Anxiety Scale: Psychomothoric Studies And The Applications To Students Who Conducting A Thesis Research

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Abstract: The purpose of this study was to analyze the construct validity and construct anxiety, and to find indicators that form the construct anxiety. Anxiety was measured by five aspects, namely; mood, mind, motivation, behavior, and biology. The subjects of this study were 55 students at X University in Yogyakarta who were conducting on their thesis. Data collection method in this study used anxiety scale. The research data were analyzed by using Structural Equation Modeling (SEM) SmartPLS 3.2.8 with reflective construct through CFA 2nd Order. Based on the results of the outer model analysis, the aspects and indicators that formed the construct of anxiety were declared valid and reliable. The most dominant aspect that reflected anxiety was the behavioral aspect. The lowest aspect that reflected anxiety was the biological aspect. It shows that all aspects and indicators were able to reflect and form the construct of anxiety. Therefore, the measurement model could be accepted because the theory that describes the construct of anxiety in accordance with empirical data which were obtained from the subjects.

Keywords: Anxiety, Behavior, Biologic, Mind, Mood, Motivation, Partial Least Square

1. INTRODUCTION

Thesis is the scientific papers which are compiled by an undergraduate student from the results of his/her research on the basis of primary data analysis and/or secondary data analysis [1]. Students must complete a thesis as the final project which is used as a prerequisite for students to obtain a bachelor's degree. Obstacles which are experienced by students will disrupt the process of conducting on the thesis, whereas students will usually feel anxious. Anxiety can be seen from aspects of mood, mind, motivation, behavior, and biological reactions [2]. Mood conditions of individuals who feel anxiety in conducting on their thesis tend to be nervous, irritable, and mood swing. Anxiety is a condition where a person experiences negative thoughts about his/her abilities. The thoughts that he/her experience such as excessive worry, difficulty in concentrating, empty thoughts, exaggerating threats, and his/her view of helpless or sensitive [2]. Lazarus [3] explains that anxiety is an unpleasant subjective emotional experience because of a threatening psychological state, whereas the source of the threat is unclear. Nevid, Rathus, and Greene [4] state that anxiety is an emotional state that has characteristics of physiological arousal, unpleasant tense feelings, and feelings of apprehension or anxiety or fear that something bad will happen soon. First, Anxiety occurs because it is based on a bold thought that expresses the analogy of the similarity of the body's response during an anxiety attack to that seen during sexual intercourse (palpitations, heavy breathing). The theory proposed by Freud as a connector of coitus interrupts theory that previously stated.Freud through his clinical observations said that anxiety was the result of "seductive libido". Freud said that the physiological improvement from sexual pressure leads to an increasing libido which is a mental representation of the physiological event. Since Freud's conceptualization of anxiety-neurosis as a distinct clinical syndrome to be distinguished from neurasthenia, clinical studies of anxiety have emerged in the psychiatric literature with increasing regularity [5].

Pavlov [6] conducted various experimental studies concerning fear, frustration, and conflict. Then the experiments developed into experiments conducted on animals including sheep experiments by Liddell [7], experiments on dogs by Gantt [8], experiments on cats by Masserman [9], and rat studies [10], [11]. Furthermore, in 1950 there began to be an experiment in anxiety on human subjects. May [12] states that anxiety is not even listed in the index of psychological books written before the late 1930s, but it is written in the work of psychoanalytic writers. Dangers and ethical problems cause anxiety experiments being less developed. Mowrer [13] states that currently there is no experimental anxiety psychology. Further explanation of anxiety is revealed by Halvin and Whitbourne [14] that anxiety is a concern that focuses on future orientation, feeling anxious and tense that a bad possibility will occur. Lazarus [3] explains that anxiety is an unpleasant subjective emotional experience due to a psychological condition that threatens the existence of the individual, while the source of the threat is unclear, so the individual feels uninformed or confused and afraid to face the future. Nevid, Rathus, and Greene [4] state that anxiety is an emotional state that has the characteristics of physiological arousal, unpleasant tense feelings, and feelings of apprehension or a state of worry that something bad will happen soon. According to Halvin and Whitbourne [14], anxiety is worry that focuses on future orientation, feeling anxious and tense that a bad possibility will occur. Maramis [15] explains the problems involved, insecurities and feelings that arise due to something unpleasant happening, but the source is largely unknown. According to Taylor [16], anxiety is a subjective feeling about anxious mental tension as a general reaction to the inability to overcome a problem or lack of security. These erratic feelings are generally unpleasant with physiological changes (e.g. shaking, sweating, increasing heart rate) and psychological (e.g. panic, tense confusion and difficulty in concentrating). Anxiety scale continues to be developed by many researchers who want to focus on knowing the contraction of the validity of anxiety as practiced by Beck, Epstein, Brown, and Steer [17], they conducted research on outpatients with anxiety disorders with an alpha = 0.94. In addition, there were previous studies aimed at measuring anxiety in mathematical-related situations,

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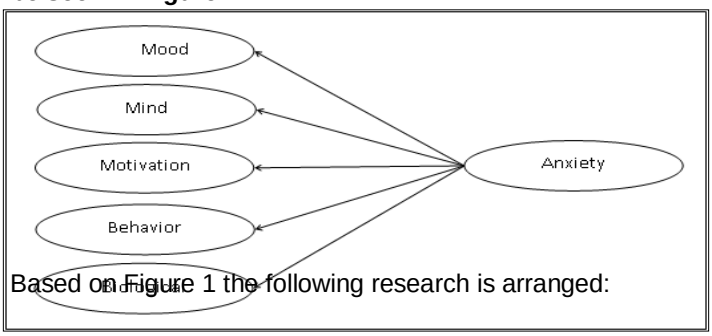
which had an alpha coefficient of 0.98 and a correlation of 0.97 [18]. Anxiety aspects raised by Blackburn and Davidson [2] consist of 5 namely mood, mind, motivation, behavior, and biological reactions. Mood; mood in individuals who experience anxiety is a condition that shows psychological discomfort, such as irritability and tense feeling. Mood can also change suddenly when an individual is faced with conditions that give rise to such anxiety. Feelings of tension and irritability can cause difficulties in deciding something. Students who experience anxiety in doing thesis tend to show psychological discomfort, the emergence of feelings of tension, and easily to get angry or cry if they feel unable to do something. Mind; mind is individual abilities related to how to think about something. Anxious individuals have negative thoughts about their abilities. These thoughts are such as worry, difficulty in concentrating, empty thoughts, exaggerate threats, and view themselves helpless or sensitive. Negative thoughts that arise can be anything but the effect remains the same that makes a person uncomfortable because they often think about it. Students who experience anxiety in conducting on their thesis will have negative thoughts about themselves, such as easily worried, even they see themselves unable or helpless in completing the thesis. Motivation; motivation is the drive to achieve something, individuals who experience anxiety tend not to have high motivation so that they will avoid the situation, high dependence, they also want to escape from the reality. Students who are conducting on their thesis and experience anxiety tend to do not have motivation to take an action such as when conducting on their thesis their motivation is decreased, so that the student avoids the existing situation. The behavior of individuals who experience anxiety can be seen from what has been shown in their uncontrolled behavior such as anxiety, nervousness, and excessive vigilance. This behavior occurs because individuals feel that there is a danger, threats, feel disturbed and feel uncomfortable. Students who experience high anxiety tend to experience inappropriate behavior such as nervousness, anxiety, and have excessive vigilance. Biological reactions are known to arise from certain bodily reactions which are largely the result of the work of the autonomic nervous system that controls various muscles and glands of the body. Biological reactions that occur in individuals who experience anxiety include increased automatic movement, sweating, trembling, dizziness, palpitations, nausea, and dry mouth. Anxiety which is experienced by students who are conducting on their thesis tends to cause biological reactions such as shaking, sweating, feeling nauseous, and cold sweat.

A conceptual framework based on the six dimensions can be seen in Figure 1.



Based on Figure 1 the following research is arranged:

Figure 1. *Conceptual framework of anxiety*

H: Aspects of anxiety, namely: Mood, thoughts, motivation, behavior, and biological reactions. These aspects are able to form the construct of anxiety.

One of approaches that can be used in testing the measuring instrument construct is Confirmatory Factor Analysis. Confirmatory Factor Analysis (CFA) is one of the main approaches in factor analysis. CFA can be used to test the dimensionality of a construct. This test is used to measure the model (measurement model) so that it can describe aspects and indicators of behavior in reflecting latent variables namely anxiety by looking at the loading factors of each aspect that form a construct. Confirmatory Factor Analysis (CFA) is also used to test the construct validity and construct reliability of the indicators (items) as forming latent constructs (Latan, 2012). The CFA which is used in this study is a second order confirmatory factor analysis (2nd Order CFA), it is a measurement model that consists of two levels. The first level of analysis is carried out from the latent construct of the dimension to its indicators and the second analysis is carried out from the latent construct to its aspect construct [19]. Based on the description above, it can be concluded that anxiety is a problem that occurs among students when conducting on a thesis. The formulations of the problem in this research are 1). Is the anxiety scale valid and reliable? 2) Are the aspects of mood, behavior, thoughts, motivation, and biological reaction able to form constructs of anxiety? Based on the background described above, this study aimed to examine the construct validity and construct reliability of the anxiety scale, and to find aspects that form the construct of anxiety.

2 RESEARCH METHOD

2.1 Population and Sample

The populations in this study were 298 students of private university in Yogyakarta from faculty of X who were conducting on their thesis. The sample used in this study was the students of the Faculty of X from Private University in Yogyakarta that amount of 55 students who were conducting on the thesis. The sampling technique which was used in this study was simple random sampling.

2.2 Research Design

The design in this study was semi-construction, where the scale design used theoretical collaborative studies with information directly obtained from field data. The advantage of using this semi-construction design was to strengthen existing theories and reproduce as many behavioral indicators as possible. Then it was tested by using the psychometric properties, including content validity analysis, discriminating power, confirmatory factor analysis, and external concurrency validity [20]

2.3 Instrumen

The data collection method using a scale was the anxiety scale. Anxiety Scale was composed by the researchers themselves based on the aspects of anxiety raised by Blackburn and Davidson [2]. These aspects were mood, mind, motivation, behavior, biology. The scaling method on the Anxiety scale used a Likert scale model developed by researchers using four answer choices. This scale consisted of 48 statements with two directions statements namely favorable and unfavorable. The score in the statement can be seen in

the table:

TABLE 1.
BLUE PRINT OF ANXIETY SCALE

Aspect	Item		Amount
	Favo	Unfavo	
Mood	1, 2, 5, 8, 11	3, 4, 6, 7,10	10
Mind	9, 13, 16, 18, 19	12, 14, 15, 17, 20	10
Motivation	21, 23, 26, 27, 28	22, 24, 25, 29,30	10
Behavior	31, 32, 35, 37, 39	33, 34, 36, 38, 40	10
Biology	44, 45, 46, 47, 48	41, 42, 43, 49, 50	10
Amount	25	25	50

The scale which is used is the anxiety scale of conducting on the thesis that consists of four answer choices namely; Very Appropriate (SS), Appropriate (SS), Unsuitable (TS), Very Unsuitable (STS). One example of the items that contain aspects of mood is "I feel tense when conducting on a thesis", and "I feel normal in doing a thesis". Items that contain aspects of the mind are "Even though in a crowded room, I can concentrate on doing thesis". The motivational aspect contains the item "When I get a lot of revision, I often leave it". Behavioral aspects contain the item "When I want to see a supervisor, I feel uneasy" and "I am very worried that I cannot finish my thesis on time". Then the item in the biological aspect is "I'm not dizzy when doing thesis".

2.4 Construction Validity and Reliability

The research which is used the Anxiety scale is the validity and reliability of measuring instruments with an outer model test using the SmartPLS 3.0 program with reflective constructs. The construct validity test is confirmatory to show how well the results obtained from the use of measuring instruments with theoretical references which are used to define a construct. The construct validity test conducted is convergent validity by looking at the loading factor value >0.5 average variance extracted value (AVE) >0.5 and discriminant validity by comparing the average variance extracted root (AVE) of a construct must be higher than the correlation among the aspects. After that, the reliability test is performed to show the internal consistency of the measuring instrument, by looking at the value of composite reliability and Cronbach's alpha according to Cooper that must be >0.7 and according to Hair, Hult, Ringle, and Sarstedt, [21], a value of 0.6 is still acceptable [22].

2.5 Data Analysis

The data in this study were analyzed by using the Smart PLS 3.2.8 program with reflective constructs through the 2nd Order CFA. According to Hartono and Abdillah [23], PLS is a variance-based structural equation analysis (SEM) that can simultaneously test measurement models to test validity and reliability.

3 RESULT

Based on the results of the analysis of the outer model test on the scale of quality of work life that are conducted by using the SmartPLS 3.2.8 program, these can be seen the results as shown in the figure below:

Figure 1*. Outer Model of Anxiety Construct*

3.1 Convergent Validity

Based on the test of convergent validity, it can be concluded that the loading factor value (Variable-aspect) has fulfilled > 0.5 and can be seen in table 2.

TABLE 2.
FACTOR LOADING (VARIABLE-ASPECT)

Aspect	Value of Loading Factor	Information
Mind	0.756	Valid
Motivation	0.725	Valid
Mood	0.744	Valid
Biology	0.685	Valid
Behavior	0.818	Valid

Based on the convergent validity test, it can be concluded that the loading factor (Aspect-Indicator) value has fulfilled >0.5 and can be seen in Table 3.

TABLE 3.
LOADING FACTOR (VARIABLE-ASPECT)

Item	Value of Loading Factor	Information
KC1.1.1	0.900	Valid
KC1.1.2	0.862	Valid
KC1.2.4	0.756	Valid
KC1.2.5	0.578	Valid
KC2.2.4	1.000	Valid
KC3.4.11	1.000	Valid
KC4.1.1	0.812	Valid

KC4.2.6	0.696	Valid
KC4.2.8	0.659	Valid
KC4.3.9	0.788	Valid
KC5.4.3	1.000	Valid

Based on the discriminant validity test, it can be concluded that the value of AVE has fulfilled > 0.5. The AVE value of anxiety variable is 0.506. AVE values in each aspect can be explained as follows.

TABLE 4.
AVERAGE VARIANCE EXTRACTED (AVE) VALUE FOR ANXIETY CONSTRUCT

Aspect	Value of Loading Factor	Information
Biological aspect	1.000	Valid
Anxiety	0.506	Valid
Motivation	1.000	Valid
Behavior	0.550	Valid
Mind	1.000	Valid
Mood	0.615	Valid

3.2 Discriminant Validity

The discriminant validity test was fulfilled by comparing the root values of average variance extracted (AVE). The first aspect was biological with a value of 1.000, it was higher than the motivational aspect that was only 0.465, the behavioral aspect was 0.411, it was greater than the aspect of the mind that was 0.341, and finally the mood had a value of 0.288.

TABLE 5.
THE ROOT VALUES OF AVERAGE VARIANCE EXTRACTED (AVE) OF ANXIETY CONSTRUCT

ASPECT	Biology	Motivation	Behavior	Mind	Mood
Biological aspect	1.000	0.465	0.411	0.341	0.288
Motivation	0.465	1.000	0.464	0.482	0.392
Behavior	0.411	0.464	0.742	0.509	0.672
Mind	0.341	0.482	0.500	1.000	0.584
Mood	0.288	0.396	0.672	0.584	0.784

The construct validity in SEM (Confirmatory Factor Analysis / CFA) shows that all of four indicators were valid with a loading factor (λ) ≥ 0.5.

3.3 Construction Reliability Test

Based on the results of the construct reliability test that has been done, the Composite Reliability and Cronbach's Alpha values > 0.7 can be obtained so that the items used in this study are reliable.

TABLE 6.
THE VALUE OF COMPOSITE RELIABILITY AND CRONBACH'S ALPHA CONSTRUCT ANXIETY

Variable	Composite Reliability	Cronbach's alpha	Information
Anxiety	0.860	0.804	Reliable

The results of construct reliability testing which used Confirmatory Factor Analysis 2nd Order in Table 6 above show that constructs have good reliability and give meaning that aspects measuring constructs/latent variables of anxiety fulfill uni-aspects criteria [21] this is indicated by the value of Composite Reliability 0.938 and Cronbach's Alpha 0.928..

4 DISCUSSION

Based on the results of the analysis of the construct validity and the construct reliability, the aspects and indicators that form anxiety are declared valid and reliable. This shows that all aspects and indicators are able to reflect and form anxiety. This results are appropriate with previous research, namely Greenberg [24] research which uses four aspects of anxiety, namely physical, thought, behavioral, and mood aspects. While this research uses five aspects of anxiety from Blackburn and Davidson [2] namely mood, mind, behavior, motivation and biology. There are also motivational and biological aspects that Greenberg [24] do not have these aspects. The most dominant aspect that reflects anxiety is the behavioral aspect with a loading factor value of 0.818. The description of behavior can be seen from the uncontrolled behavior of students. The specific behavior is to experience inappropriate behavior such as nervousness, anxiety, and excessive vigilance. Examples of the behavior aspect is that before meeting with the supervisor, he/she feel nervous. The lowest aspect that reflects students' anxiety in conducting on their thesis is the biological aspect with a loading factor of 0.685. The biological picture is seen from certain bodily reactions which are largely the result of an autonomic nervous system that controls various muscles and glands of the body. Specific behaviors that arise when students experience anxiety in doing thesis include increasing automatic movements, sweating throughout the body, trembling feet and hands, dizziness, palpitations, feeling nauseous or want to be muted, and lips feel dry and appearing to be lip skin cracked.

5 CONCLUSION

Based on the results of the analysis and discussion that has been done, this research can be concluded that the aspects and indicators that make up the construct of anxiety are declared valid and reliable. The most dominant aspect that reflects anxiety is the behavioral aspect. The lowest aspect that reflects anxiety is the biological aspect. It shows that all aspects and indicators are able to reflect and form the construct of anxiety. Therefore, the measurement model can be accepted because the theory that describes the construct of anxiety corresponds to the empirical data which are obtained from the subjects.

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REFERENCES

[1] P.S. Djarwanto, Basics of Financial Statement Analysis (in Indonesia) Yogyakarta: FE UGM, 2004.

[2] I.M. Blackburn and K.M. Davidson, "Cognitive Therapy," Depression and Anxiety: A Practitioner's Guide. B.J. Kagan, J.S. Reznick, N. Snidman, Oxford: Biological bases of Science, 1994.

[3] R.S. Lazarus, Emotion and Adaption. New York: Oxford University Press, 1991.

[4] J.S. Nevid, S.A. Rathus, and B. Greene, Abnormal Psychology Fifth Edition Vol. 1 (in Indonesia). Jakarta: Erlangga Publisher,2005.

[5] S. Freud, The Problem of Anxiety. New York: Norton, 1936.

[6] I.P. Pavlov, Conditioned Reflexes. London and New York: Oxford Univer. Press, 1927.

[7] H.S. Liddell, "Conditioned Reflex Method and Experimental Neurosis". In J. McV. Hunt Ed, Personality and the Behavior Disorders. New York: Ronald Press, pp. 389-412, 1944.

[8] W.H. Gantt, "The Origin and Development of Nervous Disturbances Experimentally Produced," American Journal of Psychiatry, vol.98, no.4, pp. 475-481, 1942

[9] J.H. Masserman, Behavior and Neurosis: An Experimental Psychoanalytic Approach to Psychobiological Principles. Chicago, 111: Unive of Chicago Press, 1943.

[10] N.E. Miller, "Studies of Fear as an Acquirable Drive: I. Fear as Motivation and Fear-Reduction as Reinforcement in the Learning of New Responses," Journal of Experimental Psychology, vol.38, no.1, pp. 89, 1948.

[11] O.H. Mowrer, "Preparatory Set (Expectancy)-Some Methods of Measurement," Psychological Monographs, vol.52, no.2, pp. I, 1940

[12] R. May, The Meaning of Anxiety, New York: Ronald Press, 1950.

[13] O.H. Mowrer, "A Stimulus-Response Analysis of Anxiety and its Role as a Reinforcing Agent," Psychological review, vol.46, no.6, pp. 553-565, 1939.

[14] R.P. Halfin, and S.K. Whitbourne, Abnormal Pschology: Clinical Perspectives on Psychological Disorders 7th Edition. New York: The McGraw-Hill Companies,Inc, 2013.

[15] Maramis, Psychology Notes (in Indonesia). Surabaya: Airlangga.

[16] I. McDowell, Measuring Health: A Guide to Rating Scales and Questionnaires 3rd Ed. New York, NY: Oxford University Press US, 2006

[17] A.T. Beck, N. Epstein, G. Brown, and R.A. Steer, "An Inventory for Measuring Anxiety: Psychometric Properties," Journal of Consulting and Clinical Psychology, vol.56 no. 6, pp. 893-897, 1988

[18] B.S. Plake and C.S. Parker, "The Development and Validation of a Revised Version of the Mathematics Anxiety Rating Scale," Educational and Psychological Measurement, vol.42, no.2, pp. 551-557. 1982

[19] H. Latan Structural Equation Modeling Concepts and Applications Using LISREL 8.80 (in Indonesia) Bandung: Alfabeta, 2012

[20] T.R. Hinkin, J.B. Tracey, C.A. Enz, and J.B. Tracey, "Scale Construction: Developing Reliable and Valid Measurement Instruments," Journal of Hospitality & Tourism Research, vol.21, no.1, pp. 100-120, 1997.

[21] J.F. Hair, G.T.M. Hult, C. Ringle, and M. Sarstedt, (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). New York: Sage Publications, 2016.

[22] HM. Jogiyanto, Concept and Application of Variant Based Structural Equation Modeling in Business Research (in Indonesia). Yogyakarta: UPP STIM YKPN, 2011

[23] J. Hartono and W. Abdillah, The Concept and Application PLS (Partial Least Square) for Empirical Research. Issue I, BPFE, Yogyakarta, 2009

[24] J.S. Greenberg, Stress management. (six edition). USA: The Mc Graw Hill Companies, 1999.