



05-4506832



pustaka.upsi.edu.my



Perpustakaan Tuanku Bainun
Kampus Sultan Abdul Jalil Shah



PustakaTBainun



ptbupsi

THE RELATIONSHIP BETWEEN FEAR OF
EVALUATION AND SELF-ESTEEM
AMONG UNDERGRADUATE STUDENTS IN UPSI

SAVARINA ALWANI



05-4506832



pustaka.upsi.edu.my



Perpustakaan Tuanku Bainun
Kampus Sultan Abdul Jalil Shah



PustakaTBainun



ptbupsi

SULTAN IDRIS EDUCATION UNIVERSITY
2023



05-4506832



pustaka.upsi.edu.my



Perpustakaan Tuanku Bainun
Kampus Sultan Abdul Jalil Shah



PustakaTBainun



ptbupsi



THE RELATIONSHIP BETWEEN FEAR OF EVALUATION AND SELF-ESTEEM
AMONG UNDERGRADUATE STUDENTS IN UPSI

SAVARINA ALWANI



A Final Year Project submitted in fulfillment of the requirement for the
Degree of Bachelor of Psychology (Honors)



Faculty of Human Development

Universiti Pendidikan Sultan Idris

2023



DECLARATION FORM



DECLARATION OF ORIGINAL WORK

SECTION A: Student's Declaration

I, SAVARINA ALWANI, Student ID D20192091935 of Faculty of Human Development, hereby declare that the work entitled THE RELATIONSHIP BETWEEN FEAR OF EVALUATION AND SELF-ESTEEM AMONG UNDERGRADUATE STUDENTS IN UPSI is my original work. I have not copied from any other students' work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

24/1/2024

(Signature)

(Date)

SECTION B: Supervisor's Declaration

I, AROYEWUN TEMITOPE FOLASHADE hereby certifies that the abovementioned work was prepared by the above named student, and is submitted to the Faculty of Human Development as a partial fulfillment for the conferment of Bachelor of Psychology with Honours, and the aforementioned work, to the best of my knowledge, is the said student's work.

25/1/2024

(Signature and Official Stamp)

(Date)

ACKNOWLEDGEMENT

First and foremost, I extend my heartfelt thanks to my supervisor, Dr. Aroyewun for invaluable guidance, support, and constructive feedback throughout the entire project. I admitted that I do procrastinating a lot but she patiently guided me all the ways. My final year project wouldn't be completed without her help. I also want to thanks to Madam Roslinda as my evaluator. Her feedback during the proposal defense helped me to improved my writing and the overall quality of this project.

Not to forget, to my family that always gives their best to support my journey to achieve the best that I could give. There's a time where I almost lost myself and felt tired, remembering their faces, candling up my light to keep the flame burning. Their unconditional love has strengthened me to never give up and keep pushing myself to be a better person and making them proud. Their belief in my abilities has been a constant source of motivation.

Last but not least, I want to express my gratitude to all those who, directly or indirectly, have played a role in this project. Your contributions, no matter how small, are deeply appreciated.

Thank you all for being part of this journey. Thanks God.



ABSTRACT

The study purpose was to look at the relationship between fear of evaluation; fear of negative (FNE) and positive evaluation (FPE) and self-esteem among undergraduate students in UPSI. Research design used was correlational by utilizing an online questionnaire distributed over social media to collect data with 160 undergraduate students participating. Brief Fear of Negative Evaluation (BFNE) Scale, Fear of Positive Evaluation Scale (FPES) and Rosenberg Self-Esteem Scale (RSES), were employed. SPSS were performed by using the Pearson correlation. Results reveal a significant positive correlation ($r = 0.355$, $p < 0.01$) between FNE and self-esteem. However, FPE showed no significant relationship with self-esteem ($r = 0.154$, $p > 0.05$). Overall, fear of evaluation (combining FNE and FPE) exhibited a significant positive correlation with self-esteem ($r = 0.258$, $p < 0.01$). The findings contribute to the understanding of the intricate connections between fear of evaluation and self-esteem.

Keywords: fear of evaluation, fear of negative evaluation, fear of positive evaluation, self-esteem





TAJUK: HUBUNGAN ANTARA KETAKUTAN TERHADAP PENILAIAN DAN HARGA DIRI DALAM KALANGAN PELAJAR SARJANA MUDA DI UPSI

ABSTRAK

Tujuan kajian adalah untuk meneliti hubungan antara ketakutan akan penilaian; ketakutan akan penilaian negatif (FNE) dan positif (FPE) serta harga diri di kalangan pelajar pra-siswazah di UPSI. Reka bentuk penyelidikan adalah korelasi dengan menggunakan soal selidik dalam talian yang diedarkan melalui media sosial untuk mengumpul data dengan penyertaan 160 pelajar pra-siswazah. Skala Ketakutan Penilaian Negatif Ringkas (BFNE), Skala Ketakutan Penilaian Positif (FPES), dan Skala Harga Diri Rosenberg (RSES) digunakan. Ujian korelasi Pearson dijalankan menggunakan SPSS. Keputusan menunjukkan korelasi positif yang signifikan ($r = 0.355$, $p < 0.01$) antara FNE dan harga diri. Walau bagaimanapun, FPE tidak menunjukkan hubungan yang signifikan dengan harga diri ($r = 0.154$, $p > 0.05$). Secara keseluruhannya, ketakutan penilaian (menggabungkan FNE dan FPE) menunjukkan korelasi positif yang signifikan dengan harga diri ($r = 0.258$, $p < 0.01$). Penemuan ini menyumbang kepada pemahaman mengenai hubungan rumit antara ketakutan penilaian dan harga diri.

Kata kunci: ketakutan penilaian, ketakutan penilaian negatif, ketakutan penilaian positif, harga diri



**TABLE OF CONTENTS**

	Page
TITLE PAGE	i
DECLARATION FORM	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
ABSTRAK	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF SYMBOLS	xi
LIST OF ABBREVIATIONS	xii
 CHAPTER 1 INTRODUCTION	
1.1 Introduction	1
1.2 Background of Study	2
1.3 Problem statement	3
1.4 Research Question	5
1.5 Objective of Study	5
1.6 Significance of Study	6
1.7 Conceptual Definition	6
1.7.1 Fear of Evaluation	7
1.7.2 Fear of Negative Evaluation	7
1.7.3 Fear of Positive Evaluation	8
1.7.4 Self-Esteem	8
1.8 Operational definition	9
1.8.1 Fear of Evaluation	9
1.8.2 Fear of Negative Evaluation	10
1.8.3 Fear of Positive Evaluation	10
1.8.4 Self-Esteem	11
1.9 Theoretical Approach	11
1.9.1 Cognitive Theory	11



1.9.2 Sociometer Theory	12
1.10 Conceptual Framework	14
1.11 Hypothesis	14
1.12 Conclusion	15

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction	16
2.2 Literature Review	17
2.2.1 Fear of Evaluation	17
2.2.2 Fear of Negative Evaluation	18
2.2.3 Fear of Positive Evaluation	18
2.2.4 Self-Esteem	19
2.2.5 Fear of Evaluation and Self-Esteem	20
2.2.6 Fear of Negative Evaluation and Self-Esteem	21
2.2.7 Fear of Positive Evaluation and Self-Esteem	23
2.2.8 Fear of Evaluation, Fear of Negative Evaluation, Fear of Positive Evaluation, and Self-Esteem	25
2.3 Conclusion	26

CHAPTER 3 RESEARCH DESIGN

3.1 Introduction	28
3.2 Research Design	29
3.3 Population and Sample	29
3.3.1. Population	30
3.3.2. Sample	30
3.3.2.1. Inclusion criteria	31
3.3.2.2. Exclusion criteria	32
3.4 Instrument	32
3.4.1 The Brief Fear of Negative Evaluation (BFNE) Scale	32
3.4.2 The Fear of Positive Evaluation Scale (FPES)	33

3.4.3 The Rosenberg Self-Esteem Scale (RSES)	34
3.5 Procedure	34
3.6 Data Analysis	36
3.7 Ethical Consideration	36
3.8 Conclusion	37
 CHAPTER 4 RESULTS	
4.1. Introduction	38
4.2 Descriptive analysis	39
4.3 Inferential Analysis	42
4.3.1 Correlation between Fear of Negative Evaluation and Self-Esteem	42
4.3.2 Correlation between Fear of Positive Evaluation and Self-Esteem	43
4.3.3 Correlation between Fear of Evaluation and Self-Esteem	44
4.4 Conclusion	45
 CHAPTER 5 DISCUSSION	
5.1 Introduction`	47
5.2 The relationship between the fear of negative evaluation and self-esteem among undergraduate student in UPSI	48
5.3 The relationship between the fear of positive evaluation and self-esteem among undergraduate student in UPSI	49
5.4 The relationship between the fear of evaluation and self-esteem among undergraduate student in UPSI	50
5.5. Implication of Study	50
5.6 Limitation of Study	51
5.7 Recommendation for Future Research	52
5.8 Research Summary	53
5.9 Conclusion	55
 REFERENCES	56

APPENDIX A Informed Consent Form

APPENDIX B The BFNE Scale Questionnaires

APPENDIX C The FPES Questionnaires

APPENDIX D The RSES Questionnaires

APPENDIX E SPSS Data Output

APPENDIX F Screenshot of Google Form

APPENDIX G Plagiarism Report

APPENDIX H Supervision Record

LIST OF TABLES

Table	Title	Page
4.1	Demographic Information of the Respondents	36
4.2	Correlation between Fear of Negative Evaluation and Self-Esteem	40
4.3	Correlation between Fear of Positive Evaluation and Self-Esteem	41
4.4	Correlation between Fear of Evaluation and Self-Esteem	42

LIST OF FIGURES

Table	Title	Page
1.1	Conceptual framework	13
3.1	The G-Power analysis	29
4.1	Histogram graph for respondents age	38

LIST OF SYMBOLS

H_0	Null hypothesis
H_1	Alternative hypothesis
f	Frequency
$\%$	Percentage
N	Total number of respondents
n	Sample size
M	Mean
SD	Standard Deviation
$**$	Significance level at 0.01 (2-tailed)
r	Pearson Correlation coefficient
p	p-value
$=$	Equal
$<$	Less than
$>$	Greater than

LIST OF ABBREVIATIONS

UPSI	Universiti Pendidikan Sultan Idris
FNE	Fear of Negative Evaluation
FPE	Fear of Positive Evaluation
BFNE	Brief Fear of Negative Evaluation Scale
FPES	Fear of Positive Evaluation Scale
RSES	Rosenberg Self-Esteem Scale
COVID-19	Coronavirus Disease 2019
SPSS	Statistical Package for Social Sciences
G*Power	A statistical power analysis program
ICC	Intra-class correlation

CHAPTER 1

INTRODUCTION

1.1 Introduction

There are twelve sections; The study's introduction is covered in the first section, and the study's background is covered in the second. The research's problem statement is found in the third section. The research questions and study objectives were the main topics of sections four and five. The study's significance is covered in the sixth section. We talked about the conceptual and operational definitions in the seventh and eighth sections. The sections on theoretical approaches and conceptual frameworks are the ninth and tenth. The study's hypothesis and conclusion are finally included in the eleventh and twelfth sections.

1.2 Background of Study

Fear of evaluation is a common phenomenon among undergraduate students. Research suggests that students often experience anxiety and fear when they are evaluated, whether it be through academic assessments, class presentations, or social interactions with peers. Fears of positive evaluation (FPE) can result in excessive self-monitoring and self-criticism, while fears of negative evaluation (FNE) can cause avoidance behaviors like skipping classes or avoiding social situations. These fears can have a negative impact on academic performance, social interactions, and overall well-being. Sulaiman et al. (2017), for instance, discovered that among medical students at a private university in Malaysia, academic procrastination was substantially correlated with fear of receiving a poor grade. Understanding the relationship between both construct is critical because developing effective interventions to address these problems depends on this understanding.

Self-esteem is an important psychological construct that has been studied in various cultures and countries, including Malaysia. It has been discovered that in Malaysia, low self-esteem is linked to a number of mental health and wellbeing issues, which included stress, anxiety, and depression. The levels of self-esteem among Malaysian university students during the COVID-19 pandemic were examined in a recent study conducted by Mohamed et al. (2021). The research found that the students had moderate levels of self-esteem, with no significant differences between genders. Additionally, the study discovered a significant correlation between self-esteem levels and variables like psychological distress, social support, and academic performance. Teenagers in Malaysia were the subjects of a second study by Tan and

Low (2020) that looked at the connection between these two constructs. The study discovered a impressive relationship between fear of being evaluated and self-esteem, indicating that people who are more self-assured also typically have higher fear. All things considered, these studies indicate that self-esteem is a crucial concept to take into account when discussing mental health and wellbeing among Malaysians, especially when it comes to academic achievement, social support, and emotional intelligence.

Numerous research have looked into the connection between self-esteem and fear of being judged. While some research indicates a significant correlation between the two, others find no evidence of one and suggest that people with high fear of evaluation may also have lower self-esteem. Understanding this link is crucial, as it can impact individuals' mental health. For example, people that have a high level of evaluation anxiety maybe also have social anxiety, which can result in social situation avoidance and a general decline in quality of life.

1.3 Problem Statement

Fear of evaluation has been empirically correlated with fear and self-esteem issues. In their 2018 study, LaBelle and Beatty investigated the relationship between undergraduate students' self-esteem and their fear of receiving an unfavorable rating. The results showed a negative correlation, meaning that people who were more afraid of receiving an inferior rating usually had lower self-esteem.

Additionally, Hu et al. (2021) investigated the relationship between fear of favorable appraisal and self-esteem in Chinese undergraduate students. The findings showed a negative correlation, indicating that people who were more afraid of receiving favorable feedback generally had lower self-esteem.

Research on the connection between university students' fear of being evaluated and their sense of self-worth is growing, but not much of it has been done in Malaysia. Given their significance for both academic achievement and psychological health, it is imperative to investigate the relationship between fear of evaluation and self-esteem among Malaysian university students. This study thus investigates the connection among the fear of evaluation that university students have and their self-esteem.

It was found to be significant among students, teenagers, and undergraduates in the majority of these studies. The current study is important because it aims to close the gap left by the lack of previous studies of this kind in the Malaysian context.

Therefore, it is imperative to investigate the relationship between undergraduate students' fear of evaluation and their sense of self-worth. This population is particularly susceptible to social anxiety and may experience academic and social stressors that can impact their mental health. By identifying the nature of the relationship between these two constructs, interventions, and support can be developed to help individuals manage social anxiety and improve their overall well-being.



1.4 Research Question

This study aimed to answer the following research questions:

1. What will be the relationship between fear of negative evaluation and self-esteem?
2. What will be the relationship between fear of positive evaluation and self-esteem?
3. What will be the joint relationship between fear of evaluation; fear of negative evaluation, fear of positive evaluation, and self-esteem?

1.5 Objective of Study



The objective of the study are as below:

1. To investigate the relationship between the fear of negative evaluation and self-esteem.
2. To investigate the relationship between the fear of positive evaluation and self-esteem.
3. To investigate the relationship between the fear of evaluation; fear of negative evaluation, fear of positive evaluation, and self-esteem.





1.6 Significance of Study

Research on the relationship between fear of evaluation and self-esteem is significant for several reasons:

1. Understanding the relationship between these two constructs can help us better understand how individuals perceive themselves in social situations. It assists in pinpointing the factors influencing reduced self-esteem.
2. The findings of such research can be useful in developing effective interventions to help individuals cope with their fear of evaluation and improve their self-esteem.
3. This research can also be applied in various fields, such as education, psychology, and communication, to improve the social and emotional well-being of individuals.



Overall, understanding the relationship between fear of evaluation and self-esteem is essential for improving our knowledge of human behavior.

1.7 Conceptual Definition

The conceptual definition of fear of evaluation - fear of negative evaluation and fear of positive evaluation- and self-esteem will be explained below.





1.7.1 Fear of evaluation

A psychological phenomenon known as "fear of evaluation" occurs when people feel uneasy or nervous about being assessed by others. This fear can show up in a number of contexts, including social interactions, public speaking, and performance reviews at work or school. According to Leary (1983), there are two subtypes of fear of evaluation: the fear of negative evaluation (FNE), which is the fear of receiving criticism or disapproval from others, and the fear of positive evaluation (FPE), which is the fear of receiving praise or positive feedback from others.

1.7.2 Fear of negative evaluation



FNE is one of category for anxiety socially characterized by the apprehension of being assessed, criticized, or rejected by others in social settings. It is a common and debilitating condition that can significantly impact an individual's social and emotional functioning. People with high levels of FNE tend to worry excessively about being criticized, rejected, or humiliated by others, which can lead to avoidance behaviors, social anxiety, and feelings of low self-esteem. (Liu, et al., 2016).

1.7.3 Fear of positive evaluation

Compared to the fear of negative evaluation (FNE), the fear of positive evaluation (FPE) has received less research attention. It speaks of the uneasiness or uneasiness



people might feel when they expect or receive compliments or positive feedback from others. People with high levels of FPE may feel uncomfortable with compliments, fear high expectations or pressure to maintain their performance or worry about the possibility of being exposed as a fraud or impostor. Feelings of self-doubt, self-criticism, and discomfort in reaction to positive social evaluation are characteristics of FPE. In contrast to FNE, FPE may not always result in social disengagement or avoidance behavior, but it can still affect people's emotional and cognitive experiences in social settings (Leary, M. R., 2015). Leary, M. R., & Kowalski, R. M. (1995) suggest that although more research is required to fully understand this construct, FPE may be more closely related to self-esteem than to social anxiety.

Self-esteem, according to Rosenberg, M. (1965), is a subjective assessment of one's own value and worth. This assessment is molded by a person's experiences, attitudes, and beliefs. A wide range of elements, such as relationships with people, accomplishments, and individual characteristics, can have an impact. It also highlights the fact that self-esteem is a multifaceted concept that includes perceptions of one's own competence, worth, and adequacy in a range of life domains. A person might, for instance, have high self-esteem in their professional or academic spheres but low self-esteem in their social or intimate spheres.

Furthermore, Rosenberg, M. (1965) argues that self-esteem is a dynamic construct that can change over time. Positive experiences and achievements can boost



self-esteem, while negative experiences and failures can lower it. Rosenberg also notes that self-esteem is closely related to other psychological constructs, such as self-concept, self-image, and self-efficacy.

Thus, Rosenberg's explanation of self-esteem highlights its complexity and multidimensionality and underscores the importance of understanding the various factors that contribute to it.

1.8 Operational Definition

Below is an explanation of the operational definitions of fear of evaluation, fear of positive evaluation, fear of negative evaluation, and fear of self-esteem.



1.8.1 Fear of evaluation

An operational definition of fear of evaluation is the specific behaviors or symptoms that an individual experiences when faced with social evaluation situations. Some examples of these behaviors and symptoms could include:

- Avoidance of social situations where evaluation may occur.
- Excessive self-consciousness and worry about how one is perceived by others.
- Physical indications like sweating, trembling, or a fast heartbeat.
- Difficulty speaking or communicating in social situations.
- Experiencing distress or impairment in daily functioning due to fear of evaluation.





1.8.2 Fear of negative evaluation

I will propose a particular method of measuring or evaluating the construct of fear of negative evaluation (FNE) in a research study. This is an operational definition of FNE. Leary (1983) developed the Brief Fear of Negative Evaluation Scale (BFNE), a widely used self-report questionnaire for measuring FNE. The twelve items in the BFNE measure an individual's fear of being negatively judged by others in social settings. On a 5-point Likert scale, from 1 (not at all characteristic of me) to 5 (extremely characteristic of me), participants rate each item. Greater levels of FNE are indicated by higher BFNE scores.



1.8.3 Fear of positive evaluation



The way that fear of positive evaluation (FPE) is measured in this study is referred to as its operational definition. The widely used self-report questionnaire known as the Brief Fear of Positive Evaluation Scale (BFPE; Weeks et al., 2005) is used to measure FPE. A 10-point ordered-category rating scale, with 0 representing "not at all true" and 9 representing "extremely true," is used in the 10-item FPES. In order to identify potential response biases, two reverse-scored items are included; however, their scores are not added to the final total. Weeks et al. (2011). Greater levels of FPE are indicated by higher BFPE scores.



1.8.4 Self-esteem

The Rosenberg Self-Esteem Scale serves as an operational definition of self-esteem. One popular self-report tool for assessing self-esteem is the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). Ten items make up the RSES, which measures a person's overall sense of self-worth and acceptance. On a 4-point Likert scale, with 1 denoting "strongly disagree" and 4 denoting "strongly agree," participants rate each item. Higher scores on the RSES labelled as higher levels of self-esteem. The RSES scores are added together to provide an overall measure of self-esteem.

1.9 Theoretical Approach

The theoretical approaches used in this study are Cognitive theory and Sociometer theory. Below is the explanation of each theory:

1.9.1. Cognitive Theory

A psychological perspective known as "cognitive theory" highlights how cognitive functions like perception, attention, memory, and reasoning influence behavior and emotions. Cognitive theory holds that people's feelings and actions are influenced by their ideas and perceptions of the world and themselves. According to Beck's theory, maladaptive behavior and negative emotions can result from negative or distorted thought patterns like all-or-nothing thinking, overgeneralization, and personalization.



The development and maintenance of fear of evaluation can be better understood through the lens of cognitive theory. The development and maintenance of fear of evaluation can be attributed, in part, to negative or distorted beliefs about oneself and one's capacity to function in evaluative situations, according to cognitive theory. People who fear evaluation may, for instance, harbor self-defeating beliefs like "I'm not good enough" or "I always make mistakes," which cause them to anticipate criticism and steer clear of situations requiring evaluation.

1.9.2 Sociometer Theory

Sociometer theory is a psychological theory developed by Leary, M. R., et al (1995) that proposes that self-esteem serves as a gauge or "sociometer" of social acceptance and rejection. According to the theory, humans evolved a mechanism to monitor their social standing in order to navigate social situations and form social connections. People have high self-esteem when they feel valued and accepted by society; on the other hand, when they believe they are being rejected or excluded from society, their self-esteem is reduced.

According to the sociometer theory, a person's level of social inclusion or exclusion can be gauged by their level of self-esteem. According to the theory, self-esteem fluctuates based on the perceived level of social acceptance and rejection an individual experiences. When individuals feel socially accepted and valued, their self-esteem is high, while feelings of social exclusion and rejection can lead to lower levels of self-esteem. As a result, one's social standing and sense of belonging can be





inferred from their level of self-esteem. The sociometer theory also suggests that self-esteem plays an important role in motivating individuals to seek and maintain social connections. People are more inclined to interact with others and look for new social relationships when they have a high sense of self-worth. Conversely, when self-esteem is low, individuals may withdraw from social situations and avoid social contact.

Research has shown support for the sociometer theory and its relationship to self-esteem. Cheung & Wildschut (2021) investigated how self-esteem functions as a sociometer in response to social exclusion. They found that participants who experienced social exclusion showed a decrease in self-esteem, but this effect was mitigated when they had opportunities to restore social connection and received positive feedback from others. These findings support the sociometer theory and suggest that self-esteem can serve as a flexible gauge of social acceptance and rejection, rather than a fixed indicator of personal worth. The "need to belong, that is, a need to form and maintain at least a minimum quality of interpersonal relationships, is innately prepared (and hence nearly universal) among human beings," according to Leary, M. R., et al. (1995). Sociometer theory (SMT) states that a sociometer serves as an internal indicator of how other people see a particular person.

In general, the sociometer theory emphasizes the value of social connections in preserving positive self-esteem and offers a helpful framework for comprehending the nuanced relationship between social belongingness and self-esteem.

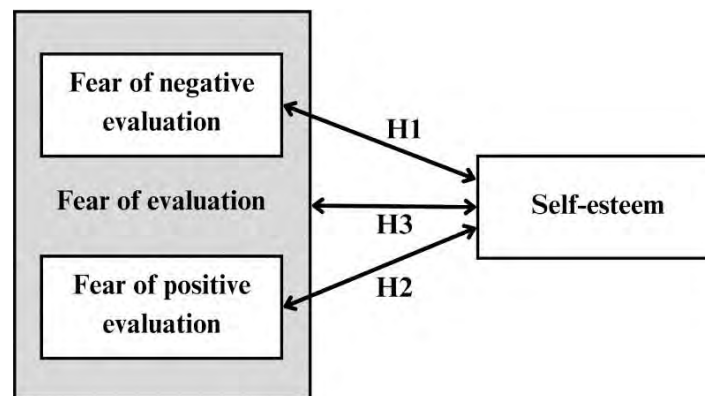


1.10 Conceptual Framework

This study proposed a conceptual framework as shown in below:

Figure 1.1

Conceptual framework



1.11 Hypothesis

H₀₁: There will be no significant relationship between fear of negative evaluation and self-esteem.

H₁₁: There will be a significant relationship between fear of negative evaluation and self-esteem.

H₀₂: There will be no significant relationship between fear of positive evaluation and self-esteem.

H₁₂: There will be a significant relationship between fear of positive evaluation and self-esteem.

H₀₃: There will be no significant relationship between fear of evaluation; fear of negative evaluation, fear of positive evaluation and self-esteem.

H₁₃: There will be a significant relationship between fear of evaluation; fear of negative evaluation, fear of positive evaluation and self-esteem.

1.12 Conclusion

This chapter includes a background summary of the study, a problem statement, the purpose of the study, and a list of hypotheses. The significance of the investigation and the variables' definitions were also emphasized.