AGGRESSION AND SELF-ESTEEM ON CYBERBULLYING AMONG

UNDERGRADUATES IN MALAYSIA

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Aggression and Self-esteem on Cyberbullying among Undergraduates in Malaysia

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APPROVAL FORM

Present research paper entitled "Aggression and Self-esteem on Cyberbullying among Undergraduates in Malaysia" prepared and submitted by "Chua Ai Fie, Joanna Kwan Hui Ting, and Raksshana Subramanian" in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

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Abstract

The prevalence of cyberbullying cases is increasing over the years and it causes detrimental effects on one's mental health and psychological well-being. The present study was a survey methodology and a cross-sectional study that aimed to determine the proactive aggression, reactive aggression and self-esteem as predictors of cyberbullying among undergraduates in Malaysia. 237 participants were recruited in the present study by utilizing purposive sampling, a non-probability sampling method, by distributing the online survey via social media platforms such as Facebook, Instagram, WhatsApp, and Twitter. The participants met the inclusion criteria which are undergraduates aged 18 to 29 years old ($M =$ 21.83 years). The number of female participants (N = 143; 60.3%) outnumbered the male participants in the present study (N = 94; 39.7%); consisted of Chinese (N= 148; 62.4%), Indians (N= 49; 20.7%), Malay (N= 26; 11.0%) and other races (N= 14; 5.9%). The result in the present study showed only proactive aggression significantly and positively predicts cyberbullying, while reactive aggression and self-esteem were not the significant predictors of cyberbullying among undergraduates in Malaysia. The present study contributed valuable findings for future exploration on this topic.

Keywords: Cyberbullying, Cyberbullying Perpetration, Proactive Aggression, Reactive Aggression and Self-esteem

DECLARATION

We declare the material and contents is prepared by our own effort and investment in

time and that due acknowledgement has been attached in the bibliography and references to

ALL sources be they printed, electronic or personal.

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Abbreviations

1. RPQ   Reactive-Proactive Aggression Questionnaire

2. RSES   Rosenberg Self-esteem Scale

3. CT   Cyberbullying Test

Chapter I

Introduction

Background of Study

The rapid advancement of technology no doubt allows any individual access to information with merely a click thus providing a medium for exchanging and transferring knowledge and communication for a wide range of purposes. As the generation is approaching the digital age, society has advanced through leaps and bounds technologically. In addition, cyberbullying is prevalent among communities who depend on the internet worldwide (Poushter, 2016). For instance, Poushter (2016) surveyed 40 countries and found vast amount usage of social networking sites, with a statistic of 86% in the Middle East, 71% in the U.S., 65% in the European region, and 68% in Malaysia. According to Bernama (2017, September 12), the Digital News Report in year 2017, Facebook was well liked among Malaysians, with 58% of usage, followed by WhatsApp with 51%, and Instagram accounted for 13%.

Internet is very beneficial to society due to easy accessibility to knowledge and information in a short period of time, but on a contrary note, it can be easily misused causing harm to others. Past studies imply that internet users have cyberbullied other individuals, sending harmful, hurtful, derogatory messages that were, in fact, spiteful and malicious in nature (Patchin & Hinduja, 2011). Aside from that, cyberbullying is found prevalent among all age groups (Barlett & Chamberlin, 2017). For instance, Global Youth Online Behavior Survey, (Microsoft survey), studied on 7,600 children age range of 8 – 17 and found in one out of every three children in Malaysia were cybervictimized (Saharrudin, Ghazali, Samah, Ahmad, & Abdullah, 2019). Furthermore, university students were found to be involved in high cyberbullying engagement due to the high frequency of social media usage (Adebayo, Ninggal, & Ajiboye, 2019). Besides, a study by Balakrishnan (2015) based on the Malaysian

context has shown a number of 399 young adults between age group 17 – 30, and found

approximately 83% cyberbullying perpetration cases happening in Malaysia. In addition to

that, Barlett and Chamberlin (2017) explored that cyberbullying occurs frequently in the age

range of 18 – 35-year-old participants.

Studies by Erdur-Baker (2010), states that the act of cyberbullying took a form from

traditional bullying and became a problem on its own. Cyberbullying causes adverse effects

to arise, as it can be damaging on its victims such as suicidal ideation, isolation and mental

illness (Deschamps & McNutt, 2016). For example, a Canadian teenager committed suicide

after being assaulted whereby her photos were circulated on the Internet by a few

cyberbullies (Popkin, 2013). Moreover, Hinduja and Patchin (2010) victims of cyberbullying

often encounter emotional reactivity such as fear, anger, frustrations, anxiety and depression,

which subsequently lead to mental health problems and death (i.e. suicidal behavior and

suicidal ideation). Aligned to Schenk and Fremouw (2012), the researchers investigated

cyberbullying among 799 college students in America, and reported 46.2% of the victims felt

frustrated, 40.9% stressed, 37.9% sad or hurt, 33.8% angry, 23.4% had trouble concentrating

in school, and some victims showed more suicidal behaviors and suicidal ideations. In a study

by Kokkinos, Antoniadou, and Markos (2014), found victims between 18 – 35 years old

scored high for emotional reactivity. According to Palermiti, Servidio, Bartolo, and Costabile

(2017), victims of cyberbullying often develop low self-esteem, which leads to a series of

ruinous effects on one's psychological well-being, such as growing the vulnerability to

suicide.

Statement of Problem

Cyberbullying deteriorates the academic performance on school going children,

impacting the mental health development among adolescents as well as young adults (Duarte,

Pittman, Thorsen, Cunningham, & Ranney, 2018). In addition, past researchers often link

mental disorders and suicidal behaviors as the negative outcomes of cyberbullying (Varghese & Pistole, 2017). Recent past studies in the Western countries reported the adverse impacts of cyberbullying among youngsters, yet there are very few studies conducted in Malaysia given that the cyberbullying prevalence rate is on the rise in Malaysia (See Yusuf et al., 2018).

Moreover, bin Abdul Rashid and Azman (2017) further argued that, despite there has been an abundance of studies exploring cyberbullying among the adolescents' age group, however, there has been scarce in studies investigating cyberbullying among students in tertiary education level, whereby prevalence of cyberbullying still exists in this age group. A study by Duggan and Brenner (2013) showed that 83% tertiary education level students use the Internet, the respondents also reported as users of social networking sites (SNS). According to Zalaquett and Chatters (2014), social media platforms serve as a conducive channel for cyberbullying to occur.

In this Internet dependent era, it is ideally used to connect people who are geographically dispersed, allowing easy access and convenience in exchanging information between users. But in reality, the anonymous nature of the Internet allows one to easily misuse and propagate hate. As cyberbullying is generally an aggressive act, it is linked to high reactive aggression, but higher proactive aggression (Schultze-Krumbholz, Hess, Pfetsch, & Scheithauer, 2018). Individuals with low self-esteem are easily victimized, while those with higher self-esteem were frequently reported to exhibit cyberbullying behaviours (Balakrishnan, 2018).

Few studies have examined on cyberbullying, however, due to contextual differences in culture mainly based on western countries and mostly focusing on middle school, and young adolescents in past studies, the present study will examine proactive aggression, reactive aggression and self-esteem contribute as predictors of cyberbullying among undergraduates in the Malaysian context. This can contribute to the existing knowledge for

relevant society members to have awareness and to take prevention to reduce cyberbullying cases.

Research Questions

1. Does proactive aggression predicts cyberbullying perpetration positively among undergraduates in Malaysia?

2. Does reactive aggression predicts cyberbullying perpetration positively among undergraduates in Malaysia?

3. Does self-esteem predicts cyberbullying perpetration positively among undergraduates in Malaysia?

Research Objective

1. To examine proactive aggression, reactive aggression and self-esteem as significant predictors to cyberbullying perpetration among undergraduates in Malaysia.

Hypotheses

H1: Proactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia.

H2: Reactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia

H3: Self-esteem positively predicts cyberbullying perpetration among undergraduates in Malaysia.

Significance of Study

The high prevalence rate of cyberbullying behaviour in Malaysia is at an alarming stage due to its severity and its negative consequences. According to Yusuf et al. (2018), there has been lack of studies in the past, this present study will redound to the benefit of the young adults, considering this study greatly focus on undergraduates in Malaysia.

Next, by studying proactive aggression, reactive aggression and self-esteem as the

contributing variables on cyberbullying among undergraduates in Malaysia increase public awareness, thus, society will have a better understanding regarding the negative impacts of cyberbullying. Acknowledging these predictors, individuals will know of the importance of self- esteem and aggression to cultivate positive self-esteem and learn to control their aggression level. Nevertheless, best to our knowledge, this is the first study to recruit participants of the three largest ethnic group in Malaysia, which are the Malay, Chinese, and Indian to increase the generalizability across populations in the Malaysian context.

Conceptual Definitions

Aggression. According to Bushman (2016), aggression is defined as an act that causes harm to another person in many forms, either physically or verbally. There are two main types of aggression, which are proactive and reactive. According to Ang, Huan, and Florell, (2014), proactive aggression is defined as instrumental aggression in the absence of any provocations and is motivated by rewards from performing aggressive acts. Conversely, reactive aggression is defined as a hostile response that serves as retaliation to risks in the surrounding (Ang et al., 2014).

Self-esteem. Balakrishnan and Fernandez (2018) defined self-esteem as a comprehensive assessment of a person's value. High self-esteem is often associated with people who are more confident, happy, and self-respecting while people with low self-esteem will be anxious, lacking self-confidence and self-criticism. Self-esteem is also seen as an important foreteller of personal and social well-being. According to Palermiti et al. (2017), self- esteem is the way one perceives about the self and the world through personal beliefs. Positive experiences such as success and good opinions increase the tendency for higher self-esteem.

Cyberbullying. Cyberbullying is defined by sending malicious and hateful messages to another person via email, social media platforms, instant messaging or mobile phones is

often rampant, humiliating, and spreading rumors, both verbal and pictorial (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). Cyberbullying is the intention to express through aggression and inflicting pain and harm to others are caused by the imbalance of power in the relationship. (Kowalski & Limber, 2013).

Operational Definitions

Aggression. The present study uses Reactive–Proactive Aggression Questionnaire (RPQ) developed by Raine, Dodge, Loeber, Reynolds, and Loeber (2006) to measure the participants' aggression. The design of RPQ is a self-report measure specifically intended to assess two-factor of aggressive acts which are proactive aggression and reactive aggression. The two-factor of the structure has been imitated in a few studies and has appeared to fit the information beyond a single factor (Cima, Raine, Meesters, & Popma, 2013). In this assessment, the current study can determine the level of proactive aggression and reactive aggression of the participants. A high score indicates a high level of aggression, and vice-versa.

Self-esteem. Based on Rosenberg (2015), Rosenberg Self-Esteem Scale (RSES) was used to measure self-esteem. The design of RSES is a self-report instrument which to achieve global self-worth by measuring positive and negative feelings about the self. A uni-dimensional instrument elaborated from a phenomenological concept of self-esteem that captures the subject's global perspective on his or her own value (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007). In this assessment, the current study can determine the level of self-esteem of the participants. A high score indicates a high level of self-esteem, and vice-versa.

Cyberbullying. Based on Garaigordobil (2017), this study uses the Cyberbullying Test (CT) to identify the two dimensions, which are cyberaggressors exhibiting (perpetrator) cyber bullying behaviours and cybervictimazation. The higher the score in the level of

exposure to cyber bullying behaviours indicates victimization, whereas the higher the score in the level of exhibiting cyber bullying behaviours indicates perpetration. In this assessment, the prevalence of cyberbullying (i.e. victim and perpetrator) of the participants can be determined.

Chapter Summary

Cyberbullying is a serious emerging problem in Malaysia that leads to suicide and depression. It can also negatively affect an individual on the aspects of psychological, mental, and emotional well-being. This research studies the relationship of proactive aggression, reactive aggression and self-esteem to understand cyberbullying among undergraduates in Malaysia. This will serve as a guide for future research purposes to cultivate awareness of society towards cyberbullying.

Chapter II

Literature Review

Theoretical Framework

This research adapts the General Aggression Model (GAM) by Anderson and Bushman, (2002) to guide our study and to explain why an individual decides to engage in cyberbullying activities. In a study by Allen and Anderson (2017), the underlying mechanism of GAM is explained by the proximate processes through three stages: input, routes, and outcomes. GAM describes inputs (i.e. person factors and situation factors); inputs affect one's internal state via particular routes (i.e. cognition, affect, and arousal), where it leads to an outcome, which influences one's decision whether to perform aggressive or nonaggressive behaviour.

The input stage consists of person and situation factors. First, person factors are any individual differences that drive how a person reacts to a situation. Past researchers study aggressive behaviours can be caused by person factors such as proactive aggression and unstable high self-esteem (i.e. Allen & Anderson, 2017; Anderson & Carnagey, 2004; Ang et al., 2014). For example, Lee (2014) reported one's unstable high self- esteem increased one's defensiveness through getting excessively angry and outbursts. Besides, Ang et al., (2014) argued proactive aggression is an instrumental aggressive behaviour that is driven by inner desire to harm others by performing aggressive acts. In addition, situation factors are environmental aspects that influence individuals' behaviour. According to Lee (2014), some situations are likely to cause reactive aggression to take place, such as provocation and cyberbullying. For example, individuals exhibit reactive aggression as it serves as retaliation to threats or provocation in the surrounding (Ang et al., 2014).

Stage two focuses on routes that determine the occurrence of aggression. Routes can be influenced by person and situation factors through altering a person's internal state, which

consists of three components: affect, cognition, and arousal. For example, individuals with high hostility trait (a person factor) tend to react in a proactive aggression manner to inflict pain on others (Lee, 2014). In addition, individuals' aggression arousal is greater when provoked under media violence (a situational factor), such as cyberbullying (Lee, 2014).

In stage three, the person is influenced by appraises and decides either to react aggressively or non-aggressively. According to Anderson and Bushman (2002), some stated an immediate appraisal sparks impulsive actions is a product of decision-making in association with cyberbullying. According to Fontaine (2007) conceptual framework, evaluation and decision making is crucial in instrumental antisocial behaviour such as bullying. The individuals who evaluate aggression as a means to achieve instrumental goals tend to increase their proactive aggression, no matter who gets hurt along the way (Fontaine, 2007). For example, individuals are likely to bully others if their group members often engage themselves in bullying activities, as to protect the group norm and to remain as a member of the group (i.e. instrumental goal). To our best of knowledge, GAM study on cyberbullying is scarce in Malaysia. The present study intends to further explore on GAM using variables of proactive aggression, reactive aggression and self-esteem on cyberbullying among undergraduates in Malaysia.
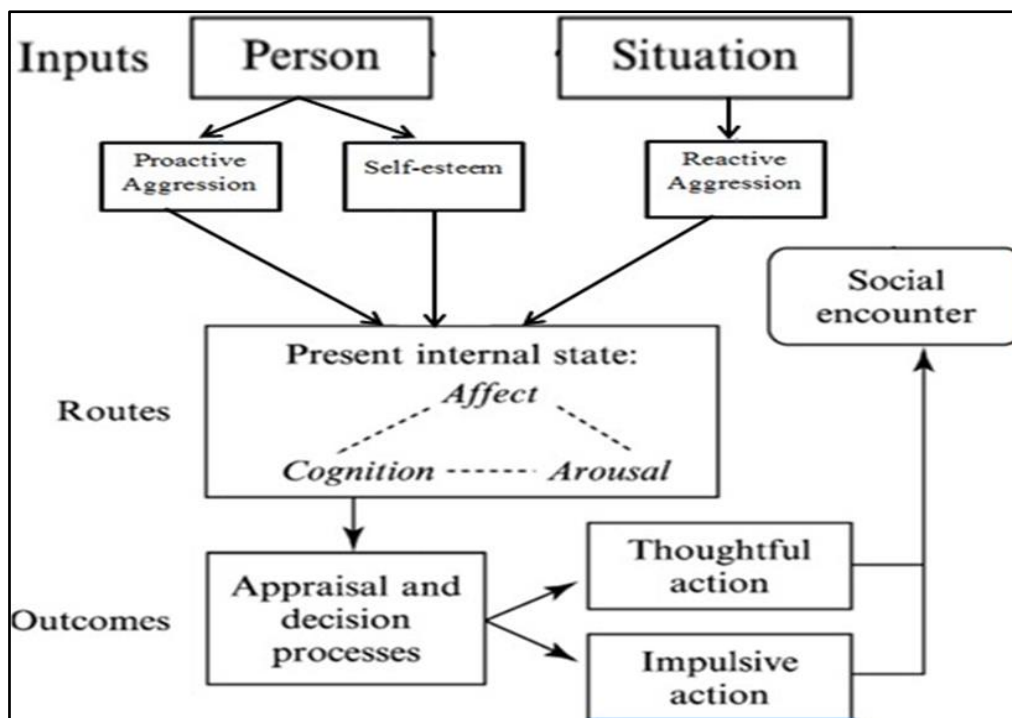
Figure 2.1 The General Aggression Model (GAM): Proximate causes and processes.

Conceptual Framework
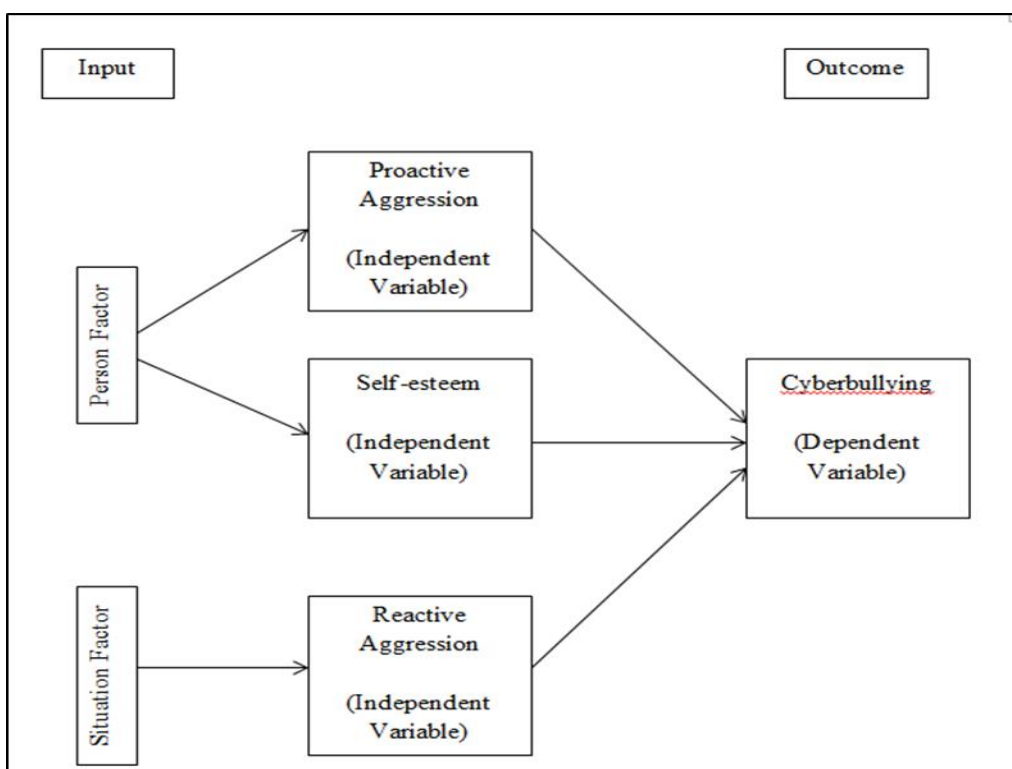
Figure 2.2 Conceptual Framework using GAM to study on "Proactive Aggression, Reactive Aggression, Self-esteem as predictors of Cyberbullying among Undergraduates in Malaysia."

In this study there are three independent variables namely, proactive aggression, reactive aggression and self-esteem and one dependent variable, that is cyberbullying. This study utilizes GAM to explain the three predictors stated above on cyberbullying. The underlying mechanisms are characterized as two stages which are input and outcome. Input is the person factor (proactive aggression and self-esteem) or situation factor (reactive aggression) leads to cyberbullying tendencies. For example, individuals with high aggressiveness (a person factor) tend to hurt others to obtain instrumental feelings of superiority (Lee, 2014). Similarly, cyberbully victims' aggression arousal is greater when provoked under media violence (a situational factor), thus, these victims tend to retaliate by imposing aggression. For example, victims will then express their aggression by cyberbullying others.

Proactive Aggression, Reactive Aggression and Cyberbullying

Aggression is defined as a behaviour that inflicts harm to another person in many forms, be it physically or verbally (Bushman, 2016). In this research, aggression is defined by two distinctive types which are proactive aggression and reactive aggression. Proactive aggression is the intent to act against an individual with power in order to obtain something or to impose authority; meanwhile, reactive aggression is when an individual reacts according to the way someone acts against (Price & Dodge, 1989).

Based on a study by Drummelsmith (2016) the study researched on two types of aggression style, namely proactive aggression and reactive aggression, alongside interpersonal competence and school identification involving cyberbully, cyberbully-victim and cyber victim or witness. The findings of the study evidently showed that aggression style differed significantly among cyberbullies, victims and cyberbully-victim. Cyberbully-victims scored highest in both proactive and reactive aggression. Similarly, Burton, Florell, and Gore (2013) investigated the association between proactive and reactive aggression to

traditional bullying and cyberbullying. A number of 851 students of rural background were recruited. The results of the study stated that, for both cyber and traditional bullying, those who were both bully-victims were high in proactive and reactive aggression in comparison to bullies. Cyberbully-victims reported higher proactive and reactive aggression compared to the cyberbullies and cybervictims. Alas, this research did not identify the differences in the level of aggression in bully-victims or explain how traditional and cyberbullying relates to proactive and reactive aggression.

However, Schultze-Krumbholz et al. (2018) indicated proactive aggression was shown in cyberbullies, whereas high reactive aggression was shown in cybervictims. In align with Schultze-Krumbholz et al. (2018), Renati, Berrone, and Zanetti (2012) examined the associations between proactive aggression, reactive aggression and cyberbullying. Findings indicated that cyberbullying perpetration is associated with higher proactive aggression, while cybervictims portrayed higher reactive aggression. This could be explained by perpetrators are provocative in nature, whereas cybervictims are more likely to retaliate to the perceived threat by the cyberbullies.

In contrast, Law, Shapka, Domene, and Gagne (2012), reported only proactive aggression was a significant predictor of cyberbullying. In Law et al. (2012) the findings suggest as a result of hostile websites, only proactive items shown as a significant predictor of cyberbullying. Law et al. (2012) argued hostile website development, which is proactive aggression in nature, strongly predicts cyberbullying. The reason being proactive aggression rather than reactive aggression is due to the participants having instrumental desire to create a hostile website solely for the purpose of hurting others.

Aligned with Law et al. (2012), Calvete, Orue, Estévez, Villardón, and Padilla (2010) used multiple regression analysis to examine aggressive behaviors contributing to cyberbullying and the results indicated that proactive aggression and belief justifying

violence were the only predictors of cyberbullying.

According to Ang et al. (2014), findings indicated only proactive aggression was associated with cyberbullying across the US and Singapore. A total of 425 adolescents aged 11 to 16 years were recruited from the US, whereas 332 adolescents aged 12 to 17 years were recruited from Singapore. Consistent results were obtained from both the US and Singapore sample, in which, the study tested one subtype of aggression (proactive or reactive) towards cyberbullying at a time. Overall, proactive aggression contributed to cyberbullying, while reactive aggression was found not associated with cyberbullying in both the US and Singapore, after controlling for proactive aggression.

Self-esteem and Cyberbullying

According to Rosenberg (2015), self-esteem is an individual feeling of self-worth. Individuals with high self-esteem are often associated to have a healthy psychological and emotional well-being (Orth & Robins, 2014), while those who have low levels of self-esteem have issues feeling important and difficulties to find meaning in one's life. They often perceive themselves to be inadequate, unimportant, worthless and burdensome to people around them. This leads to changes in the way one interacts and socializes with people (Chung et al., 2014).

Based on a recent study by Šincek, Duvnjak, and Milić (2017) examined the cyberbullying experience and its involvement of genders, age, grades and number of devices as well as the level of stress, anxiety, self-esteem and depression among victims and perpetrators. A total sample of 7038 including both children and youth across different high schools and elementary schools located in rural and urban areas. The findings of the study, however, showed perpetrators and victims had a lower level of self-esteem in comparison to those who have not been involved.

In contrast, Poole (2017) reported that high self-esteem individuals are more prone to

cybervictimization. The study involved 201 college students while investigating the prevalence of cyberbullying. Results found a significant positive correlation between cyberbullying victimization and self-esteem. The findings in the study reported individuals with higher self- esteem tend to report greater experiences of victimization compared to their low self-esteem peer counterparts. The study explained that cyberbullies who are of high self-esteem often uses social media, hence increasing the susceptibility to be cyberbullied. However, Bayraktar, Machackova, Dedkova, Cerna, and Ševčíková (2015) study reported cyberbullies had significantly higher self-esteem scores than cybervictims. Cyberbullies impose authority on weaker peers to feel superior to intimidate others, thus increasing their self-esteem. On the other hand, cybervictims feel inferior and perceived negatively of themselves, thus lowering their self-esteem.

Interestingly, a study by Balakrishnan and Fernandez (2018) found the levels of self-esteem did not differ regardless of the roles in cyberbullying, which portrays a vast difference as compared to past studies. Balakrishnan and Fernandez (2018) explore the effects of self-esteem and empathy on cyberbullies, victims and bystanders. They have also additionally incorporated to study perpetrators, victims and bystanders' emotional reaction and actions. The data was collected through the self-administered surveys to collect a number of 1288 young adults, from university students across all states in Malaysia. Through binary logistic regression, the results revealed that there was no significant difference in the level of self-esteem on the participants regardless of their roles being victim, perpetrator or bystander. Aligned with Balakrishnan and Fernandez (2018) study, Brack and Caltabiano (2014) examined the relationship between cyberbully status and self- esteem in young adults. There were 164 participants. Surprisingly, there were no significant differences in bully groups. These findings mentioned that young adult who infrequent or moderate cyberbullying may not produce dramatic changes in self-esteem like severe cyberbullying.

Chapter Summary

There is an array of confirmation that victims and bullies, display high levels of aggression in comparison to those who have not been a victim of cyberbullying (Tippett & Wolke, 2014). At this current day and age, the research on cyberbullying has expanded however there is no proper clarification on the framework of aggression and how it influences the probability of being a cyberbully victim or perpetrator (Mehari, Farrell, & Le, 2014). The past correlational research on self-esteem and cyberbullying imply relations that are inconsistent with one's self-esteem and the tendencies of being a cyberbully (Süslü, 2018). However, Hinduja and Patchin (2010) firmly stated that correlation between victims of cyberbullying and self-esteem was significantly higher compared to perpetrators and self-esteem. This research could potentially hold to clarify the inconsistencies based among undergraduates in a Malaysian context.

Chapter III

Methodology

Research Design

The research design of this study was a survey methodology. Mathiyazhagan and Nandan (2010) stated the survey method is a descriptive research for the collection of data from a representative sample of the target population. The present research was a quantitative study. Christensen, Johnson, and Turner (2014) stated the quantitative research is used to collect quantifiable data from subjects, statistics are used to analyze numerical data and the inquiries are conducted in an unbiased an objective manner.

The data was obtained using survey questionnaire conducted in an anonymous manner to measure various variables, which comprised of the demographic variables and the self-report scales of the variables enables respondents to attempt the online survey as the responses would be confidential. A cross-sectional design was utilized to understand the relationship between aggression and self-esteem on cyberbullying among the targeted population during a single time period (Christensen et al., 2014).

Research Population and Locations of the Study

The present research was conducted in Malaysia. In this study, undergraduates from Malaysia age range from 18 - 29. A study by Duggan and Brenner (2013) reported approximately 83% of Internet users are undergraduates of the aged 18 - 29 years old. According to Zalaquett and Chatters (2014), the increase in growth of Internet usage caused a high prevalence rate of 2600 cyberbullying cases among university students in Malaysia (Zalaquett & Chatters, 2014).

The study targeted the undergraduate population from various universities in Malaysia which constituted of Malay, Chinese, and Indian.

Sample Size and Sampling Method

G* power version 3.1.9.4 was used to calculate the minimum sample size for the three predictors: proactive aggression, reactive aggression and self-esteem on cyberbullying to run multiple linear regression (Appendix C). This study calculated the sample size of 161 participants based on the adjusted R^2 values obtained from Ang et al. (2014), proactive aggression on cyberbullying, adjusted R^2 = .24; reactive aggression on cyberbullying, adjusted R^2 = .00; self-esteem on cyberbullying, R^2 = .012; power = .95; medium effect size of .11, which yields a total of 161 participants.

In the present study, 309 samples were obtained using an online survey, however, 237 samples were retained after cleaning the data and removing outliers which fail to meet the criteria for the present study. Purposive sampling was used for the identification of the sampling frame for the subject that is relevant and directly affected by the cyberbullying issue (Patton, 2002). The Qualtrics survey link was circulated via social media platforms such as Facebook, Instagram, WhatsApp, and Twitter.

Pilot Study

In the present study, a pilot test was conducted before the actual study. The pilot study provided an opportunity to experience with the procedure to carry out the actual study and to test the reliability of the instruments (Christensen et al., 2014). Approximately a number of 36 participants were involved in the pilot study.

Research Procedure

A Qualtrics link was administered using questionnaires that consisted of the informed consent, confidentiality, demographic details and 3 self- reporting scales (Appendix B). The data was collected through questionnaires that were distributed online and shared through social media platforms for quicker response and to reach a large number of people in a short period of time. Participants were advised to read and sign the informed consent thoroughly

before participating in the study. The participants were briefed on the significance of the study, the background of research and also a brief introduction of the 3 self-reporting scales. Total freedom was given to the participants as there was no right or wrong answer to the questions and no time limit was given to answer the questionnaire. Upon the completion of the questionnaire, the data collected then proceeded to the tabulation of data. IBM Statistical Package of Social Science Version 25 (SPSS-25) was used to analyse the data.

Research Instrument

Three instruments used to examine the variables in the study were the Reactive-Proactive Aggression Questionnaire (RPQ), the Rosenberg Self-Esteem Scale (RSES) and the Cyberbullying Test (CT).

Aggression. Reactive-Proactive Aggression Questionnaire (RPQ) is a 23-item self-report measure by Raine et al. (2006) that consists of 12 Proactive items and 11 Reactive items assessing aggression level among adolescents and youth. The items are rated on a 3-point ordinal scale (0 = Never, 1 = Sometimes, and 2 = Often). Summed scores range from 0 – 46 for the proactive items and reactive items respectively. The higher scores in the proactive items indicate higher levels of proactive aggression, similarly, the higher scores in the reactive items indicate higher levels of reactive aggression. Confirmatory factor analysis displayed the presence of both proactive and reactive factors with an internal consistency of Cronbach's alpha (α range .86 - .90) (Raine et al., 2006). An example of an item from the proactive aggression is "Had fights with others to show who was on to" while another example of an item to evaluate reactive aggression is "Reacted angrily when provoked by others".

Self-esteem. According to Rosenberg (2015), Rosenberg Self-Esteem Scale (RSES) is a 10-item self-report which assesses self-worth by measuring the positive and negative feelings about one self. It is an uni-dimensional. The scale of RSES is a 4-point Likert scale

ranging from (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree). Items no. 2, 5, 6, 8, and 9 are reversed scoring items. The summed score range from 10 - 40; an individual who scored higher indicates he or she has higher self-esteem. The Cronbach's coefficient for the RSES is .91 (Rosenberg, 2015). As an example, one of the questions in RSES is "I feel that I'm a person of worth, at least on an equal plane with others."

Cyberbullying. Based on Garaigordobil (2017), Cyberbullying Test (CT) is a 45 self-report items to measure cyberbullying. The CT is a 4-point Likert scale (Never = 0, Sometimes = 1, Several Times = 2, Always = 3). The scale was divided into three sections to identify the "victim", "bully", and "observer". However, the present study chose 30 items which involved cyberbullying victimization and cyberbullying perpetration. The CT is composed of split sections "Done to me" and "I did it". The items were distributed in a manner as such 15 items "Done to me" indicated cyberbullying victimization and 15 items "I did it" indicated cyberbullying perpetration. The summed score range from 0 – 45 for both section, respectively. The higher score on "Done to me" section indicates high levels of cyberbullying victimization while the higher score on "I did it" section indicates high levels of cyberbullying perpetration. The Cronbach's alpha coefficients obtained for the 45 items were high (α = .91), as were those obtained for its three factors, cybervictimization (α = .82), cyberaggression (α = .91), and cyberobservation (α = .87), showing evidence of the test's internal consistency. The results strongly show that CT is a reliable and valid instrument. As an example, one of the questions related to cyberbullying victimization behaviour, "Have you ever received anonymous calls to scare or frighten you?", as well as an example of the question related of cyberbullying perpetration behavior is "Have they ever slandered you through the Internet, telling lies about you to discredit you?"

Data Cleaning

In this current study, a total of 309 responses were collected. Initially, 39 cases were

removed, due to failure to meet the inclusion criteria. Next, 15 missing values were removed at this stage. A total of 255 cases were retained then proceeded for analysis of multiple linear regression to identify the outliers. After removing the outliers, a final of 237 samples was obtained.

Data Analysis

In this study, the analysis for cyberbullying victimization was omitted due to the low response rate and time constraint, this present study focused solely on cyberbullying perpetration. The Statistical Package of Social Science Version 25 (SPSS-25), a statistic analysis instrument was used to measure the data collected. Multiple linear regression analysis was conducted to identify the significant predictors for cyberbullying perpetration. Prior to conducting the analysis, the normality and assumption for multiple linear regression were checked.

The assumption for normality included skewness which is a measure of symmetry of distribution around its mean while kurtosis measures the data as heavy or light tailed relative to a normal distribution (Čisar & Čisar, 2010). George and Mallery (2010) stated the skewness and kurtosis with the values between -2 and +2 as an acceptable range in order to indicate a normal univariate distribution. The distributions of data and outlier values, as well as the shape of distribution, were characterized by the histogram (Kaplan, Gabrosek, Curtiss, & Malone, 2014). Besides, the Q-Q plot is a graphical technique to identify any two sets of data origin from a population with a common distribution (V´elez & Morales, 2015). Next, the normality test can be assessed using the goodness of fit tests such as Kolmogorov-Smirnov (K-S) and Shapiro-Wilk test (S-W) to indicate whether a set of observation, specifies a continuous distribution (Lilliefors, 1967) and accepted at the alpha level of .05 (Massey, 1951).

Furthermore, the present study examines the assumptions for multiple linear

regression, by identifying whether the type of data are quantitative or categorical, with a continuous dependant variable (Afzal & Rizwi, 2013). Independent assumes that all the values of dependant variables are independent (Berry, 1993). Next, the assumption of multicolinearity examined the inter-correlation between variables was low (Berry, 1993). Besides, Variance Inflation Factors (VIF) and Tolerance are used to identify the multicolinearity. VIF is defined as the inverse of Tolerance values, high VIF signals collinearity issue, with a cutoff value of VIF ≥ 10. Tolerance, on the other hand, examines the influence of an independent variable on the other independent variables (Hair Jr, Black, Babin, Anderson, & Tatham, 2010). The lower Tolerance value indicated high collinearity, with a cutoff value of ≤ .10. Independent error states that for any two observations, the participants are responding independently (Stevens, 2009). Moreover, Durbin Watson test was used for the assumption of independence of errors with a value close to 2 best indicates correspondence to the assumption (Reddy & Sarma, 2015).

Next, mutlivariate outliers were assessed using Mahalanobis distance, Cook's distance and Centered Leverage Value. For Mahalanobis, a sample of 100 and three predictors, the cutoff value is > 15. Cook and Weisberg (1982) suggested Cook's distance value that is greater than 1 as problematic. Hoaglin and Welsch (1978) proposed leverage values multiply 2 while Stevens (2009) suggested multiply 3 could cause concern as an influential case. The linearity displayed in a scatter plot of residuals and y values vertically on the y-axis, while the standardized residuals are plotted horizontally on the x-axis. The scatter plot achieves linearity assumption if it is in a linear pattern and not a curvilinear pattern (Reddy & Sarma, 2015). The normality of residual characterizes errors that are normally distributed. Scatterplots are good indicators of normality of residuals and homoscedasticity (Gan & Ahmad, 2011). Homoscedasticity is defined as the errors along the regression line, kept equal or constant. The overall pattern of the scatterplot is characterized by its direction,

strength and form of the relationship. The individual values that fall outside the pattern are deemed as outliers (Moore, Notz, & Flinger, 2013). The scatterplot shows the direction of whether there is a positive association (positive slope) or negative association (negative slope) (Moore et al., 2013).

The reliability test of the pilot study for the questionnaires were highly reliable with the alpha Cronbach's coefficient ($\alpha = .92$) for the RPQ; alpha Cronbach's coefficient ($\alpha = .89$) for proactive aggression; alpha Cronbach's coefficient ($\alpha = .86$) for reactive aggression; alpha Cronbach's coefficient ($\alpha = .89$) for the RSES; alpha Cronbach's coefficient ($\alpha = .96$) for the CT; while alpha Cronbach's coefficient ($\alpha = .95$) for "I did it" in CT indicates cyberbullying perpetration.

The reliability test of the actual study for the questionnaires were highly reliable with the alpha Cronbach's coefficient ($\alpha = .91$) for the RPQ; alpha Cronbach's coefficient ($\alpha = .86$) for proactive aggression; alpha Cronbach's coefficient ($\alpha = .86$) for reactive aggression; alpha Cronbach's coefficient ($\alpha = .84$) for the RSES; alpha Cronbach's coefficient ($\alpha = .96$) for the CT; while alpha Cronbach's coefficient ($\alpha = .95$) for "I did it" in CT indicates cyberbullying perpetration (refer to Appendix D, p. 62). Reliability of both pilot test and actual study was shown in Table 3.1.

Table 3.1

Reliability of the Instrument

Variable	No. of Items	Cronbach's Alpha		
		Past Study	Pilot Study	Actual Study
Proactive Aggression	12	.89	.89	.86
Reactive Aggression	11	.86	.86	.86
Reactive-Proactive Aggression Questionnaire	23	.92	.92	.91

Rosenberg Self-esteem Scale	10	.89	.89	.84
Cyberbullying Test	30	.96	.96	.96
Cyberbullying perpetrator	15	.95	.95	.95

Chapter Summary

In summary, an online questionnaire was circulated via Qualtrics link to undergraduates in Malaysia. This study used a purposive method to reach out to a large number of participants. Besides, the three instruments are the RPQ to test aggression, the RSES to test self-esteem, and the CT to identify cyberbullying perpetration. Lastly, the measurements were analyzed using multiple linear regression by SPSS-25.

Chapter IV

Finding and Analysis

Normality Assumptions

Univariate outliers. Prior to conducting analysis for the actual data, normality assumptions were checked, including P-P plot, Q-Q plot, Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W), histogram, and skewness and kurtosis (refer to Appendix E, p. 63 - 67).

Skewness and kurtosis. Skewness and kurtosis were used to check the normality of each distribution. Table 4.1 below shows the results of 237 samples that there was no violation for the assumption of skewness and kurtosis. The values were within the acceptable range from -2 to +2 (George & Mallery, 2010).

Table 4.1

Skewness and Kurtosis

	Skewness	Kurtosis
Proactive Aggression	1.216	.936
Reactive Aggression	.474	.182
Self- esteem	-.513	1.479

*refer to Appendix E, p. 67 for the SPSS output.

Histogram. Normality can be identified through a histogram. The scales of the Reactive Aggression in the RPQ met the assumption whereby it showed a bell shape curve, whereas the scales of Proactive Aggression in the RPQ was found positively skewed, followed by the scale of the RSES which was negatively skewed.

Normal Q-Q plot. The Q-Q plot is also an indicator for test of normality. The normal Q-Q plot presented in this study showed some data were normally distributed as the data points were close the straight line for the scales of proactive aggression, reactive aggression and RSES, while cyberbullying perpetration were not normally distributed.

Normality test. Lastly, Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) test were used to assess the normality in this study. Ghasemi and Zahediasl (2012) stated if the test is significant, it indicates a non-normal distribution. Table 4.2 below shows the current K-S and S-W test displays significant value with $p < .05$ for all scales.

Table 4.2

Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk (S-W)

	Kolmogorov-Smirnov Significant value	Shapiro-Wilk Significant value
Proactive Aggression	.000	.000
Reactive Aggression	.001	.000
Self- Esteem	.000	.000
Cyberbullying Perpetration	.000	.000

*refer to Appendix E, p. 65 for the SPSS output.

Descriptive

Background of Respondents

A total of 237 participants from 18 to 29 years old ($M = 21.83$, $SD = 1.52$), gender ($M = 1.60$, $SD = .49$) and race ($M = 2.22$, $SD = .71$) involved in this study as shown in Table 4.3. The highest percentage of 38.4% age group were 22 years old, followed by 24.1 % were 21 years old, 12.2% were 23 years old, 9.3% were 20 years old, 5.1% were 24 years old, 4.6% were 19 years old, 3.4% were 25 years old, 1.3% were 26 years old, and 0.8% were 18 years old while 28 and 29 years old were 0.4 % respectively. Besides, more than half of the number of participants in which 60.3% were female ($n = 143$) while the rest 39.7% were male participants ($n = 94$). The most number of participants of this study, 62.4% belonged to Chinese ($n = 148$), followed by 20.7% were Indian ($n = 49$), 11% were Malay ($n = 26$), while 5.9% consists of the least number of participants in other ethnicity group ($n = 14$).

Table 4.3

Demographics of Respondents

Demographic profile	*n*	%
Age		
18	2	.8
19	11	4.6
20	22	9.3
21	57	24.1
22	91	38.4
23	29	12.2
24	12	5.1
25	8	3.4
26	3	1.3
28	1	.4
29	1	.4
Gender		
Male	94	39.7
Female	143	60.3
Ethnicity		
Malay	26	11.0
Chinese	148	62.4
Indian	49	20.7

Others	14	5.9	

*refer to Appendix F, p. 68 for the SPSS output.

Frequency Distribution

The mean score for all variables was shown in Table 4.4. The mean score for total

proactive aggression for the participants in this study is 1.22 (SD = 1.420). The mean scores

for total scores of reactive aggression and total scores of self-esteem are 6.07 (SD = 3.438)

and 26.90 (SD = 4.702) respectively.

Table 4.4

Frequencies distribution of Proactive Aggression, Reactive Aggression, Self-esteem and

Cyberbullying (N = 237)

Variable	M	SD	Min	Max
Proactive Aggression	1.22	1.42	0	6
Reactive Aggression	6.07	3.44	0	18
Self-esteem	26.90	4.70	10	39
Cyberbulling Perpetrator	1.45	4.56	0	30

Note. M: Mean; *SD*: Standard Deviation; Min: Minimum Score; Max: Maximum Score

Inferential Analysis

In this section, the analyses of assumption for multiple linear regression analysis

based on the present study's research questions were presented (refer to Appendix G, p. 69).

Assumption for Multiple Linear Regression

Type of variables. In multiple linear regression, each variable in this present study

were all continuous variable.

Independent. The responses in the current study were independent of other subjects

(Berry, 1993).

Multicollinearity. Besides, multiple linear regression model portrays no

multicollinearity in the data. Table 4.5 shows each predictor with their respective VIF values

were less than 10, whereas the tolerance value of each predictor was larger than .10 (Shieh,

2010). This shows there was no violation of multicollinearity assumption.

Table 4.5

Collinearity Statistics

	Tolerance	VIF
Proactive Aggression	.758	1.320
Reactive Aggression	.733	1.365
Self-esteem	.959	1.043

*refer to Appendix G, p. 69 for the SPSS output.

Independence of errors. Durbin Watson test was used to examine the independent

error. Reddy and Sarma (2015) suggested that the acceptable range was from one to three, but

best close to two. Referring to Table 4.6, the assumption was met in this study.

Table 4.6

Independent Error Test

Model	Durbin - Watson
1	2.015

Note. Predictors: Proactive Aggression, Reactive Aggression and Self-esteem

Dependent Variable: Cyberbullying Perpertration

*refer to Appendix G, p. 69 for the SPSS output.

Multivaraite outliers. To examine multivariate outliers, Mahalanobis distance,

Cook's distance, and Centered Leverage distance were utilized in this test. Cross checking

cutoff point of all the multivariate outliers, 18 cases violated Mahalanobis distance, 1 case

violated Cook's distance, and lastly, 18 cases violated Centered Leverage distance, as shown

in Table 4.7.

Table 4.7

Multivariate Outliers Tests

	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
1	13	18.446	.0477	.0735
2	14	24.204	.183	.0964
3	17	17.456	.0509	.0713
4	25	29.701	.280	.117
5	56	15.323	.0499	.0639
6	59	16.260	.0509	.0664
7	92	16.506	.173	.0697
8	95	20.754	.110	.0847
9	97	18.699	.123	.0745
10	121	16.509	.0758	.0658
11	135	56.685	1.044	.223
12	209	21.359	.110	.0847
13	221	16.215	.0839	.0676
14	222	21.701	.0703	.0865
15	223	21.840	.134	.0891
16	235	17.473	.0674	.0688
17	244	20.573	.127	.0820
18	252	20.339	.0839	.0848
	Total N	18	18	18

Linearity, residual normality and homoscedasticity. The MLR model demands

linearity of residual, residual normality and homoscedasticity. Figure 4.1 displays a

scatterplot that did not meet the three stated assumptions.
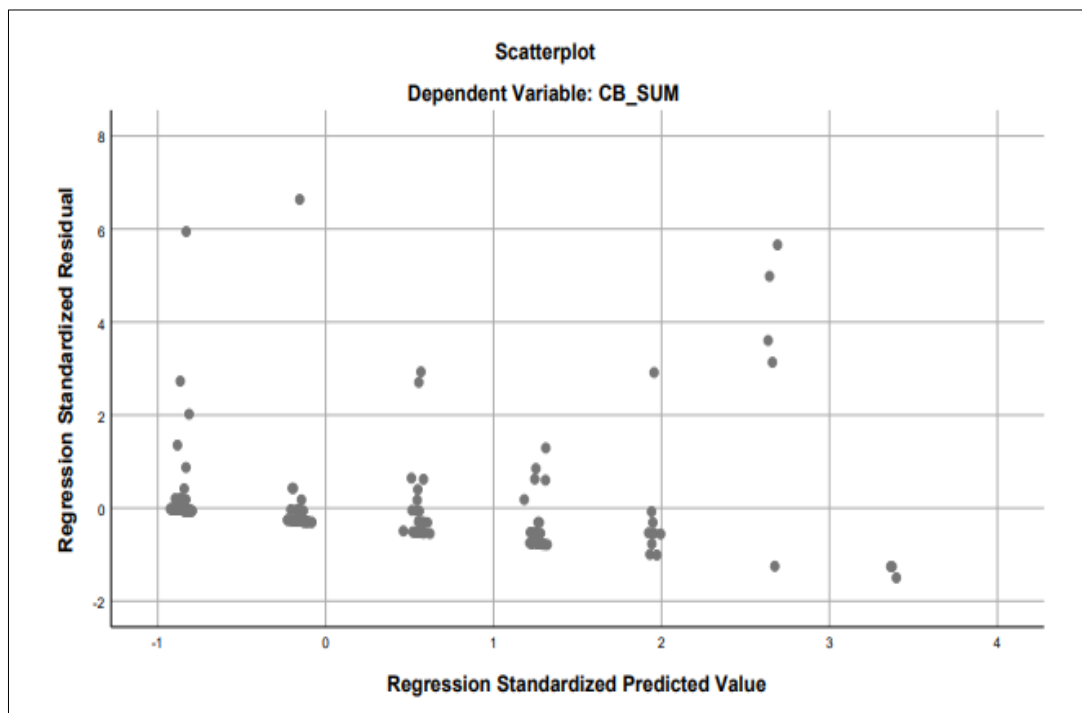
Figure 4.1 The scatterplot showed that the assumptions for linearity, residual normality and

homoscedasticity were not met.

Multiple Regression Analysis for Proactive Aggression, Reactive Aggression and Self-

esteem as Predictors of Cyberbullying

The result of proactive, reactive aggression and self-esteem toward cyberbullying

among undergraduate adults in Malaysia was shown in Table 4.8 and Table 4.9. To test

proactive aggression, reactive aggression and self-esteem, multiple linear regression analysis

was used to identify the significant predictors of cyberbullying. The model is statistically

significant, $F(3, 233) = 9.244$, $p = .000$, and accounted for 9.5 % of the variance. It was found

that proactive aggression ($\beta = .329$, $p = .000$) significantly predict cyberbullying perpetration

whereas reactive aggression ($\beta = -.007$, $p = .923$) and self-esteem ($\beta = .007$, $p = .917$) does

not predict cyberbullying among undergraduates in Malaysia.

Table 4.8

Result of Regression Model

	df	F	p	Adj. R^2
Regression	3	9.244	.000	.095
Residual	233			
Total	236			

Note. Dependent variable = Cyberbullying Perpetration. Predictors = Proactive Aggression,

Reactive Aggression, Self-esteem.

*refer to Appendix G, p. 69 for the SPSS output.

Table 4.9

Result of Regression Coefficient

	t	Std. β	p
Proactive Aggression	4.630	.329	.000
Reactive Aggression	-.097	-.007	.923
Self-esteem	.104	.007	.917

Note. Dependent variable = Cyberbullying Perpetration. Predictors = Proactive Aggression,

Reactive Aggression, Self-esteem.

*refer to Appendix G, p. 69 for the SPSS output.

Summary of Findings

In summary, this chapter presented the participants' demographic, hypothesis H1

were supported whereas H2 and H3 were not supported as shown in Table 4.10.

Table 4.10

Summary of Results

Hypotheses	Std. β	p	Decision

H1: Proactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia.	.329	.000	Supported
H2: Reactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia.	-.007	.923	Not supported
H3: Self-esteem positively predicts cyberbullying perpetration among undergraduates in Malaysia.	.007	.917	Not supported

Chapter V

Discussion and Conclusion

H1: Proactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia.

The current study is aligned with our proposed hypothesis. Proactive aggression was found to be a significant predictor of cyberbullying perpetration. Based on Ang et al. (2014), supporting the results of proactive aggression contributing as a predictor of cyberbullying. Since cyberbullying perpetration is a general subtype of aggression, and proactive aggression is defined as a negative action that aims to obtain the desired goal from another individual by causing harm, the action goes hand in hand explaining proactive aggression as a significant predictor of cyberbullying perpetration (Schultze-Krumbholz et al., 2018). Calvete et al. (2010) also aligns with the result of our study stating proactive aggression significantly related to cyberbullying.

At this digital age, with easy accessibility to the internet, enables cyber perpetrators to achieve dominance and superiority against others by sending out hateful messages to others to channel out their innate proactive aggression in an instant (Xiao, Chan, Cheung, & Wong, 2016). Supported by another study Jara, Casas, and Ortega-Ruiz (2017), the contributing factor for cyberbullying perpetration to occur stems from the desire to assert power and authority, hence supporting our hypothesis.

A possible justification as to proactive aggression explaining the occurrence of cyberbullying perpetration is because, individuals with higher aggressive traits, involve in extreme negative behaviours to compensate and readjust their cognitive, physiology and psychological states (Song et al., 2019).

H2: Reactive aggression positively predicts cyberbullying perpetration among undergraduates in Malaysia.

In the present study, however, there are inconsistencies with past study, as our present study does not support the hypothesis proposed. The current study shows, that reactive aggression is not a significant predictor of cyberbullying perpetration. This is supported by Ang et al. (2014) reactive aggression and cyberbullying was not found to be significant. In this study, it was explained that cyberbullying perpetrators, who invest their time to engage in activities such as hostile website development, hence being the parties causing provocation, thus the element of reactive aggression is absent in contributing to the variance in explaining cyberbullying perpetration.

Reactive aggression is characterized as a form of retaliation or coping strategy against provocation, frustration, and towards threat as it is a reaction to defend or protect oneself, such anger stems from ones need to defend themselves when victimized. This could be explained as only cyber perpetrators are being assessed in this study, they seek for dominance, hence, they do not feel the need to possess reactive aggression, as they are not being victimized (Ling, Ling, Zhimin, Hung, & Leong, (2017).

H3: Self-esteem positively predicts cyberbullying perpetration among undergraduates in Malaysia.

There are many past studies that have presented on the strong relationship between self-esteem and cyberbullying (Brewer & Kerslake, 2015). Nevertheless in our current study self-esteem is not a significant predictor of cyberbullying perpetration. According to a study by Robson and Witenberg (2013) also found no association between self-esteem and cyberbullying.

In consistent with another study, Brack and Caltabiano (2014) displayed no significant difference in self-esteem among cybervictim and cyberbully group, indicating self-esteem as a weak predictor of cyberbullying. There are past studies that displayed self-

esteem to have a weaker relationship towards cyberbullying regardless of its direction (Patchin & Hinduja, 2011).

Jacobs, Dehue, Völlink, and Lechner (2014) stated that individuals go through different age phases from young adolescent, transitioning to adulthood as supported by several psychological studies, self-esteem levels raise and decline based on internal and external factors for example financial situation, education level, unsupportive family and popularity level, influencing one's self-esteem. One might not have the same level of self-esteem at adolescence, into adulthood and old age (Orth, Trzesniewski, & Robins, 2010). Therefore, our findings suggest that self-esteem levels are constantly fluctuating. Therefore it can be regarded that self-esteem may not have a dramatic impact on cyberbullying perpetration and relies strongly on the time of assessment.

Moreover, self-esteem was not a predictor of cyberbullying perpetrator in this study, possibly because the perpetrators' activity does not possess self-esteem value, nor reflect the properties of self-esteem that predicts perpetrator action (Varghese & Pistole, 2017).

Furthermore, in the present study, most of the participants are young adults with high scoring on self-esteem scale, thus the result imposes that self-esteem does not have a drastic impact on cyberbullying. This is in line with a study by Balakrishnan and Fernandez (2018) whereby self-esteem did not contribute uniquely to the variance as a predictor of cyberbullying perpetration with $p = 0.317$ ($p > .05$) due to a large number of young adults with high self-esteem in their study.

Lastly, the sample in the present study found to be having a high score in self-esteem indicates most of the participants are possessing high self-esteem (Rosenberg, 2015). Individuals with high self-esteem value their lives and strive to achieve in all domains in life such as maintaining a harmonious social interpersonal relationship (Chung et al., 2014;

Hinduja & Patchin, 2010; Poole, 2017). This may be a possible reason for self-esteem not able to predict cyberbullying perpetration among the sample in the present study.

Implications

   Theoretical implications. This study could bestow to the society by contributing information and substantial knowledge on cyberbullying. It allows the society to pay attention to proactive aggression, reactive aggression and self-esteem as predictors of cyberbullying in Malaysia context. Besides, scant past studies focused on these predictors on cyberbullying. The current study assessed that proactive aggression was a positive significant predictor of cyberbullying perpetration, whereas reactive aggression and self-esteem were non-significant predictors of cyberbullying perpetration can provide a better understanding on how the types of aggression and self-esteem contributes to one's tendency to engage in cyberbullying.

   Practical implications. The present study is able to provide insight into the detrimental effects of cyberbullying. Relevant authorities could obtain useful information by referring to the present study to implement beneficial programs, raise awareness and prevention against cyberbullying cases among the community in Malaysia. The findings are crucial to identify the factors so that implementations could be taken to counter the negative impacts it entails through counseling programs, managing aggressive behaviors, and coping skills to eradicate cyberbullying perpetrator tendencies.

Limitations

   There are a few limitations that need to be addressed in the present study. Firstly, the questionnaires were self-reported. This could be an inhibiting factor on the aspect of accuracy in which the questions may not be attempted at with honesty. In such situation, may lead to the occurrence of biases such as response bias where the participants are influenced by

societal pressure and conform to answers that abide the social norms or what is socially acceptable that creates a systematic error in the measure (Lavrakas, 2008).

Besides, this study incorporates a cross-sectional design that allows a one-time collection of data. Although cross-sectional design enables to carry out the research in a short period of time, however such case where the data that was collected is based on a particular time of assessment can influence the relationship between the variables (Sainani & Popat, 2011).

Moreover, social desirability bias could be another limitation as individuals conform to social norms and acceptance (King & Bruner, 2000). For example, participants might not be truthful when reporting their responses. This potential bias might lead to an inaccuracy in the final results of the present study.

Furthermore, the current study shows only 9.5% contributed to the variance of cyberbullying perpetration explained by the predictor which is proactive aggression. In other words, approximately 91.5% can be explained by other potential risk factors.
Lastly, the sampling method used in this study was non probability sampling that is purposive and snowball sampling method. This does not guarantee an equal chance for each and every individual of the targeted population to be involved in the sample, thus may reduce the generalizability of results from the sample to the population (Sharma, 2017).

Recommendations

Aspiration for future studies is to be more inclusive of other variables. It is recommended that future researchers to the extent the scope of this study by including other psychological variables which may have an impact on the phenomenon of cyberbullying. It will benefit researches to achieve a deeper understanding and insight on the potential factors that cause cyberbullying and develop ways to eradicate them in the technologically advancing times ahead.

Future studies can conduct similar research in different settings, besides educational setting extended to organizational settings that can broaden and test different variables if applicable in other aspects (Privitera, 2018).

Next, probability sampling method has the leverage to yield accurate results as well reduce researcher bias, that can increase the generalizability of data where each individual has an opportunity to be included in the sample hence enable the findings to be generalized to the entire population of Malaysia.

Future researchers are also suggested to include different population in their studies, such as working adults in organizational settings to increase knowledge regarding individual differences in characteristics, occupation and its influence on cyberbullying tendencies and victimization.

Conclusion

In conclusion, the current study has achieved the objectives to identify proactive, reactive aggression and self-esteem as predictors of cyberbullying perpetration among Malaysian undergraduates. The findings in this study indicated that proactive aggression was a significant predictor of cyberbullying perpetration whereby reactive aggression and self-esteem were not significant predictors of cyberbullying perpetration. It is pivotal to shed light on this issue since cyber perpetration behaviours impact another individual emotionally and mentally. Thus, this study can be utilized as a guide or reference to help to pave way for a healthier and more positive usage of the internet.

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Appendices

Appendix A: Turnitin Report

Turnitin FYP 2

ORIGINALITY REPORT

9% SIMILARITY INDEX	6% INTERNET SOURCES	7% PUBLICATIONS	% STUDENT PAPERS

PRIMARY SOURCES

1	Kai-Ying Chen, Meng-Lin Chang. "User acceptance of 'near field communication' mobile phone service: an investigation based on the 'unified theory of acceptance and use of technology' model", The Service Industries Journal, 2013 Publication	1%
2	link.springer.com Internet Source	1%
3	journals.sagepub.com Internet Source	1%
4	scholarworks.waldenu.edu Internet Source	1%
5	estudogeral.sib.uc.pt Internet Source	1%
6	Vimala Balakrishnan, Terence Fernandez. "Self-esteem, empathy and their impacts on cyberbullying among young adults", Telematics and Informatics, 2018 Publication	<1%

Appendix B: Questionnaires

Section A: The Reactive–Proactive Questionnaire (RPQ)

Instructions

There are times when most of us feel angry, or have done things we should not have done. Rate each of the items below by putting a circle around 0 (never), 1 (sometimes), or 2 (often). Do not spend a lot of time thinking about the items—just give your first response. Make sure you answer all the items (see below).

How often have you…

No.	Items	Never	Sometimes	Often
1.	Yelled at others when they have annoyed you	0	1	2
2.	Had fights with others to show who was on top	0	1	2
3.	Reacted angrily when provoked by others	0	1	2
4.	Taken things from other students	0	1	2
5.	Gotten angry when frustrated	0	1	2
6.	Vandalized something for fun	0	1	2
7.	Had temper tantrums	0	1	2
8.	Damaged things because you felt mad	0	1	2
9.	Had a gang fight to be cool	0	1	2
10.	Hurt others to win a game	0	1	2
11.	Become angry or mad when you don't get your way	0	1	2
12.	Used physical force to get others to do what you want	0	1	2
13.	Gotten angry or mad when you lost a game	0	1	2

14.	Gotten angry when others threatened you	0	1	2
15.	Used force to obtain money or things from others	0	1	2
16.	Felt better after hitting or yelling at someone	0	1	2
17.	Threatened and bullied someone	0	1	2
18.	Made obscene phone calls for fun	0	1	2
19.	Hit others to defend yourself	0	1	2
20.	Gotten others to gang up on someone else	0	1	2
21.	Carried a weapon to use in a fight	0	1	2
22.	Gotten angry or mad or hit others when teased	0	1	2
23.	Yelled at others so they would do things for you	0	1	2

Scoring:

Sum scores for 12 items for proactive aggression and 11 items for reactive aggression. Higher scores for proactive aggression indicate higher proactive aggression. Higher scores for reactive aggression indicate higher reactive aggression.

Section B: Rosenberg Self-esteem Scale (RSES) 10 Item version

Instructions

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

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

Scoring:

Items 2, 5, 6, 8, 9 are reverse scored. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.

Section C: Cyberbullying Test (CT)

Instructions

Below is a list of statements to assess 15 cyberbullying behaviours. Please indicate in both columns (Done to me) and (I did it) regarding how true the cyberbullying behaviours are to you by rating "Never" 0 point, "Sometimes" 1 point, "Several times" 2 points, and "Always" 3 points.

		Done to me				I did it			
No.	Items	Never	Sometimes	Several Times	Always	Never	Sometimes	Several Times	Always
1	Sent offensive and insulting messages by cellphone or internet?								
2	Sent offensive and insulting calls on your cellphone or by Internet?								
3	Assaulted to tape the assault and hang it on the Internet?								
4	Diffused your private or compromising pictures or videos by								

	Internet or cellphone?
5	Taken pictures of you without your permission in places such as locker rooms, beaches, or toilets and hung them on the Internet or diffused them by cellphone?
6	Received anonymous calls to scare or frighten you?
7	Blackmailed or threatened you with calls or messages?
8	Harassed you sexually by cellphone or on the

	Internet?
9	Signed your blog, pretending to be you, making slandering comments, lying, or revealing your secrets?
10	Stolen your password to prevent your access to your blog or e-mail?
11	Touched up your photos or videos to diffuse them through social networks or YouTube to humiliate you or make fun of you?
12	Harassed you to isolate you from your social

13	Blackmailed you, making you do things you did not want to do to prevent them from diffusing your intimate matters on the network?
14	Threatened to kill you or your family by cellphone, the social networks, or any other type of technology?
15	Spread rumors about you to harm you?

Appendix C: Effect Size

Section A: R^2 value of Proactive Aggression and Reactive Aggression on Cyberbullying

Understanding the Relationship Between Proactive and Reactive Aggression, and Cyberbullying Across United States and Singapore Adolescent Samples

Rebecca P. Ang, PhD,[1] Vivien S. Huan, PhD,[1] and Dan Florell, PhD[2]

For both the United States and Singapore adolescent samples, cyberbullying was regressed onto proactive aggression, controlling for reactive aggression, and reactive aggression, controlling for proactive aggression, respectively. In each of these analyses, the variable to be controlled was entered in the first block. The results are presented in Table 2. In the first pair of analyses conducted using the U.S. sample, proactive aggression was significantly associated with cyberbullying, controlling for reactive aggression, $\Delta R^2 = .17$, $\Delta F(1, 394) = 106.11$, $p < .05$, while reactive aggression was not significantly associated with cyberbullying after controlling for proactive aggression, $\Delta R^2 = .01$, $\Delta F(1, 394) = 3.67$, *ns*. Proactive aggression ($\beta = .54$, $p < .01$) rather than reactive aggression ($\beta = .10$, *ns*) was responsible for the additional 17% variance explained for cyberbullying over and above reactive aggression. Likewise, in the second pair of analyses conducted using the Singapore sample, proactive

Note. DV = Dependent Variable.
*$p <.05$. *$p < .01$.

aggression was significantly associated with cyberbullying, controlling for reactive aggression, $\Delta R^2 = .24$, $\Delta F(1, 329) = 117.58$, $p < .05$, while reactive aggression was not significantly associated with cyberbullying after controlling for proactive aggression, $\Delta R^2 = .00$, $\Delta F(1, 329) = 0.73$, *ns*. Proactive aggression ($\beta = .60$, $p < .01$) rather than reactive aggression ($\beta = -.05$, *ns*) was responsible for the additional 24% variance explained for cyberbullying over and above reactive aggression. For the combined sample, a similar pattern of results emerged. Proactive aggression was significantly associated with cyberbullying, controlling for reactive aggression, $\Delta R^2 = .20$, $\Delta F(1, 726) = 226.66$, $p < .01$, while reactive aggression was not significantly associated with cyberbullying after controlling for proactive aggression, $\Delta R^2 = .00$, $\Delta F(1, 726) = 0.59$, *ns*. Proactive aggression ($\beta = .58$, $p < .01$) rather than reactive aggression ($\beta = .03$, *ns*) was responsible for the additional 20% variance explained for cyberbullying over and above reactive aggression.

Section B: R^2 value of Self-esteem on Cyberbullying

A META-ANALYSIS OF THE PREDICTORS OF CYBERBULLYING PERPETRATION AND VICTIMIZATION

SIYING GUO

University of South Carolina

Previous studies so far have investigated various aspects of cyberbullying. Using meta-analytic approaches, the study was primarily to determine the target factors predicting individuals' perpetration and victimization in cyberbullying. A meta-analysis of 77 studies containing 418 primary effect sizes was conducted to exam the relative magnitude of demographic, individual, and contextual predictors. Several study characteristics (i.e., sample age, sample gender, study location, publication status, and publication year) were further analyzed as moderators. The results showed the average effect size of each predictor for both cyberbully and cybervictim groups. Several significant shared and unique predictors were identified as important factors for designing effective prevention and intervention programs. The implications of the findings for future research were discussed in relation to interventions on cyberbullying. © 2016 Wiley Periodicals, Inc.

Table 1
Operational Definitions and Coding Rules

| Variables	Operational Definitions and Coding Rules
Study characteristics	
Sample gender	The percentage of males in the sample. ($\kappa = 1.00$)
Sample age	The average age of the sample. For studies reporting only the age range of the participants, the median of the range was used instead. ($\kappa = 1.00$)
Study location	The location the studies were carried out, which was divided into three categories: United States, Europe, and other countries. ($\kappa = 1.00$)
Publication year	The year the article was published. ($\kappa = 1.00$)
Publication status	Whether the included study was published (1) or not (0). ($\kappa = 1.00$)
Measurement source	The method of data collection, which was recoded into four classifications: self-report, peer-report, teacher-report, and parent-report measurement. ($\kappa = 1.00$)
Demographic predictors	
Age	Age of the respondent in years. ($\kappa = 1.00$)
Gender	Male (1) or female (0). ($\kappa = 1.00$)
Race	White (1) or non-White (0). ($\kappa = 1.00$)
Individual predictors	
Self-related cognition	Individuals' perceptions, awareness, beliefs, judgments, or attitudes about the self, including self-satisfaction, self-concept, and self-esteem. ($\kappa = 0.90$)

Table 3

The Overall Mean Effect Size and Fail-Safe N for Cyberbullying Perpetration

Correlation	k	Effect Size r	95% Confidence Intervals		Test of Heterogeneity	Fail Safe N
			Lower	Upper	Cochran's Q	
Demographic						
Gender	25	.23[a]	.04	.40	3024.62[c]	4850
Age	21	.10[b]	.03	.16	331.11[c]	406
Race	10	.09	−.21	.37	1270.30[c]	235
Individual						
Externalizing problems	23	.31[c]	.24	.38	1091.56[c]	1877
Cyber activities	24	.23[c]	.17	.28	813.26[c]	2456
Internalizing problems	24	.19[c]	.14	.23	371.23[c]	4913
Self-related cognition	8	.06	−.14	.02	97.64[c]	30

Table 4

The Overall Mean Effect Size and Fail-Safe N for Cyberbullying Victimization

Correlation	k	Effect Size r	95% Confidence Intervals		Test of Heterogeneity	Fail-Safe N
			Lower	Upper	Cochran's Q	
Demographic						
Gender	19	−.12[b]	−.21	−.03	587.40[c]	440
Age	16	.04	−.02	.11	201.45[c]	119
Race	7	−.02	−.09	−.05	37.83[c]	0
Individual						
Externalizing problems	14	.21[c]	.15	.27	248.31[c]	2516
Cyber activities	13	.24[b]	.09	.38	2163.35[c]	5861
Internalizing problems	24	.28[c]	.24	.33	899.36[c]	3264
Self-related cognition	7	−.14[c]	−.20	−.08	36.18[c]	226

Section C: Total Sample Size calculated using G* power
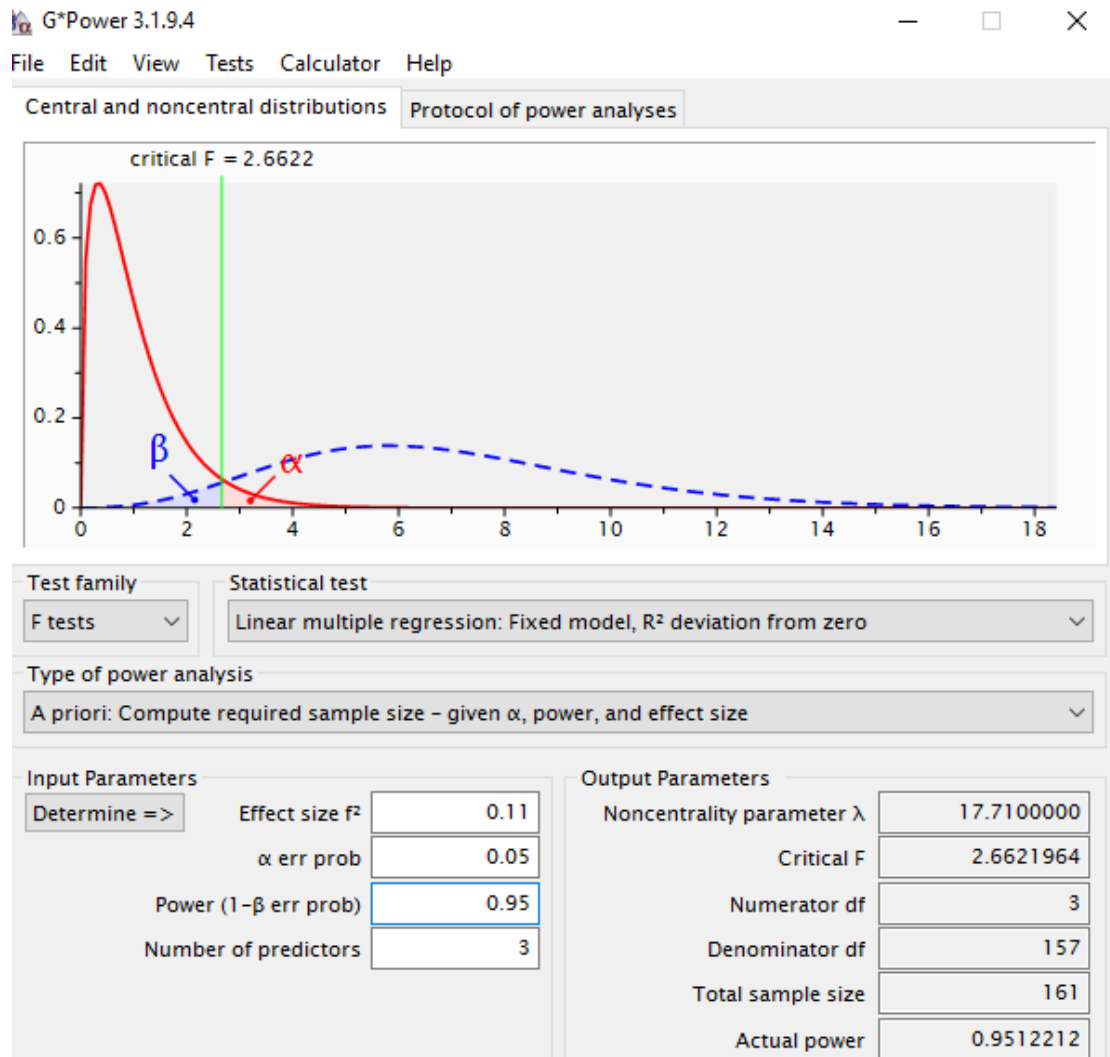
Appendix D: SPSS Results

Reliability of the Scales

Reactive-Proactive Aggression Questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
.905	23

Proactive Aggression Questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
.857	12

Reactive Aggression Questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
.864	11

Rosenberg Self-esteem Scale

Reliability Statistics

Cronbach's Alpha	N of Items
.843	10

Cyberbullying Test Cyberbullying Perpetration
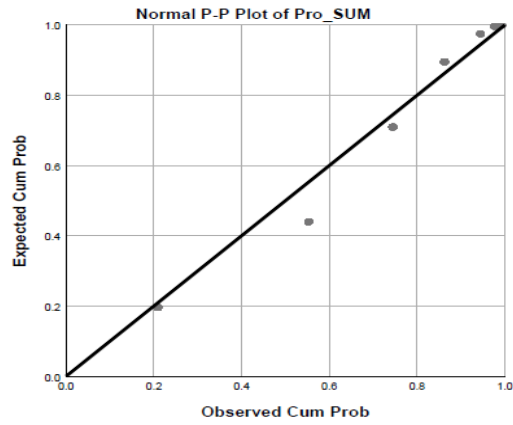
Reliability Statistics

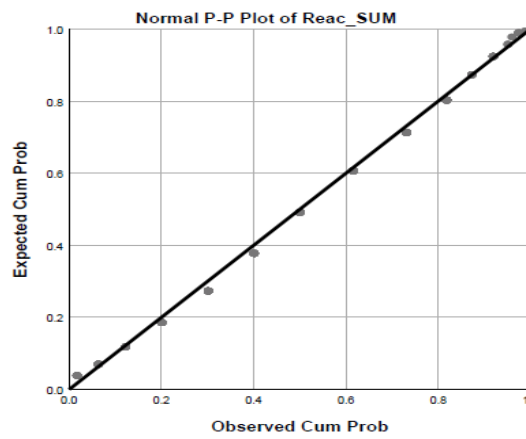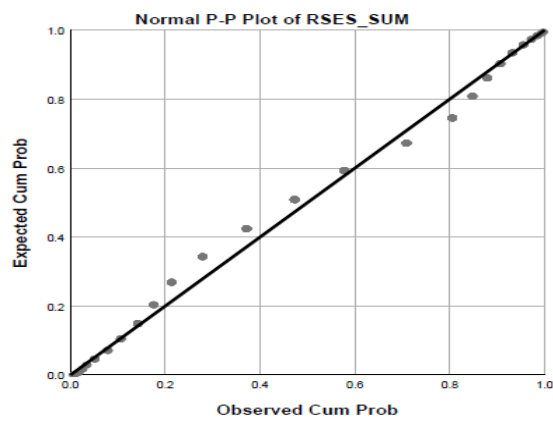| Cronbach's Alpha	N of Items
.952	15

Appendix E: Normality Assumptions

P-P Plot

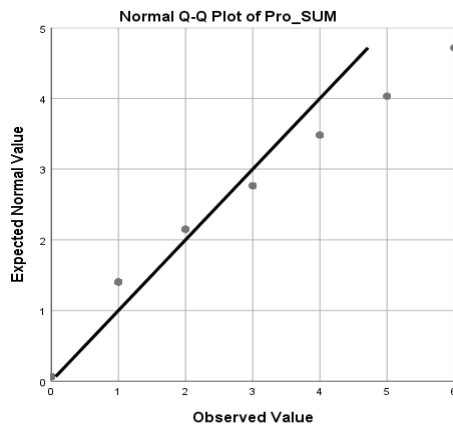Proactive Aggression

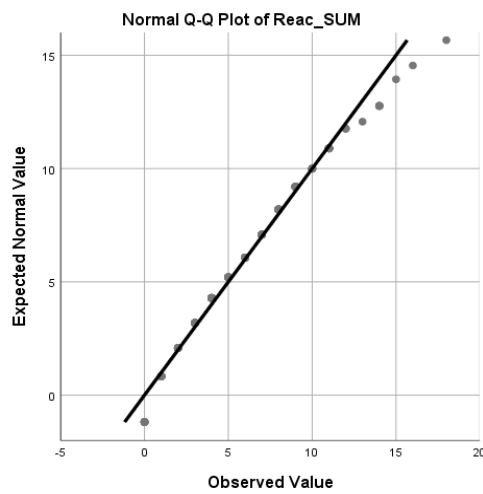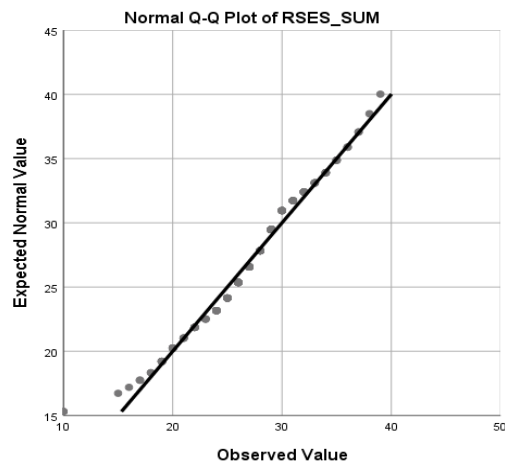Reactive Aggression

Self-esteem

Q-Q Plot

Proactive Aggression

Reactive Aggression

Self-esteem

Kolmogorov-Smirnov (K-S) Test and Shapiro-Wilk (S-W)

Cyberbullying Perpetration

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CB_SUM	.383	237	.000	.352	237	.000

a. Lilliefors Significance Correction

Proactive Aggression

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pro_SUM	.248	237	.000	.808	237	.000

a. Lilliefors Significance Correction

Reactive Aggression

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Reac_SUM	.081	237	.001	.973	237	.000

a. Lilliefors Significance Correction

Self-esteem

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RSES_SUM	.108	237	.000	.966	237	.000

a. Lilliefors Significance Correction

Histogram

Proactive Aggression
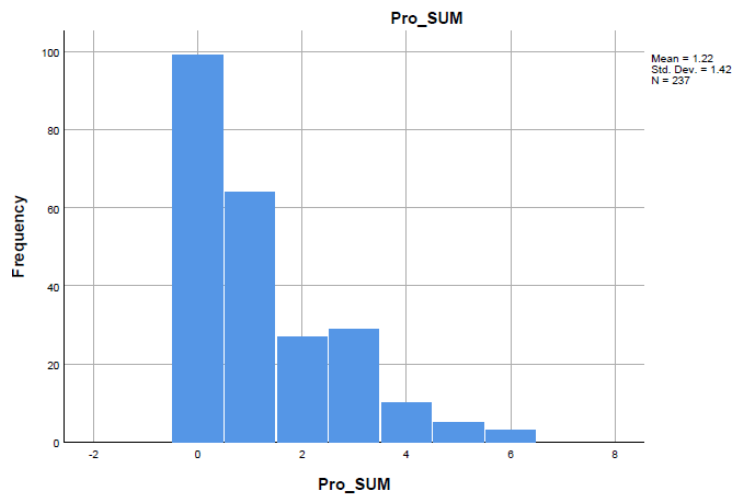
Reactive Aggression
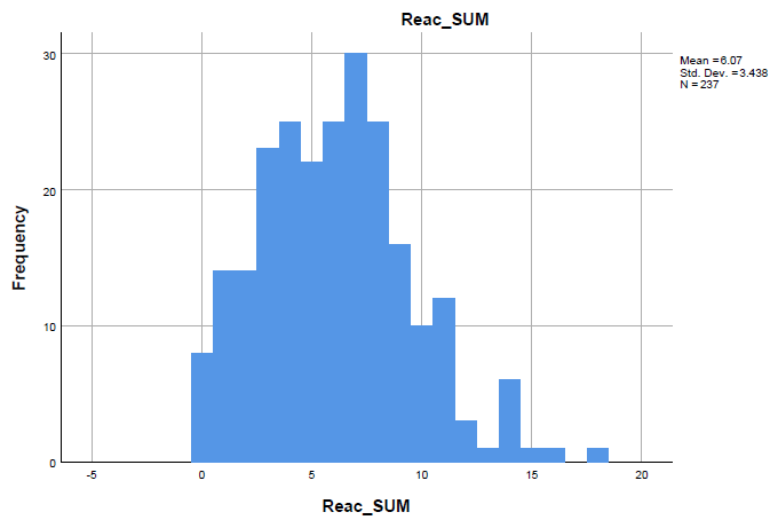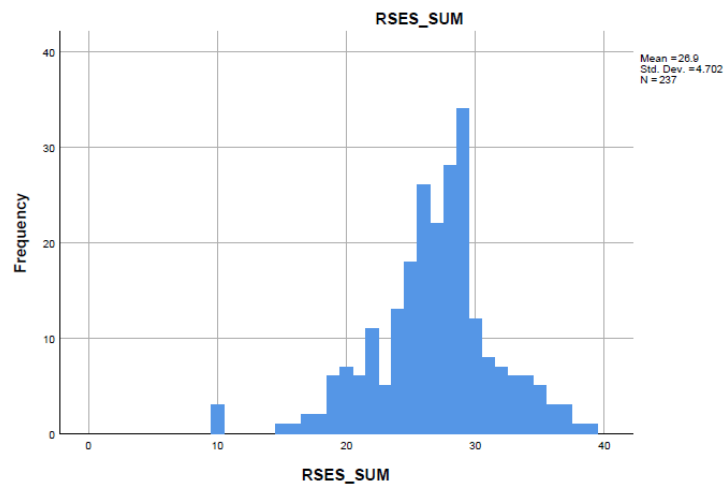
Self-esteem

Skewness and Kurtosis

Proactive Aggression, Reactive Aggression and Self-esteem

Statistics

		Pro_SUM	Reac_SUM	RSES_SUM
N	Valid	237	237	237
	Missing	0	0	0
Mean		1.22	6.07	26.90
Std. Deviation		1.420	3.438	4.702
Skewness		1.216	.474	-.513
Std. Error of Skewness		.158	.158	.158
Kurtosis		.936	.182	1.479
Std. Error of Kurtosis		.315	.315	.315
Minimum		0	0	10
Maximum		6	18	39

Appendix F: Descriptive Statistics

Statistics

		Age	Gender
N	Valid	237	237
	Missing	0	0
Mean		21.83	1.60
Median		22.00	2.00
Std. Deviation		1.528	.490
Percentiles	25	21.00	1.00
	50	22.00	2.00
	75	22.00	2.00

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	2	.8	.8	.8
	19	11	4.6	4.6	5.5
	20	22	9.3	9.3	14.8
	21	57	24.1	24.1	38.8
	22	91	38.4	38.4	77.2
	23	29	12.2	12.2	89.5
	24	12	5.1	5.1	94.5
	25	8	3.4	3.4	97.9
	26	3	1.3	1.3	99.2
	28	1	.4	.4	99.6
	29	1	.4	.4	100.0
	Total	237	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	94	39.7	39.7	39.7
	Female	143	60.3	60.3	100.0
	Total	237	100.0	100.0	

Appendix G: Multiple Linear Regression

Independent Error Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.326[a]	.106	.095	4.338	1.720

a. Predictors: (Constant), RSES_SUM, Pro_SUM, Reac_SUM

b. Dependent Variable: CB_SUM

ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	521.861	3	173.954	9.244	.000[b]
	Residual	4384.730	233	18.819		
	Total	4906.591	236			

a. Dependent Variable: CB_SUM

b. Predictors: (Constant), RSES_SUM, Pro_SUM, Reac_SUM

Test of Multicollinearity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.047	1.834		.026	.980
	Pro_SUM	1.058	.228	.329	4.630	.000
	Reac_SUM	-.009	.096	-.007	-.097	.923
	RSES_SUM	.006	.061	.007	.104	.917

Coefficients[a]

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-3.566	3.660		
	Pro_SUM	.608	1.508	.758	1.320
	Reac_SUM	-.198	.180	.733	1.365
	RSES_SUM	-.114	.127	.959	1.043

a. Dependent Variable: CB_SUM