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Validity test using LISREL on the academic anxiety instrument using the Confirmatory Factor Analysis Method

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Abstract: Academic anxiety in students is a concern for education. The problem that arises is the high level of academic anxiety among students, which is caused by several factors. Ottens believes that academic anxiety arises when a person experiences disturbances in thought patterns, behavior, and physiological responses due to feelings of excessive worry about academic performance. It consists of 4 dimensions, namely anxiety that results in mental activity (patterns of anxiety-engendering mental activity), forms of interest that show the wrong direction (misdirected attention), physical distress (physiological distress), and inappropriate actions (inappropriate behaviors). It will reduce students' learning motivation, so they tend to look for alternative ways to overcome their academic anxiety, for example, in a negative way, namely making cheat sheets during exams, which will reduce their academic integrity. Therefore, researchers will measure students' academic anxiety levels at SMAN 75. The data in this study was obtained from 254 students at SMAN 75. Test the validity of this instrument using LISREL and Amos software with the confirmatory factor analysis (CFA) program. The results stated that of 27 items in this instrument, three were irrelevant or invalid. So, if you drop it, you are left with 24 items that are only one aspect.
Keywords: Academic anxiety; confirmatory factor analysis (CFA); validity test

Introduction

The phenomenon of academic anxiety in students seems to be a severe concern for the government because the Minister of Education and Culture announced a policy of eliminating national exams and replacing them with minimum competency assessments and character surveys starting in 2021. Another problem that arises is the high level of academic anxiety or stress caused by the national exam (CNN Indonesia, 2019); this is supported by the results of a survey on the Indonesian National Adolescent Mental Health Survey (I-NAMHS) website in 2022 that teenagers aged 10-17 years experience emotional disorders with the most significant percentage being 3.7% anxiety disorders. School and education are risk factors (Aulia, 2023).

Anggoro (2018) argues that academic anxiety is an impulse of thoughts and feelings in a person that contains fear of danger or some kind of threat in the future without a specific cause, resulting in disruption of thought patterns and physical responses and behavior as a result of pressure in carrying out tasks and activities—variety in academic situations. A variety of complex factors can influence academic anxiety. Some common causes of academic anxiety include (Istiantoro, 2018):

1. Personal factors such as health problems, inability to adapt, lousy study habits
2. Family factors such as authoritarian parents, lack of guidance from parents, family problems, and parents' unrealistic expectations of children's learning outcomes
3. Social factors such as environmental rejection, discrimination, and students' wrong perceptions of other people's views about their learning outcomes
4. Institutional factors such as tight competency between students, poor student-teacher relationships, and inadequate school facilities and infrastructure

Academic anxiety experienced by students can be caused by many things, including academic pressure (Rachmawati, 2023). This opinion is supported by Sahu and Gupta, who argue that academic anxiety and stress are related to academic achievement (Sahu & Gupta, 2018). Apart from that, it has a negative relationship with student learning achievement;

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when students experience academic anxiety, their learning achievement tends to decrease (Kusumastuti, 2020). It will reduce students' learning motivation, so students tend to look for alternative ways to overcome their academic anxiety, for example, in a negative way, namely by making cheat sheets during exams, which will reduce their academic integrity (Firmantyo & Alsa, 2016). Prolonged academic anxiety can dampen students' motivation to learn and try new things, and fear of failure or negative assessments can make students reluctant to try new challenges and have the potential to hinder their academic growth (Salend, 2021).

Academic anxiety has the following four characteristics (Lusi et al., 2023)

a. First, anxiety causes mental action (patterns of worry bring about mental action). This characteristic shows individuals with ideas, impressions, and insights leading to academic complexity. Three significant things in this characteristic are worry, self-talk, and false beliefs.
b. Second, a form of interest that leads to incorrect attention (misdirected attention), which refers to academic tasks such as making cheat sheets, not doing assignments, and needing to concentrate on academics fully. Academically anxious individuals will allow themselves to deteriorate.
c. Third is physiological distress, where the individual experiences many transfigurations in the body, such as muscles becoming numb, sweating, heartbeat more active, and shaking hands. The emotional and physical factors of anxiety can hinder individuals if interpreted as serious while carrying out academic obligations.
d. Fourth inaccurate attitude, where someone wants to choose the right way to face difficulties, but the method is inappropriate. Inaccurate attitudes such as stalling on assignments (procrastination) and excessive anxiety can cause individuals to work on questions hastily or be too careful in exams to avoid mistakes.

To measure academic anxiety, research (Situmorang, 2018) used Ottens' academic anxiety theory, whereas, in this research, Situmorang adapted instruments from existing theories, producing positive results in measuring academic anxiety. Other research (Lestari & Wulandari, 2021) also produced positively charged items that are valid in measuring academic anxiety. Therefore, researchers conducted a validity test on the measuring instrument by Ottens (1991), the Academic Anxiety Scale. This measuring tool measures four characteristics or dimensions, namely anxiety, which causes mental actions, forms of interest that lead in the wrong direction, physical distress, and inaccurate attitudes. This academic anxiety instrument consists of 24 items that have been dropped. The grid on this instrument can be seen in the following table:

Table 1. Academic Anxiety Scale

Indicator	Descriptor	Item	Item Total
Anxiety that results in mental action	Feeling uneasy by viewing all things as untrue.	1,14	2
	Harsh self-comments and self-accusations characterize self-talk, especially worrying about talking to oneself.	2,15	2
	Having inaccurate beliefs about urgent problems can cause academic anxiety.	3,16	2
A form of attraction that signals the wrong direction	Interest in academic obligations is easy to shift.	4,17	2
	Attraction shifts through external aspects of oneself.	5,18	2
	Attraction shifts through aspects of the self.	6,19	2
Physiological distress	Transfiguration of the body is linked to feelings of anxiety.	7,12,20	3
	Become the main center of interest during academic work.	8,13,21	3
Inaccurate	Procrastination of assignments or abandoning	9,22	2

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attitude	schoolwork.		
	Doing schoolwork hastily or too carefully to avoid mistakes.	10,23	2
	Require yourself when you are relaxing.	11,24	2
TOTAL		4	24

Previous researchers tested the instrument using SPSS software, so researchers were interested in testing the validity of this academic anxiety instrument using Lisrel software. Double-checking the validation of instruments in research is very important. Because the validity of measurement instruments is crucial, the researcher must ensure that the data collected is accurate and reliable. Validity refers to the extent to which an instrument measures what it intends to measure. When a researcher wants to use a measuring instrument, the questions that must be answered are whether the instrument is valid or what its validity is. Validity speaks to the extent to which a test tool measures what it is intended to measure (Purwanto, 2016).

Therefore, researchers are interested in using Lisrel software to test the validity of academic anxiety instruments, of course, because Lisrel and SPSS have many differences, including Lisrel being designed explicitly for structural model analysis in measuring latent variables (variables that cannot be measured directly but are estimated from other measured variables) and the relationship between these variables is used for structural equation analysis. Lisrel also has a higher learning curve due to its focus on complex structural models (Kline, 2018).

In addition, researchers will use the confirmatory factor analysis (CFA) validation method to test this instrument. It has certain advantages compared to several other validation methods in the context of psychological and social measurement, including testing specific theoretical models, measuring and verifying complex constructs, allowing researchers to understand the underlying structure of these constructs, and allowing formal assessment to the extent to which the proposed statistical model fits the observed data; this represents a more objective assessment of how well the theoretical model fits the empirical data (Brown, 2015).

Several studies above show the psychometric properties and validity of the academic anxiety scale and the importance of testing the construct validity of the academic anxiety scale as a useful measuring tool, which is widely used in research in various countries. However, so far, no research has tested the construct validity of items using a confirmatory factor analysis (CFA) approach with Lisrel software. Therefore, in this study, researchers will test the construct validity of the academic anxiety scale that previous researchers have developed.

Method

The sample participants in this research were students at SMAN 75 Jakarta. The total sample was 241 people, consisting of classes X and XI. Sampling in this study used a simple random sampling technique. The instrument used in this research is the academic anxiety scale from Ottens' theory (Situmorang, 2018). Based on the number of answer choices, the academic anxiety scale consists of 27 items. It uses a Likert model scale with four answer choices: never, occasionally, sometimes, often, and always.

In this study, the construct validity of the academic anxiety scale was tested using Confirmatory Factor Analysis (CFA) with the help of LISREL 8.70 software (Joreskog & Sorbom, 2006). CFA is part of factor analysis, which tests the extent to which each indicator reflects the dimensions of a construct (Wijanto, 2008). In this case, it looks at the extent to which the items of a research instrument are valid in measuring what is intended

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to be measured. In CFA, researchers first form a model, determine the number of factors (latent variables), and determine the items (observed variables) that measure certain factors (Wijanto, 2008).

Researchers tested the validity of this academic anxiety instrument using Lisrel 8.70 software with a factor analysis design with confirmatory factor analysis (CFA). About how to process data, there are steps to test validity with CFA as follows (Umar, 2012) :

1. Make a mechanism for understanding the rules that will be tested to assess the concept, requiring items as indicators.
2. Make an assumption or principle that all aligned items are valid to test the designed structure. Therefore, it is assumed that there is only one dimension being measured.
3. Then, look at the results obtained and process the relationship matrix between the items (matrix).
4. This paradigm estimates the relationship matrix that should occur according to the specified form. If the theory or assumption in point b is correct, all items only weigh one dimension.
5. This assumption test is carried out using the chi-square test, where if the chi-square is not accurate ($p>0.05$), it can be deduced that the null hypothesis (H0) is not accepted; this is a sign that this theory states that all items that only weigh one construct are proven to be appropriate (fit) with the data.
6. If the one-dimensional model fits with statistics, preferences can be made for items using three standards, namely:
   a. Items with invalid dimension loading values are removed because they do not convey statistically significant information.
   b. Items with a constant negative dimensional loading are also removed because they test things that compete with the described philosophy. However, it is mandatory to check first how the points for which the statement is unfavorable have been adjusted so that they become positive; this applies hyponymy to items where there is no right or wrong answer.
   c. A statement that can be eliminated if the residual (measurement error) is related to many other resist items because this means that the item likes something other than structure.
7. Finally, after carrying out the parts mentioned above and getting items with significant ($t>1.96$) and positive dimensional loadings, the next is the significant indicators ($t>1.96$), and positives are processed to obtain the point dimensions later.
8. If the above procedure has been carried out, a valid statement will be obtained to support what is to be tested. This research does not provide raw scores (the results of statement score processing). This statement is processed to obtain score dimensions on each scale. With this, the divergence of the skills of each statement in testing what is to be tested also determines the dimension of the score (actual score).

Results and Discussion

The author checked the validity of this instrument to support whether the 27 statements contained one factor, namely only measuring the characteristics of academic anxiety. Researchers have tested the construct validity of this instrument by testing whether the 27 items are unidimensional, meaning they only measure one factor. The data used is academic anxiety instrument data, which consists of 4 aspects, namely anxiety, which results in mental actions (PK), inaccurate forms of attention (PS), physical distress (DSF), and incorrect

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attitudes (PL). The aspect of anxiety that causes mental action (PK) consists of 7 items, namely PK1-PK7; the aspect of inaccurate forms of attention (PS) consists of 8 items, namely PS1-PS8; the aspect of physical distress (DSF) consists of 6 items, namely DSF1- DSF6, aspects of incorrect attitudes (PL) consist of 6 items, namely PL1-PL6, this can be seen in Figure 1.

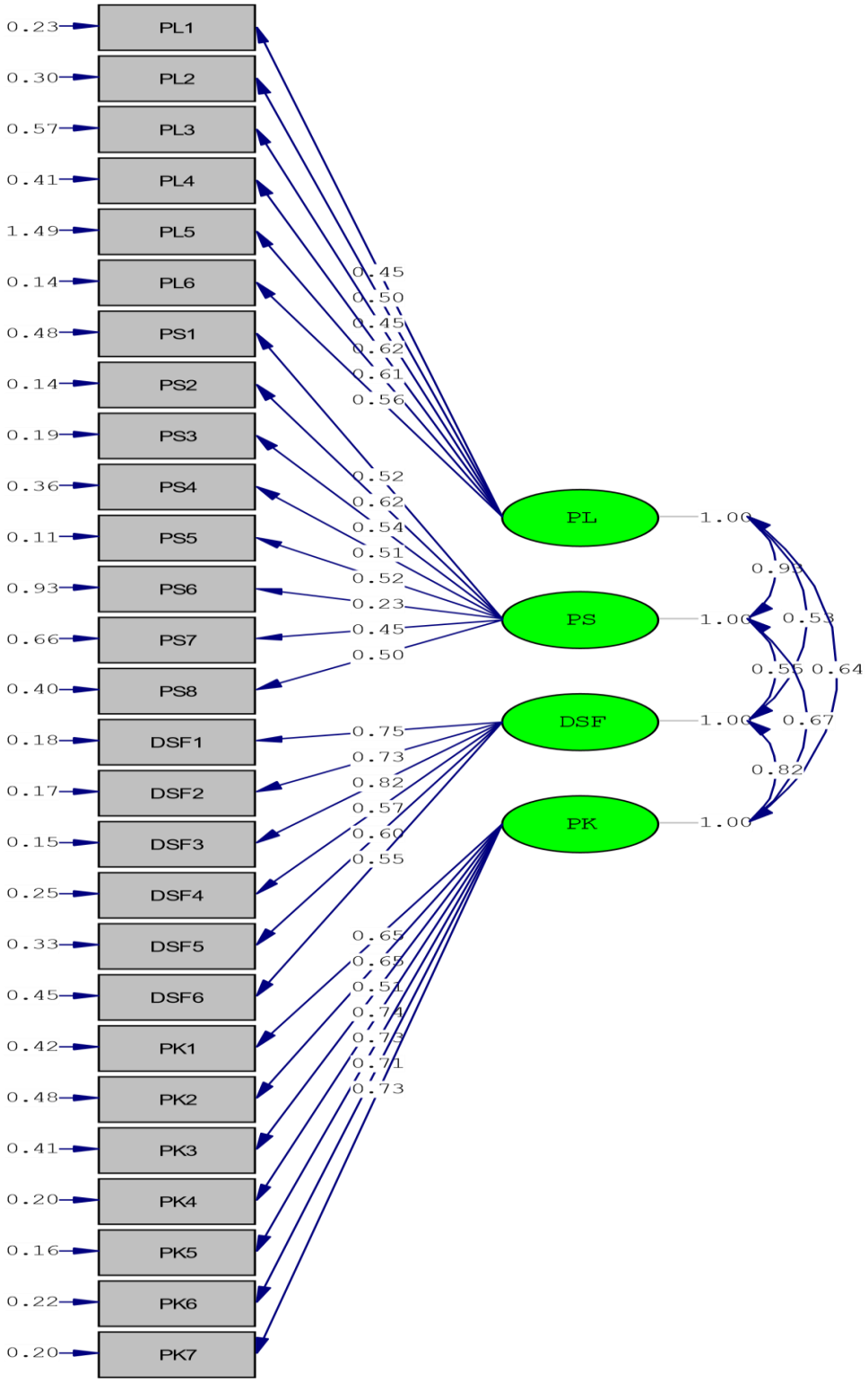

Figure 1. Path Diagram of Academic Anxiety

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The image above is the output of the Lisrel software, namely the standardized solution. Characteristic variables of the anxiety instrument include mental actions (PK), inaccurate forms of attention (PS), physical distress (DSF), and incorrect attitudes (PL). Value 0.23, 0.3, 0.57 is the residual value, and the value is 0.45; 0.5; 0.45 is the factor loading value. Each item has a reasonably high factor loading in measuring the latent factor. The average value is above 0.5 except for the items PL1, PS6, and PS7. We can see that the items used are pretty good in measuring the academic anxiety construct. In this test, item factors are connected to see the correlation between factors. The PL aspect is correlated with the PS aspect, producing a score of 0.93; this result is above 0.5. The PL to DSF aspect produces a score of 0.2, and the PL to PK aspect produces a score of 0.64. In the PS to DSF aspect, it produces a score of 0.55, and PS to PK produces a score of 0.67. In the DSF to PK aspect, it produces a score of 0.82. In the PK to PS aspect, it produces a score of 0.67, and PK to PL produces a score of 0.64. The PL, PS, DSF, and PK item factors correlate reasonably well, above 0.6; this is natural because all four measure the same variable: academic anxiety.

Based on the results of this analysis, it appears that the model is by the empirical data (the model is fit) because most of the criteria used to meet the requirements, such as the RMSEA value producing 0.099 (>0.08), CFI produces a value of 0.95 (>0.90), NFI produces 0.93 (> 0.90), the IFI produces a value of 0.95 (>0.9), so the model can be said to be fit.

The next level is to see how the statement's validity can determine the factors to be tested. In the context of the null assumption test, by paying attention to the constant value of factor coverage per item, however, the statement has poor factor coverage. Then, the following experiment is to look at the t-value for each constant factor coverage. If the t value < 1.96, invalid items will be separated. In Table 2, it can be seen that not all items are significant (t>1.96). The following is an explanation table of Figure 1 of the path diagram above. The researcher describes it in a table according to the order of aspects of academic anxiety so that the order of aspects in the path diagram will be different. However, the results are still the same, including:

Table 2. Factor Loadings on Academic Anxiety

Dimension	*Item*	*Coefficient*	*Standard Error*	*Sig*	*t-value*	*Sig*
PK1	1	0.65	0.42	0.052	12.35	√
PK2	2	0.65	0.48	0.055	11.85	√
PK3	3	0.51	0.41	0.049	10.43	√
PK4	4	0.74	0.20	0.045	16.39	√
PK5	5	0.73	0.16	0.043	16.98	√
PK6	6	0.71	0.22	0.045	15.62	√
PK7	7	0.73	0.20	0.045	16.22	√
PS1	8	0.52	0.48	0.052	9.95	√
PS2	9	0.62	0.14	0.038	16.31	√
PS3	10	0.54	0.19	0.039	14.09	√
PS4	11	0.51	0.36	0.047	11.01	√
PS5	12	0.52	0.11	0.033	15.88	√
PS6	13	0.23	0.93	0.066	3.46	X
PS7	14	0.45	0.66	0.058	7.80	√
PS8	15	0.50	0.40	0.048	10.42	√
DSF1	16	0.75	0.18	0.045	16.76	√
DSF2	17	0.73	0.17	0.043	16.79	√
DSF3	18	0.82	0.15	0.046	17.92	√
DSF4	19	0.57	0.25	0.042	13.52	√

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DSF5	20	0.60	0.33	0.047	12.76	√
DSF6	21	0.55	0.45	0.051	10.69	√
PL1	22	0.45	0.23	0.038	11.57	X
PL2	23	0.50	0.30	0.044	11.33	√
PL3	24	0.45	0.57	0.055	8.05	X
PL4	25	0.62	0.41	0.052	11.84	√
PL5	26	0.61	1.49	0.088	6.98	√
PL6	27	0.56	0.14	0.037	15.28	√

Note: V = significant (factor loading/coefficient > 0.50) and X = not significant

From observing the table above, the loading factor values for items 13, 22, and 24 are not significant. Thus, item numbers 13, 22, and 24 were discarded because they were invalid. Not all items contain positive factors, so some items must be eliminated because they contain negative factors. In this measurement model, there is also an error in measuring items that are correlated with each other. Overall, there are three items, namely number 13, number 22, and number 24, with a partial correlation of five times each. The causes of invalid items in the assessment context often come from several factors that can interfere with the validity of the measurement; among the common causes of invalid items are conceptual or operational errors, respondent bias effects, systematic effects, and technical problems such as writing errors, ambiguous structure or incorrect formatting-confusing in presenting questions (Finch et al., 2018). Furthermore, looking at the results of the loading factor value for each indicator above 0.5, it can be concluded that the indicators for each variable are valid and can be used for each variable:

Table 3. Factor Loadings on Academic Anxiety

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extra
PK	0.912	0.931	0.692
PS	0.835	0.876	0.488
DSF	0.910	0.931	0.692
PL	0.818	0.869	0.528

The following is a description of the test results for each characteristic of the academic anxiety instrument:

1. Anxiety resulting in mental action (PK)
   In the validity test, the anxiety aspect results in mental action. Researchers tested how the seven statements were one-dimensional, where they only measured anxiety, through the CFA test. The calculation results of this variable obtained a Cronbach alpha value of 0.912, a composite reliability of 0.931, and an AVE value of 0.692.
   After testing, the researcher looks at the T-value for each statement. If the t-value is more significant than 1.96, then the statement can be significant; if it is below that value, it is insignificant. In this aspect, all statements are declared significant because the t-va value is above 1.96.
2. Inaccurate form of attention (PS)
   In the validity test, the attention aspect needs to be more accurate. Researchers tested how the eight statements were one-dimensional, where this only measured the form of attention, through the CFA test. The calculation results of this variable obtained a Cronbach alpha value of 0.835, a composite reliability of 0.876, and an AVE value of 0.488.

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After testing, the researcher looks at the T-value for each statement. If the t-value is more significant than 1.96, then the statement can be significant; if it is below that value, it is insignificant. In this aspect, all statements were declared significant because the t-value was above 1.96. However, there was 1 statement had a loading factor value below 0.50, namely item 6 in the inaccurate attention aspect.

3. Physical distress (DF)
   In the validity test, the distress aspect is visible physically. Researchers tested how the six statements are one-dimensional, where they only measure distress, through the CFA test. The calculation results of this variable obtained a Cronbach alpha value of 0.910, a composite reliability of 0.931, and an AVE value of 0.692.
   After testing, the researcher looks at the T-value for each statement. If the t-value is more significant than 1.96, then the statement can be significant; if it is below that value, it is insignificant. In this aspect, all statements are declared significant because the t-va value is above 1.96.
4. Incorrect attitude (PL)
   In the validity test, aspects of attitudes are not correct. Researchers tested how the six statements are one-dimensional, where they only measure attitudes, through the CFA test. The calculation results of this variable obtained a Cronbach alpha value of 0.818, a composite reliability of 0.869, and an AVE value of 0.528.
   After testing, the researcher looks at the T-value for each statement. If the t-value is more significant than 1.96, then the statement can be significant; if it is below that value, it is insignificant. In this aspect, all statements are declared significant because the t-va value is above 1.96. However, in this incorrect attitude aspect, two items could be more significant in the loading factor values, namely items 1 and 3.

The Goodness of Fit Statistics section is the most essential part of the output of confirmatory factor analysis with Lisrel, Considering that CFA is a model testing method. Evaluating model fit is carried out by several criteria: assessing the overall model and the significance of the parameter estimates for each item. Overall model assessment can be obtained based on the model fit index (Goodness of fit statistics) produced by LISREL.

The most common model accuracy index is the Chi-Square value. Assessing model fit, the Chi-Square value is expected to be insignificant (p-value> 0.05) because these results indicate no difference between the model and the data. However, the chi-square value is susceptible to sample size, where if the sample is large, there is a tendency for the estimation results to be significant, so it is interpreted as an unfit model. If this is the case, researchers are advised to look at other parameters.

Table 4. **Goodness of Fit**

Goodness of Fit
Degrees of Freedom = 218
Minimum Fit Function Chi-Square = 16.75 (P = 0.086)
Normal Theory Weighted Least Squares Chi-Square = 19.18 (P = 0.075)
Estimated Non-centrality Parameter (NCP) = 751.18
90 Percent Confidence Interval for NCP = (655.69 ; 854.25)
Minimum Fit Function Value = 4.65
Population Discrepancy Function Value (F0) = 3.13
90 Percent Confidence Interval for F0 = (2.73 ; 3.56)
Root Mean Square Error of Approximation (RMSEA) = 0.079
90 Percent Confidence Interval for RMSEA = (0.093 ; 0.11)
The P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00
Expected Cross-Validation Index (ECVI) = 4.95
90 Percent Confidence Interval for ECVI = (4.56 ; 5.38)
ECVI for Saturated Model = 3.15

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ECVI for Independence Model = 64.78
Chi-Square for Independence Model with 351 Degrees of Freedom = 493.89
Independence AIC = 15547.89
Model AIC = 1189.18
Saturated AIC = 756.00
Independence CAIC = 15668.98
Model CAIC = 1458.27
Saturated CAIC = 2451.25
Normed Fit Index (NFI) = 0.96
Non-Normed Fit Index (NNFI) = 0.94
Parsimony Normed Fit Index (PNFI) = 0.84
Comparative Fit Index (CFI) = 0.95
Incremental Fit Index (IFI) = 0.95
Relative Fit Index (RFI) = 0.92
Critical N (CN) = 82.58
Root Mean Square Residual (RMR) = 0.063
Standardized RMR = 0.088
Goodness of Fit Index (GFI) = 0.95
Adjusted Goodness of Fit Index (AGFI) = 0.91
Parsimony Goodness of Fit Index (PGFI) = 0.93

The following are the results of the analysis to conclude whether the research model is suitable or not based on the criteria:

1. Absolute fit index criteria
   a) Chi-Square Value
      Because the Chi-Square value is 0.075, based on this criterion, the empirical data obtained is similar to the theory being built.
   b) Root Mean Square Error of Approximation (RMSEA)
      RMSEA (root mean square error of approximation) explains the residuals contained in the model. The expected RMSEA value is ≤ 0.05. An RMSEA value ≤ 0.05 indicates a close fit, whereas if the value is in the range $0.05<\text{RMSEA}\leq 0.08$, the model can still be accepted as a good fit model. Because the RMSEA value is 0.079, the empirical data obtained fits the criteria.
   c) Goodness of Fit Index (GFI)
      GFI (goodness fit index) is a model fit index that is often used as a reference for assessing model fit. GFI is an index of model accuracy in explaining the model prepared. The GFI value is expected to be ≥ 0.90 to determine model fit based on GFI. The GFI value ranges between 0.00 (poor fit) to 1.00 (perfect fit). Because the GFI value is 0.95, the model's accuracy in producing the observed covariance matrix is vital.
2. Incremental fit index criteria
   a) Adjusted Goodness of Fit Index (AGFI)
      AGFI (Adjusted Goodness of Fit) is a development fit index criterion from GFI, which is adjusted to the ratio of the degree of freedom for the proposed model to the degree of freedom for the null model. The recommended AGFI value to indicate model fit is ≥ 0.90. Because the AGFI value is 0.91 above 0.9, based on this criterion, the model fit is vital.
   b) Normed Fit Index (NFI)
      NFI (Normed Fit Index) compares the proposed and null models. The expected NFI value is ≥ 0.95 (Schumacker and Lomax, 2010). Because the NFI value is 0.96, based on this criterion, the model fits.

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c) Comparative Fit Index (CFI)
CFI (comparative fit index) is a comparison value of a model prepared with an ideal model. The expected CFI value is above 0.90. Because the CFI value is 0.95, it shows that the model fit is in a strong position.

d) Incremental Fit Index (IFI)
This index has a value ranging from 6 to 1. CFI values are generally above 0.9, indicating that the model is fit. The model is in a strong position because the IFI value in the calculated results is 0.95.

e) Relative Fit Index (RFI)
This index has a value ranging from 0 to 1. RFI values are generally above 0.9, indicating that the model is fit. Because the RFI value in the calculated results is 0.92, it shows that the model fit is in a strong position.

3. Parsimonious fit index criteria

a) Expected Cross-Validation Index (ECVI)
The benchmark for stating that the model is suitable is if the ECVI is smaller than the ECVI independence value. The results of this research state that the ECVI value of 4.95 is smaller than the independent ECVI value of 64.78.

b) Akaike Information Criterion (AIC)
The benchmark for which the model is suitable is if the AIC value is smaller than the AIC independence value; the results of this research state that the AIC value of 756.00 is smaller than the independent AIC value of 15668.98, so it is stated that the model is fit.

c) Consistent Akaike Information Criterion (CAIC)
The benchmark for which the model is suitable is if the CAIC value is smaller than the saturated CAIC and independent CAIC values. The results of this research state that the CAIC value is 1458.27 and CAIC independence is 2451.25, so it is stated that the model is fit.

d) Parsimonious Goodness of Fit Index (PGFI)
The benchmark for which the model is suitable is if the PGFI value is > 0.60. The results of this research state that the PGFI value of 0.93 is more significant than 0.60, so it is stated that the model is fit.

e) Root Mean Residual (RMR)
The benchmark the model fits is measured based on RMR, calculating the residual or difference between the sample and estimated covariance. An RMR value below 0.1 will be better—the results of this research state that the RMR value is 0.063, so the model fits.

Therefore, for each test criterion, a fit test element meets the standards, and it is concluded that the research model has been fulfilled as a fit model. Because looking at the average criteria shows fit results, if you look at the Goodness of Fit results, the validity test of this instrument is quite strong, or the model is fit. The results of the construct validity test on the Academic Anxiety Scale show that the items of this instrument are significantly unidimensional, meaning they only measure the construct of academic anxiety as a whole; this means that there is no difference between the data obtained and theory.

These results are supported by findings obtained by previous researchers (Situmorang, 2018), who found that the academic anxiety scale is unidimensional, valid, and reliable in various research populations and different cultures. It is just that the one-factor model that was initially proposed did not fit directly and showed a significant p-value ($p<0.05$), so it required a model modification where the measurement errors in each item were allowed to correlate.

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Overall, there is a negative charge on items number 13, number 22, and number 24, so these three items need to be eliminated because they contain negative factors. Likewise, after reviewing based on the t-value, all items are valid. However, researchers need to note that several items have quite a lot of partial correlation between measurement errors, namely items 13, 22, and 24, with each partial correlation five times.

This research has several limitations, including that the researcher only tested the validity of the academic anxiety instrument developed by researcher David Situmorang (Situmorang, 2018). In this research, there is a limitation of researchers, namely that the data processing on the instrument can only use Lisrel 8.80 software, so it cannot use Winstep software. It is hoped that future researchers can carry out all stages of instrument development to obtain good-quality items. Apart from that, this research was also limited to a sample of high school students. Expanding sample variations can be considered to determine how valid the instrument construct is in different samples.

Conclusions

Researchers concluded from testing the validity of the academic anxiety instrument using the confirmatory factor analysis (CFA) method that the 27 statements measured only one factor. The conclusion of this study states that the one-dimensional design conceptualized by this academic anxiety instrument can be obtained. Therefore, these 24 items include qualifications as a good statement; the factor coverage is conclusive, valid, or significant at the factor loading value (0.50 t > 1.96) and solely has a connection between no more than three false statements being tested or is said to be unidimensional.

This instrument can be a reference for Guidance and Counseling Teachers to overcome academic anxiety problems. This instrument can also be used as a research instrument for researchers interested in the field of education. Apart from that, it is hoped that future researchers can use this instrument in detail on the research subject. Future researchers need to be able to test the validity of this instrument with other, more specific methods such as convergent validity, discriminant validity, and multitrait-multimethod methods. This research has areas for improvement and shortcomings, including the researcher needing help to test the instrument using Winstep, which is more sophisticated in testing the instrument's validity because the device cannot access the software.

References

Anggoro, K. W. (2018). Hubungan antara dukungan sosial teman sebaya dengan kecemasan akademik pada mahasiswa program studi akuntansi universitas islam indonesia menghadapi ujian komprehensif. *Jurnal bimbingan dan konseling*, 1-10.

Aulia, F. A. (2023). Desain E-Modul Regulasi Emosi Berbasis Emotional Freedom Technique untuk Mengatasi Kecemasan Akademik Siswa Sekolah Dasar. *Journal Pendidikan*, *4*, 1-10.

Brown, T. A. (2015). *Confirmatory factor analysis (CFA) for applied research.* Guilford Publication.

Debi, I. (2018). Identifikasi Faktor Penyebab Kecemasan Akademik pada Siswa Kelas XI di SMA Negeri 3 Bantul. *Jurnal Riset Mahasiswa Bimbingan Dan Konseling*, *4*(10), 629–635.

Finch, W., Holmes, & French, B. F. (2018). Educational and psychological measurement. *Routledge*.

Firmantyo, T., & Alsa, A. (2016). Integritas akademik dan kecemasan akademik dalam menghadapi ujian nasional pada siswa. *Psikohumaniora: Jurnal Penelitian Psikologi*, *1*, 1-11.

Gatignon, H. (2014). Confirmatory Factor Analysis. *Statistical Analysis of Management Data*, 77–154. https://doi.org/10.1007/978-1-4614-8594-0_4

Hysenbegasi, A., Hass, S. L., Rowland, C. R., & Stein, M. B. (2005). The effects of anxiety disorders on educational achievement. *Journal of Anxiety Disorders, 19*, 309-319.

Istiantoro, D. (2018, Oktober). Identifikasi Faktor Penyebab Kecemasan Akademik Pada Siswa Kelas XI di SMA Negeri 3 Bantul. *Jurnal Riset Mahasiswa Bimbingan dan Konseling, 4*, 626-636. Diambil kembali dari https://journal.student.uny.ac.id/index.php/fipbk/article/viewFile/12600/12146

Joreskog, K., & Sorbom, D. (2006). *LISREL 8.80 for Windows. Computer Software. Scientific Software International, Inc.*

Kline, R. B. (2018). Response to Leslie Hayduk's review of Principles and Practice of Structural Equation Modeling. *Canadian Studies in Population*, pp. 188–195.

Kusumastuti, D. (2020). Kecemasan dan Prestasi Akademik pada Mahasiswa. *Jurnal Magister Psikologi UMA, 12*. Diambil kembali dari https://www.ojs.uma.ac.id/index.php/analitika/article/view/3110/2739

Leahy, R. L. (2011). *Cognitive Therapy Techniques: A practitioner's guide.* New York: Guilford Press.

Leigh, E., Chiu, K., & Clark, D. M. (2021). Is concentration an indirect link between social anxiety and educational achievement in adolescents? *PLoS ONE*, *16*(5 May), 1–12. https://doi.org/10.1371/journal.pone.0249952

Lestari, W., & Wulandari, D. A. (2021). Hubungan antara dukungan sosial terhadap kecemasan akademik pada mahasiswa yang menyusun skripsi di masa pandemi covid 19 semester genap tahun ajaran 2019/2020. *PSIMPHONI*, 93-98.

Lusi, A., Nalle, A. P., & Saba, K. R. (2023). Hubungan Antara Kecemasan Akademik dengan SelfEfficacy pada Mahasiswa yang sedang menyusun Skripsi di rumpun Ilmu Pendidikan FKIP Universitas Nusa Cendana. *JURNAL BIMBINGAN KONSELING FLOBAMORA, 1*, 91-100.

Maruf, A. A. (2013). Corporate Social Responsibility and Corporate Image. *Transnational Journal of Science and Technology*, *8*(4), 29–50.

McClenahan, E. L. (2005). Cognitive Therapy Techniques: A Practitioner's Guide. *Psychiatric Services*, *56*(9), 1164–1164. https://doi.org/10.1176/appi.ps.56.9.1164

Mode, K. F., & Analysis, E. (n.d.). *Lampiran 1 RAHASIA*.

Nurhidayah, B. S., Wibowo, M. E., & Purwanto, E. (2022). Keefektifan Konseling Kelompok Cognitive Behavioral Therapy (CBT) dengan Teknik Modeling Simbolis dan Role Playing untuk Meningkatkan Self-Confidence pada Siswa. *Bulletin of Counseling and Psychotherapy*, *4*(1), 64–69. https://doi.org/10.51214/bocp.v4i1.156

Ottens, A. j. (1991). *Coping With Academic Anxiety.* New York: he Rosen Publishing Group.

Purwanto, E. (2016). *Metodologi penelitian kuantitatif* . Semarang: Pustaka Pelajar.

Rachmawati, M. (2023). Konsep diri dan prokrastinasi akademik terhadap kecemasan akademik pada usia remaja. *Jurnal Pendidikan*, 1-14.

Rana, R., & Mahmood, N. (2010). The relationship between test anxiety and academic achievement. *Bulletin of Education and Research, 3*, 63-74.

Sahu, S. K., & Gupta, R. (2018). Academic Stress, Anxiety and Coping Strategies among College Student. *Journal Education and Practice*, pp. 1–12.

Salend, S. J. (2021). Creating Inclusive Classrooms: Effective, Differentiated and Reflective Practices. *Journal Pearson*.

Situmorang, D. D. (2018). *Keefektifan konseling kelompok cognitive behavioral therapy (CBT) dengan teknik passive dan active music therapy terhadap academic anxiety dan self-efficacy.* Semarang.

Squire, D. D., Booth, A., & Arnold, B. (2023). Creating Inclusive Classrooms. *Difficult*

Subjects, pp. 178–192. https://doi.org/10.4324/9781003444220-13

Theodoridis, T., & Kraemer, J. (n.d.). *No 主観的健康感を中心とした在宅高齢者における 健康関連指標に関する共分散構造分析Title*. 97–113.

Umar, J. (2010). Logika CFA (Confirmatory Factor Analysis).Bahan ajar perkuliahan Werner, E. E. (1995). Resilience in development. *Current Directions in Psychological Science*, pp. 81–85.

Umar, J. (2012). *Confirmatory factor analysis: Bahan ajar perkuliahan.* Jakarta: UIN Syarif Hidayatullah.

Vijay Mahadeorao Bhujade. (2017). Depression, anxiety and academic stress among college students A brief review. *Indian Journal of Health and Wellbeing*, *8*(7), 748–751.

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. *Handbook of Structural Equation Modeling.*, *October*, pp. 209–231.

Wijanto, S. H. (2008). *Structure Equation Modeling dengan LISREL 8.8: Konsep & Tutorial.* Yogyakarta: Graha Ilmu.

https://ejournal.radenintan.ac.id/index.php/konseli
https://doi.org/10.24042/kons.v%vi%i.19589