

# The Measurement Instrument Adaptation (Structural Validity Test) of Mood and Anxiety Symptoms Questionnaire - Anhedonic Depression Scale in Indonesian Language

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## ABSTRACT

It is known that depression constitutes the main cause of suicidal behavior and is the 6th leading cause of death in developed countries. Depression can occur in anyone, from children to elderly. This study aims at determining the results of the structural / internal validity test for the Mood and Anxiety Symptoms Questionnaire-Anhedonic Depression (MASQ-AD) using Indonesian Language. This study was conducted with 752 participants aged 15-40 year old. The method used was non-experimental quantitative methods. The nonprobability sampling with convenience sampling technique was used in selecting the participants. Based on data analyses (validity test of measuring instrument using confirmatory factor analysis), the results show that it is the measuring instrument of MASQ-AD which has good structural validity. Although the items have been translated into Indonesian, all items of the MASQ-AD have factor loads of  $\geq 0.50$ . Thus, it fulfills the item validity criteria. The measuring instrument of MASQ-AD looks valid for measuring the level of depression in individuals. It is because MASQ-AD has a higher positive and significant relationship on the BDI-II depression measuring instrument than the BAI anxiety measuring instrument.

**Keywords:** *Mood and anxiety symptoms questionnaire-anhedonic depression, measurement instrument, adaptation, structural validity*

## 1. INTRODUCTION

It is known that depression constitutes the main cause of suicidal behavior and is the 6th leading cause of death in developed countries, such as in the United States [1]. According to Gintner, it is estimated that 1 of 4 people will experience a depressive episode in their lives [2]. The World Health Organization (WHO) estimates that the prevalence of depression among people in the world is 3%. Research on these matters in Europe and the United States estimates that 9-26% of women and 5-12% of men experience severe depressive conditions in their lives because they have many individual demands, roles and experiences [3]. A survey conducted by the Specialist Medical Association of Mental Health (Persatuan Dokter Spesialis Kesehatan Jiwa -- PDSKJ) in 2007 stated that around 94% of Indonesians experienced depression from mild to severe conditions [4]. Based on Riskesdas data in 2007, the prevalence of emotional mental disorders such as anxiety and depression is 11.6% among adult population in Indonesia. Based on the data, it can be said that, with approximately 150,000,000 of total Indonesian adult population, 1,740,000 people are currently experiencing emotional disorders [5].

According to WHO, depression is a common mental disorder characterized by a depressed mood, loss of pleasure or interest, feeling less energy, feelings of guilt or inferiority, appetite or sleeping disorders, and low concentration. Depression can occur in anyone, from children to elderly. In line with WHO, Rosenhan and Seligman state that depression is the most common psychological disorder encountered [6]. Depression is a disorder that is mainly characterized by sad and gloomy emotional conditions and the presence of cognitive, physical, and obstacle in interpersonal relationships [7]. From a developmental perspective, depression start to rise in adolescence. Epidemiological studies show that the prevalence rate of depression in children is 2.5% and increases to 8.3% in adolescents [8]. If the low level of depression is taken into account, this prevalence increases to 25% [9]. Depression in adolescents is closely related to the risk of suicidal behavior. This risk increases in people suffering depression related to substance abuse or using narcotics and alcohol, especially in adolescent boys. In 1997, suicide was the third leading cause of death in the population aged 10 to 24 year old. Among adolescents who suffer from major depressive disorder, 7 % of those who commit suicide were young adults [10].

Based on the previous description, it can be concluded that depression in adolescents and young adults is a serious problem. Nowadays, however, adolescent who experience depression often do not receive adequate help or even not detected by their families and environments. The signs of depressive disorders in young people are often taken for granted as emotional turmoil that naturally occurs at this stage of development. In fact, early diagnosis and treatment of depression is very important for the emotional, social and behavioral development of the sufferer.

A research measurement instrument that is widely used to detect depressive disorders is the Beck Depression Inventory (BDI) created by Beck in 1976. In 1996, the BDI was revised in order to be more consistent with the DSM-IV criteria. Beck, Steer, and Brown named the revised results BDI-II. Further, BDI-II is a very popular measuring instrument to describe depressive condition of a person [11]. This measuring instrument can be used for individuals ages 13 and over [12]. The reason for this revision is to fulfill the depression criteria on the DSM-IV which states that to diagnose depression, at least depressive symptoms have been present for 2 consecutive weeks [13].

Beck, Steer, and Brown's tested the items of the BDI and BDI-II measuring instruments on 500 respondents with clinical problems. Then, they compared the curve characteristic of the items chosen. The result of this study indicates the increase of clinical sensitivity in the new edition measuring instrument (BDI-II) with BDI-II reliability (coefficient alpha 0.92). It is higher than BDI (coefficient alpha 0.86) [11]. Kojima, Furukawa, Takahashi, Kaawai, Nagaya, and Tokudome developed the BDI-II version in Japanese and then tested the construct validity of the measuring instrument. The consistency of the reliability of this measuring instrument was 0.87 and the result of the factor analysis test showed a two-factor structure (cognitive and somatic-affective) with a result which was almost the same as the original BDI-II model [14].

BDI-II is positively and significantly related to two other measurement instruments for depression, namely the CES-D (Center for Epidemiologic Studies Depression Scale) and the CATI-Depression subscale (Coolidge Axis II Inventory). Besides that, BDI-II is also related to the stress perception measurement instrument (Perceived Stress Scale / PSS) and features of the DPD (Depressive Personality Disorder) [15]. It is known that most measuring instruments that measure depression tend to measure negative affect that is not specific to depression. Negative affect represents general negative states such as anger, self-denial, feeling guilty, and sadness [16]. Segal, Coolidge, Cahilil, and O'Riley state that BDI-II has inadequate discriminant validity because it has a positive correlation with the BAI (Beck Anxiety Inventory) anxiety measurement ( $r = 0.53-0.6$ ,  $p < 0.001$ ). The measurement instrument of CES-D is also known to have a significant positive correlation with the measurement of somatic symptoms which may give an impact on the assessment of the high level depressive conditions in participants with

somatic symptoms that may be caused by other disorders [12].

According to Clark and Watson, depression and anxiety can be separated. Clark and Watson proposed a tripartite model that explains the relationship among negative affect, depression, and anxiety. It is mentioned that negative affect is a non-specific factor in the form of general distress which can be associated with anxiety and depression. It is further stated that the specific symptoms of depression are anhedonia and low positive affect and the specific symptoms of anxiety are physiological hyperarousal [17, 18]. Mood and Anxiety Symptom Questionnaire (MASQ) is created using the tripartite model. MASQ is known to have been widely used in various studies [19, 20].

MASQ consists of 90 items with six dimensions, namely: (a) general distress mixed, (b) general distress anxiety, (c) general distress depression, (d) anxious arousal, (e) loss of interest, and (f) high positive affect [18]. Then, depressive measurement is developed using the MASQ-Anhedonic Depression Scale (MASQ-AD). This scale consists of eight items from loss of interest dimension and 14 reversed-keyed items selected from the high positive affect dimension [18, 21]. In several studies, it is mentioned that MASQ-AD has a good function as a screening tool related to depressive disorders [22, 23]. Based on this, the researcher is interested in adapting (internal/structural validity test) measurement instrument of the MASQ-AD in Indonesian Language.

## 2. RESEARCH METHOD

### 2.1. Research Participants

In this study, 752 participants were selected based on the criteria of age range that are individuals who are in late adolescence to early adulthood (15-40 years). Individuals who participate in this study were not limited to gender, occupation, religion, and certain ethnic groups.

The technique of selecting participants in this study was nonprobability sampling with convenience sampling technique. The way used by researcher in obtaining the participants was asking students from various universities to fill out the questionnaire form directly and distribute the questionnaire link created online in the form of Google Form.

### 2.2. Research Design

This research used non-experimental quantitative methods because the researcher did not manipulate or treat the participants of the study. This study used two variables, namely depression and anxiety. Depression is a feeling disorder characterized by loss of interest or passion. Anxiety is a response to a threat, real or not, due to uncertainty in the future.

Analysis (CFA) show that each item already has a loading factor value > 0.5. The cognitive dimension has a construct reliability value of 0.678. The second dimension is the somatic dimension, and it consists of 12 items. The CFA test results also show that each item already has a loading factor value > 0.5. The somatic dimension has a construct reliability value of 0.554.

### **2.3. Beck Depression Inventory - II**

Beck et al. (1996) develops The BDI-II instrument that measures depressive symptoms. BDI-II also consists of two dimensions, namely the cognitive dimension and the somatic dimension [11]. Ginting et al. translated BDI-II items into Indonesian by involving experts. BDI-II consists of 21 statement items with the choice of answers ranging from 0 to 3. Each item has different choice of answers based on the aspects to be measured [24]. All statements of the BDI-II measurement instrument are also statements with positive items. The first dimension is the cognitive dimension, and it consists of 9 items. The CFA results showed that each item has a loading factor value > 0.5. The cognitive dimension has a construct reliability value of 0.908. The second dimension is the somatic dimension, and it consists of 12 items. The CFA results show that each item already has a loading factor value > 0.5. The construct reliability value of somatic dimension is 0.595.

## **3. MEASUREMENT**

### **3.1. Mood and Anxiety Symptoms Questionnaire-Anhedonic Depression Scale**

Mood and Anxiety Symptoms Questionnaire-Anhedonic Depression Scale (MASQ-AD) is a measurement instrument that uses a tripartite model created by Watson and Clark (1991) [17]. MASQ-AD consists of 22 statement items which are divided into two dimensions, namely the high positive affect dimension and the loss of interest dimension. The high positive affect dimension consists of 14 negative items and needs to be recoded, so that finally the dimension becomes the low positive affect dimension. Meanwhile, the loss of interest dimension consists of 8 positive items.

This measurement instrument uses the Likert Scale so that there are five alternative answers. Before filling the MASQ-AD measurement instrument, directions or

instructions on how to fill the measurement instrument are explained at the beginning. Participants were asked to choose one answer that was considered the most appropriate to the participant's emotional experience during the past week. Alternative answers given are *Sangat Tidak Setuju--STS* (Strongly Disagree), *Tidak Setuju--TS* (Disagree), *Ragu-Ragu--RR* (Doubtful), *Setuju--S* (Agree), and *Sangat Setuju--SS* (Strongly Agree).

### **3.2. Beck Anxiety Inventory**

Beck Anxiety Inventory (BAI) is a measurement instrument that measures symptoms of anxiety. BAI consists of two main dimensions, namely the cognitive dimension and the somatic dimension. This measurement instrument consists of 21 statement items with 4 alternative answers. Ginting, Naring, van der Veld, Srisayekti, and Becker (2013) translated the BAI items into Indonesian with the help of experts [24]. The following are the choice of answers given and the score for each answer, namely:

1. Not annoying at all.
2. A little annoying but not so annoying.
3. Quite annoying, sometimes unpleasant.
4. Very strong, so annoying me.

All statements on the BAI measurement instrument are statements with positive items. The first dimension is the cognitive dimension, and it consists of 9 items. The results of construct validity test using Confirmatory Factor.

## **4. RESULT**

### **4.1. The Overview of the MASQ-AD Measurement Instrument Items**

This study is aimed at considering the results of the factor analysis on the items in the MASQ-AD measurement instrument. This measurement instrument consists of two dimensions, namely loss of interest and high positive affect dimensions. The naming of the high positive affect dimension was changed to low positive affect because the items in the dimension were negative items. When the negative item scores had been recoded, the dimension name was changed to the low positive affect dimension. The items 1 - 14 for the high positive affect dimension and the items 9 - 22 measured the loss of interest dimension. The following are the translation results of MASQ-AD items carried out by a qualified translator.

**Table 1** The translation of MASQ-AD items

No.	English	Indonesian
1.	Felt really “up” or lively	<i>Merasa sangat bersemangat</i>
2.	Felt like I was having a lot of fun	<i>Merasa seperti sedang bersenang-senang</i>
3.	Felt really good about myself	<i>Merasa segar bugar</i>
4.	Felt really happy	<i>Merasa sangat bahagia</i>
5.	Was proud of myself	<i>Bangga dengan diri sendiri</i>
6.	Felt like I had a lot to look forward to	<i>Merasa seperti saya sangat mengharapkan sesuatu</i>
7.	Felt like I had a lot of energy	<i>Merasa seperti saya memiliki banyak tenaga</i>
8.	Felt like I had accomplished a lot	<i>Merasa seperti telah menyelesaikan banyak hal</i>
9.	Felt like I had a lot of interesting things to do	<i>Merasa seperti saya memiliki banyak hal menarik untuk dikerjakan</i>
10.	Looked forward to things with enjoyment	<i>Menantikan/mengharapkan sesuatu dengan senang</i>
11.	Seemed to move quickly and easily	<i>Merasa tangkas dan sigap</i>
12.	Felt optimistic	<i>Merasa optimis</i>
13.	Felt cheerful	<i>Merasa riang</i>
14.	Felt hopeful about the future	<i>Memiliki harapan di masa depan</i>
15.	Felt like there wasn’t anything interesting or fun to do	<i>Merasa seperti tidak ada yang menarik atau menyenangkan untuk dikerjakan</i>
16.	Felt like nothing was very enjoyable	<i>Merasa seperti tidak ada yang menyenangkan</i>
17.	Felt withdrawn from other people	<i>Merasa dikucilkan oleh orang lain</i>
18.	Felt unattractive	<i>Merasa kurang menarik</i>
19.	Felt really slowed down	<i>Merasa lambat</i>
20.	Felt really bored	<i>Merasa sangat bosan</i>
21.	Felt like it took extra effort to get started	<i>Merasa seperti susah untuk memulai sesuatu</i>
22.	Thought about death or suicide	<i>Sempat berpikir untuk mati atau bunuh diri</i>

#### **4.2. The Overview of MASQ-AD Measurement Instrument Data**

The following is an overview of research data containing a discussion of the average value and standard deviation of each item in the MASQ-AD measurement instrument.

Based on the results of data processing, it is seen that the average value of most items is  $< 2$ . Because the research scale is 0-4, this value becomes in a lower level than the hypothetical mean. There are only two items (items 20 and 21) that have an average value above the hypothetical mean.

**Table 2** The overview of MASQ-AD measurement instrument data

MASQ-AD Items	N	Minimum	Maximum	Mean	Std. Deviation
MASQ_1_HPA	752	0	4	1,60	0,903
MASQ_2_HPA	752	0	4	1,82	0,986
MASQ_3_HPA	752	0	4	1,85	1,025
MASQ_4_HPA	752	0	4	1,66	0,967
MASQ_5_HPA	752	0	4	1,49	1,006
MASQ_6_HPA	752	0	4	0,99	0,965
MASQ_7_HPA	752	0	4	1,84	1,014
MASQ_8_HPA	752	0	4	1,85	1,083
MASQ_9_HPA	752	0	4	1,48	1,051
MASQ_10_HPA	752	0	4	1,08	0,930
MASQ_11_HPA	752	0	4	1,63	0,969
MASQ_12_HPA	752	0	4	1,48	0,992
MASQ_13_HPA	752	0	4	1,55	0,956

MASQ_14_HPA	752	0	4	0,77	0,854
MASQ_15_LoI	752	0	4	1,59	1,137
MASQ_16_LoI	752	0	4	1,38	1,085
MASQ_17_LoI	752	0	4	1,16	1,144
MASQ_18_LoI	752	0	4	1,78	1,214
MASQ_19_LoI	752	0	4	1,73	1,197
MASQ_20_LoI	752	0	4	2,02	1,215
MASQ_21_LoI	752	0	4	2,22	1,233
MASQ_22_LoI	752	0	4	1,04	1,339

**4.3. The Overview of Validity Study on MASQ-AD Measurement Instrument**

The researcher conducted a content validation study starting by asking a qualified translator to translate the MASQ-AD items. Then the researchers asked 3 experts mastering depressive disorders for their opinion, namely dr. Salikur, SpKj., Dr. Irene, SpKj., And Roslina Verauli, M.Psi., Psychologist. Face validation study was conducted by asking the participants' opinion on the research questionnaire. Based on the personal communication with several participants, the display of the MASQ-AD measuring instrument is acceptable, and each statement item is very clear and understandable. The explanation of the instructions on how to fill in the form was also easy to understand, and the procedures for filling out the questionnaire were considered uncomplicated by some participants.

**4.4. The Feasibility Test of the Items**

This section discusses the model feasibility test of the MASQ-AD measurement instrument. The test was carried out by performing the Confirmatory Factor Analysis (CFA) test on the two dimensions used in the measurement instrument. The results of this measurement were obtained from the 752 participants collected. The second order CFA test results show the feasibility value of the model, namely Chi Square = 1425.64, p value = 0.00000, RMSEA = 0.079 <0.08. This shows that the model formed has been fit because the RMSEA value is still at 0.05-0.08. The following results show that the model testing is also fit because the values have met the expected criteria. Based on the 11 criteria of the Goodness of Fit (GOF) Model, the research model has had a good model. It means that the measurement model obtained from the data is in accordance with the hypothesis. This is because 9 of the 11 value criteria have been fulfilled.

**Table 3** Goodness of Fit Summary

Measure of GOF	Fitness Target	Explanation
Normal Theory Weighted Least Squares Chi-Square = 1425.64 (P = 0.00000)	P Value > 0.05	No Fit
RMSEA = 0.079	0.05 ≤ RMSEA < 0.08	Medium Fit
NFI = 0.94	≥ 0.90	Good Fit
NNFI = 0.94	≥ 0.90	Good Fit
CFI = 0.95	≥ 0.90	Good Fit
IFI = 0.95	≥ 0.90	Good Fit
RFI = 0.95	≥ 0.90	Good Fit
RMR = 0.070	< 0.10	Good Fit
Standardized RMR = 0.063	≤ 0.10	Good Fit
GFI = 0.85	≥ 0.90	No Fit
AGFI = 0.82	0.80 ≤ AGFI < 0.90	Good Fit

**4.4.1. Convergent Validity Test**

Convergent validity testing by presenting the load of the factors (factor loading) of each item in the MASQ-AD measurement instrument is discussed here. The revelation

of these results can indicate measurement instrument items that have a high factor load and a low factor load. The results on the CFA Second Order MASQ-AD path diagram show that each item in the low positive affect and loss of interest dimensions has had a good factor load value. This result can be seen from the factor load value of each item which has value > 0.5. The result of the factor

load test can be seen in the following standardized model image:

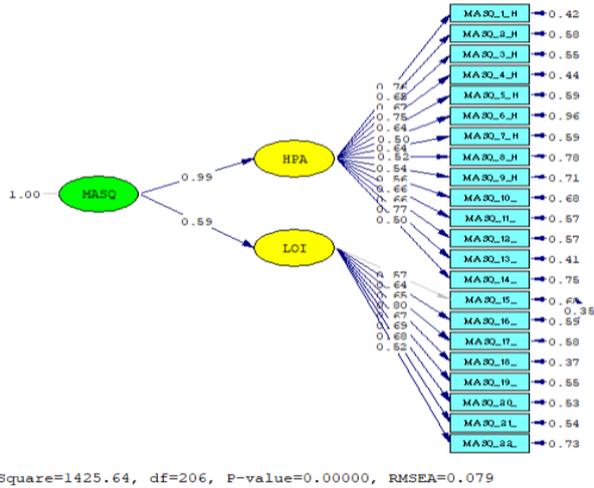


Figure 1 Factor load value (standardized presentation)

#### 4.4.2. Construct Reliability (CR) Test

The following is the result of reliability testing which is measured by calculating construct reliability. The expected CR value in the measurement results is  $\geq 0.70$ , but the CR value between 0.6-0.7 is still acceptable with consideration that the validity value of the items that become the measurement indicators shows a good result (Hair, Black, Babin, & Anderson, 2014).

The CR test result on the low positive affect dimension shows a good value because the value of the CR calculation has reached  $0.904 \geq 0.70$ . Thus the result of reliability testing on the low positive affect dimension can

be said to have a good level of reliability. In contrast to the CR test results for the low positive affect dimension, the CR test result of the loss of interest dimension show a bad value because the value of the CR calculation obtained is only  $0.481 \leq 0.70$ . It means that the reliability test result on the loss of interest dimension can be said to have less level of reliability.

#### 4.4.3. Construct Validation Study

The construct validity carried out is to look at the evidence, including evidence of homogeneity, convergent evidence, and discriminant evidence. Evidence of homogeneity from the MASQ-AD measurement instrument can be seen from the correlation value between the two dimensions contained in the measurement instrument. The loss of interest dimension has a significant correlation value with the low positive affect dimension. Correlation test is done by Spearman's Correlation test because the result of the normality test with One-Sample Kolmogorov Smirnov shows that the distribution of the data is not normal. The significance value of each dimension and research variable was  $p < 0.05$ .

The correlation test results show a significant correlation between the total MASQ-AD score and the BDI-II total score. Discriminant evidence is obtained by testing the correlation between the MASQ-AD and BAI measurement instruments. The results of the correlation test show that there is still a significant positive correlation between MASQ-AD and BAI. However, the correlation value between MASQ-AD and BAI is still lower than the correlation value between BDI-II and BAI. It is also lower than the correlation value between MASQ-AD and BDI-II.

Table 4 The Correlation of All Measurement Instruments

	1	2	3	4	5
1 MASQ-AD: Low Positive Affect	1.000				
2 MASQ-AD: Loss of Interest	.537**	1.000			
3 MASQ-AD: Total Score	.896**	.845**	1.000		
4 BAI	.057**	.277**	.177**	1.000	
5 BDI-II	.457**	.677**	.634**	.430**	1.000

\*\* Significant correlation at the level of 0.01 (2-way)

## 5. CONCLUSION

### 5.1. Conclusion

Based on the results of data analysis (the validity test of the measurement instrument using confirmatory factor analysis), it can be concluded that the MASQ-AD measurement instrument which has two dimensions, namely the low positive affect dimension and the loss of interest dimension, has good structural validity. Although

the items have been translated into Indonesian language, all items of the MASQ-AD measurement instrument have a factor load of  $\geq 0.50$ . Thus, it fulfills the item validity criteria. The MASQ-AD measurement instrument looks valid for measuring the level of depression in individuals. It is because MASQ-AD has a higher positive and significant relationship with the BDI-II depression measurement instrument compared to the BAI anxious measurement instrument.

## 5.2. Discussion

Based on the research results, the construct validity of the MASQ-AD measurement instrument in this study is sensed from the evidence of homogeneity and evidence of discriminant. Evidence of homogeneity is sensed from the correlation results of the MASQ-AD dimensions. The correlation between the loss of interest and low positive affect dimensions shows a significant correlation coefficient of  $r = 0.537$  ( $p < 0.05$ ).

Clark and Watson (1991) mentions that generally the measurement of depression and anxiety has a correlation of 0.45 - 0.75. Research by Hughes, Heimberg, Coles, Gibb, Liebowitz, and Schneiner demonstrates a correlation between the MASQ-AD and the measurement of somatic symptoms that specifically measure anxiety ( $r = 0.41$ ,  $p < 0.01$ ) [25]. Based on several previous studies, MASQ-AD has better discriminant validity than other depression measurement instruments because it has a lower correlation value than the measurement instrument for anxiety [23, 25, 26, 27]. This study shows conformity with the results of previous studies. The correlation between MASQ-AD and BAI dimensions is lower than the correlation between MASQ-AD and BDI-II. The correlation coefficient between MASQ-AD and BAI is 0.177 and the correlation coefficient between MASQ-AD and BDI-II is 0.677. The results of the research conforms the research hypothesis that the correlation between MASQ-AD and BAI was lower than the correlation between MASQ-AD and BDI-II.

This is in line with what Kendal and Watson said, the emergence of anxiety and depression occurs very often simultaneously, in which both represent a disorder that causes negative reactions [28]. Although the two have similarities, anxiety and depression can still be distinguished. Anxiety is closely related to anticipation of threats, whereas depression involves loss of interest and an inability to feel [17]. Kovacs et al. states that anxiety generally precedes the emergence of depression [28]. Brown et al. states that 60 % of individuals with anxiety disorders meet the criteria for depressive disorder [29].

## 5.3. Suggestion

Based on the results of this study, further research is suggested to be able to use MASQ-AD which has been translated into Indonesian and tries to conduct some adaptations to more respondents in order to examine further about its validities and reliabilities and for making the norm more accurate. In addition, it is recommended that some studies to compare the screening ability between MASQ-AD and BDI-II measuring instruments are conducted. This study involved 752 participants. Practically, the author suggests that similar research involving more participants with clinical or non-clinical group from various regions in Indonesia is conducted.

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