualizing on Emotion Regulation

ER refers to processes in which people feel, control, and express their emotions; there are three main dimensions of ER, namely goals, strategies, and outcomes; goals mean what people are attempting to achieve during ER process; strategies describe the different processes that different people experience and utilize to make their ER goals come true; outcomes include various features of emotions which vary across individuals, such as the onset, duration, behavioural response of joy (Gross, 2013). In addition, ER goals aim at increasing happiness or reducing unhappiness by matching certain norms (Sheldon et al., 2011). On top of that, ED is internally consistent with a variety of psychopathology criteria aspects (Bradley et al., 2011).

Conceptualizing on Emotional Eating

EE traditionally describes that people overeat for their NE, rather than hunger (Frayn et al., 2018; Huang et al., 2021; Konttinen et al., 2019; Reichenberger et al., 2020; Van Strien, 2018). This kind of definition leads to a skewed understanding of eating behaviours related to emotions. In fact, both NE and PE can increase or decrease food intake; that is, the two types of emotions can predict both overeating and undereating (Annesi et al., 2016; Cardi et al., 2015; Devonport et al., 2019; Herle et al., 2017; Konttinen et al., 2019; Macht, 2008; Manchón et al., 2021; Reichenberger et al., 2020). Hence, the traditional definition of EE,

overeating due to NE, is not enough to reflect all the non-neglectable changes in eating behaviours caused by NE and PE. Instead, in this study, EE stands for overeating or undereating related to both NE and PE.

Negative Emotions and Emotional Eating

NE are one of the predictors that affect people to engage in EE (Schnepper et al., 2020; Devonport et al., 2017; Cardi et al., 2015). When people live and deal with NE (i.e., depression), eating habits tend to show an increase in appetite and an unhealthy preference in food selection (Devonport et al., 2017). Bekker, et al. (2003) claimed that the negative effects manipulated by achievement-related failure and success resulted in a statistically significantly higher self-perceived emotional diet compared to the neutral effect. So, food desires were linked to overeating in response to a bad mood. Hence, it can be noticed that individuals overeat in order to cope with negative feelings. NE enhance food consumption (Canetty, 2002).

There are individual differences in EE, according to Sims et al. (2008) who discovered that perceived stress could account for a higher percentage of variance in EE among overweight and obese participants than in the general sample. These perceptions are also determined by physical activity such as sex, obese or overweight. For example, many of the negative moods such as anxiety, feeling tension, tiredness are associated with EE. Therefore, food is utilized as a form of self-treatment and emotional management. The difference between men and women lies in the specific emotions associated with EE.

According to the theory of the five-way model (Macht, 2008), overeating due to NE (Annesi et al., 2016; Cardi et al., 2015; Devonport et al., 2019; Manchón et al., 2021;

Reichenberger et al., 2020) can be explained by way 1, way 3, way 4, and way 5; Way 2 and way 5 might support the undereating related to NE (Reichenberger et al., 2020). For instance, when non-smokers and smokers face high levels of stress, they tend to overeat and undereat respectively as non-smokers overeat to reduce stress and smokers smoke to tackle stress instead of eating (Meule et al., 2018). In this case of non-smokers: there are possibilities that wonderful food makes people eat more as they feel PE when eating nice food in ER process (way 1); if those non-smokers are restrained eaters, they may lack focus or mental ability to keep restrained eating in order to tackle stress primarily (way 3); if those non-smokers are emotional eaters, they may utilize eating to decrease stress (way 4); stress may predict overeating as stress has such cognitive and motivational characteristics for those non-smokers (way 5). In the case of smokers: from the view of way 2, the natural reactions to the high levels of stress in physical and behavioural levels result in low motivation to eat; way 5 also provides a rationale that undereating may occur as the by-product of high levels of stress, matching the features of NE in the cognitive and motivational level.

When the five ways (Macht, 2008) cannot be met, no changes in eating may occur when people feel NE. For example, when people feel lonely, they may have no changes in eating (Alalwan et al., 2019).

Positive Emotions and Emotional Eating

Previous studies have found that PE have a greater effect on EE (Patel & Schlundt, 2001; Manchón et al., 2021; Bongers et al., 2016). Bongers et al. (2016) claim that people tend to overeat due to PE. The higher scores in implicit association tests, the more likelihood of overeating after PE (Bongers et al, 2016). This was supported by Patel and Schlundt

(2001), who proposed the impact of PE on rising food intake. Therefore, research is beginning to recognize the role of PE in increasing food intake. PE may drive people to eat more than usual in social settings as it may lead them to feel satisfied and enhance their social connection as well (Schlundt et al., 1988). In the five-way model, the consequences of way 1, way 3, and way 5 can be overeating; that is, PE related to food, the distraction on controlling restrained eating due to PE, and the cognitive and motivational characteristics of PE can evoke overeating (Macht, 2008).

In a positive emotional state, the motivation to eat should be increased, and research emphasizes that positive feelings towards food are more likely to experience during the act of eating rather than in the motivation to eat (Macht & Simons, 2011). In other words, PE enhance food satisfaction and consumption of foods. (Macht & Simons, 2000). To put it another way, pleasant emotions boost food satisfaction and consumption. This point is consistent with way 1 in the five-way model (Macht, 2008): PE that people feel when eating satisfactory food drive people to eat more.

Negative Emotions and Emotion Regulation

Several studies had found that negative emotion was a predictor that affects ER (Bradley et al., 2011; Burr et al., 2021; Donahue et al., 2014; Tull et al., 2007). The possible explanation might be once people possess a negative emotion towards certain events, there is a higher possibility for them to have difficulty in regulating their emotions. According to Donahue et al. (2014), they proposed ED is a plausible mechanism through which NE have an effect on psychopathology. The findings suggest that negative affect may be more strongly connected to some forms of psychopathology compared to the difficulty in regulating

emotion.

Bradley et al. (2011) mentioned that when people live in terrible circumstances and are highly responsive to stimulations with NE, they are more likely to experience ED. That is, the chance for people to be exposed to the difficulty of regulating emotion is greater when they have experienced unfavourable or unpleasant events accompanied by negative emotion. The result was that difficulty in ER has a positive impact on NE.

In the five-way model, all the five ways can be involved NE and cannot work without ER process: in way 1, NE that people feel when eating terrible food make people avoid eating; ER process takes a role in the pairing terrible food with NE; in way 2, the consequences of processing intense NE reduce motivation to eat; in way 3, processing NE grabs attention and requires mental ability, leading to losing control of on restrained eating; in way 4, emotional eaters regard EE as an ER strategy to reduce NE; in way 5, ER works in the process that makes people eat to fit the features of NE (Macht, 2008).

Positive Emotions and Emotion Regulation

PE are involved in ER, though the frequency of this involvement is fewer than that of NE; ER strategies are utilized to adjust the way that individuals go through and express PE; for instance, some people may prefer finding various positive aspects among unhappy incidents, focusing on and tackling essential problems that produce NE, and filling positive thoughts with usual moments (Tugade & Fredrickson, 2007).

Positive emotion plays a role in manipulating people to control their emotional states. According to Brondino et al. (2020), certain ER strategies, like reappraisal, tends to maintain PE, resulting in a better life and higher well-being whereas some ER strategy (i.e,

suppression) work in an opposite way; different people, different ER strategies. According to Quoidbach et al. (2020), PE can be express through ER strategies like behavioral display, it is prolonging and increasing positive emotional experiences with non-verbal behaviours. Previous studies suggest that the intensity and frequency of PE linked with the ER strategies like efforts to be present, people deliberately direct attention to the present pleasant experience (Bryant, 2003; Erisman et al., 2010).

In the five-way model, way 1, way 2, way 3, and way 5 can be involved PE and cannot work without ER process: in way 1, PE that people feel when eating amazing food make people overeat; ER process takes a role in the pairing nice food with PE; in way 2, the consequences of processing intense PE reduce motivation to eat; in way 3, processing PE grabs attention and requires mental ability, leading to losing control of on restrained eating; in way 5, ER works in the process that makes people eat to fit the features of PE (Macht, 2008).

Emotion Regulation and Emotional Eating

There is a negative connection between ER and overeating (Goossens et al., 2016; Wong et al., 2014). Michopoulos et al. (2015) mentioned that ED should be focused in terms of EE as people face difficulty in ER strategies contributing to enhanced food intake (Evers et al., 2013). According to Laghi et al. (2018), people with greater emotional capability are related to more adaptive eating patterns. Similarly, ED predicts maladaptive eating patterns (Czaja et al., 2009; Favieri et al., 2021; Isasi et al., 2013; Lu et al.,2016; Mills et al., 2014; Minnich et al., 2017). DER reveal the lack of ability and attention on NE and predict problematic overeating which contributes to obesity (Favieri et al., 2021).

In the five-way model, ER is essential for EE as all the three types of changes in

eating behaviours are involved in ER process; in type 1, the consequences of ER process interfere in eating, resulting in overeating or undereating; in type 2, different emotions through ER process shapes overeating or undereating as corresponding by-products; in type 3, eating works as ER strategies to regulate NE and promote PE (Macht, 2008).

Negative Emotions, Emotion Regulation, and Emotional Eating

ER is related to EE related to NE (Braden et al., 2018; Evers et al., 2013). Braden et al. (2018) identified that ED predicts EE related to NE negatively. When people perceive stress increases negative-focused cognitive ER, which eventually increases EE (Huang et al., 2020). Similarly, ED works as a mediator in the link between psychological distress and EE (Usubini et al., 2021). Therefore, it can be seen that the existence of negative emotion towards emotional dysregulation is very important as it will influence people engaging in EE.

According to the five-way model, emotional eaters aim at reducing NE by overeating (Macht, 2017). EE is individually developed when they have the drive to eat to cope with NE. When people have the drive to eat to cope with negative feelings, they develop EE. ED predicts problematic eating behaviours (Sohrabi, 2015) and overeating (Lavender et al., 2010; Sim et al., 2005).

According to Khodapanah et al. (2018), maladaptive ER correlates with eating behaviours. ER plays an important role in predicting eating behaviours especially in overweight and obese patients. Several previous findings also suggest that maladaptive ER strategies have a relationship with EE (Loman et al., 2010; Jaffe et al., 2009; Morris et al., 2007). Therefore, people with difficulty in ER can develop NE which contribute to EE behaviours.

Positive Emotion, Emotion Regulation, and Emotional Eating

According to Selby et al. (2019), positive ED in eating can take various forms, leading to the lack of positive emotional experience or maladaptive elevations in positive emotion. Hence, PE may induce and maintain eating disorders. In other words, positive emotion impact involves disinhibition of eating control. This was suggested by Canett et al. (2002), people with PE tend to overeat based on the associative learning mechanism. So, PE is related to consuming more food.

The five-way model emphasizes PE can increase food intake in terms of restrained eating habits (Macht, 2008). Eating too much food due to PE may include some characteristics of ED (Sultson et al., 2017). When people have less ED, PE turns harder to predict eating disorders (Braden et al., 2018).

Chapter III

Methodology

Research Design

The present study applied a cross-sectional study design to understand (1) the effect of positive and negative emotions on emotional eating and (2) the mediation role of emotion regulation in the relationships between (1) negative emotion with emotional eating and (2) positive emotion with emotional eating among Malaysians. It was a research design that is observational in nature. Participants in a cross-sectional study were specifically selected to study both independent and dependent variables simultaneously based on the pre-set inclusion and exclusion criteria (Setia, 2016).

A cross-sectional study design was selected for this study due to several reasons. One of the reasons was that this research design provides an opportunity for any study to be able to assess the relationship between different variables (Institute for Work & Health, 2015). This proved to be suitable for this study as the aim was to study the relationship between emotion regulation, positive emotion, and negative emotion with emotional eating. Furthermore, the cross-sectional design allowed a study to be done efficiently and affordably (Setia, 2016). This was because data collection in this design usually used self-report surveys that allow the researchers to collect a large amount of data more conveniently and less expensively. For this reason, it was helpful to expedite the process of this study due to the limited time given to collect the necessary data. Furthermore, it allowed a study to understand the various risk factors and multiple outcomes of a study. A cross-sectional study was also suitable for examining a particular behaviour in society (Sedgwick, 2014). This proved to be

useful for this study to gain extra insight and additional information on how non-targeted variables such as genders and ages influenced the relationship between the targeted variables.

Quantitative research was applied for data collection through a self-report online survey that was distributed to the participants. It involved gathering and examining numerical data which can be turned into descriptive or inferential statistics during data analysis (McLeod, 2019). A self-report online survey was used as it has been proven to have a higher response rate than traditional surveys (Saleh & Bista, 2017). By using online software to generate an online survey, a study can be done more conveniently and efficiently. One of the advantages of an online survey was that it allowed the researchers to effectively find the required participants through the Internet. This was because researchers can easily take advantage of the Internet and numerous sites on it to find participants who fit a particular personality, perception, or problem (Wright, 2017). This fits the study's goal of recruiting participants based on several pre-set inclusion criteria in which the researchers recruited participants through social media sites like Facebook, Instagram, and WhatsApp.

Moreover, an online survey allowed researchers to gain access to a large pool of samples which can save a lot of time and effort in conducting a study as researchers would be able to recruit participants from around the country or from all corners of the world. An online survey was also cheaper as the cost for preparation and administration can be kept at a minimum. This was because an online survey nowadays can be created using various survey software which kept the cost of preparation at a minimum. In addition, survey software also helped to reduce the cost of administration as online surveys were self-reported as well as it does not require the printing of survey forms and mailing of the survey to the targeted

participants (Minnaar & Heystek, 2016). Other than that, an online survey also helped a study to obtain more accurate data. This was because it helps participants protect their identity which leads them to be more truthful with their answers when they cannot be identified (Rice et al, 2017). Additionally, an online survey has been commonly used in studies that focused on emotional eating (e.g., Al-Musharaf, 2020; Bennett et al., 2013; Cecchetto et al., 2021; Strodl et al, 2020; Vandewalle et al., 2016). For instance, a study done on a topic related to emotional eating used Qualtrics to collect data from their participants (Strodl et al, 2020).

Sampling Method

This study applied non-probability sampling which was also known as a judgement or non-random sampling. This type of sampling involved a selection of participants through a process that does not include a random selection of participants. Instead, the researchers have chosen the participants based on their perception of the participants' unique characteristics. A non-probability sampling method was chosen for several reasons, one of which was it helped this study to be able to be conducted effectively and efficiently as it was a method that was inexpensive and convenient in gathering participants that were needed for a study. Furthermore, this type of sampling allowed a study to build a solid foundation for further research in the future for an issue to be studied more in-depth (Alvi, 2016).

The non-probability sampling chosen for this study was purposive sampling. It was also known as judgmental, selective, or subjective sampling in which the selection of the participants relied on the subjective judgement of the researchers (Sharma, 2017). Purposive sampling was chosen as it allowed this study to find participants that fit the objectives of this study in an efficient manner (Campbell et al., 2020). There were also several studies

involving emotional eating using purposive sampling to recruit their participants (e.g., Annesi et al., 2016; Escandón-Nagel et al., 2018; Frayn et al., 2018; Michopoulos et al., 2015). For example, a past study on emotional eating has used purposive sampling to only recruit participants who got a score of 3.25 and above on the Dutch Eating Behavior Questionnaire (DEBQ) subscale for emotional eating (Frayn et al., 2018). For this study, participants were recruited based on several inclusion criteria such as being a Malaysian aged between 18 to 40 years old.

Sample Size

The effect size and minimum sample size were calculated using statistical calculator software developed by Soper (2021). On top of that, the minimum sample size was also calculated using G*Power software version 3.1.9.7 which was developed by Erdfelder et al (1996). It included four components in the input parameters which included the effect size, error probability of alpha, statistical power, and the number of predictors. The effect size is defined as the extent of the dissimilarity between different groups (Sullivan & Feinn, 2012). Error probability of alpha is defined as the probability of committing a Type I error which is an error in which the researcher mistakenly rejects a true null hypothesis (McLeod, 2019). Statistical power referred to the likelihood that a study can detect the actual effect and differences between interventions (Sullivan & Feinn, 2012). By entering the information in the input parameters, the minimum sample size along with other information such as numerator degree of freedom and denominator degree of freedom were generated in the output parameters.

The R-squared (R^2) of the three predictors was calculated and the R^2 values generated

were 0.273, 0.035, and 0.607 for an average value of 0.305. The R^2 value of 0.305 was key into the effect size calculator and it generated an effect size of 0.439. This study relied on classification by Cohen in which effect size was categorized as small ($f^2 = 0.02$), medium ($f^2 = 0.15$), and large ($f^2 \geq 0.35$) (Cohen, 1988). The large effect size of 0.439, the statistical power of 0.95, an alpha level of error probability of 0.05, and three predictors were key into two different sample size calculators to get a more reliable minimum sample size. The minimum sample size generated by both software was 44 respondents. However, the sample size was raised by 15% as recommended to safeguard against problematic data that reflect inaccurate assumptions (Fairbairn & Kessler, 2015). Therefore, the minimum sample size was raised to 51 participants.

Participants

The targeted samples were Malaysians aged between 18 to 40 years old. In addition, non-Malaysians who are living in either Malaysia or abroad were not targeted. Similarly, Malaysians aged below 18 years old or above 40 years old were not targeted. Lastly, both males and females were targeted for this study to achieve the objectives of this study. Participants who fulfilled these criteria were targeted as they were at a higher risk to suffer from emotional eating.

Location

The current study was conducted with samples across Malaysia. A survey was created with the necessary questions to fulfil the objectives of this study through Qualtrics. Then, the survey link was distributed to relevant participants through social media mediums such as WhatsApp, Instagram, WeChat, and Messenger. In addition to that, the researchers also

enlisted students and lecturers from Universiti Tunku Abdul Rahman to help circulate the survey link.

Procedures

At first, the researchers applied and requested ethical clearance to seek permission from the UTAR Scientific and Ethical Review Committee and relevant parties to involve human subjects to achieve the objectives of this study. The ethical clearance was approved under the code, U/SERC/282/2021 (refer to Appendix O). After that, the online survey was generated by using Qualtrics which included information such as informed consent to get permission from the participants to collect their data and notified them about the purposes of this study. It was followed up by demographic questions, and scales for emotional eating, positive emotion, negative emotion, and emotion regulation.

The online survey was circulated by the researchers to individuals who meet the inclusion criteria through social media sites such as Facebook, Instagram, and WhatsApp. In addition, the researchers distributed the online survey to potential students who enrolled in various courses. Furthermore, the participants were encouraged to distribute the link to the online survey to others who met the requirements. After collecting a decent amount of data, the data cleaning and data analysis process were conducted using version 25 of the Statistical Package for Social Sciences (SPSS).

Instruments

Emotional Eating

The Dutch Eating Behavior Questionnaire (DEBQ) was used to measure the prevalence of emotional eating among the participants. The scale was developed by van

Strien et al. (1986) to examine restrained eating, emotional eating, and external eating among obese people. It has three subscales for restrained eating, emotional eating, and external eating for a total of 33 items. For the purpose of this study, only the subscale of emotional eating which contained 13 items was used (van Strien et al., 1986). The items were rated with a 5-point Likert scale (1 = *never*, 5 = *very often*). This meant that each question could have a scoring range of between 1 to 5 for a total scoring range of between 13 to 65. A higher score indicated a higher tendency to engage in emotional eating (Domoff, 2015). The scale was tested for its reliability and achieved a Cronbach's alpha value of 0.94 (van Strien et al., 1986). In this study, the scale achieved a high Cronbach's alpha value of .93.

Examples of some of the items:

1. Do you have the desire to eat when you are irritated?
2. Do you have a desire to eat when you have nothing to do?
3. Do you have a desire to eat when you are depressed or discouraged?

Positive Emotions and Negative Emotions

The positive and negative emotions of the participants were measured using the Positive and Negative Effect Schedule (PANAS). This scale was developed by Watson and Clark (1988) as a shorter scale to measure positive and negative affect which are the two main emotions of humans. It has two subscales for both positive affect and negative effect. Each subscale has ten items rated with a 5-point Likert scale (1 = *very slightly or not at all*, 5 = *extremely*) (Watson & Clark, 1988). The scoring range for each subscale ranged from 10 to 50. The score of each subscale needed to be totaled up respectively to get the final score. The higher the score in each subscale, the more likely a person was to experience positive or

negative emotions (Serafini et al., 2016). Moreover, the author also provided flexibility in terms of the time frame as there are a total of seven time frames that can be included in the instruction. The examples included “moment” which described you feel this way right now, that is, at the present moment, “today” which described you have felt this way today, and “past few days” which described you have felt this way during the past few days. The average Cronbach’s alpha value of the positive affect subscale was 0.88 while the average Cronbach’s alpha value for the negative affect subscale was 0.855 (Watson & Clark, 1988). Both subscales were tested for their reliability in this study and achieved a high Cronbach’s alpha value of .85 for the positive affect subscale and .88 for the negative affect subscale.

Examples of some of the positive affect items:

1. Interested
2. Excited
3. Strong

Examples of some of the negative affect items:

1. Distressed
2. Upset
3. Guilt

Emotion Regulation

Difficulties in Emotion Regulation Scale Short Form (DERS-SF) was used to measure the ability of the participants to regulate their emotions. It was developed by Kaufman et al. (2016) as a shorter version of the original scale to measure the deficit of emotion regulation among adolescents and adults. It contained six subscales that include subscales for

nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Each subscale consists of three items each for a total of eighteen items across the six subscales in which the three items under the lack of emotional awareness are reverse items (Kaufman et al., 2016). The eighteen items were rated with a 5-point Likert scale (1 = *almost never*, 5 = *almost always*). The greater the score, the higher the prevalence of difficulties in regulating one's emotions. The total score after summing up ranges from 18 to 108. The average Cronbach's alpha value of this scale was more than 0.89 (Gouveia et al., 2019). The reliability of this scale was tested in the study and was found to have high internal reliability with a Cronbach's alpha value of .89.

Examples of some of the items:

1. I pay attention to how I feel
2. I have no idea how I am feeling
3. I have difficulty making sense out of my feelings

Data Analyses

Data Cleaning

Data cleaning is a process with the purpose to enhance data quality by recognizing and eliminating errors and inaccuracy in the data. This is to ensure that the results produced by the data analysis process do not encounter any difficulties associated with low-quality data and obtain data that provide as precise as possible of the depiction of the population (Ridzuan & Wan Zainon, 2019). Before data analysis, data cleaning was carried out by examining for input error, irrelevant data, missing data, and straight-lining data. The input error was examined by comparing and cross-checking a random set of data from the recorded data in

Qualtrics with the same set of data in the downloaded file from Qualtrics. The data were further checked for irrelevant data to remove responses that did not meet the requirement of this study. Missing data were identified and removed to improve the statistical power of this study, reduce bias, and misrepresentation of the responses to ensure an accurate data analysis (Kang, 2013). Data that falls under the category of straight-lining data which are similar or nearly similar responses within the same response scale was also removed to ensure the accuracy of the data (Kim et al., 2019).

Descriptive Statistics

The descriptive statistics consisted of three parts in which the first was the descriptive statistics of demographic variables which included information such as the respondents' age, sex, race, marital status, and employment status. All of the demographic variables were examined using frequency and percentage while mean and standard deviation were also used to examine the age and number of family members. The second part was the descriptive statistics of the main variables of this study such as negative emotions, positive emotions, emotion regulation, and emotional eating. The main variables were examined using different ways such as frequency, percentage, mean, median, and standard deviation. The third part was the descriptive statistics of demographic variables with emotional eating scores which compare the emotional eating score of the respondents with their demographic variables.

Normality Test

The assumptions of normality of the data collected were examined and checked. This was conducted to ensure that the sample that was chosen for this study was from a normally distributed population (Tsagris & Pandis, 2021). The normality assumptions were examined through histogram, Quantile-Quantile plot, Skewness test, Kurtosis test, and Kolmogorov

Smirnov test.

Histogram. It is a graph that provides a graphical representation of the data collected and it contains the observed values pitted against their frequency. In a study, normally distributed data will have a bell-shaped curve in the plotted graph (Das & Imon, 2016).

Quantile-Quantile Plot. It is a way that provides a graphical representation for the normality test by comparing the quantiles of expected values with the quantiles of observed values. A dataset is considered normally distributed if the quantiles of both observed values and expected values are plotted in the same area on the graph that is when the observed values are plotted on the straight line of the expected values in the graph (Das & Imon, 2016).

Skewness and Kurtosis. Skewness is defined as the proportion of asymmetry in a distribution that can be skewed to the left or right. Kurtosis refers to the peakedness or the shape of the tails of the distribution such as the length and weight (Bono et al., 2019; Jammalamadaka et al., 2020). In an ideal normal distribution situation, both values of skewness and kurtosis should be zero (Kim, 2013). The acceptable range for normal distribution for both skewness and kurtosis is between -2 to +2 (George & Mallery, 2010).

Kolmogorov-Smirnov Test. It is a method used to test the goodness of fit between a set of observed data and a set of normally distributed data (Berger & Zhou, 2014). The dataset is considered normally distributed if the p-value of the test is more than .05, that is, the result is non-significant (Gupta et al., 2019).

Multiple Linear Regression (MLR)

For data analysis, Multiple Linear Regression (MLR) was employed, and the

assumptions were tested to find the linear relationship between several independent variables such as negative emotions, positive emotions, and difficulties in emotion regulation with the dependent variable which was emotional eating.

Multivariate Outliers. It is defined as a situation where an extreme result is generated due to the combination of two or more data sets (El-Masri et al, 2021). The Mahalanobis Distance (MD), Cook's Distance (CD), and Centered Leverage (CL) were used to examine the multivariate outliers of this study. MD is defined as a method that examines the standard deviations of the cases compared to the mean of the distribution (Ghorbani, 2019). If the case under MD is more than 15, it is considered a potential outlier (Barnett & Lewis, 1978). CD is a method to identify influential cases in a set of independent variables in a study by adding up both values of leverage and residual of each case (Boussiala, 2020). CD has a positive relationship with both the leverage and residual values in which CD will increase only if both the leverage and residual values increase (Dhakal, 2017). A case is identified as an outlier if the value for CD is greater than 1 (Cook & Weisberg, 1982). CL is a method that is used to identify cases with influential values related to the independent variable or cases in which the value is significantly different from the majority of cases which can significantly affect the result of a regression-based study (Kannan & Manoj, 2015; Blatná, n.d.; Pearson Prentice Hall Publishing, n.d.). An observed value is considered a potential outlier if the calculated value of CL is greater than the calculated CL value using the formula which is $(\frac{2(k+1)}{n})$, whereby k is the number of predictor variables and n is the number of cases (Dhakal, 2017). A multivariate outlier will be removed if it does not meet the requirement of at least two out of three tests.

Type of Variables. Quantitative variables were used for data collection and data analysis which can be further broken down into discrete or continuous variables (Kaliyadan & Kulkarni, 2019). The assumption for MLR is met when the independent variables are quantitative while the dependent variables are continuous variables (Berry, 1993).

Independent. It is assumed that the responses provided by the participants in a study are independent of one another which ensures that the data collected is not contaminated.

Independent Errors. The assumption assumed that there is no correlation between the errors which can lead to inaccurate calculations of the standard errors and significance (Wiliams et al, 2013). Durbin Watson (DW) test was used to examine the presence of independent errors. The test can have a range of scores from 0.0 to 4.0 with an acceptable range of between 1.5 to 2.5. A score of 2.0 indicates a perfect score, that is, no autocorrelation was found (Al-Rawabdeh et al., 2021).

Multicollinearity. It is a term used to describe a situation in which the independent variables of the study are related to one another (Shrestha, 2020). Multicollinearity was examined by using both Variance Inflation Factors (VIF) and tolerance. VIF is used to detect the increase in the variances of the independent variables' coefficients which is caused by a rise in the standard error. Tolerance is used to measure the extent to which the variability of a predictor is not explained by the other remaining predictors (Daoud, 2017). A VIF value of between 5 to 10 while a tolerance value of between 0.1 to 0.2 indicates the non-existence of multicollinearity between the variables (Kim, 2019).

Homogeneity of Variances. It is assumed that the residuals of the variance remain the same across a different combination of values of the predictors. This can be examined

through a scatter plot of the standardized residuals in which homogeneity of variances is achieved when the residuals are spread evenly around the horizontal line (Osborne & Waters, 2002).

Multivariate Normality. It is referring to a normally distributed set of errors (Ernst & Albers, 2017). It can be examined using a scatter plot in which the assumption is met if the data is spread across the horizontal line (Nimon, 2012).

Linearity of Residuals. It is assumed that the relationship between the predicted values of both the dependent variable and the residuals is linear (Plonsky & Ghanbar, 2018). This assumption can be examined using a scatter plot with the assumption being met if the residuals are distributed around the straight line (Reddy & Sarma, 2015).

Mediational Analysis

PROCESS (Version 4) created by Andrew Hayes was used to examine the mediating effect of emotion regulation on the relationship of negative emotions with emotional eating.

Chapter IV

Results

Data Cleaning

Data cleaning is a multistage process to recognize and remove data errors, resulting in the improved quality of a data set (Müeller & Freytag, 2005). In total, 638 sets of responses were collected.

Input Error. Random sets of responses recorded in Qualtrics were chosen to be cross-checked with the SAV file downloaded from Qualtrics. No input error was identified. By this stage, 638 sets of responses were reserved.

Irrelevant Data. In this study, the targeted participants were Malaysians aged between 18 and 40. One set of responses provided by one non-Malaysian researcher when testing the online survey was recorded as a Survey Preview in the Response Type column and dropped. By this stage, 637 sets of responses remained.

Missing data. When a primary predictor or primary outcome has missing data in a cross-sectional study, researchers should consider dropping the observations that miss values (Sainani, 2015). Once the rate of blank responses is higher than 25% for main variables, the corresponding cases should be removed or non-negligible problems in validating statistical inferences would arise (Dong & Peng, 2013; Sekaran & Bougie, 2019). To compute the proportion of blank responses for main variables in each case, a count of empty cells was obtained through the COUNTBLANK function and then divided by 51 (the number of all questions for main variables) in Microsoft Excel. There were 150 cases in which the rate of blank responses for main variables was over 25% (12 items); among which, 138 cases did not

give any response on any scale; 8 cases merely provided the demographic information and responses in the PANAS while 31 blank responses of main variables accounted for 60.8%; 4 cases only completed the demographic section, the PANAS and the DERS-SF, leaving 13 blank items (25.5%) of main variables. These aforesaid 150 cases were dropped. By this stage, 487 sets of responses were retained.

Straight-Lining Data. To ensure data quality, it is necessary to remove straight-lining data, namely the same or comparable responses from any respondent to a string of questions within one scale (Kim et al., 2020). To identify straight-lining data, the IFS function was utilized on the Microsoft Excel file; if all items in the first scale were not the same, this function would evaluate the second and last scales; considering that all items in any scale were the same, this function would return a value, namely the text of straight-lining data. One case in which all items were 3 on each scale was recognized and dropped. Eventually, 486 sets of complete responses were preserved as the final sample.

Normality Assumptions

This final data set was assessed for normality through (1) histogram, (2) Quantile-Quantile plot, (3) Skewness test, (4) Kurtosis test, and (5) Kolmogorov Smirnov test.

Histogram

Each histogram of the four variables looked approximately bell-shaped and normally distributed (see Appendix K, p. 124). In terms of the histogram, the normality assumption was met.

Quantile-Quantile Plot

The Quantile-Quantile (Q-Q) plots of each variable illustrated that the majority of

values were located along the diagonal lines (see Appendix K, p. 127). The normality assumption for the Q-Q plot was met.

Skewness and Kurtosis Tests

All the values of skewness and kurtosis tests for the four variables ranged between -2 and 2 (see Appendix K, p. 129). Regarding skewness and kurtosis tests, the normality assumptions were achieved.

Kolmogorov-Smirnov Test

The results of the Kolmogorov-Smirnov (K-S) Test for negative emotions, positive emotions, difficulties in emotion regulation, and emotional eating were D (486) =.059, p<.001, D (486) =.065, p<.001, D (486) =.051, p=.005, and D (486) =.047, p=.013 respectively (see Appendix K, p. 130). Since all the p-values of the four variables were less than .05, the normality assumption of the K-S test was not met. In addition, the K-S test is not a critical or highly influential indicator of normality (Ghasemi & Zahediasl, 2012).

Summary

The four out of five aforementioned normality assumptions were not violated. In essence, this data set was considered approximately normally distributed.

Outliers

Univariate Outliers

To identify univariate outliers, the boxplot was conducted (see Appendix J, p. 121). As 14 identified cases for the four variables were not errors of input and did not influence the normality distribution or the findings in this study significantly (Aguinis et al., 2013; Hecht, 1991), they were not dropped.

Multivariate Outliers

To remove all influential cases, the indicators of Mahalanobis Distance (MD), Cook's Distance (CD), and Centered Leverage (CL) were utilized based on the application of two standard deviations. According to the casewise diagnostics table (see Appendix M, p. 141), 27 cases exceeded two standard deviations and were regarded as potential multivariate outliers. The results of MD, CD and CL for all cases were summarized (see Appendix M, p. 142). For this sample of 486 respondents, once MD was more than 15, cases may be influential (Barnett & Lewis, 1978); the 27 potential multivariate outliers did not show any MD higher than 15. When CD is greater than 1, cases might be outliers (Cook & Weisberg, 1982); the CD values of all the 27 potential multivariate outliers were less than 1. If CL is higher than twice leverage's value [$\frac{(3+1)}{486} \times 2 = 0.0165$] (Dhakal, 2017), cases are probably outliers; only the CL value of Case 334 was 0.0167, higher than twice leverage's value; since two out of the three residual statistics were met, Case 334 was not removed. As a result, no multivariate outlier was identified.

Descriptive Statistics

The descriptive information of demographic variables was shown in Appendix L. The age range of the 486 participants was between 18 and 40 (M=22.7, SD=3.751); among whom, 405 respondents were aged 20 (11.1%), 21 (30.9%), 22 (30.5%), and 23 (10.9%). There were 316 females, accounting for about 65%. Approximately 88.7% of this sample consisted of 431 Chinese. About 84.8% of respondents were students who were studying a bachelor's program mainly from Universiti Tunku Abdul Rahman (UTAR).

According to the descriptive statistics of the four main variables (see Appendix L, p.

134), the mean and standard deviation are indicated for negative emotions (*M*=25.32, *SD*=7.45), positive emotions (*M*=32.52, *SD*=5.994), difficulties in emotion regulation (*M*=43.91, *SD*=11.343), and emotional eating (*M*=31.5, *SD*=10.13) respectively.

Multiple Linear Regression Assumptions

The Type of Variables. The type of each variable in the proposed framework was continuous, meeting the assumption of Multiple Linear Regression (MLR).

Independent. The values provided by each respondent were independent of the values collected from all other respondents, which met the assumption of MLR.

Independent Errors. Durbin Watson (DW) statistic was applied to discover the serial correlation among the values of residuals in this proposed model. The result of the DW test ranges between zero and four and two implies that the autocorrelation is not found. The acceptable range of the DW test is between 1.5 and 2.5 (Maxwell & David, 1995; White, 1992). In this study, the indicator of the DW test was 2.12 within the acceptable range (see Appendix M, p. 140). Hence, the relative independence of residuals was revealed, meeting the assumption of MLR.

Multicollinearity. The indicators of the Variance Inflation Factor (VIF) and tolerance were employed to notice multicollinearity for the three independent variables, namely negative emotions, positive emotions, and difficulties in emotion regulation. Once the result of VIF is not higher than five to 10 and the result of tolerance is not lower than 0.1 to 0.2, no multicollinearity is considered (Kim, 2019). The results of VIF for negative emotions, positive emotions, and difficulties in emotion regulation were 1.471, 1.025, and 1.492 respectively; all these results were lower than five. The values of tolerances for negative

emotions (.680), positive emotions (.975), and difficulties in emotion regulation (.670) were all higher than 0.2. The indicators of VIF and tolerance did not support multicollinearity, meeting the assumption of MLR.

Table 4.1

Collinearity Statistics

	Tolerance	Variance Inflation Factor
Negative Emotions	.680	1.471
Positive Emotions	.975	1.025
Difficulties in Emotion Regulation	.670	1.492

Homogeneity of Variances, Linearity of Residuals, and Multivariate Normality. The scatterplot was produced to illustrate the distribution of residuals (see Appendix M, p. 141). The locations of the residuals did not display a liner or curvilinear but were distributed fairly randomly and evenly, meeting the assumption of MLR.

Multiple Linear Regression Analysis

To examine this proposed model, an MLR analysis was conducted without the violation of any MLR assumption. As the ANOVA table and model summary (see Appendix M, p. 155) showed, this regression model was statistically significant, $F(3, 482) = 22.606$, $p<.001$, while accounting for 11.8% of the variance. According to the coefficients table (see Appendix M, p. 156), negative emotions (β=.111, $p=.032$), positive emotions (β=.123, $p=.005$), and difficulties in emotion regulation (β=.265, $p<.001$) predicted significantly emotional eating; thereinto, difficulties in emotion regulation were the most influential

predictor (β=.265, p<.001).

Mediational Analysis

Version Four of PROCESS (model 4) by Hayes (2021) added in SPSS was utilized to investigate the mediating effect of emotion regulation on the negative emotions – emotional eating relationship and the positive emotions – emotional eating relationship; the number of the bootstrap samples set as 10,000 and the default setting for confidence intervals was 95%. If the confidence interval (CI) of the indirect effect based on the bootstrap samples does not contain zero, a mediation effect is supported statistically (Hayes, 2017).

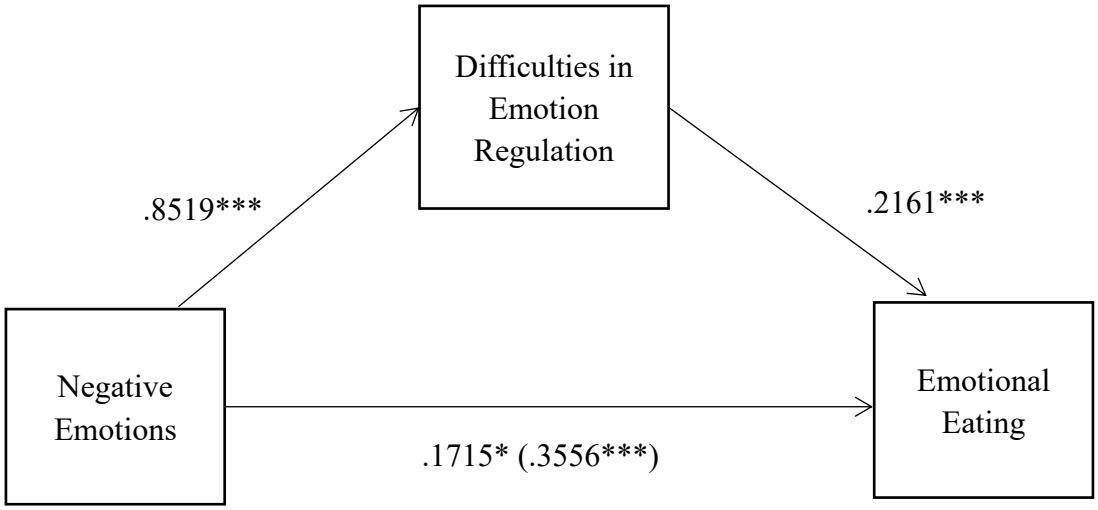
Negative Emotions, Emotion Regulation, and Emotional Eating

As the results showed in Appendix N, negative emotions predicted difficulties in emotion regulation positively and significantly, B =.852, SE =.057, t =14.852, p <.05, 95% CI [.739, .965]; difficulties in emotion regulation were a significant and positive predictor of emotional eating, B =.216, SE =.046, t =4.668, p <.05, 95% CI [.125, .307]. The total effect of negative emotions on emotional eating was positive and statistically significant, B =.356, SE =.060, t =5.962, p <.05, 95% CI [.238, .473]. The indirect effect of negative emotions on emotional eating through difficulties in emotion regulation was positive and statistically significant, B =.184, SE =.042, 95% CI [.105, .269]. That negative emotions predicted emotional eating positively through difficulties in emotion regulation was supported. That is, hypotheses 1, 3, 5, and 6 are supported.

Figure 4.1

Mediating Effect of Difficulties in Emotion Regulation on Negative Emotions – Emotional Eating Association

**p < .05, ***p < .001*



Note. *N* = 486. All the values in the figure are unstandardized coefficients. The total effect is in the brackets.

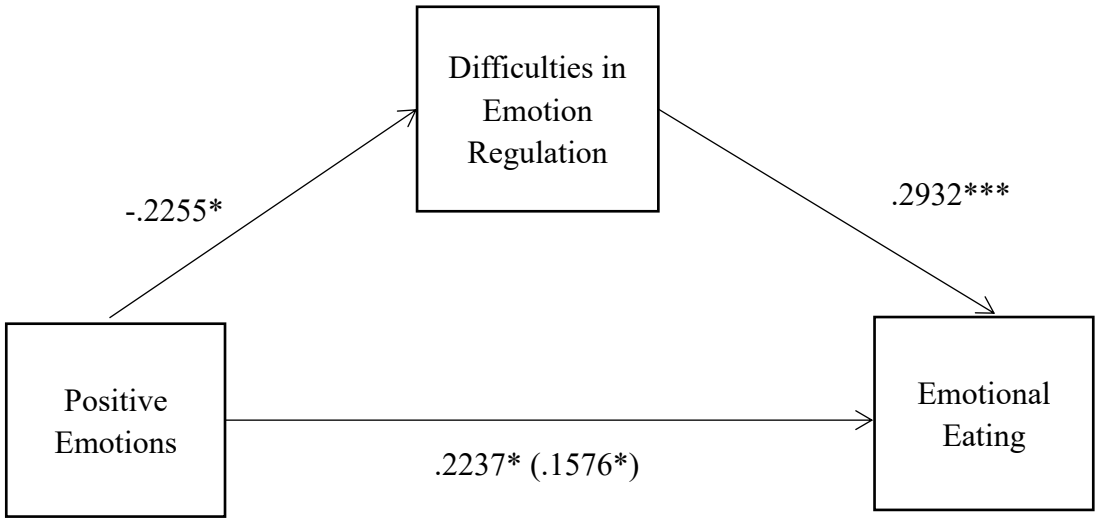
Positive Emotions, Emotion Regulation, and Emotional Eating

According to the results in Appendix N, positive emotions predicted difficulties in emotion regulation negatively and significantly, *B* =-.226, *SE* =.085, *t* =-2.640, *p* =.009, 95% CI [-.393, -.058]; difficulties in emotion regulation were a significant and positive predictor of emotional eating, *B* =.293, *SE* =.039, *t* =7.615, *p* <.05, 95% CI [.218, .369]. The total effect of positive emotions on emotional eating was positive and statistically significant, *B* =.158, *SE* =.077, *t* =2.061, *p* =.040, 95% CI [.007, .308]. The indirect effect of positive emotions on emotional eating through difficulties in emotion regulation was statistically significant, *B* =-.066, *SE* =.031, 95% CI [-.132, -.011]. That positive emotions predicted emotional eating positively through difficulties in emotion regulation was suggested. Hypotheses 2, ,4, 5, and 7 are supported.

Figure 4.2

Mediating Effect of Difficulties in Emotion Regulation on Positive Emotions – Emotional Eating Association

**p < .05, ***p < .001*



Note. $N = 486$. All the values in the figure are unstandardized coefficients. The total effect is in the brackets.

Summary of Findings

Table 4.2

Summary of Results

Hypotheses	Decision
H_1. Negative emotions predict emotional eating positively.	Supported
H_2. Positive emotions predict emotional eating positively.	Supported
H_3. Negative emotions predict emotion regulation negatively.	Supported

Table 4.2

Summary of Results (Continued)

Hypotheses	Decision
H_4. Positive emotions predict emotion regulation positively.	Supported
H_5. Emotion regulation predicts emotional eating negatively.	Supported
H_6. The association between negative emotions and emotional eating is mediated by emotion regulation among Malaysians.	Supported
H_7. The association between positive emotions and emotional eating is mediated by emotion regulation among Malaysians.	Supported

Chapter V

Discussion

H_1: Negative Emotions Predict Emotional Eating Positively.

The hypothesis in the present study was supported and negative emotion was a significant positive predictor of EE. This result was consistent with past studies (Cardi et al., 2015; Devonport et al., 2017; Schnepper et al., 2020) which supported NE as positive predictor of EE. It reveals that people with NE are more likely involved in EE. It was consistent with the previous finding of Parola et al. (2020) reported that people use eating coping with NE.

According to Crockett et al. (2015) carried out people use eating to overcome NE was a generalized trend. The possible reason might be NE trigger the consumption of palatable foods (Bilici et al., 2020). Hence, people with NE might be more likely to consume hyper-palatable foods which means they are less motivated to choose healthy food. This is because food is often used as a diversion from NE. This can be explained by people who tend to use food as a form of self-healing and emotional management. The findings of the present study are also consistent with Macht (2008), the study stated that EE occurred in regulating NE as eating can be a form of rewarding and comforting (Macht, 2008). Therefore, food desire is related to overeating due to a bad mood.

In this study, it was determined that NE were correlated with EE. According to Devonport et al. (2017), the intensity of a person to involve in EE will occur when people have negative moods. The emotional eating theory states that NE can induce eating as eating helps to reduce intensity of NE. One of the possible reasons found that people with NE are

more likely to engage in cognitive distortion (Booth et al., 2019), which led them unable to think about the consequence of the behaviour.

In other words, psychological variables play an important role in influencing a person to involve in EE. It is thought that people display negative moods and thus develop EE for the purpose to manage NE and diminish negative moods. The possible reason can be supported by Sims et al. (2008) stated that stress would lead to having a higher level of EE among overweight and obese participants compared to the general sample. The recent study by Sultson et al. (2021) claimed that NE were correlated with increased food intake in female samples instead of man. This is because NE influence the ability to ignore the existence of high-calorie food images among females (Sambal et al., 2021). In short, people consume more food, especially during stressful periods thus NE play a role in predicting the EE positively.

H_2: Positive Emotions Predict Emotional Eating Positively.

The findings of the present study supported the second hypothesis which also showed similar results with several past studies (Bongers et al., 2016; Devonport et al., 2019; Evers et al., 2018; Patel & Schlundt, 2001) that PE have a greater effect on EE. It indicates that people who score higher on PE are more likely involved in EE. The reason is people tend to increase average portion size to follow the social norms (Herman et al., 2015) which means they tend to overeat in a social context. People with PE will be more likely to improve their social connections. According to Sels et al. (2020), PE can be used to influence others by promoting collective action. For instance, they are more likely to overeat because of the conformity

effect. People tend to follow social norms for developing PE which is the feelings of belongingness in a group.

Furthermore, PE and food intake are likely to be related to an associative learning mechanism, where positive feelings have been associated with eating more food. PE may trigger food desire through associative learning of special occasions such as birthdays, weddings, and religious events rather than using food to regulate PE (Devonport et al., 2017). The explanation is that people may disrupt the conscious restriction of food intake as PE may divert attention to the origin of the PE (Jansen et al., 1991) which illustrated that food intake increases when meals are eaten in a social context.

The possible reason might be the operant conditioning of reinforming occurred in the process of eating (Skinner, 1958). PE give a sense of reward such as feeling satisfied when eating or improving social connections when eating with friends, which served as a reinforcement to the participant's eating behaviour, thus leading them to continuously eat food to attain greater positive feelings. This was consistent with Macht et al. (2011), people are more likely to experience positive feelings about food during eating and Cardi et al. (2015) also claimed that PE are associated with an increased desire to eat, especially highly palatable and sweet foods. PE can improve food satisfaction and food intake.

H_3: Negative Emotions Predict Emotion Regulation Negatively.

The results of this study support the findings that negative emotion was a significant negative predictor of ER which has consistently illustrated that once people are having negative emotions, they may have difficulty regulating their emotions (Braley et al., 2011; Donahue et al., 2014). One of the reasons is ER mostly indicates the use of cognitive

strategies to help individuals manage NE (Gross et al., 2003). A study by Donahue et al. (2014) found that ED is a mechanism through which NE in difficulty tolerating distress and increases the possibility of psychopathology. NE may increase the probability of developing psychopathology, especially under ED, which can explain why NE predict ER negatively, as people with NE are less likely to apply adaptive strategies like reappraisal which is the mechanism people use to regulate emotion. Therefore, they rely more on maladaptive strategies like suppression, which is trying to inhibit emotional responses, a similar finding was found that people with higher levels of NE such as more traits of anxiety, tend to suppress more emotional responses (Burr et al., 2021).

Besides, there are higher possibilities in ED for people who live in terrible circumstances and are prompt with NE (Bradley et al., 2011). It is plausible that people with NE tend to interpret situations as being more negative due to the cognitive bias and make it difficult to think more positive thoughts, thus causing they may have a higher chance of DER when experiencing more unpleasant events accompanied by NE. Thus, people with lower NE are found to have better NE.

H_4: Positive Emotions Predict Emotion Regulation Positively.

Moreover, the current study supported the fourth hypothesis with positive emotion as a significant positive predictor of ER. The current study showed similar with previous findings (Brodino, 2020; Troy et al. 2020). According to Tugade et al. (2017), people tend to focus and address the underlying issues caused by NE, discover numerous positive sides in unpleasant experiences and inject optimism into routine situations. In other words, ER strategies are used to create a more positive experience when feeling down.

Individuals who used ER that enhance or maintain PE are beneficial for creating positive coping outcomes. Positive reappraisal generates experiences even in stressful condition. In turn, these positive emotional experiences can help people continue and move forward in their lives (Folkman et al., 2000). This can be explained by the people with more PE tend to use more adaptive strategies like reappraisal emotion regulation. This was also suggested by Brodino et al. (2010), in which the reappraisal from ER strategies can lead to stability of PE, resulting in a better life and higher well-being. According to Troy et al., (2020), the ability to use reappraisal to increase PE are more closely linked with adaptive outcomes than using it to decrease NE. People who used ER are a greater focus on the regulation of NE, compared to PE (Young et al., 2019). PE were used to manage unpleasant situation and it showed efficacy in the ability to manage emotion. One possible explanation might be respondents unaware of their ER strategies, resulting to inaccurate result in self-report measures. In short, PE predict ER positively.

H_5: Emotion Regulation Predicts Emotional Eating Negatively.

The results of the present study have shown evidence supporting the hypothesis that ER predicts EE negatively. The current study is consistent with previous findings in which indicated ER is a negative predictor of EE (Goossens et al., 2016; Laghi et al., 2018; Wong et al., 2014).

Apart from that, an individual with greater capacity on ER may less likely to develop EE. The study was also consistent with Laghi et al. (2018) that emotional capability is related to more adaptive eating patterns. According to Goossens et al. (2016), the result of the study claim that loss of control is associated with maladaptive ER strategies. People with a greater

ability to control their emotions tend to increase the use of adaptive strategies. In short, individuals with the ability to regulate their emotions will decrease the likelihood of overeating.

Another reason might be individuals with DER tend to use eating to cope with their emotions. Past studies suggested that ED contributes to enhanced food intake as people face difficulty with ER strategies (Evers et al., 2013; Michopoulos et al, 2015). It is similar to the study of Favieri et al. (2021), DER is a lack of ability and attention on NE and contributes to problematic overeating. EE has related to the use of maladaptive strategies that people use to regulate NE or boost PE (Mason, 2011). Hence, this may lead to ER is a significant negative predictor of EE due to maladaptive attempts that made people overeat.

H_6: The Association between Negative Emotions and Emotional Eating is Mediated by Emotion Regulation among Malaysian.

Sixth hypothesis was supported. The results suggest that ER has significant mediating effect on the relationship between NE and EE. This is in line with the previous study (Braden et al., 2018; Evers et al., 2013) that indicates that ER showed a significant mediating effect between NE and EE. One of the possible reasons that ER plays a mediating effect is because its ability to exert control on emotional state and attempt to maintain adaptive emotions.

The results of the present study found that NE was negative predictor of ER. It was plausible that people attempt to decrease NE followed by maladaptive consequences of using suppression (Evers et al., 2010; Gross, 1998; Goldin et al., 2008). In the recent of the studies suggested people employ maladaptive emotion regulation to ease unwanted negative emotions (Avila, 2021; Burr et al. 2021). In other words, people depend on maladaptive

strategies result in inhibit their emotional response. People with NE tend to have a cognitive bias to interpret the situation more negatively thus associated with low ER.

People are less likely to develop EE when they have greater ER. For example, when an individual perceived high ER, they are eager to handle a challenging or problematic situation that is kept under control. In other words, EE is more often for a person face difficulty in ER strategies hence resulting in problematic overeating. When an individual with insufficient ability to manage their emotions, this increases the probability to develop EE. This is consistent with past studies that the use of maladaptive strategies is related to EE (Mason, 2011) and resulting loss of control in overeating (Goossens et al. 2016). Therefore, ER was mediator on the association of NE and EE.

H_7: The Association between Positive Emotions and Emotional Eating is Mediated by Emotion Regulation among Malaysian.

The last hypothesis of this study was supported. This result is consistent with past research (Selby et al., 2019) which revealed the mediating role of ER in the relationship between PE and EE.

It is showing a consistent result of past studies showing that positive emotion was a significant positive predictor of ER (Brodino et al., 2010; Troy et al., 2020). The individual with PE may have the ability to use adaptive behaviour like reappraisal. ER strategies may enhance or maintain PE is beneficial for creating positive coping outcomes, resulting in an improved life and better well-being.

People are less likely to have ER strategies when they have greater PE which leads to EE. Individuals tend to have EE that influences their ER when they have more PE. According

to Snyder et al. (2013), people with PE are more likely to express it publicly. PE may induce and maintain EE when individuals use the food as part of social rituals (Bongers et al.,2013). PE trigger individuals to have a larger intake through associative learning, as PE may divert attention to the origin of the PE and disrupt the conscious restriction of food. It is consistent with the findings of Canett et al. (2002), that people with PE tend to overeat based on the associative learning mechanism. Hence, EE may be developed when they have greater PE and ER. In brief, people overeat might be due to PE with some indicators of ED (Sultson et al., 2017).

Implication

Theoretical Implication

This study adopted the five-way model (Macht, 2008) to examine (1) the relationship between PE and EE, (2) the mediating effect of ER in the relationship between NE and EE (3) the mediating effect of ER in the relationship between PE and EE.

However, based on the results of the present findings, the theory supported that NE was a positive significant predictor of EE which was consistent with the way 4 and way 5 of the five-way framework (Annesi et al., 2016; Devonport et al., 2019; Manchón et al., 2021; Reichenberger et al., 2020) and EE theory, the findings of the present study consolidated the important aspects of the theory. Moreover, present findings showed PE were positive significant predictor of EE which was congruent with several past findings (Bongers et al., 2013; Devonport et al., 2019; Evers et al., 2018; Manchón et al., 2021; Reichenberger et al, 2018; Wedig & Nock, 2010; Selby et al., 2019) and suggested the way 5 of the model.

The current results showed that NE were negative predictor of ER while PE were positive predictor of ER which was consistent with past findings. The five-way model explains the mechanism of eating behaviours related to emotions and individual differences. The current study showed a similar result to past studies that prevalence of EE among females is higher (Bemanian et al., 2020; Guerrini Usubini et al., 2021; He et al, 2020; Hou et al., 2013; Madalı et al., 2021; Sze et al., 2021). It could attract the attention of researchers to further study in order to examine the possible reasons or explanations which can be a new source to the literature field. Furthermore, the theory of five-way model suggested that ER is the mediator in the model that involved NE, PE, and EE in this study. The model explained that emotions were associated with EE and ER plays a significant role in the changes of EE, it can provide clearer details and demonstrate results that incorporate these variables together.

Hence, the findings of the current study supported the theoretical literature which contributes a new reference to society. Specifically, this study also provides valuable information for further research as no study focused on that including PE, NE, EE, and ER together in the Malaysian context.

Practical Implication

The present study strengthens the knowledge of the public in developing a clearer understanding about the interplay of the selected key variables, particularly among female Malaysians. The present study helps public to increase the awareness and build up the knowledge on their emotion condition. It gives some idea to treat or help public to overcome their issue if the individual's eating behaviour was influenced by emotion condition.

Therefore, it can be a reference for them to think out of a useful and good idea as well as to implement effective programs for encouraging more people to participate in ER intervention or program. For instance, figuring out the possible factors to increase ER strategies. This is a very important step to reduce the risk of developing EE.

Besides, the findings of the present study showed that ER was a significant mediator in the relationship between NE and EE or PE and EE. It can be concluded that the ER may offer an idea for the authorities to create strategies aimed to encourage EE. The authorities can develop an implementation plan to help residents for understanding the methods to engage in low EE effectively. For instance, EE-based intervention programs, emotional health practices like mindfulness and mental health service like reflective counselling.

Moreover, there have been some interventions to increase ER including acceptance and Commitment Therapy (Hayes et al., 2004), Dialectical Behaviour Therapy (Linehan et al., 2014), and Cognitive Behavioural Therapy approaches (Forkmann et al., 2014) in clinical setting. Other ER interventions like relaxation exercise (Moore et al., 2022) is effective for those individuals who was struggling dealing with their emotion control and have a way to release the NE and increase the PE.

There have some self-regulatory skills such as planning, monitoring and evaluation, for people to have the ability to emotional control. Moore et al. (2022) suggested that ER can be improved in a relatively short period in a group setting. This might be due to individual differences in cognitive ability, thus it is important to see and learn from each other how they regulate emotion. The positive outcomes from adaptive emotion regulation strategies

included reappraisal capacity that can apply to food intake, it can protect against people from developing EE (Evers et al., 2010). Other than that, psycho-education intervention can cooperate with those coping strategies, Hussin et al. (2020) suggested that it enables people to understand their emotions and empowered them in emotion management in a more effective way. Hence, individuals who have difficulties understanding and managing their emotions are also potentially challenged in handling their eating behaviours.

By doing this, the individuals are able to have the full knowledge of the importance of controlling eating which eventually strengthens their ER to exhibit low EE. The efforts to build and develop a positive attitude toward ER can be an effective way to make people have high ER which results in them being more likely to engage in low EE. As the current study proved that the association between the NE and EE was fully mediated by ER which is signifying the crucial role of ER. Individuals with DE will not be put in action and it can seem that ER is the key to carrying out low EE. Additionally, ER is a significant mediator for another two predictors (NE and PE) and EE. In short, ER is important to ensure the sustainability of low EE. Those individuals who were struggling to deal with the serious outcomes of EE could also reach out to some relevant useful information by referring to the above implementation plan which to help them reduce the harmful effects of EE.

Limitations of Study

There are several limitations that the current study needs to be addressed. First, the study employed a cross-sectional research design that is difficult to access the causal inferences between the variables as it only examined the exposure and the outcome once

(Solem, 2015). In short, all of the variables in this study were measured once in time. However, the psychological variables (PE, NE, EE & ER) might change over time due to environmental factors and personal experience. As a result, the cross-sectional research design in this study was only used to identify the prevalence of an event at a specific time.

One of the limitations in the current study was the use of a self-reporting questionnaire and associated with possible biases such as social desirability bias. Social desirability bias referred to participant's tendency to give socially expected responses rather than responding in accordance with their true feelings or thought (Grimm, 2011). Another bias is the response bias, participants may not have insight into their eating behaviours or emotional clarity, which will result in an inaccurate response given by the participants.

Another limitation in the present study was the duration of completing the online questionnaire was too long due to the lengthy questionnaire. In this case, participants may get bored and withdraw from the online survey halfway, thus reducing the response rate. The validity of the data may be influenced by participants simply choosing the answer without understanding the meaning of the questions. There were high missing data found in the current study due to the incomplete response.

Moreover, the generalizability of the present study is limited by several factors. This research was conducted in a Malaysian setting which limits the generalizability across countries due to the differences in culture. However, based on the literature review, EE is more appealing to females compared to males in different countries, and it is reasonable to suggest that examining solely in Malaysia is insufficient to hold in other countries. This study

was not aimed to explore gender differences or racial differences in EE or other variables due to the unequally proportionate sample. The majority of the respondents were Chinese which has 88.7% and females which has 65%, the imbalance rate may lead to bias thus the findings might not be applicable in other populations.

Recommendations of Study

Future studies are recommended to apply a longitudinal research design instead of the cross-sectional research design applied in the current study. A longitudinal study allows a study to collect multiple sets of data from the same group of participants at two different time points (Taris & Kompier, 2014). Moreover, it allows a study to examine the causal relationship between the variables (Caruana et al., 2015). Thus, this is the reason that longitudinal study is the preferred method over cross-sectional study in studies that are related to social science (Wang, 2013). In addition, the longitudinal method also allows a study to examine the changes in the variables over time (Nese et al., 2013). Hence, a longitudinal research design will be able to address the limitation of the current study by collecting data at two different time points which can lead to a more comprehensive understanding of the relationship between all of the psychological variables (PE, NE, EE & ER) and the changes over time.

Secondly, social desirability bias can be overcome through the use of indirect questioning in the survey. According to Ried et al. (2022), indirect questioning is a way of asking the participants to answer a survey based on the point of view of other people instead of themselves. Thus, this will be able to motivate the participants to answer truthfully as they assume that they would not be judged for their answers. For future research, it is

recommended to avoid using “you” in the question. For example, the question on the top of Section B in the online questionnaire in this study can be replaced with a statement like “The following items describe statements about your brother’s positive and negative emotions. Please indicate how often the following statements apply to your brother GENERALLY”. Additionally, using a scale to detect social desirability bias can also be used to overcome this limitation. It is recommended to use the Social Desirability Scale-17 (SDS-17) which was found to produce a similar result to the most common scale used to detect social desirability bias which is the Marlowe-Crown Social Desirability Scale (M-C SDS). However, SDS-17 is a much shorter scale with 16 items compared to the 33 items of M-C SDS (Larson, 2018).

Thirdly, a shorter version of the online questionnaire is suggested for future research to solve the low response rate of online questionnaires. Participants in online questionnaires are more likely to respond to a questionnaire that takes less than 10 minutes to complete compared to a survey that will up to 20 to 30 minutes. Furthermore, indicating the time that is needed to complete the online questionnaire has been proven effective in increasing the response rate (Sammut et al., 2021). On top of that, future research should also offer higher incentives to motivate participants to complete the online questionnaire. This is especially effective when distributing surveys to students (Ali et al., 2021). In this regard, future research can provide a higher incentive such as RM100 for five lucky winners instead of the current RM5 for 100 lucky winners applied in this study. Next, straighlining can be solved by avoiding grid-style questions as participants are more likely to select similar answers in these types of questions (Müller et al., 2014). Hence, future research is advised to randomize the answer options for every question in the online questionnaire. On top of that, future research

can also identify and remove certain responses that can be categorised under straighlining by observing for signs such as the time taken to complete each question is less than one second or the participants choosing the same answer for 10 consecutive questions (Hays et al., 2015).

Fourthly, future research is recommended to conduct similar studies in different countries outside of Malaysia to improve the generalizability of the results. This is due to the lack of research in the area of emotional eating and the inconsistency in the findings of the past studies in terms of the relationship between the variables such as PE, NE, EE & ER as mentioned in Chapter 1 of this study. In addition, future research is suggested to use a different approach in the sampling method, particularly the stratified random sampling method which can better represent the diverse population in Malaysia. In this method, the population of interest is split into different strata or subgroups based on demographic characteristics such as religion, age, or gender. Next, the researchers will select a sample randomly from each stratum (Elfil & Negida, 2017). Thus, this method can help to ensure the representativeness of the minority population in a study (Howell et al., 2020).

Conclusion

To sum up, this study achieved its objectives to explore the direct effects of negative emotions and positive emotions on emotional eating which included overeating and undereating as well as to investigate the indirect effect of emotion regulation on the correlations between the negative emotions and positive emotions with emotional eating among Malaysians aged between 18 and 40 years old. The findings of this study supported all seven hypotheses that were proposed that were (1) the first hypothesis, negative emotions predict emotional eating positively, (2) the second hypothesis, positive emotions predict

emotional eating positively, (3) the third hypothesis, negative emotions predict emotion regulation negatively, (4) the fourth hypothesis, positive emotions predict emotion regulation positively, (5) the fifth hypothesis, emotion regulation predicts emotional eating negatively, (6) the sixth hypothesis, the association between negative emotions and emotional eating is mediated by emotion regulation among Malaysian, and (7) the seventh hypothesis, the association between positive emotions and emotional eating is mediated by emotion regulation among Malaysian.

In summary, the findings of this study have provided a solid foundation for future studies that will focus on the correlation between positive emotions, negative emotions, emotional eating, and emotion regulation. Furthermore, this study has contributed to the literature gap by understanding the role of emotion regulation as a mediator between positive and negative emotions with emotional eating. This is especially useful for Malaysians to identify the cause and solution of their emotional eating as half of the population was classified under the category of overweight and obese. Moreover, this study has also shed light on the importance of emotion regulation in combating emotional eating. This finding can help healthcare professionals to develop an effective intervention program for patients who suffer from emotional eating.

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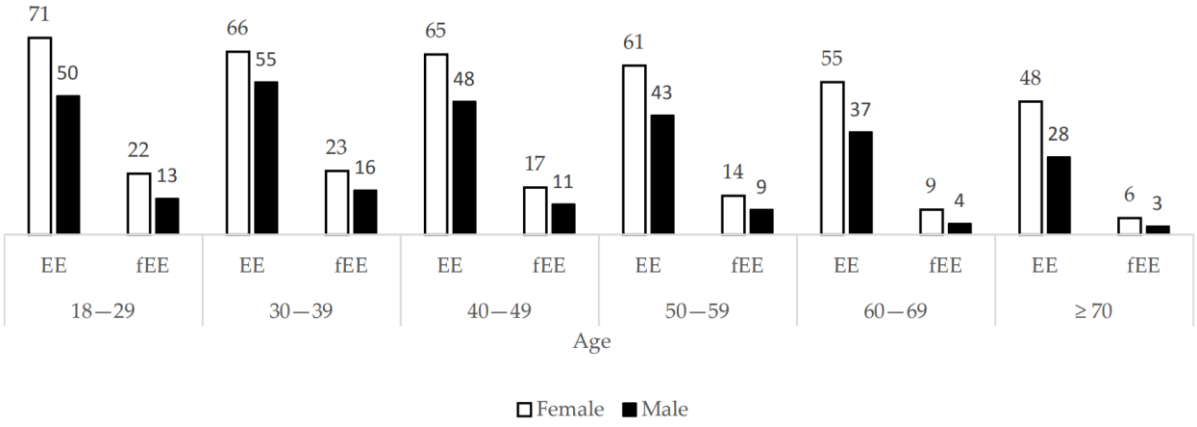
Appendix A

The prevalence of overweight and obesity among Malaysians aged 18 years and above (IKU, 2006; IKU, 2011; IKU, 2015; IKU, 2019; Khambalia, 2010)

Year	The prevalence of overweight	The prevalence of obesity	Total
1996	16.6%	4.4%	21%
2006	29.1%	14.5%	43.6%
2011	29.4%	15.1%	44.5%
2015	30.0%	17.7%	47.7%
2019	30.4%	19.7%	50.1%

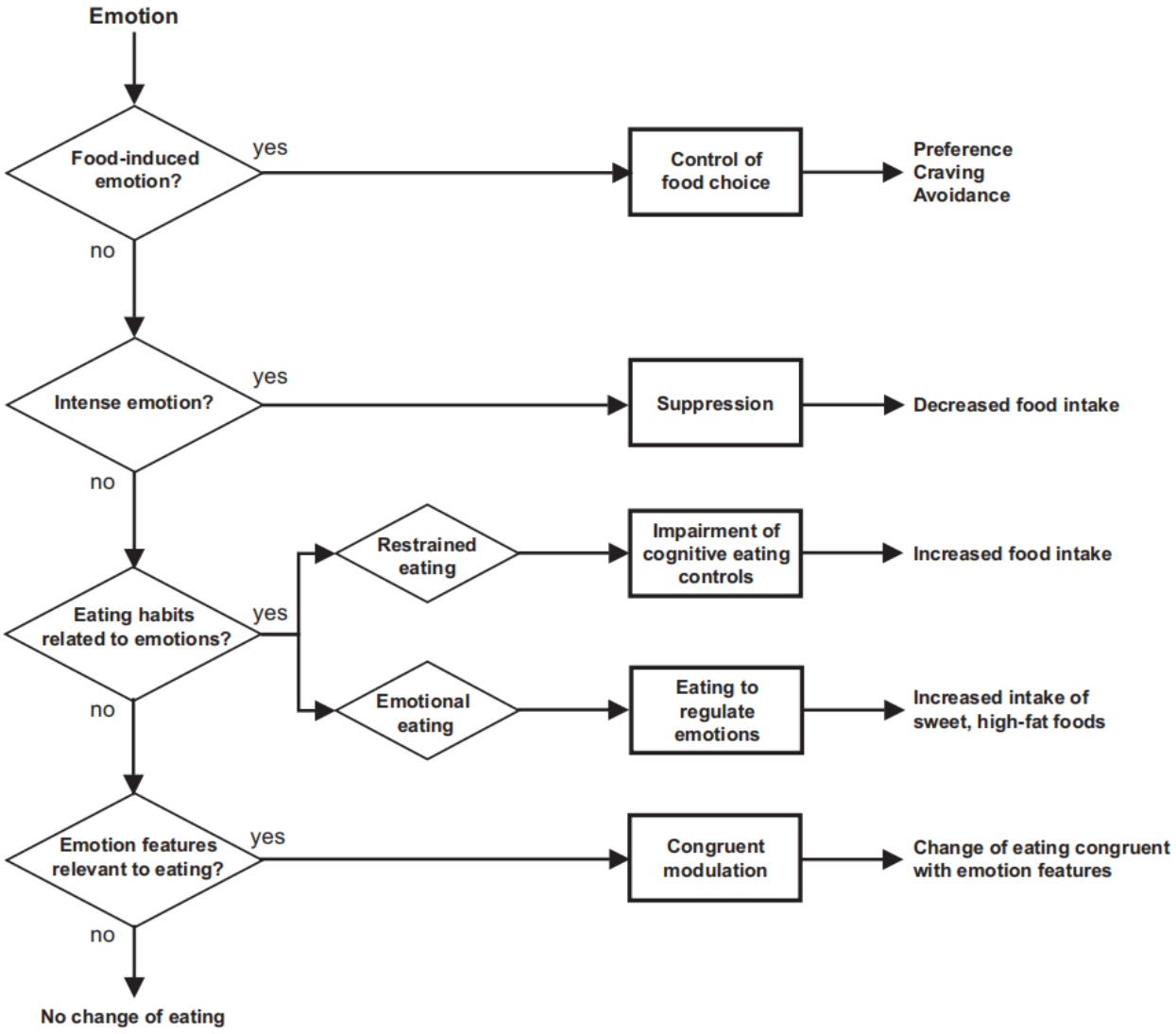
Appendix B

The percentages of females and males who reprot EE and frequent EE across six age groups aged 18 and older (Bemanian et al., 2020)



Appendix C

The framework of the five-way model (Macht, 2008)



Appendix D

Questionnaire

PERSONAL DATA PROTECTION NOTICE

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

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

a) Name
b) Identity card
c) Place of Birth
d) Address
e) Education History
f) Employment History
g) Medical History
h) Blood type
i) Race
j) Religion
k) Photo
l) Personal Information and Associated Research Data

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

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

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

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

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

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

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

8. You may access and update your personal data by writing to us at:

Chong Xuan Ni, xuanni@1utar.my
Heng Wee Keat, hengweekeat@1utar.my
Ruan, Yu, 530579596@1utar.my

By proceeding with this form, I declare that I am:
a) a Malaysian
b) between 18 and 40 years old

Acknowledgment of Notice

○ I have been notified and that I hereby understood, consented and agreed per UTAR above notice.

○ I disagree, my personal data will not be processed.

Section A: Demographics Information

Please fill in your personal details.

Username / Nickname

_____

Contact number:

_____

(Your nickname and contact number will keep confidential. Once you are the lucky respondent, we need your nickname and contact number to transfer the token of appreciation (RM5) to you through Touch N Go Wallet.)

Age

_____

Sex

- ○ Male
- ○ Female

Race

- ○ Malay
- ○ Chinese
- ○ Indian
- ○ Others _____

Marital Status

- ○ Single
- ○ Married
- ○ Widowed
- ○ In a romantic relationship but not married
- ○ Others _____

Employment Status

- ○ Employed
- ○ Unemployed
- ○ Student
- ○ Others _____

Income of whole family (Include with respondents)

- ○ B40 (Below RM4849)
- ○ M40 (RM4850-10959)
- ○ T20 (Above RM10960)

Education level

- ○ Secondary (STPM)Muslim
- ○ College
- ○ Bachelor Degree
- ○ Master
- ○ PhD
- ○ Others _____

How many people are there now in your family (including you):
_____

Are you:

- ○ An only child?
- ○ (If you have siblings) The oldest child?
- ○ (If you have siblings) The youngest child?
- ○ (If you have siblings) A middle child?
- ○ Others _____

Are you brought up by

- ○ Both original parents
- ○ One original parent
- ○ No original parents but other family member(s)
- ○ Others _____

Section B: Positive Emotion and Negative Emotion

The following items describe statements about your positive and negative emotion. Please indicate how often the following statements apply to you GENERALLY.

	Very Slightly or Not At All	A Little	Moderately	Quite a Bit	Extremely
1. Interested	○	○	○	○	○
2. Distressed	○	○	○	○	○
3. Excited	○	○	○	○	○
4. Upset	○	○	○	○	○
5. Strong	○	○	○	○	○
6. Guilty	○	○	○	○	○
7. Scared	○	○	○	○	○
8. Hostile	○	○	○	○	○
9. Enthusiastic	○	○	○	○	○
10. Proud	○	○	○	○	○
11. Irritable	○	○	○	○	○
12. Alert	○	○	○	○	○
13. Ashamed	○	○	○	○	○
14. Inspired	○	○	○	○	○
15. Nervous	○	○	○	○	○
16. Determined	○	○	○	○	○
17. Attentive	○	○	○	○	○
18. Jittery	○	○	○	○	○
19. Active	○	○	○	○	○

20. Afraid	○	○	○	○	○

Section C: Emotion Regulation

The following items describe statements about your level emotion regulation. Please indicate how often the following statements apply to you.

	Almost Never	Sometimes	About Half of the Time	Most of the Time	Almost Always
1 . I pay attention to how I feel	○	○	○	○	○
2. I have no idea how I am feeling	○	○	○	○	○
3. I have difficulty making sense out of my feelings	○	○	○	○	○
4. I care about what I am feeling	○	○	○	○	○
5. I am confused about how I feel	○	○	○	○	○
6. When I'm upset, I acknowledge my emotions	○	○	○	○	○
7. When I'm upset, I become embarrassed for feeling that way	○	○	○	○	○
8. When I'm upset, I have difficulty getting work done	○	○	○	○	○
9. When I'm upset, I become out of control	○	○	○	○	○
10. When I'm upset, I believe that I will end up feeling very depressed	○	○	○	○	○

11. When I'm upset, I have difficulty focusing on other things	○	○	○	○	○
12. When I'm upset, I feel guilty for feeling that way	○	○	○	○	○
13. When I'm upset, I have difficulty concentrating	○	○	○	○	○
14. When I'm upset, I have difficulty controlling my behaviors	○	○	○	○	○
15. When I'm upset, I believe there is nothing I can do to make myself feel better	○	○	○	○	○
16. When I'm upset, I become irritated with myself for feeling that way	○	○	○	○	○
17. When I'm upset, I lose control over my behavior	○	○	○	○	○
18. When I'm upset, it takes me a long time to feel better	○	○	○	○	○

Section D: Emotional Eating

The following items describe statements about the extent emotions affect eating behaviours. Please indicate how often the following statements apply to you.

	Never	Seldom	Sometimes	Often	Very Often
1. Do you have the desire to eat when you are irritated?	○	○	○	○	○
2. Do you have a desire to eat when you have nothing to do?	○	○	○	○	○
3. Do you have a desire to eat when you are depressed or discouraged	○	○	○	○	○
4. Do you have a desire to eat when you are feeling lonely?	○	○	○	○	○
5. Do you have a desire to eat when somebody lets you down?	○	○	○	○	○
6. Do you have a desire to eat when you are cross?	○	○	○	○	○
7. Do you have a desire to eat when you are approaching something unpleasant to happen?	○	○	○	○	○
8. Do you get the desire to eat when you are anxious, worried or tense?	○	○	○	○	○
9. Do you have a desire to eat when things are going against you or when things have gone wrong?	○	○	○	○	○
10. Do you have the desire to eat when you	○	○	○	○	○

are emotionally upset?					
11. Do you have a desire to eat when you are bored or restless?	○	○	○	○	○
12. Do you have a desire to eat when you are frightened?	○	○	○	○	○
13. Do you have a desire to eat when you are disappointed?	○	○	○	○	○

Appendix E

Pearson's Correlation

Table 3
Pearson's correlations of continuous variables.

	1	2	3	4	5	6	7	8	9
1. PTSS Severity	–								
2. Emotion Regulation Difficulties	.634**	–							
3. Emotional Eating	.479**	.522**	–						
4. Binge Eating Severity	.389**	.495**	.636**	–					
5. Depressive Symptoms	.572**	.728**	.492**	.476**	–				
6. Anxiety Symptoms	.608**	.690**	.492**	.496**	.829**	–			
7. Stress Symptoms	.583**	.759**	.490**	.472**	.858**	.837**	–		
8. Age	-.221**	-.243**	-.128*	-.124*	-.152*	-.204**	-.189**	–	
9. BMI[a]	-.099	-.043	.021	.166*	-.046	-.107	-.095	.159*	–
Mean	29.3	73.6	2.4	12.0	4.6	3.9	4.7	36.6	26.2
Standard Deviation	21.19	25.61	1.04	10.20	4.93	4.55	4.75	12.05	5.63
Scale Range	0–80	30–150	1–5	0–46	0–21	0–21	0–21	–	–

*$p < .05$.
**$p < .001$.
[a] N = 330.

Table 1 shows Correlation of Emotion Regulation with Emotional Eating

TABLE 2 | Descriptive analysis and correlations between negative and positive emotional eating and other variables.

	M (SD)	Range	PNEES-N	PNEES-P
PNEES-Negative emotional Eating	14.20 (12.32)	0–48	1	0.332**
PNEES-Positive emotional Eating	9.29 (6.78)	0–28	0.332**	1
HADS-Total	11.82 (5.45)	0–42	0.292**	0.174**
HADS-Anxiety	9.11 (3.73)	0–21	0.224**	0.146**
HADS-Depression	2.70 (3.13)	0–21	0.242**	0.130**
BULIT-Binge eating	24.44 (7.65)	14–70	0.540**	0.261**
TFEQ-Emotional eating	6.05 (2.66)	3–12	0.779**	0.186**
TFEQ-Disinhibition	19.14 (5.80)	9–36	0.582**	0.377**
TFEQ-Restraint	12.50 (4.33)	6–24	0.255**	−0.057
EAT-Diet	7.17 (7.02)	0–52	0.397**	0.048
EAT-Bulimia	1.76 (2.91)	0–24	0.483**	0.090
EAT-Oral control	3.02 (3.33)	0–32	−0.094	0.041

*$p < 0.01$.
PNEES-P, Positive Emotional Eating; PNEES-N, Negative Emotional Eating.

Table 2 shows Correlation of Positive Emotion and Negative Emotion with Emotional Eating

Appendix F

Calculation of R^2

Emotional Regulation

$R^2 = 0.522^2 = 0.273$

Positive Emotion

$R^2 = 0.186^2 = 0.035$

Negative Emotion

$R^2 = 0.779^2 = 0.607$

Average R^2

$$R^2 = \frac{0.273 + 0.035 + 0.607}{3}$$

$$= 0.305$$

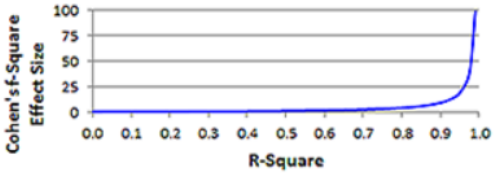
Appendix G

Calculation of Effect Size

Effect Size Calculator for Multiple Regression

This calculator will tell you the effect size for a multiple regression study (i.e., Cohen's f^2), given a value of R^2.

Please enter the necessary parameter values, and then click 'Calculate'.



Observed R^2: 0.305

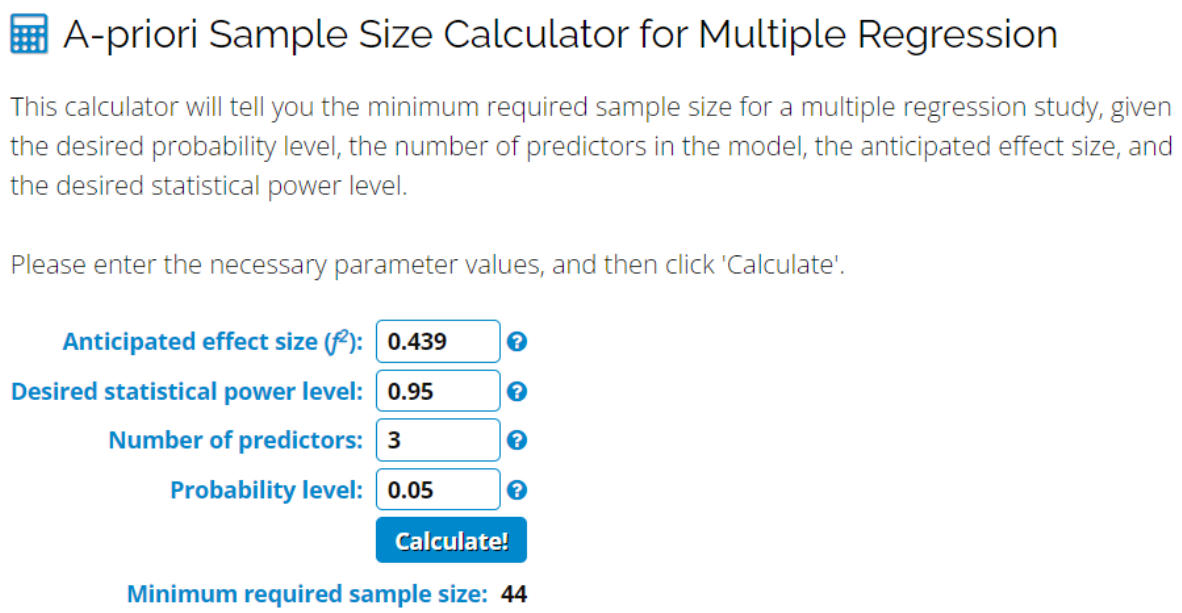
Calculate!

Effect size (f^2): 0.43884892

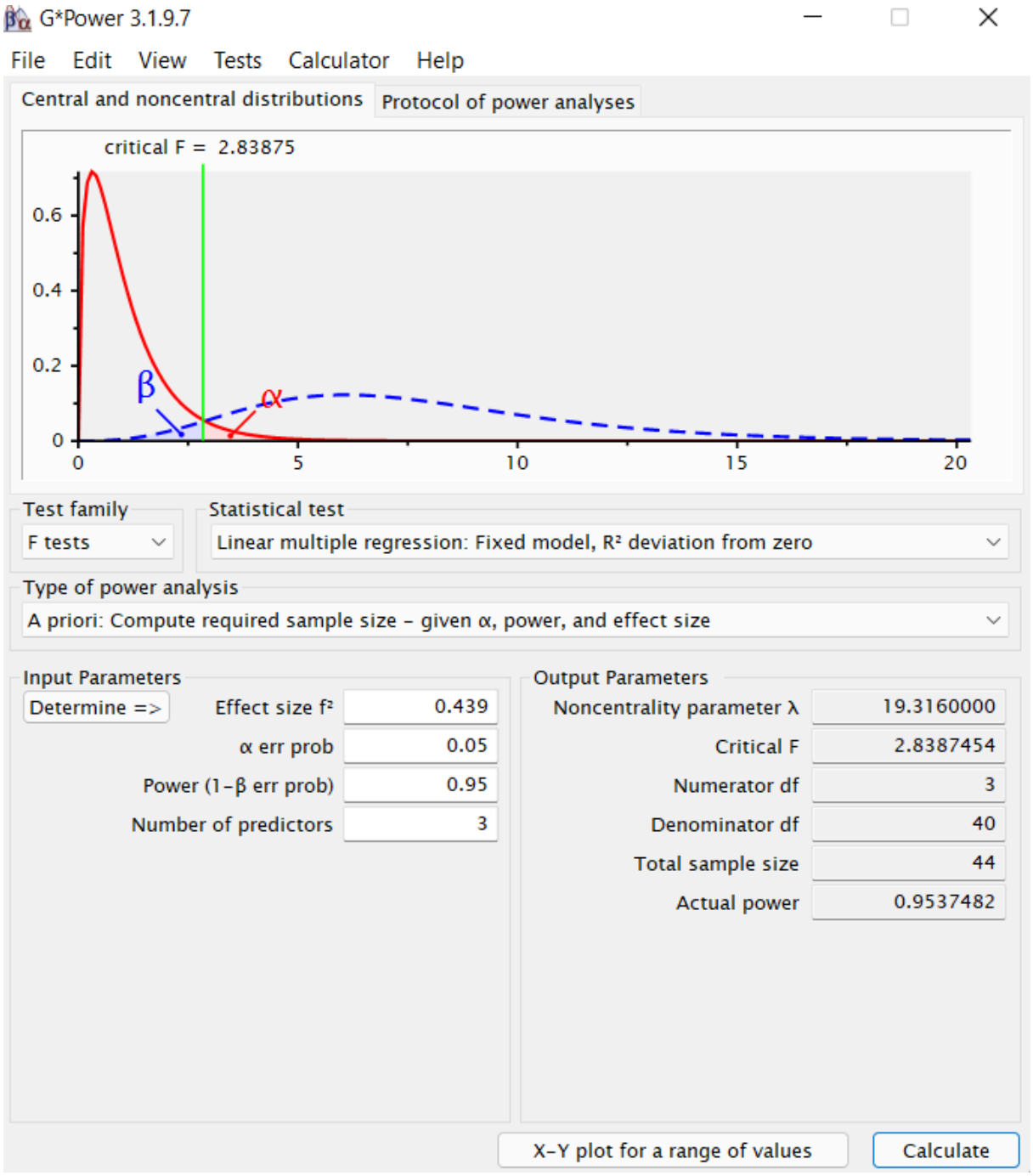
Appendix H

Calculation of Sample Size

A-Priori Sample Size Calculation



G*Power Sample Size Calculation



Appendix I

Ethical Approval Letter

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

Re: U/SERC/282/2021

8 December 2021

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

Dear Dr Pung,

Ethical Approval For Research Project/Protocol

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

The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Perceived Stress, Self-control, and Subjective Well-being as Predictors in Predicting Social Media Addiction Among Young Adults During the Covid-19 Pandemic in Malaysia	1. Chiam Kok Yi 2. Chow Jing Keat 3. Lee Jiao Hao	Dr Pung Pit Wan	
2.	Predicting Roles of Perceived Social Support and Perceived Academic Stress on Internet Addiction Among Undergraduate Students in Malaysia	1. Chan Yieng Ming 2. Ooi Kyxin 3. Loi Ting Sian		

3.	Attitudes toward Singlehood, Negative Stereotyping of Single Persons, and Perceived Control as Determinants of the Intention to be Single Among Young Adults in Malaysia	1. Joanne Chong Hui Qi 2. Leong Wen Sam 3. Leow Rou yi	Dr Tan Chee Seng	8 December 2021 - 7 December 2022
4.	The Effect of Career Self-Efficacy, Career Outcome Expectations, And Future Career Anxiety on Final Undergraduate Year Last Semester Students' Career Choice	1. Tan Za Sen 2. Lee Quan Xuan 3. Viven Anak Thomas		
5.	The Relationship Between Sense of Coherence, Coping Strategies and Suicidal Ideation Among Youths in Malaysia	1. Nur Imanina Amani Binti Mustakim 2. Reshmika a/p Elangovan 3. Shobhanah a/p Ramesh	Dr Siah Poh Chua	

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
6.	Non-Attachment and Sense of Coherence: Their Relationships with Happiness	1. Gan Wei Xuan 2. Kashvini Muthu Kumar 1. Stephanie Wong Zi Shan	Dr Siah Poh Chua	8 December 2021 - 7 December 2022
7.	Grit, Social Relationship and Academic Performance: Their Relationships AmongUndergraduates in Malaysia	1. Firozepall Singh 2. Arjan Singh a/l Ranjit Singh		
8.	Flow Experience, Stress, and Mindfulness as Predictors of Internet Addiction Among University Students in Malaysia	1. Avinaash a/l Thiruselvam 3. Lim Shu Jing	Ms T'ng Soo Ting	
9.	The Mediating Role of Emotion Regulation in the Relationship Between Negative Emotion, Positive Emotion, and Emotional Eating Among Young Adults in Malaysia	4. Chong Xuan Ni 5. Heng Wee Keat 1. Ruan, Yu		
10.	Determinants of Sexting Behavior Among Emerging Adults in Malaysia	2. Lee Li Teng 3. Ong Pei Ling 4. Wong Yoke Ting	Mr Tan Soon Aun	
11.	The Association Between Compulsive Social Media Use and Psychological Well-being Among Young Adults in Malaysia: Social Media Fatigue as a Mediator	1. Foong Chee Ee 2. Lau Yau Chee 3. Sarvinna a/p Vasuthevan		

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

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

Thank you.

Yours sincerely,

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

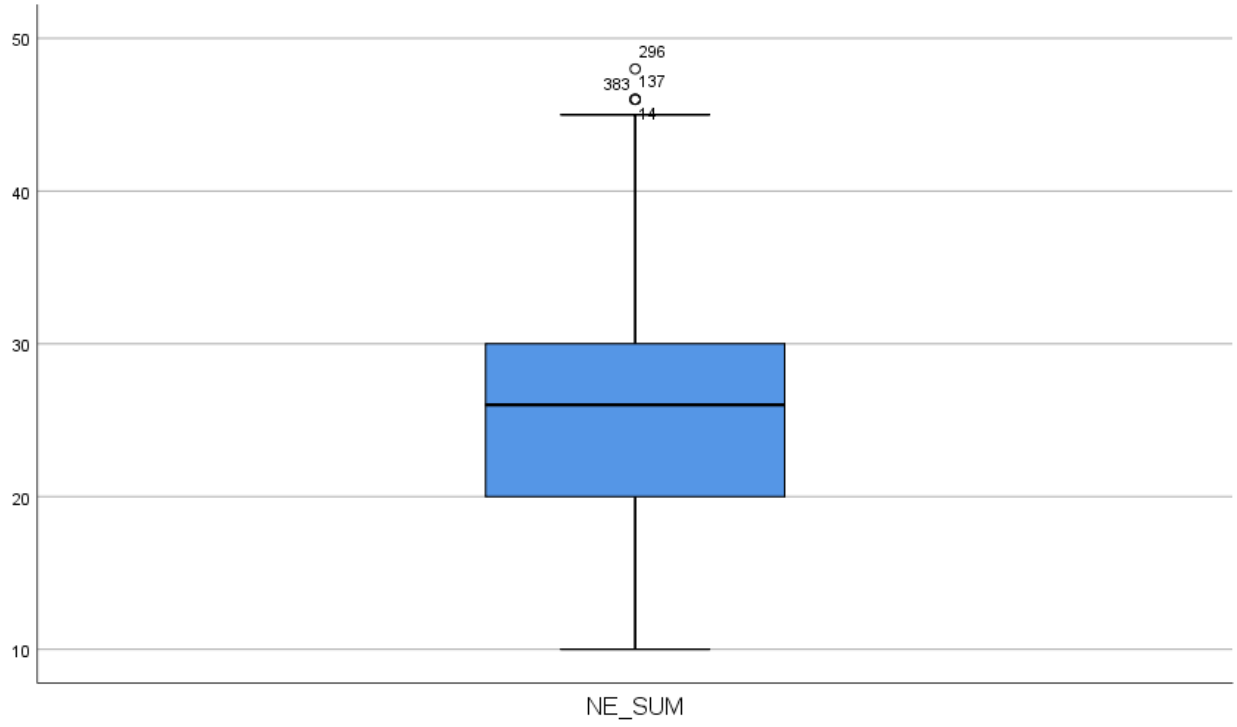
c.c Dean, Faculty of Arts and Social Science
Director, Institute of Postgraduate Studies and Research

Appendix J

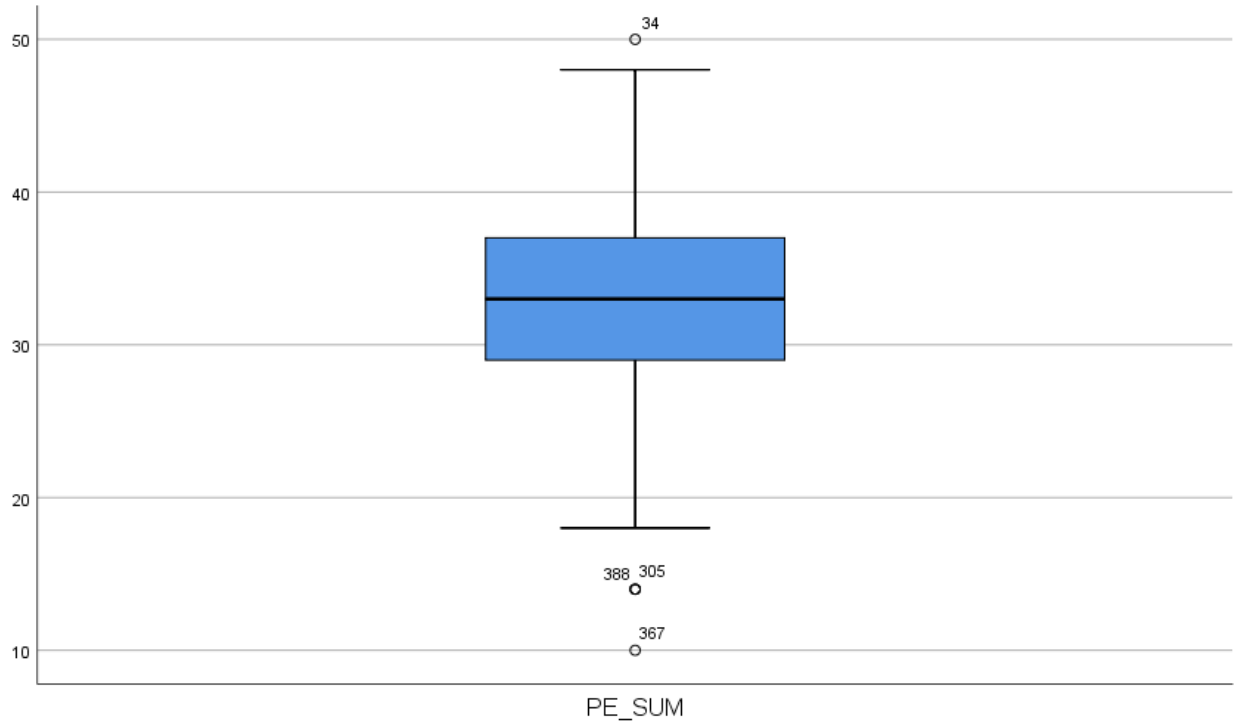
SPSS Output: Outliers

Boxplot for Each Variable

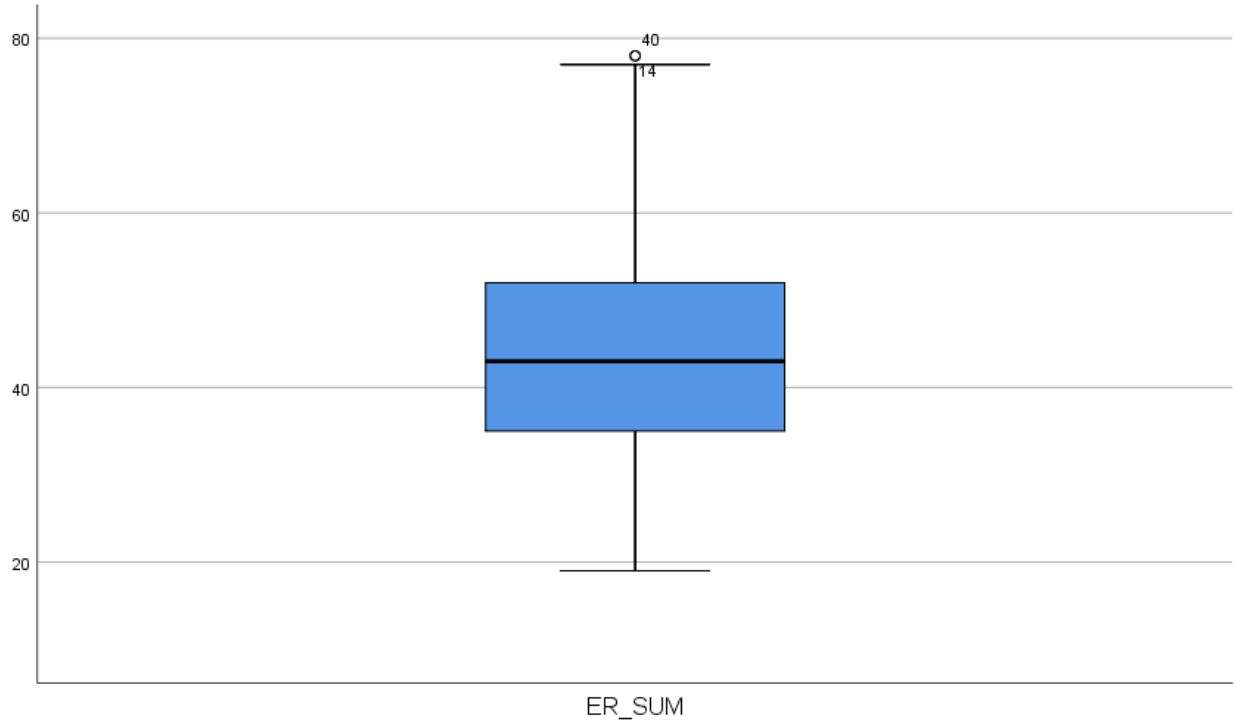
Negative Emotions



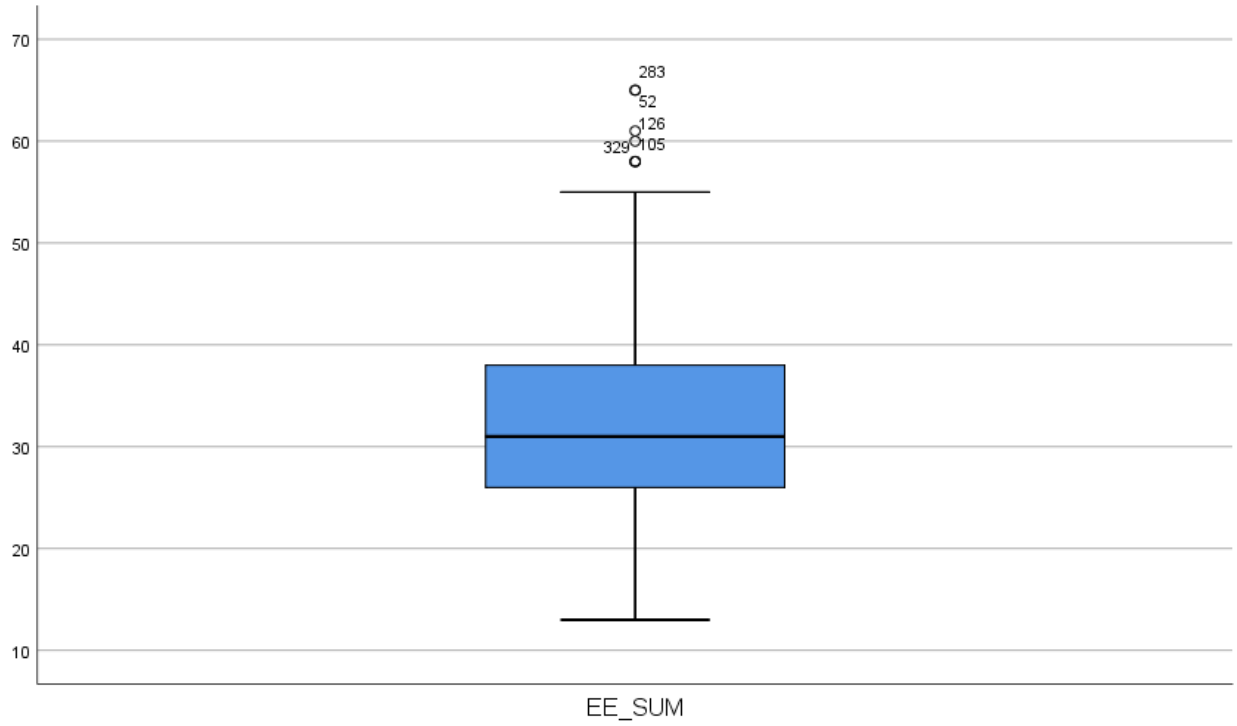
Positive Emotions



Emotion Regulation



Emotional Eating

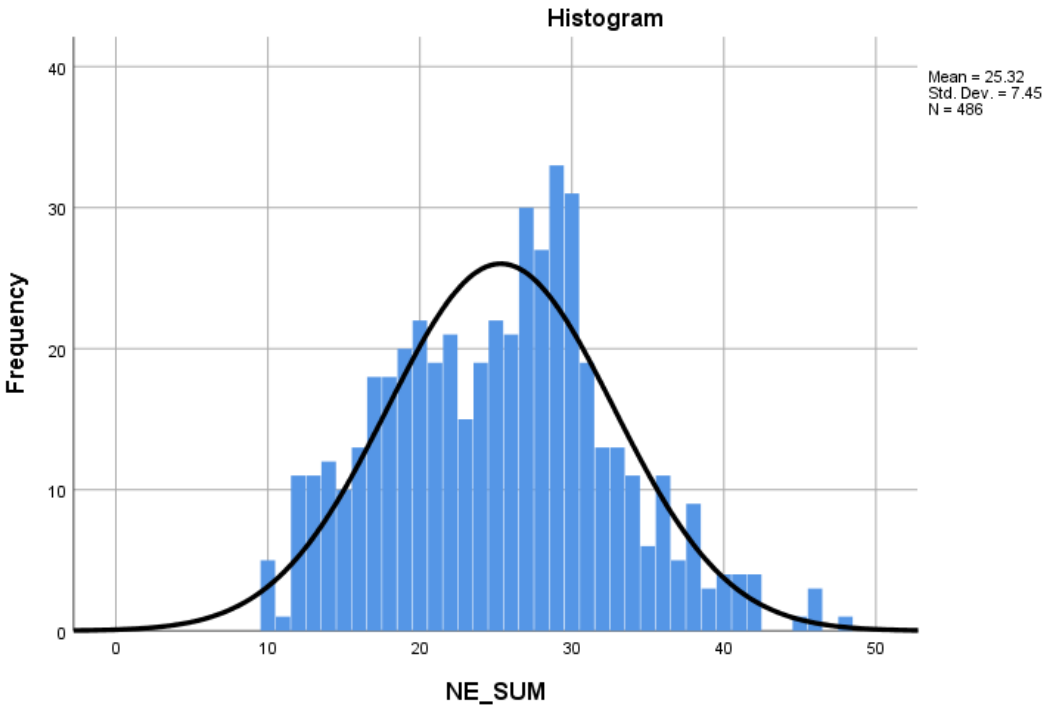


Appendix K

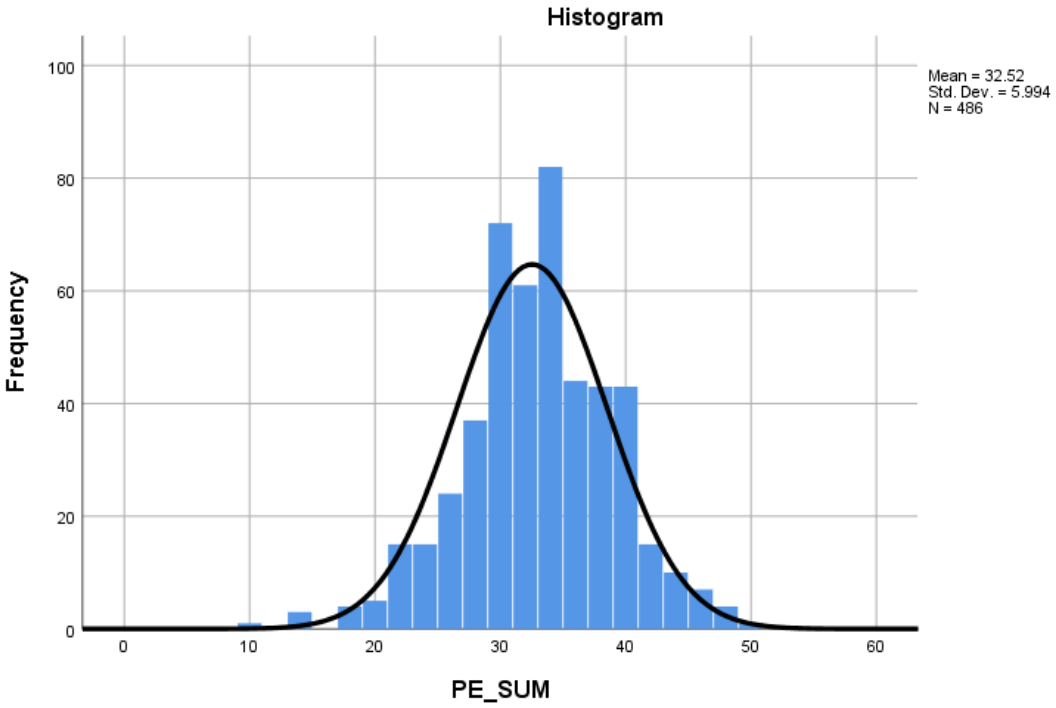
SPSS Output: Normality Assumptions

Histogram for Each Distribution

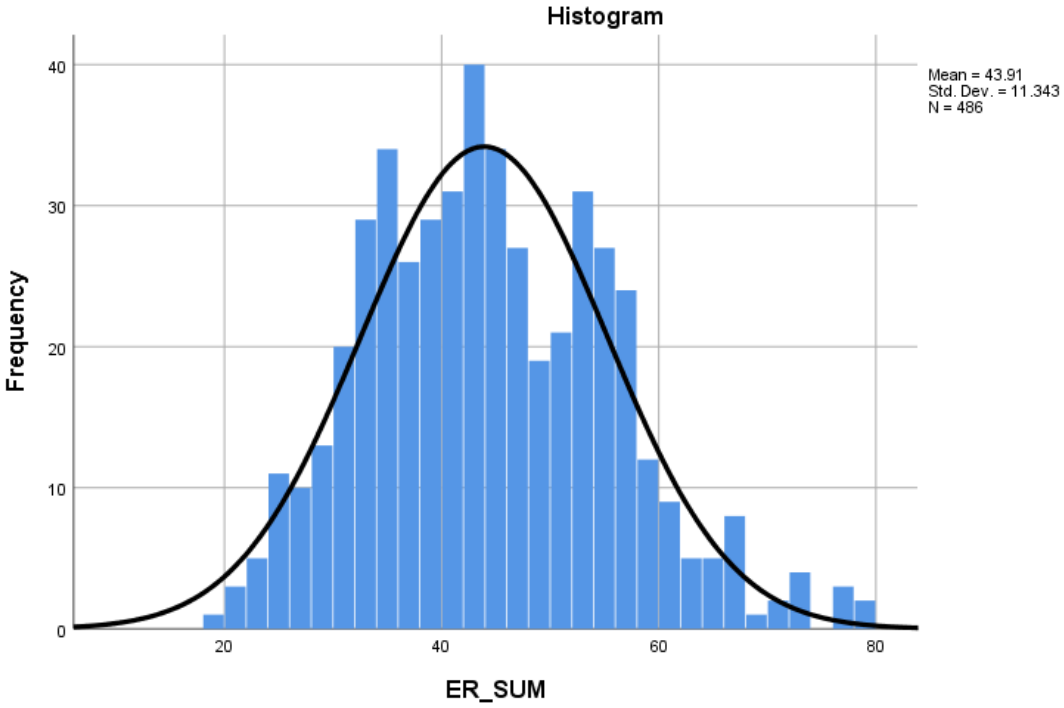
Negative Emotions



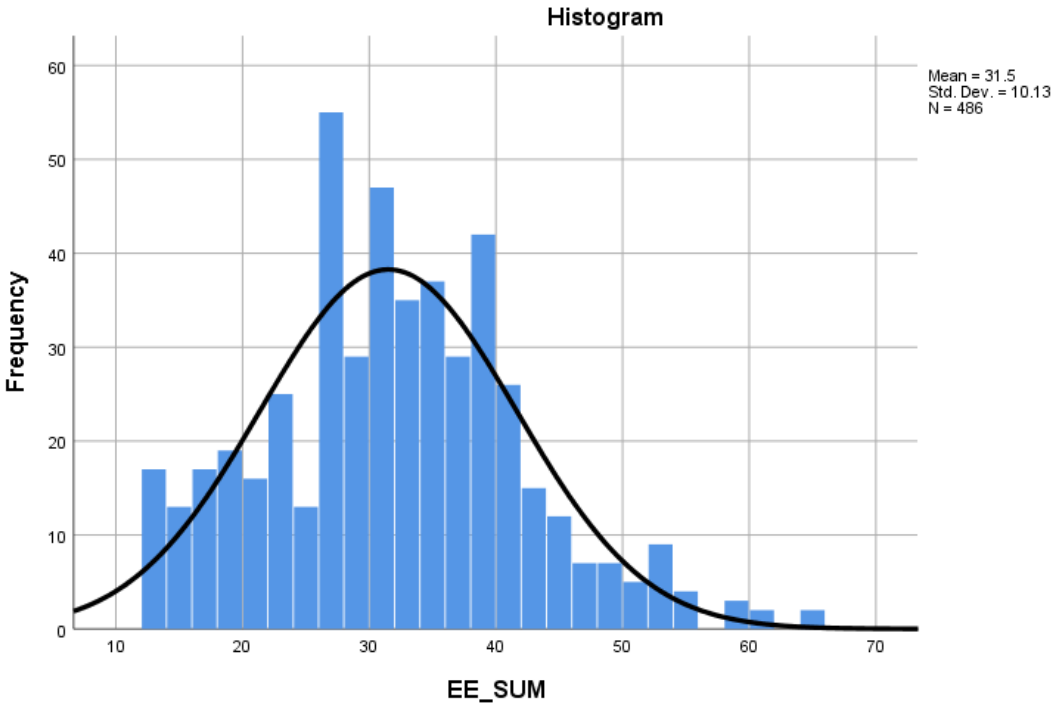
Positive Emotions



Emotion Regulation

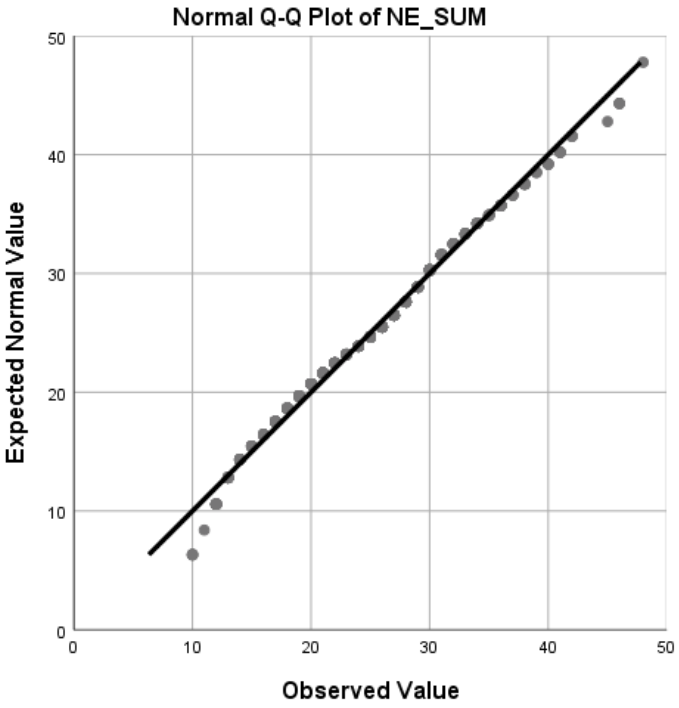


Emotional Eating

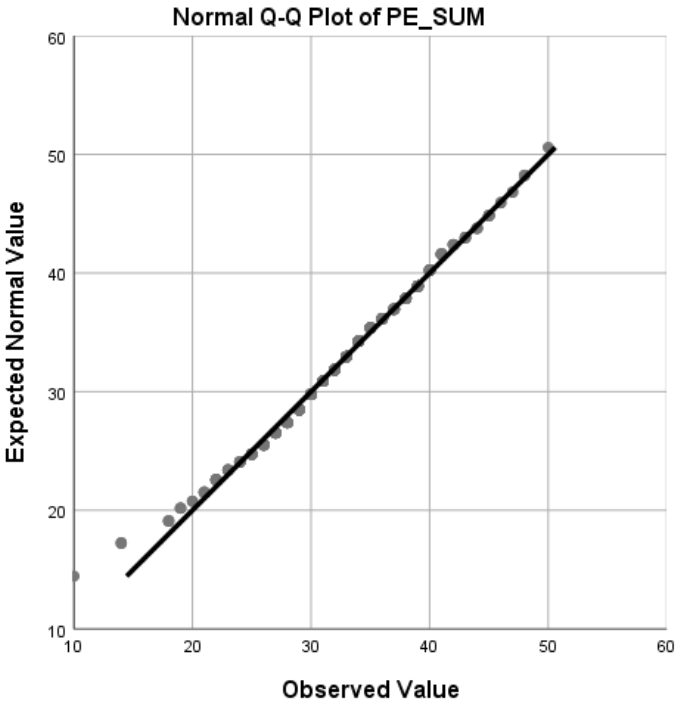


Normal Q-Q Plots for Each Distribution

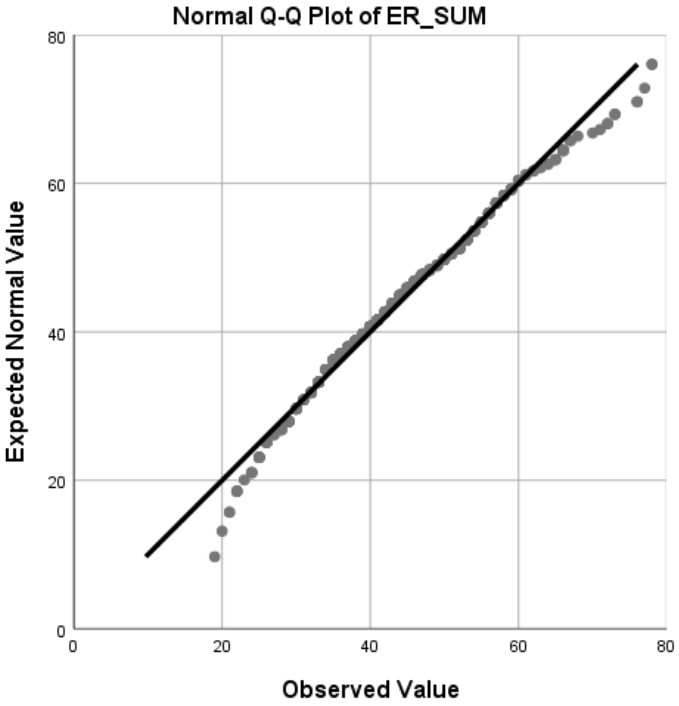
Negative Emotions



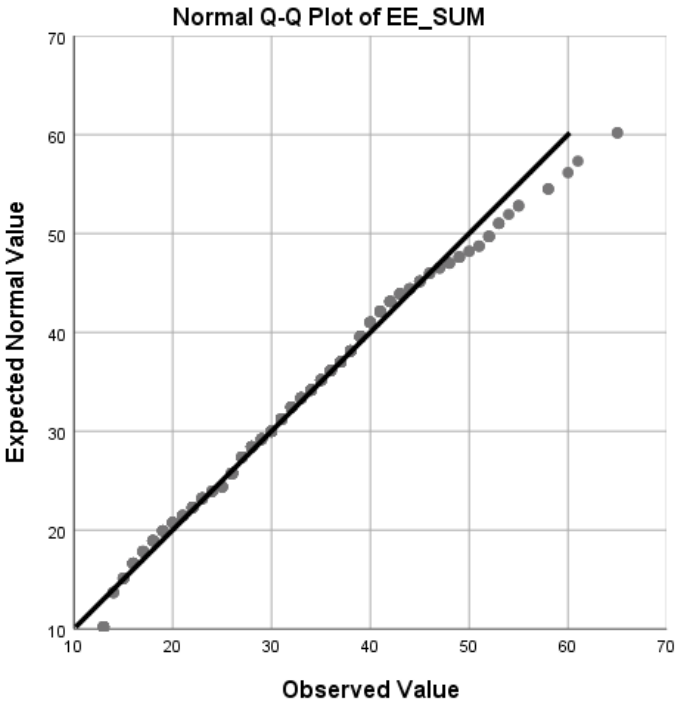
Positive Emotions



Emotion Regulation



Emotional Eating



Skewness and Kurtosis Tests for Each Distribution

Skewness and Kurtosis Tests

		Negative Emotions	Positive Emotions	Emotion Regulation	Emotional Eating
N	Valid	486	486	486	486
	Missing	0	0	0	0
Skewness		**.184**	**-.201**	**.362**	**.336**
Std. Error of Skewness		.111	.111	.111	.111
Kurtosis		**-.290**	**.530**	**-.110**	**.104**
Std. Error of Kurtosis		.221	.221	.221	.221

Kolmogorov-Smirnov (K-S) Test for Each Distribution

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Negative Emotions	.059	486	**.000**	.988	486	.000
Positive Emotions	.065	486	**.000**	.991	486	.007
Emotion Regulation	.051	486	**.005**	.987	486	.000
Emotional Eating	.047	486	**.013**	.983	486	.000

a. Lilliefors Significance Correction

Appendix L

SPSS Output: Descriptive Statistics

Descriptive Statistics of Demographic Variables

Demographic Variables	Values	*n*	*%*	*M.*	*S.D.*	*Range*	*Minimum*	*Maximum*	*Percentiles 25*	*Percentiles 50*	*Percentiles 75*
Age		486	100	22.7	3.751	22	18	40	21	22	23
Sex											
	Female	316	65								
	Male	170	35								
Race											
	Chinese	431	88.7								
	Indian	45	9.3								
	Malay	4	0.8								
	Punjabi	2	0.4								
	Iban	1	0.2								
	Portuguese	1	0.2								
	Sikh	1	0.2								
	Baba Nyonya	1	0.2								
Marital Status											
	Single	400	82.3								
	In a romantic relationship but not married	71	14.6								

	Married	15	3.1								
Employment Status											
	Student	413	85								
	Employed	65	13.4								
	Unemployed	6	1.2								
	Freelancer	1	0.2								
	Part-Time	1	0.2								
Monthly Household Income											
	B40	213	43.8								
	M40	245	50.4								
	T20	28	5.8								
Education Level											
	UEC	1	0.2								
	SPM	4	0.8								
	Secondary (STPM)	23	4.7								
	College	17	3.5								
	Foundation	6	1.2								
	Bachelor degree	412	84.8								
	Master	17	3.5								
	PhD	6	1.2								
How Many Family Members		486	100	4.93	1.258	9	1	10	4	5	6

Order Of Birth			
	An only child	30	6.2
	The youngest child	164	33.7
	The second child	2	0.4
	The Third child	1	0.2
	A middle child	123	25.3
	The oldest child	166	34.2
Who Bring Up			
	Both original parents	442	90.9
	One original parent	29	6
	No original parents but other family member(s)	11	2.3
	Both original parents and other relatives	1	0.2
	Grandparents	1	0.2
	Parents, and grandmother	1	0.2
	Parents, grandparents and guardian (relative)	1	0.2

Note. N=486. M.=Mean. S.D. = Standard Deviation. All variables do not have any missing value.

Descriptive Statistics of Main Variables

Main Variables	Groups	*n*	*%*	*M.*	*Std. Error of Mean*	*Median*	*Mode*	*S.D.*	*Variance*	*Range*	*Minimum*	*Maximum*	*Percentiles 25*	*Percentiles 50*	*Percentiles 75*
Negative Emotions				25.32	0.338	26	29	7.45	55.504	38	10	48	20	26	30
	Low (<25.32)	237	48.8												
	High (≥25.32)	249	51.2												
Positive Emotions				32.52	0.272	33	33a	5.994	35.924	40	10	50	29	33	37
	Low (<32.52)	237	48.8												
	High (≥32.52)	249	51.2												
Emotion Regulation				43.91	0.515	43	34	11.343	128.666	59	19	78	35	43	52
	Low (<43.91)	252	51.9												
	High (≥43.91)	234	48.1												
Emotional Eating				31.5	0.459	31	26	10.13	102.613	52	13	65	26	31	38
	Low (<31.5)	251	51.6												
	High (≥31.5)	235	48.4												

Note. N=486. M.=Mean. S.D. = Standard Deviation. All variables have no missing value. a means multiple modes exist and the smallest value is shown.

Descriptive Statistics of Demographic Variables with Emotional Eating Scores

Demographic	**Variables**	**Emotional Eating Scores** 13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	58	60	61	65	Total
	Female	8	1	3	8	5	5	6	4	5	9	8	5	5	24	9	11	6	14	18	14	11	11	18	3	13	15	14	10	6	8	2	3	5	3	3	3	3	2	3	2	3		2	3	1	1		316
Sex	Male	9	3	6	1	3	5	3	4	3	3	5	2	1	13	9	9	3	6	9	6	4	4	4	9	4	4	9	5	5	2	3	1	3	1			1			3	1	1	1				2	170
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
	Chinese	12	3	9	7	8	7	8	7	7	12	11	6	5	35	14	19	9	17	23	19	15	14	21	12	15	17	22	14	9	8	4	4	7	4	2	2	3	2	3	4	3		3	2		1	2	431
	Indian	4	1		2		2	1	1	1		1	1	1	1	4	1		3	1	1		1	1		2	1	1	1	2	1	1		1		1	1				1	1	1		1	1			45
	Malay	1													1					1							1																						4
	Punjabi						1													1																													2
Race	Iban																														1																		1
	Portuguese											1																																					1
	Sikh																																					1											1
	Baba Nyonya																			1																													1
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
	18																										1								1														2
	19	1														1									1				1																				4
	20	2		3	1	1		1	1		1	2	2	1	4	2	2	1	3	2	1	1	4	1	2		1	9	2		1	1	1		1														54
	21	3	2	1	4	3	4	2	2	4	7	3	1	2	12	4	7	5	7	12	9	2	5	5	3	6	6	7		3	2		2	1		1	1	3	1	1	2	1		1	1		1	1	150
Age	22	4		2	2	1	3	3	1	1	4	6	2	1	14	6	6	2	6	4	6	7	3	10	3	7	5	4	11	1	4	2	1	4	1	1	1	1		2	3	1		2					148
	23	2	1	2	1	1	2	1		1				1	5	3	3	1		3	2	3	1	3	1	1	2	2		5	1			1	1	1									1			1	53
	24	1	1			1			2				1	1		1	1			1			1							1	1																		13
	25					1						1									1			2		1	2										1		1			1				1			12
	26	1								1					1					1		1					2					1													1				9
	27																1		1	1														1															4

	28	2							1							1			1						1																								6
	29												1						1							1		1		1																			5
	30				1		1																																										2
	31																		1										1																				2
	32																																									1							1
	33																						1																										1
	34	1																																															1
	35							1	1	1										1	1																												5
	36																								1																								1
	37																					1																											1
	38											1																																					1
	39														1																																		1
	40			1				1												2				1		1					1	1		1									1						10
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
Marit-al Status	Single	16	4	8	8	4	9	7	5	8	11	12	5	6	34	16	16	8	18	19	15	9	11	17	11	12	16	21	15	10	6	4	3	7	3	2	3	3	2	2	3	2		3	2	1	1	2	400
	In a romantic relationship	1		1		4	1	1	3		1	1	1		2	2	4	1	1	6	4	5	4	4	1	5	3	2		1	2		1		1	1		1		1	2	2			1				71
	Married				1			1					1		1				1	2	1	1		1							2	1		1									1						15
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
Emplo-yment Status	Student	13	3	8	8	6	9	7	6	6	12	12	6	5	33	15	18	9	16	21	18	12	12	19	10	14	17	23	13	7	8	3	4	6	4	3	2	4	2	3	5	3		3	1	1	1	2	413
	Employed	4		1	1	2	1	2	2	2		1	1		4	3	2		4	5	2	3	2	3	2	3	2		1	3	2	2		1								1	1		2				65
	Unemployed		1											1						1									1	1							1												6
	Freelancer																																	1															1
	Part Time																						1																										1
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
Month	B40	7	4	5	3	3	4	4	2	5	6	8	2	2	18	5	6	6	10	10	11	6	3	6	6	12	7	9	8	5	3	2	3	6	2	2	1		1	2	3			1	1	1	1	1	213

-ly	M40	6		4	6	5	6	5	5	3	6	4	4	2	19	12	12	3	10	15	9	8	12	13	5	4	11	12	7	6	6	1	1	2	1	1	2	4	1	1	2	3	1	2	2			1	245
House	T20	4							1			1	1	2		1	2			2		1		3	1	1	1	2			1	2			1							1							28
-hold Income	*Total*	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
	UEC																	1																															1
	SPM			2				1											1																														4
	Secondary (STPM)	2	2				1		1	1					2			1	1			1	1	2	1		1	1	1		1				1		1											1	23
Educat	College	1			1	1						1			3	1			1		1			1	2		1	1				1												1					17
-ion	Foundation			1													2			1											1											1							6
Level	Bachelor degree	14	2	6	8	7	8	7	5	6	12	12	6	6	31	17	18	7	16	25	18	13	13	18	8	15	16	21	13	10	7	3	4	7	3	3	2	4	2	3	5	2	1	2	3	1	1	1	412
	Master							1	1	1			1						1	1	1	1		1	1	1	1			1	1	1		1								1							17
	PhD						1		1						1								1			1			1																				6
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
	1									1																																							1
	2				1	1			1	1									1	1	1										1			1			1												10
	3	2			1	1	1	2	1	1		1	1		2	1	2		1	5	1	1		1	1	1		1	1		1	1		1				1				1	1				1		36
How	4	7	2	7	1	2	3	3	2		5	1		2	12	3	5	2	5	5	7	5	3	5	2	5	7	7	2	5	2	1		2	1	2	1	1		2		1			1			1	130
Many	5	6	1	2	2	3	5	4	2	3	4	6	4	1	8	9	7	5	7	11	5	6	6	5	6	5	5	9	8	5	4	2	4	3		1		2	1	1	3	1		1	1	1			175
Family	6	1			3	1	1		2		2	3	1	2	11	1	4	2	6	3	2	1	4	8	1	3	5	3	1	1	1				2		1				2	1		1				1	81
Memb	7	1			1					1		2	1	1	4	1	2			2	3	2	2	3		2	2	3	3		1			1	1									1	1				41
-ers	8									1	1					2									2	1													1										8
	9															1					1											1																	3
	10		1																																														1
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
Order	An only child	3			1	1	1	3	1	1		1			1	1	1		2	4	1	1		1	1	1					1						1	2											30

Of Birth	The youngest child	2	1	4	3	2	3	1	3	2	4	4		1	13	6	8	4	8	9	4	5	7	11	3	6	11	10	3	5		1	1	4	1	2		1	2		4	2		1	1			1	164
	The second child				1						1																																						2
	The Third child														1																																		1
	A middle child	3			3	2	3	1	1	3	4	6	5	3	11	6	4	2	4	7	6	1	4	4	4	5	1	5	8	1	3	2	2	2	1					1	1	1		2	1				123
	The oldest child	9	3	5	1	3	3	4	3	2	3	2	2	2	11	5	7	3	6	7	9	8	4	6	4	5	7	8	4	5	6	2	1	2	2	1	2	1		2		1	1		1	1	1	1	166
	Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*
Who Bring Up	Both original parents	15	3	9	9	8	9	8	7	6	9	13	6	5	35	17	18	9	17	24	16	14	15	22	12	17	18	19	13	11	8	4	4	7	4	3	2	3	2	3	5	4		3	3	1	1	1	442
	One original parent	1						1		2	2		1	1	1		1		3	2	4						1	2	2		1			1			1	1					1						29
	No original parents but other family member(s)	1	1				1				1					1	1			1								1			1	1																1	11
	Both original parents and other relatives																											1																					1
	Grandparents																					1																											1
	Parents, and grandmother														1																																		1
	Parents, grandparents and guardian (relative)								1																																								1

Total	*17*	*4*	*9*	*9*	*8*	*10*	*9*	*8*	*8*	*12*	*13*	*7*	*6*	*37*	*18*	*20*	*9*	*20*	*27*	*20*	*15*	*15*	*22*	*12*	*17*	*19*	*23*	*15*	*11*	*10*	*5*	*4*	*8*	*4*	*3*	*3*	*4*	*2*	*3*	*5*	*4*	*1*	*3*	*3*	*1*	*1*	*2*	*486*

Appendix M

SPSS Output: Multiple Linear Regression

Durbin-Watson Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.351[a]	.123	.118	9.514	**2.120**

a. Predictors: (Constant), ER_SUM, PE_SUM, NE_SUM

b. Dependent Variable: EE_SUM

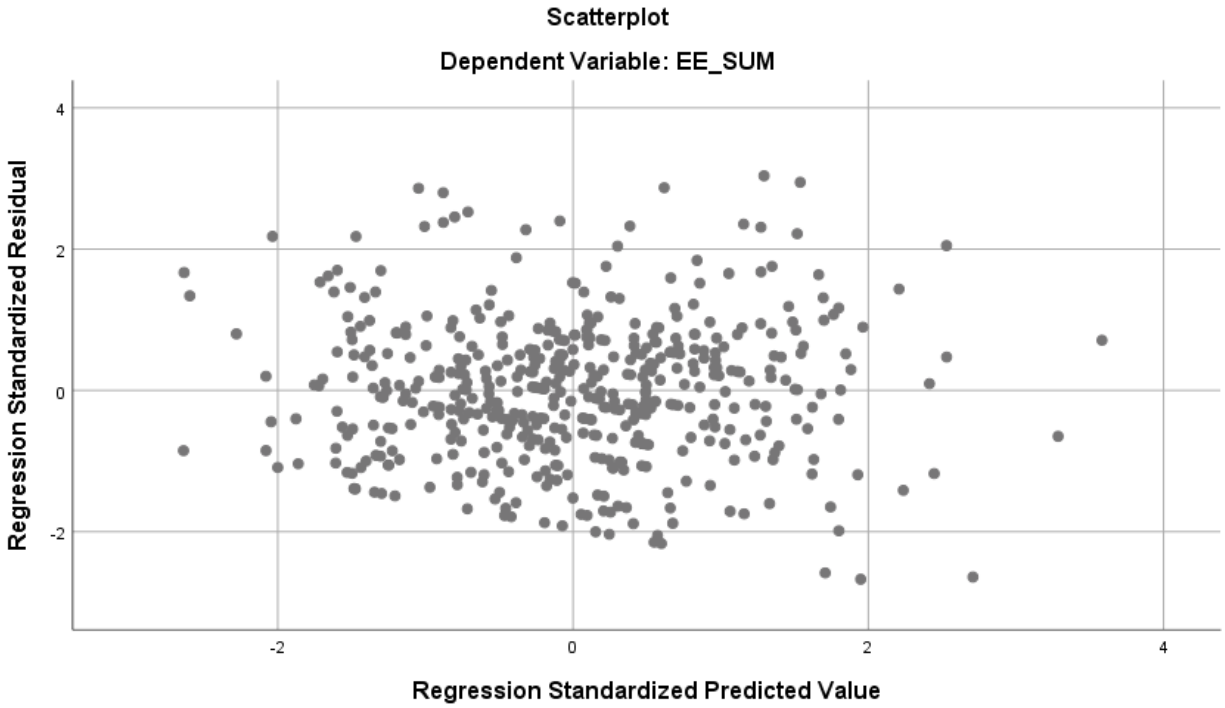
The Values of Variance Inflation Factor and Tolerance

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	10.530	3.113		3.383	.001		
	NE_SUM	.151	.070	.111	2.148	.032	**.680**	**1.471**
	PE_SUM	.208	.073	.123	2.846	.005	**.975**	**1.025**
	ER_SUM	.237	.047	.265	5.088	.000	**.670**	**1.492**

a. Dependent Variable: EE_SUM

The Scatterplot of Homoscedasticity , Linearity of Residuals, and Multivariate Normality for All main variables



The Casewise Diagnostics for Emotional Eating

Casewise Diagnostics[a]

Case Number	Std. Residual	EE_SUM	Predicted Value	Residual
9	2.378	51	28.37	22.626
20	-2.583	13	37.58	-24.576
48	-2.150	13	33.45	-20.452
52	3.037	65	36.10	28.898
105	2.353	58	35.61	22.390
122	2.870	61	33.70	27.303
126	2.050	60	40.50	19.500
152	2.042	52	32.57	19.426
164	-2.036	13	32.37	-19.373
202	2.274	52	30.36	21.638
206	2.218	58	36.90	21.099
265	2.326	55	32.87	22.129
283	2.946	65	36.97	28.026
329	2.310	58	36.03	21.973

333	2.179	47	26.27	20.730
334	-2.642	16	41.14	-25.137
347	2.861	55	27.78	27.223
355	-2.168	13	33.63	-20.628
362	-2.002	13	32.05	-19.045
372	2.526	53	28.97	24.033
384	2.180	45	24.26	20.743
396	2.454	52	28.65	23.352
398	-2.673	13	38.43	-25.431
404	-2.053	14	33.54	-19.537
405	2.398	54	31.18	22.819
439	2.799	55	28.37	26.629
442	2.321	50	27.92	22.079

a. Dependent Variable: EE_SUM

The Case Summaries for The Residuals Statistics (Mahalanobis Distance, Cook's Distance and Leverage)

Case Summaries

			Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
Group_MO	Potential Outliers	Multivariate 1	9	4.36747	.01599	.00901
		2	20	4.34636	.01879	.00896
		3	48	1.07132	.00497	.00221
		4	52	1.97737	.01432	.00408
		5	105	2.53407	.01023	.00522
		6	122	2.28774	.01414	.00472
		7	126	6.85290	.01757	.01413
		8	152	1.58109	.00560	.00326
		9	164	2.58324	.00777	.00533
		10	202	.34804	.00361	.00072
		11	206	3.38957	.01133	.00699
		12	265	5.35382	.01819	.01104
		13	283	4.02130	.02292	.00829
		14	329	2.44643	.00961	.00504
		15	333	2.89966	.00969	.00598
		16	**334**	8.10252	.03401	**.01671**
		17	347	1.85394	.01218	.00382

		18	355	.95979	.00478	.00198
		19	362	.42180	.00295	.00087
		20	372	2.77129	.01259	.00571
		21	384	6.24265	.01828	.01287
		22	396	2.47106	.01093	.00509
		23	398	4.48443	.02066	.00925
		24	404	2.04886	.00671	.00422
		25	405	2.60288	.01084	.00537
		26	439	2.64627	.01494	.00546
		27	442	1.14917	.00601	.00237
		Total	N	27	27	27
NOT Outliers	Multivariate	1	1	4.28555	.00075	.00884
		2	2	.92782	.00027	.00191
		3	3	.74092	.00000	.00153
		4	4	.94922	.00075	.00196
		5	5	.33302	.00049	.00069
		6	6	2.31620	.00063	.00478
		7	7	1.53137	.00083	.00316
		8	8	.80116	.00047	.00165
		9	10	2.21358	.00491	.00456
		10	11	3.19475	.00003	.00659
		11	12	4.67377	.00072	.00964
		12	13	1.05531	.00138	.00218
		13	14	12.99741	.00385	.02680
		14	15	3.21895	.00035	.00664
		15	16	1.21264	.00012	.00250
		16	17	2.82876	.00001	.00583
		17	18	2.73309	.00096	.00564
		18	19	7.07760	.00644	.01459
		19	21	1.97600	.00311	.00407
		20	22	4.39393	.00001	.00906
		21	23	.66939	.00001	.00138
		22	24	2.45608	.00111	.00506
		23	25	15.93189	.01992	.03285
		24	26	.60098	.00021	.00124
		25	27	5.91615	.00015	.01220
		26	28	.78688	.00138	.00162
		27	29	.73670	.00081	.00152
		28	30	3.91411	.00164	.00807

	29	31	.94117	.00040	.00194
	30	32	5.74312	.00974	.01184
	31	33	3.04611	.00203	.00628
	32	34	10.27380	.01911	.02118
	33	35	7.72553	.00004	.01593
	34	36	4.14166	.00001	.00854
	35	37	2.23335	.00054	.00460
	36	38	1.79555	.00010	.00370
	37	39	1.10411	.00028	.00228
	38	40	21.44371	.00538	.04421
	39	41	1.14788	.00005	.00237
	40	42	3.68605	.00000	.00760
	41	43	1.07590	.00033	.00222
	42	44	5.11657	.00234	.01055
	43	45	.42994	.00001	.00089
	44	46	6.87208	.00720	.01417
	45	47	.77951	.00029	.00161
	46	49	1.17965	.00000	.00243
	47	50	1.23513	.00007	.00255
	48	51	.97925	.00008	.00202
	49	53	1.67358	.00102	.00345
	50	54	3.86254	.00270	.00796
	51	55	2.86055	.00013	.00590
	52	56	.57242	.00048	.00118
	53	57	1.68406	.00009	.00347
	54	58	.26421	.00015	.00054
	55	59	6.53927	.00308	.01348
	56	60	.29152	.00038	.00060
	57	61	2.16717	.00045	.00447
	58	62	.31254	.00009	.00064
	59	63	3.59759	.00014	.00742
	60	64	2.78878	.00005	.00575
	61	65	.59623	.00013	.00123
	62	66	1.68095	.00015	.00347
	63	67	.06188	.00031	.00013
	64	68	3.08995	.00046	.00637
	65	69	4.68964	.00088	.00967
	66	70	6.65211	.00050	.01372
	67	71	.95982	.00041	.00198

	68	72	2.23707	.00008	.00461
	69	73	.92657	.00034	.00191
	70	74	5.28030	.00003	.01089
	71	75	4.17970	.00325	.00862
	72	76	4.73483	.00083	.00976
	73	77	1.28746	.00055	.00265
	74	78	.71536	.00001	.00147
	75	79	1.87884	.00094	.00387
	76	80	1.26413	.00024	.00261
	77	81	3.33142	.00101	.00687
	78	82	2.77363	.00176	.00572
	79	83	6.51358	.00776	.01343
	80	84	4.39315	.00047	.00906
	81	85	4.03939	.00023	.00833
	82	86	1.27642	.00001	.00263
	83	87	.26058	.00136	.00054
	84	88	5.51756	.00000	.01138
	85	89	1.20342	.00015	.00248
	86	90	2.86854	.00159	.00591
	87	91	.91447	.00002	.00189
	88	92	.94723	.00023	.00195
	89	93	2.48705	.00094	.00513
	90	94	3.96073	.00556	.00817
	91	95	2.88041	.00021	.00594
	92	96	7.00200	.00951	.01444
	93	97	2.27835	.00089	.00470
	94	98	2.67219	.00348	.00551
	95	99	.75624	.00101	.00156
	96	100	6.05879	.00031	.01249
	97	101	.33689	.00006	.00069
	98	102	5.25199	.00073	.01083
	99	103	2.04083	.00008	.00421
	100	104	2.89674	.00031	.00597
	101	106	.52664	.00020	.00109
	102	107	3.49361	.00330	.00720
	103	108	3.03148	.00000	.00625
	104	109	2.97324	.00086	.00613
	105	110	.16697	.00055	.00034
	106	111	2.47738	.00054	.00511

	107	112	2.86420	.00069	.00591
	108	113	5.82049	.00003	.01200
	109	114	2.44436	.00499	.00504
	110	115	.38951	.00041	.00080
	111	116	.48100	.00012	.00099
	112	117	3.32093	.00180	.00685
	113	118	1.12163	.00032	.00231
	114	119	2.47937	.00071	.00511
	115	120	2.98888	.00000	.00616
	116	121	3.17027	.00015	.00654
	117	123	2.76527	.00053	.00570
	118	124	6.47589	.00076	.01335
	119	125	1.41074	.00198	.00291
	120	127	4.76037	.00244	.00982
	121	128	4.76219	.00157	.00982
	122	129	1.99977	.00554	.00412
	123	130	8.58458	.01057	.01770
	124	131	1.58497	.00310	.00327
	125	132	3.08533	.00201	.00636
	126	133	4.55758	.00023	.00940
	127	134	2.16986	.00064	.00447
	128	135	12.00884	.00218	.02476
	129	136	2.59359	.00000	.00535
	130	137	13.39299	.00000	.02761
	131	138	1.53187	.00126	.00316
	132	139	1.52914	.00006	.00315
	133	140	.38170	.00003	.00079
	134	141	2.66356	.00054	.00549
	135	142	.12156	.00001	.00025
	136	143	.46812	.00123	.00097
	137	144	4.56909	.00844	.00942
	138	145	1.17968	.00009	.00243
	139	146	4.43118	.00020	.00914
	140	147	.56561	.00188	.00117
	141	148	7.15773	.00222	.01476
	142	149	3.16581	.00084	.00653
	143	150	1.65403	.00158	.00341
	144	151	1.38265	.00096	.00285
	145	153	.51992	.00000	.00107

	146	154	3.63900	.00009	.00750
	147	155	7.47255	.00411	.01541
	148	156	6.73446	.00000	.01389
	149	157	.49098	.00031	.00101
	150	158	3.41207	.00436	.00704
	151	159	1.27723	.00009	.00263
	152	160	3.54113	.00426	.00730
	153	161	1.52795	.00005	.00315
	154	162	1.09491	.00348	.00226
	155	163	8.17131	.00090	.01685
	156	165	1.08725	.00011	.00224
	157	166	3.93189	.00044	.00811
	158	167	11.73624	.00942	.02420
	159	168	2.91814	.00229	.00602
	160	169	2.16892	.00004	.00447
	161	170	4.95317	.00016	.01021
	162	171	1.58494	.00023	.00327
	163	172	2.92342	.00058	.00603
	164	173	6.05345	.00037	.01248
	165	174	2.16838	.00000	.00447
	166	175	1.33979	.00070	.00276
	167	176	.48395	.00009	.00100
	168	177	2.66136	.00010	.00549
	169	178	.10938	.00004	.00023
	170	179	2.04411	.00063	.00421
	171	180	10.09631	.00104	.02082
	172	181	1.09475	.00004	.00226
	173	182	3.39265	.00106	.00700
	174	183	2.05176	.00143	.00423
	175	184	1.30438	.00008	.00269
	176	185	3.21627	.00035	.00663
	177	186	.50291	.00009	.00104
	178	187	5.79289	.01041	.01194
	179	188	11.83224	.01396	.02440
	180	189	.60837	.00146	.00125
	181	190	1.31541	.00425	.00271
	182	191	1.13320	.00168	.00234
	183	192	.66706	.00190	.00138
	184	193	.62329	.00000	.00129

	185	194	1.31643	.00008	.00271
	186	195	.28274	.00063	.00058
	187	196	.58988	.00254	.00122
	188	197	2.83825	.00013	.00585
	189	198	3.37802	.00038	.00696
	190	199	1.43550	.00387	.00296
	191	200	1.12233	.00060	.00231
	192	201	1.61883	.00058	.00334
	193	203	.47249	.00193	.00097
	194	204	5.49192	.00266	.01132
	195	205	.86689	.00034	.00179
	196	207	5.08491	.00075	.01048
	197	208	7.55673	.00652	.01558
	198	209	4.37297	.00115	.00902
	199	210	.83600	.00052	.00172
	200	211	.43614	.00055	.00090
	201	212	10.72029	.00417	.02210
	202	213	.93247	.00005	.00192
	203	214	.22979	.00039	.00047
	204	215	1.81573	.00000	.00374
	205	216	.51651	.00042	.00106
	206	217	2.86633	.00046	.00591
	207	218	3.18935	.00191	.00658
	208	219	.36263	.00055	.00075
	209	220	3.53470	.00162	.00729
	210	221	1.31051	.00001	.00270
	211	222	.43046	.00018	.00089
	212	223	1.38042	.00100	.00285
	213	224	2.76022	.00018	.00569
	214	225	2.22417	.00013	.00459
	215	226	5.22023	.00774	.01076
	216	227	.36791	.00069	.00076
	217	228	6.86667	.01291	.01416
	218	229	8.83047	.01469	.01821
	219	230	2.20244	.00002	.00454
	220	231	.38951	.00004	.00080
	221	232	3.76014	.00419	.00775
	222	233	1.27883	.00070	.00264
	223	234	2.63536	.00395	.00543

	224	235	4.04835	.00003	.00835
	225	236	8.68785	.00497	.01791
	226	237	4.12541	.00031	.00851
	227	238	1.80167	.00007	.00371
	228	239	1.63902	.00012	.00338
	229	240	3.32410	.00123	.00685
	230	241	.29423	.00006	.00061
	231	242	.95363	.00008	.00197
	232	243	.20566	.00089	.00042
	233	244	3.85421	.00295	.00795
	234	245	1.42084	.00080	.00293
	235	246	9.19569	.00367	.01896
	236	247	.40340	.00052	.00083
	237	248	3.85413	.00352	.00795
	238	249	4.80977	.00050	.00992
	239	250	3.33233	.00005	.00687
	240	251	.51781	.00006	.00107
	241	252	7.09510	.00000	.01463
	242	253	1.77363	.00041	.00366
	243	254	1.38042	.00000	.00285
	244	255	2.84901	.00599	.00587
	245	256	.18794	.00080	.00039
	246	257	.23688	.00000	.00049
	247	258	1.84793	.00144	.00381
	248	259	.41969	.00076	.00087
	249	260	.24958	.00003	.00051
	250	261	.90131	.00346	.00186
	251	262	1.96664	.00045	.00405
	252	263	.85874	.00010	.00177
	253	264	4.37126	.00001	.00901
	254	266	3.95624	.00007	.00816
	255	267	4.94360	.00053	.01019
	256	268	.36530	.00190	.00075
	257	269	1.82726	.00415	.00377
	258	270	3.62675	.00262	.00748
	259	271	.96338	.00168	.00199
	260	272	4.31927	.00001	.00891
	261	273	1.52611	.00174	.00315
	262	274	4.37889	.00056	.00903

	263	275	2.98881	.00025	.00616
	264	276	3.10268	.00039	.00640
	265	277	3.06246	.00059	.00631
	266	278	2.81128	.00133	.00580
	267	279	1.40983	.00117	.00291
	268	280	.87651	.00247	.00181
	269	281	2.47336	.00353	.00510
	270	282	.18433	.00225	.00038
	271	284	1.59042	.00106	.00328
	272	285	1.67992	.00162	.00346
	273	286	2.24732	.00037	.00463
	274	287	1.35337	.00010	.00279
	275	288	2.19418	.00003	.00452
	276	289	4.03054	.00014	.00831
	277	290	2.67224	.00333	.00551
	278	291	4.26813	.00274	.00880
	279	292	7.47595	.00033	.01541
	280	293	1.89508	.00075	.00391
	281	294	2.86303	.00018	.00590
	282	295	3.49123	.00255	.00720
	283	296	15.41819	.02325	.03179
	284	297	1.17729	.00004	.00243
	285	298	1.33403	.00084	.00275
	286	299	.35801	.00074	.00074
	287	300	1.64772	.00005	.00340
	288	301	3.38365	.00003	.00698
	289	302	5.31360	.00011	.01096
	290	303	5.11733	.00266	.01055
	291	304	1.32979	.00025	.00274
	292	305	13.02162	.01373	.02685
	293	306	.72873	.00121	.00150
	294	307	.64013	.00000	.00132
	295	308	.48924	.00003	.00101
	296	309	2.79334	.00023	.00576
	297	310	1.06157	.00003	.00219
	298	311	.81600	.00319	.00168
	299	312	4.83864	.00001	.00998
	300	313	5.12226	.00013	.01056
	301	314	2.80457	.00016	.00578

	302	315	3.98790	.00000	.00822
	303	316	1.26349	.00168	.00261
	304	317	1.52539	.00001	.00315
	305	318	4.44123	.00347	.00916
	306	319	3.06953	.00029	.00633
	307	320	6.75111	.00100	.01392
	308	321	1.71658	.00054	.00354
	309	322	4.87367	.00057	.01005
	310	323	1.21908	.00022	.00251
	311	324	2.50573	.00023	.00517
	312	325	1.01993	.00011	.00210
	313	326	8.28029	.00051	.01707
	314	327	.32905	.00159	.00068
	315	328	1.09482	.00000	.00226
	316	330	.82948	.00001	.00171
	317	331	2.06909	.00091	.00427
	318	332	1.23165	.00017	.00254
	319	335	1.99782	.00007	.00412
	320	336	4.28115	.00075	.00883
	321	337	4.18960	.00172	.00864
	322	338	1.57805	.00034	.00325
	323	339	4.00235	.00294	.00825
	324	340	16.97481	.00040	.03500
	325	341	4.38787	.00134	.00905
	326	342	2.24356	.00074	.00463
	327	343	2.91710	.00021	.00601
	328	344	1.81985	.00133	.00375
	329	345	7.86661	.00244	.01622
	330	346	1.71341	.00046	.00353
	331	348	2.84874	.00230	.00587
	332	349	2.42167	.00088	.00499
	333	350	.87401	.00109	.00180
	334	351	5.63521	.00058	.01162
	335	352	3.11694	.00365	.00643
	336	353	2.47045	.00081	.00509
	337	354	2.87865	.00049	.00594
	338	356	.61887	.00051	.00128
	339	357	8.08731	.00138	.01667
	340	358	4.69616	.00089	.00968

	341	359	.88469	.00049	.00182
	342	360	.30742	.00025	.00063
	343	361	8.22279	.00156	.01695
	344	363	3.52061	.00010	.00726
	345	364	2.10664	.00011	.00434
	346	365	1.98811	.00001	.00410
	347	366	3.17624	.00001	.00655
	348	367	17.21280	.02823	.03549
	349	368	2.69809	.00099	.00556
	350	369	2.07101	.00001	.00427
	351	370	.24183	.00149	.00050
	352	371	2.08067	.00161	.00429
	353	373	4.40156	.00339	.00908
	354	374	3.01517	.00001	.00622
	355	375	1.77696	.00212	.00366
	356	376	1.85756	.00027	.00383
	357	377	1.90359	.00183	.00392
	358	378	1.44106	.00084	.00297
	359	379	.60923	.00003	.00126
	360	380	2.09966	.00119	.00433
	361	381	.06698	.00173	.00014
	362	382	2.56004	.00005	.00528
	363	383	24.30803	.01395	.05012
	364	385	2.73232	.00378	.00563
	365	386	2.86046	.00220	.00590
	366	387	6.88783	.00582	.01420
	367	388	13.30103	.00569	.02742
	368	389	3.21297	.00298	.00662
	369	390	2.24808	.00043	.00464
	370	391	1.05895	.00004	.00218
	371	392	1.43598	.00060	.00296
	372	393	7.83592	.00667	.01616
	373	394	.54091	.00011	.00112
	374	395	3.54933	.00009	.00732
	375	397	6.27713	.00432	.01294
	376	399	.95719	.00228	.00197
	377	400	1.70297	.00008	.00351
	378	401	3.20316	.00578	.00660
	379	402	2.62671	.00007	.00542

	380	403	3.19505	.00065	.00659
	381	406	8.65717	.00319	.01785
	382	407	2.21497	.00142	.00457
	383	408	2.50190	.00000	.00516
	384	409	4.45406	.00791	.00918
	385	410	.98257	.00017	.00203
	386	411	7.96802	.01133	.01643
	387	412	2.96813	.00181	.00612
	388	413	8.53609	.00327	.01760
	389	414	2.22735	.00006	.00459
	390	415	3.42521	.00295	.00706
	391	416	.18433	.00015	.00038
	392	417	1.07687	.00006	.00222
	393	418	.08219	.00102	.00017
	394	419	.80159	.00000	.00165
	395	420	.58670	.00231	.00121
	396	421	2.21577	.00009	.00457
	397	422	1.02124	.00076	.00211
	398	423	.72060	.00002	.00149
	399	424	2.89141	.00002	.00596
	400	425	1.48695	.00022	.00307
	401	426	.67848	.00056	.00140
	402	427	1.74720	.00003	.00360
	403	428	1.26985	.00004	.00262
	404	429	1.22186	.00024	.00252
	405	430	3.46528	.00007	.00714
	406	431	1.77477	.00017	.00366
	407	432	.22720	.00185	.00047
	408	433	5.46773	.01352	.01127
	409	434	1.72629	.00046	.00356
	410	435	4.83777	.00008	.00997
	411	436	2.38571	.00145	.00492
	412	437	1.06932	.00044	.00220
	413	438	1.42198	.00345	.00293
	414	440	.66813	.00308	.00138
	415	441	.76250	.00096	.00157
	416	443	4.24813	.00020	.00876
	417	444	.87611	.00002	.00181
	418	445	2.24808	.00327	.00464

	419	446	.13528	.00001	.00028
	420	447	2.56581	.00028	.00529
	421	448	.81027	.00024	.00167
	422	449	.69634	.00012	.00144
	423	450	4.26041	.00537	.00878
	424	451	3.11317	.00291	.00642
	425	452	2.31786	.00336	.00478
	426	453	.56561	.00027	.00117
	427	454	2.02383	.00002	.00417
	428	455	.29854	.00010	.00062
	429	456	4.50921	.00197	.00930
	430	457	6.17407	.00029	.01273
	431	458	1.25757	.00114	.00259
	432	459	1.63888	.00002	.00338
	433	460	2.31172	.00533	.00477
	434	461	2.42058	.00130	.00499
	435	462	4.20819	.00281	.00868
	436	463	.64285	.00040	.00133
	437	464	5.47280	.00197	.01128
	438	465	1.74922	.00057	.00361
	439	466	1.21509	.00108	.00251
	440	467	3.86512	.00070	.00797
	441	468	5.19565	.00186	.01071
	442	469	1.73388	.00000	.00358
	443	470	2.86436	.00011	.00591
	444	471	.97032	.00096	.00200
	445	472	1.04544	.00118	.00216
	446	473	.68100	.00019	.00140
	447	474	1.09475	.00009	.00226
	448	475	.39887	.00082	.00082
	449	476	2.37802	.00017	.00490
	450	477	6.77800	.00093	.01398
	451	478	4.03325	.00710	.00832
	452	479	3.23905	.00217	.00668
	453	480	2.32441	.00036	.00479
	454	481	1.22229	.00048	.00252
	455	482	.94922	.00058	.00196
	456	483	1.97693	.00326	.00408
	457	484	1.13862	.00061	.00235

		458	485	2.67224	.00043	.00551
		459	486	1.71215	.00057	.00353
		Total	N	459	459	459
	Total	N		486	486	486

ANOVA Table of Multiple Linear Regression

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6138.651	**3**	2046.217	**22.606**	**.000[b]**
	Residual	43628.849	**482**	90.516		
	Total	49767.500	485			

a. Dependent Variable: EE_SUM

b. Predictors: (Constant), ER_SUM, PE_SUM, NE_SUM

Model Summary of Multiple Linear Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.351[a]	.123	**.118**	9.514

a. Predictors: (Constant), ER_SUM, PE_SUM, NE_SUM

Coefficients Table of Multiple Linear Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	10.530	3.113		3.383	.001
	NE_SUM	.151	.070	**.111**	2.148	**.032**
	PE_SUM	.208	.073	**.123**	2.846	**.005**
	ER_SUM	.237	.047	**.265**	5.088	**.000**

a. Dependent Variable: EE_SUM

Appendix N

SPSS Output: Mediation Analysis

The Mediating Effects of Emotion Regulation on Negative Emotions - Emotional Eating Association

Run MATRIX procedure:

********** PROCESS Procedure for SPSS Version 4.0 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****
Model : 4
Y : EE_SUM
X : NE_SUM
M : ER_SUM

Sample
Size: 486

****
OUTCOME VARIABLE:
ER_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5595	.3131	88.5677	220.5820	1.0000	484.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	22.3439	1.5136	14.7620	.0000	19.3699	25.3180
NE_SUM	**.8519**	**.0574**	**14.8520**	**.0000**	**.7392**	**.9646**

Standardized coefficients

	coeff
NE_SUM	.5595

****

OUTCOME VARIABLE:
EE_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3296	.1086	91.8465	29.4275	2.0000	483.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	17.6690	1.8562	9.5188	.0000	14.0217	21.3162
NE_SUM	.1715	.0705	2.4341	.0153	.0331	.3100
ER_SUM	**.2161**	**.0463**	**4.6679**	**.0000**	**.1251**	**.3070**

Standardized coefficients

	coeff
NE_SUM	.1262
ER_SUM	.2419

********** TOTAL EFFECT MODEL **********

OUTCOME VARIABLE:
EE_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2615	.0684	95.7916	35.5391	1.0000	484.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	22.4968	1.5741	14.2916	.0000	19.4038	25.5898
NE_SUM	.3556	.0597	5.9615	.0000	.2384	.4728

Standardized coefficients

	coeff
NE_SUM	.2615

********** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **********

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.3556	**.0597**	**5.9615**	**.0000**	**.2384**	**.4728**	**.2615**

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.1715	.0705	2.4341	.0153	.0331	.3100	.1262

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
ER_SUM	**.1841**	**.0421**	**.1049**	**.2686**

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
ER_SUM	.1354	.0307	.0771	.1970

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
10000

------ END MATRIX -----

The Mediating Effects of Emotion Regulation on Positive Emotions - Emotional Eating Association

Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****
Model : 4
Y : EE_SUM
X : PE_SUM
M : ER_SUM

Sample
Size: 486

****
OUTCOME VARIABLE:
ER_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.1191	.0142	127.1019	6.9697	1.0000	484.0000	.0086

Model

	coeff	se	t	p	LLCI	ULCI
constant	51.2440	2.8241	18.1452	.0000	45.6949	56.7930
PE_SUM	**-.2255**	**.0854**	**-2.6400**	**.0086**	**-.3933**	**-.0577**

Standardized coefficients

	coeff
PE_SUM	-.1191

****
OUTCOME VARIABLE:
EE_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p

.3391	.1150	91.1934	31.3678	2.0000	483.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	11.3504	3.1008	3.6604	.0003	5.2576	17.4431
PE_SUM	.2237	.0729	3.0703	.0023	.0805	.3669
ER_SUM	**.2932**	**.0385**	**7.6151**	**.0000**	**.2175**	**.3688**

Standardized coefficients

	coeff
PE_SUM	.1324
ER_SUM	.3283

********** TOTAL EFFECT MODEL **********

OUTCOME VARIABLE:
EE_SUM

Model Summary

R	R-sq	MSE	F	df1	df2	p
.0933	.0087	101.9312	4.2458	1.0000	484.0000	.0399

Model

	coeff	se	t	p	LLCI	ULCI
constant	26.3749	2.5291	10.4288	.0000	21.4056	31.3442
PE_SUM	.1576	.0765	2.0605	.0399	.0073	.3079

Standardized coefficients

	coeff
PE_SUM	.0933

********** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **********

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.1576	**.0765**	**2.0605**	**.0399**	**.0073**	**.3079**	**.0933**

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.2237	.0729	3.0703	.0023	.0805	.3669	.1324

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
ER_SUM	**-.0661**	**.0308**	**-.1322**	**-.0107**

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
ER_SUM	-.0391	.0180	-.0771	-.0063

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
10000

------ END MATRIX -----

Appendix O

Ethical Clearance Form

UNIVERSITI TUNKU ABDUL RAHMAN			
Form Title: **APPLICATION FOR ETHICAL CLEARANCE TO INVOLVE HUMAN SUBJECTS FOR UNDERGRADUATE STUDENT'S PROJECT (GROUP APPLICATION)**			
Form Number : **FM-IPSR-R&D-078**	Rev No : 0	Effective Date: **09/05/2019**	Page No : **163 of 182**

Application No. *(Official use only)*

Summary of Application for Ethical Clearance to Involve Human Subjects for Undergraduate Student's Project

Programme Name: Bachelor of Social Science (HONOURS) Psychology
Code & Title of Course: UAPZ3013, Final Year Project I

**Please attach a copy of the survey questionnaire/interview questions for every project listed below.*

No	Student Name	Supervisor Name	Project Title	Brief Description of Project	Brief Description of Questionnaire/ Interview Questions	Supervisor's Signature
	Chong Xuan Ni	Ms.T'ng Soo Ting	The mediating role of emotion regulation in the relationship between negative emotion, positive emotion, and emotional eating among young adults in Malaysia	This study focuses on examining the relationship between positive emotion, negative emotion, and emotion regulation with emotional eating. At the same time, this study also plans to study the mediation role play by emotion regulation in the relationship between positive emotion and emotional eating as well as negative emotion and emotional eating.	The questionnaire included the informed consent section, demographic information section, and scales such as Emotional Eater Questionnaire (EEQ), Positive and Negative Effect Schedule (PANAS), and Difficulties in Emotion Regulation Scale Short Form (DERS-SF).	
	Heng Wee Keat	Ms.T'ng Soo Ting	The mediating role of emotion regulation in the relationship between negative emotion, positive	This study focuses on examining the relationship between positive emotion, negative emotion, and emotion regulation with	The questionnaire included the informed consent section, demographic information section, and	

No	Student Name	Supervisor Name	Project Title	Brief Description of Project	Brief Description of Questionnaire/ Interview Questions	Supervisor's Signature
			emotion, and emotional eating among young adults in Malaysia	emotional eating. At the same time, this study also plans to study the mediation role play by emotion regulation in the relationship between positive emotion and emotional eating as well as negative emotion and emotional eating.	scales such as Emotional Eater Questionnaire (EEQ), Positive and Negative Effect Schedule (PANAS), and Difficulties in Emotion Regulation Scale Short Form (DERS-SF).	
	Ruan, Yu	Ms.T'ng Soo Ting	The mediating role of emotion regulation in the relationship between negative emotion, positive emotion, and emotional eating among young adults in Malaysia	This study focuses on examining the relationship between positive emotion, negative emotion, and emotion regulation with emotional eating. At the same time, this study also plans to study the mediation role play by emotion regulation in the relationship between positive emotion and emotional eating as well as negative emotion and emotional eating.	The questionnaire included the informed consent section, demographic information section, and scales such as Emotional Eater Questionnaire (EEQ), Positive and Negative Effect Schedule (PANAS), and Difficulties in Emotion Regulation Scale Short Form (DERS-SF).	

INDEMNITY

I shall indemnify, defend and hold harmless UTAR from any or all claims, demands, losses, damages, costs and liabilities made by any third party due to or arising out of any acts, omission or negligence in carrying out this study.

DECLARATION

a) I will not initiate this research until I receive written approval from the UTAR Scientific & Ethical Review Committee and the regulatory authority or otherwise relevant authorities (if applicable).

b) I will not initiate any changes in protocol without prior written approval from UTAR Scientific and Ethical Review Committee except when it is necessary to reduce or eliminate risk to the subject.

c) I will promptly report any unexpected or serious adverse events, unanticipated problems or incidents that may occur in the course of this research.

d) I will take all necessary steps to maintain confidentiality of all information, samples and specimens about the volunteers. Data, samples and specimen obtained will be stored securely and will be made available only to the Principal Investigator and the research team, the UTAR Scientific and Ethical Review Committee, the sponsor and the regulatory authorities for the purpose of verifying the research procedures info and/or data

e) I declare that the name and other facts that might identify the volunteer will not appear when this study is presented or its results are published

f) I declare that there is no existing or potential conflict of interest for any of the investigators participating in this research.

g) I have read and understood, and hereby accept and agree to abide by UTAR Research Ethics & Code of Conduct and any applicable UTAR's Guidelines. I undertake that the information I have provided herein is complete and accurate and I agree to carry out the Project in accordance with the terms in the International Conference of Harmonization of Good Clinical Practice Guidelines. My involvement in this Project does not conflict with my University duties and I have no other conflict of interest to declare

h) I further agree that I shall abide by all instructions and directions issued by UTAR pertaining to all aspects of the research herein including but not restricted to suspending and ceasing of the research herein.

Remarks *(if any)* :

_____ _____

Head of Department Signature Date

Name of Head of Department: _____

RECOMMENDATION BY DEAN

Recommended / Not Recommended for Approval

_____ _____

Signature Date

Name of Dean _____

RECOMMENDATION BY UTAR SCIENTIFIC & ETHICAL REVIEW COMMITTEE

Comments : _____

_____

_____

UTAR Scientific & Ethical Review Committee :	Minutes No.

.....
Signature of Secretary

Name of Secretary: _____

COMPLETED BY THE CHAIRMAN OF THE UTAR SCIENTIFIC & ETHICAL REVIEW COMMITTEE

Approved ☐

Approved subject to full review (of protocol, informed consent documents etc.) ☐

Not Approved ☐

Others (*please state*) ☐

_____ _____

Signature of Chairman Date:
Name of Chairman:

Appendix P

Turnitin Originality Report of FYP1

PY-2021-1905438

ORIGINALITY REPORT

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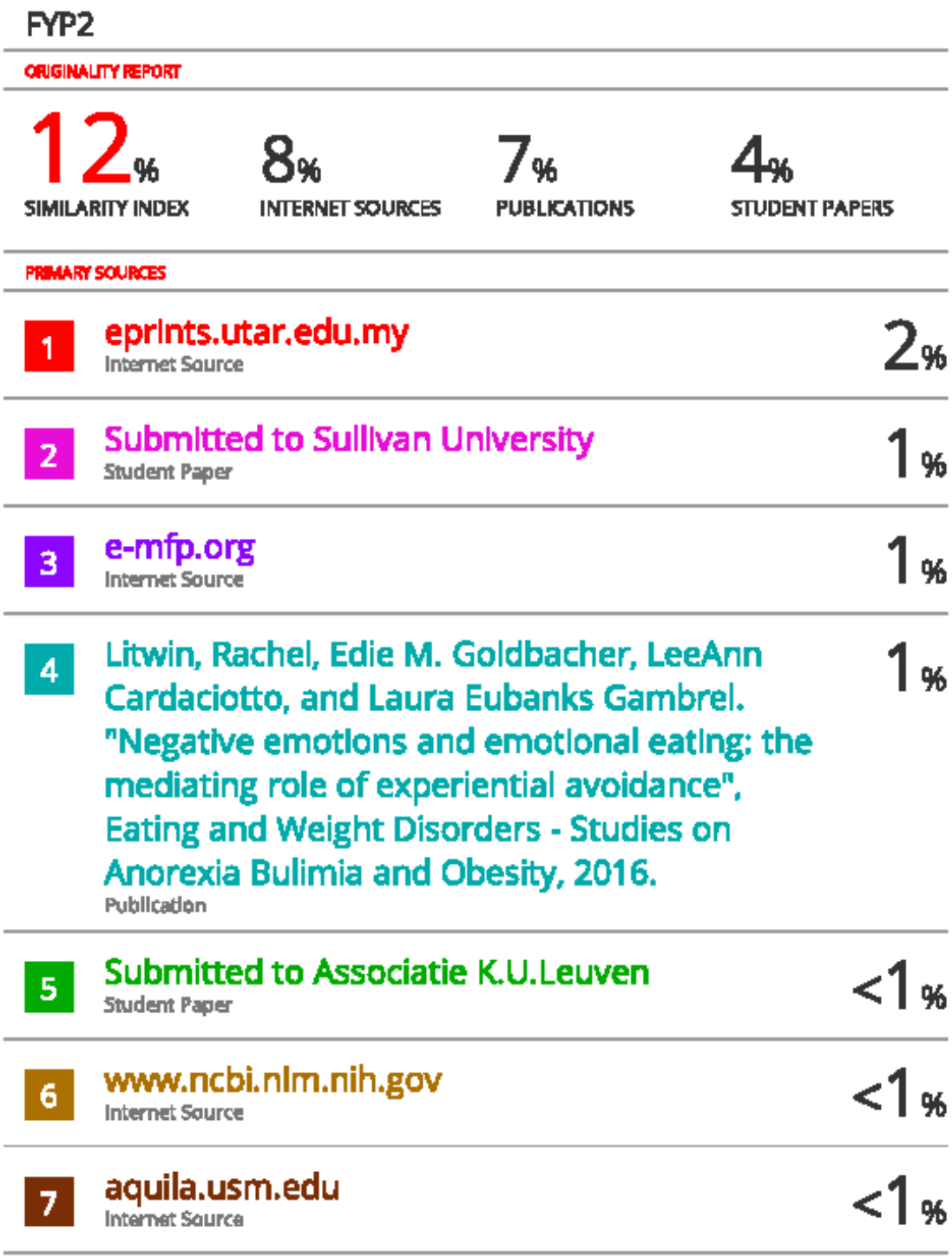
5	Macht, M.. "Emotions and eating in everyday life", Appetite, 200008	<1%

Appendix Q
Turnitin Originality Report of FYP2



FYP2

ORIGINALITY REPORT

12%	8%	7%	4%
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PRIMARY SOURCES

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2	Submitted to Sullivan University Student Paper	1%
3	e-mfp.org Internet Source	1%
4	Litwin, Rachel, Edie M. Goldbacher, LeeAnn Cardaciotto, and Laura Eubanks Gambrel. "Negative emotions and emotional eating: the mediating role of experiential avoidance", Eating and Weight Disorders - Studies on Anorexia Bulimia and Obesity, 2016. Publication	1%
5	Submitted to Associatie K.U.Leuven Student Paper	<1%
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