

A MEASUREMENT OF CONSTRUCT VALIDITY AND RELIABILITY OF OPTIMISM SCALE

By Fatwa Tentama



RESEARCH ARTICLE

A MEASUREMENT OF CONSTRUCT VALIDITY AND RELIABILITY OF OPTIMISM SCALE

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ABSTRACT

The purpose of this study is to test the validity and reliability of the optimism scale construct, and test the dimensions and indicators that can form this variable. Optimism is measured by three dimensions, namely permanence, personalization and pervasiveness. The population in this study are all students at "X" University in Yogyakarta with a total sample of 60 subjects. The sampling technique used is simple random sampling. The data collection method is a scale of optimism. Research data were analyzed with Structural Equation Modeling (SEM) through the SmartPLS 3.2.8 program. Based on the results of data analysis, the dimensions and indicators that made up the optimism variable were declared valid and reliable. The most dominant dimension that reflects the optimism variable is permanence with a loading factor of 0.781. The weakest dimension that reflects the optimism variable is personalization with a loading factor of 0.721. This shows that all dimensions and indicators are able to reflect and shape the studied variable. Thus, the measurement model can be accepted because theories that describe optimism fit with empirical data obtained from the subject.

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Key Words: Optimism, Permanence, Personalization, Pervasiveness, Structural Equation Modeling.

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INTRODUCTION

The highest level of education in Indonesia is college. Students in higher education are seen as educated young people who are the hope of the Indonesian nation in the future. Students in higher education have higher demands than other levels of education. Students have the main task of completing academic assignments that have been set, in order to achieve the expected graduation competencies. The lecture demands must be completed on time, whether it is the collection of regular assignments, practical assignments, or completion of study loads. The demands of the environment and the academic burden borne by students have the potential to increase stress. If students are not able to deal with it well, it will negatively affect their psychological condition. To overcome these situations, students need optimism. With high optimism, students can see the positive side of various assignments given to them. The optimism that an individual has makes him able to see things from the positive side (Snyder and Lopez, 2002). Seligman (2008) added that optimistic individuals always think positively and have a high level of success at work, school, never giving up in facing problems, and looking at problems with their own mindset. Optimism is associated with positive outcomes desired by individuals such as good moral conditions, satisfying achievements, and the ability to solve problems (Chang and McBride, 2015). Individuals who have high optimism have the awareness that they themselves are the determinants of their life success (Perera and McIlveen, 2014), have a healthier and happier life (Renaud, Jesse, Wrosch, Carsten and Scheier, Michael, 2018), have a higher resilience (Gómez-Molinero, Zayas, Ruiz-González, and Guil, 2018;

Sabouripour, and Roslan, 2015) and a higher quality of life (Soylu, Babacan, Sever, and Altundag, 2016). While low optimism can improve depressive symptoms (Chang, Chang and Sanna, 2009; Chang et al., 2016) optimism is beneficial for physical health, subjective well-being, and social relationships (Carver et al., 2010; Hernandez et al., 2015; Lys, Scheier, and Carver, 2016; Kelloniemi et al., 2005; Ayres and Mahat, 2012; Steptoe, et al., 2006; Glazebrook and Brawley, 2011), as well as increasing happiness and reducing anxiety (Alarcon, Bowling, and Khazon, 2013). Optimism correlates with health (Ayres and Mahat, 2012; Glazebrook and Brawley, 2011), and longer life (Steptoe et al., 2006). For students, optimism can reduce academic stress (Shaheen and Jahan, 2014; Tan and Tan, 2014; Mathur and Sharma, 2015; Kim et al., 2016), affect creativity (Zhang, Liu, Liu, Huang, and Liu, 2019), and improve achievement (Londoño, 2009). The results of interviews with several students of the University of "X" Yogyakarta revealed that college assignments are often not done optimally and students often failed to get the targeted score. They are also easily tired and sick. Besides, students also say that they are not sure of their ability to do the work, easy to give up when faced with tasks that are considered difficult, blame themselves, do not have a plan for the future and difficulty in solving problems. This shows that there is no confidence in the students in doing their assignments. Optimism refers to an individual's hopes for the future. Hope is associated with efforts to achieve goals. The higher the expected goal the higher the value (Austin and Vancouver, 1996; Carver and Scheier, 1998; Higgins, 2006). Individuals who are pessimistic in achieving goals will stop trying or will not try to achieve a goal. Optimism and pessimism are related to beliefs and doubts about life (Scheier and Carver, 1992).

The approach to measuring optimism is seen through individual expectations of the future stemming from interpretations of the past (Peterson and Seligman, 1984). Individuals who consider failure to be permanent will meet with constant failure. Individuals who consider failure to be temporary are more likely to have a successful future. Optimism is the view of individuals who believe that good results will occur in the future (Carver, Scheier, and Segerstrom, 2010). This opinion is reinforced by Scheier, Carver, and Bridges (2001) who state that optimism is a generalized expectation or hope that is related to the entire space of an individual's life. Chang (1998) defines optimism as an individual's expectation of good things to happen, in other words an optimistic individual is an individual who expects good events to occur in his future life. Seligman (2006) states that optimism is an overall view, in the form of an individual's ability to see good things, think positively, and easily give meaning to himself. Shapiro (1998) defines optimism as a habit of positive thinking, a positive and realistic way of looking at a problem. Corsini (2002) suggests that optimism is a positive attitude which views that everything is the best thing. Lopez and Snyder (2003) argue that optimism is a positive expectation that things will go well. Then, according to Sheldon and King (2001) optimism is the tendency or attitude to look at work and interpret positive situations and events, this can be considered a strength and virtue of humans. Bryant and Cvengros's (2004) research consider optimism as a general expectation for the future regarding positive outcomes. Optimism reflects a positive assessment of the future and things that might happen (Karademas, 2005). Seligman (2006) argues that optimism consists of three dimensions, namely: 1) Permanence, describing an individual's view of an event that occurs whether it is permanent or not permanent. Pessimistic individuals see bad events that occur as a thing that is permanent. Pessimistic individuals believe that the causes of bad events that happen to them are permanent and are always present affecting their lives. Optimistic individuals believe that the causes of bad events are temporary and pleasant events are considered as something that is always permanent. 2) Pervasiveness, is a matter of space that is specific space and universal space. Optimistic individuals see that good things are universal and bad events are specific. Individuals who are pessimistic, give up on everything when failure befalls one thing. Optimistic individuals may have weaknesses in one part of life, but have advantages in other parts (Seligman, 2006). 3) Personalization, namely how individuals see the source of the problem, from within themselves (internal) or from outside themselves (external). People who are pessimistic when experiencing a bad event will blame themselves as the cause of the event and when experiencing a pleasant event will consider the external factors that cause it. People who are optimistic when experiencing a pleasant event will state that the factors within themselves that are the cause and when experiencing bad events will state that factors outside themselves are the cause.

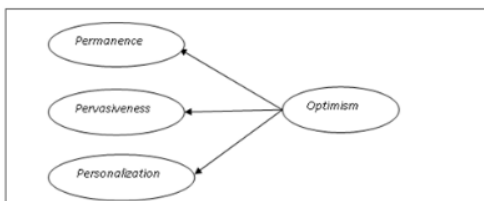


Figure 1. Conceptual Model of Optimism

Based on Figure 1 above, the hypotheses proposed in this study are: 1) An optimism scale measurement model that is fit with empirical data is formed. 2) The dimensions of permanence, pervasiveness, and personalization are able to form optimism variables. One approach that can be used in testing the construct of a measuring instrument is Confirmatory Factor Analysis (CFA). Confirmatory Factor Analysis (CFA) is one of the main approaches in factor analysis. It can be used to test the dimensions of a construct. This test is used to measure the model (model measurement) so that it can describe the dimensions in reflecting latent variables, namely optimism by looking at the loading factor of each dimension that forms a construct. Confirmatory Factor Analysis (CFA) is also used to test the construct validity and construct reliability of the indicators (items) forming latent constructs (Latan, 2012). Confirmatory Factor Analysis (CFA) used in this study is the second order Confirmatory Factor Analysis (2nd Order CFA), a measurement model that consists of two levels. The first level of analysis is carried out from the dimensions to the indicators and the second analysis is carried out from the latent variable to its dimensions (Latan, 2012). Based on the description above, the formulation of the problems in this study are: 1) Is the optimism scale valid and reliable?, 2) Are the dimensions of permanence, pervasiveness, and personalization able to form optimism variables? The purpose of this study is to test the validity and reliability of the optimism scale construct and examine the dimensions and indicators that can form optimism variables.

METHODS

Population, Sampling and Sampling Technique: The population in this study were all students at "X" University in Yogyakarta. The sample in this study were 60 students of "X" University in Yogyakarta. The sampling technique in this study uses simple random sampling technique.

Data Collection Technique: Optimism in this study was measured using an optimism scale with a Likert scaling model. The scale of this study was prepared by the researcher by referring to the dimensions of optimism proposed by Seligman (2006) which consists of permanence, personalization and pervasiveness. Example of items on the dimension of permanence are "I am sure that the bad events that I experienced can still be changed by effort and prayer" and "I still help my friends even if they are not rewarded". Meanwhile, the examples of items on the dimension of personalization are "the cause of my misfortune all this time is myself" and "I get good grades by chance". The samples items on the pervasiveness dimension are "I feel able to speak in public so that it makes it easy for me to achieve my goals" and "I have never managed to finish the job well". Blueprints that are used as a reference in compiling optimism scale can be seen in table 1.

Construct Validity and Reliability: To test the construct validity and construct reliability, this study uses the outer model testing through the smartPLS 3.2.8 program. The construct validity test consists of convergent and discriminant validity tests. Convergent validity can be seen from the loading factor and the Average Variance Extracted (AVE) value of > 0.5 (Jogiyanto, 2011). According to Hair, Black, Babin, and Anderson (2014) the higher the loading factor score, the more important the role of loading will be in interpreting the factor matrix.

Table 1. The blue print of optimism scale

Dimension	Indicator	Item number		Σ
		Favorable	Unfavorable	
Permanence	The belief that good things are permanent and bad things are temporary	1,7,13,19	4,10,16,22	8
Pervasiveness	Explain specifically when faced with a bad problem and explain globally when faced with something good	2,8,14,20	5,11,17,23	8
Personalization	The belief that failure comes from external factors and success comes from within	3,9,15,21	6,12,18,24	8
Total		12	12	24

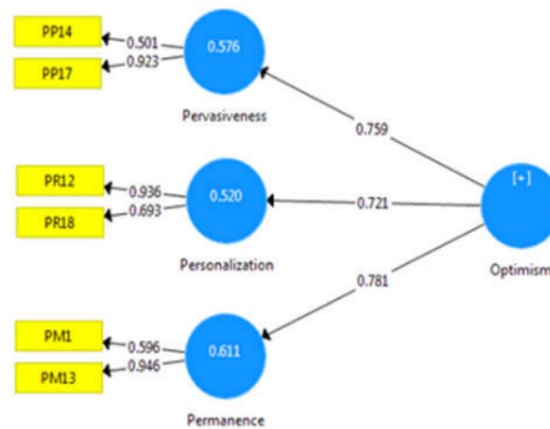


Figure 2. Output and outer model of optimisme scale

Table 2. Loading factor value (variable-dimension)

Dimension	Loading Factor	Explanation
Pervasiveness	0.759	Valid
Personalization	0.721	Valid
Permanence	0.781	Valid

Table 3. Loading factor value (dimension-item)

Item	Loading Factor	Explanation
PP 14	0.501	Valid
PP 17	0.923	Valid
PR 12	0.936	Valid
PR 18	0.693	Valid
PM 1	0.596	Valid
PM 13	0.946	Valid

Table 4. Value average variance extracted (AVE)

Dimension	Nilai AVE	Explanation
Permanence	0.625	Valid
Personalization	0.678	Valid
Pervasiveness	0.551	Valid

Table 5. AVE root value of optimism

Dimension	Permanence	Pervasiveness	Personalization
Permanence	0.791	0.498	0.411
Pervasiveness	0.498	0.742	0.353
Personalization	0.411	0.353	0.824

Table 6. Composite reliability and Cronbach alpha value of optimism variable

Variable	Composite Reliability	Cronbach Alpha	Explanation
Optimism	0.800	0.625	Reliable

A loading factor and Average Variance Extracted (AVE) value of > 0.5 are considered significant (Jogiyanto, 2011). While discriminant validity can be seen from comparing the roots of Average Variance Extracted (AVE) between dimensions in which it must be higher than the correlation with other dimensions (Jogiyanto, 2011). The construct reliability test is performed to show the internal consistency of the measuring instrument, by looking at the value of composite reliability and Cronbach alpha with a higher value. It will show the consistency value of each item in measuring latent variables. According to Hair, Black, Babin, and Anderson (2014) the expected composite reliability and Cronbach alpha values are > 0.7 but 0.6 values are still acceptable (Jogiyanto, 2011).

Data Analysis: The data in this study were analyzed using the outer model with the CFA 2nd Order approach through the SmartPLS 3.2.8 program. According to Abdillah and Hartono (2015) Partial Least Square (PLS) is a variant-based Structural Equation Model (SEM) that can simultaneously test measurement models to test the construct validity and reliability.

RESULTS

The result of the optimism scale model using the smart PLS 3.2.8 program can be seen in Figure 2.

Construct Validity Test Result

Convergent Validity: Convergent validity test is done by testing the outer model which is seen from the value of the loading factor and Average Variance Extracted (AVE). This test is done by looking at the loading factor value of > 0.5 and Average Variance Extracted (AVE) of > 0.5 . Based on the data analysis, it was found that the loading factor values from variables to dimensions and from dimensions to indicators are > 0.5 . Loading factor weights of 0.5 or more are considered to have validation that is strong enough to explain latent constructs (Hair, Black, Babin, and Anderson, 2014). The results of convergent validity testing can be seen in table 2 and table 3. Furthermore, the results of the convergent validity test show the Average Variance Extracted (AVE) value of > 0.5 . The Average Variance Extracted (AVE) value of the optimism variable is 0.571 and the Average Variance Extracted (AVE) value of each dimension can be seen in table 4.

Discriminant Validity: The results of discriminant validity test shows that the root value of Average Variance Extracted (AVE) in each dimension is higher than the value of the Average Variance Extracted (AVE) root in other dimensions, so that the discriminant validity criteria are met. The root value of the Average Variance Extracted (AVE) optimism variable can be seen in Table 5.

Construct Reliability Test: Construct reliability testing is done by testing the outer model which is seen from the value of composite reliability and Cronbach alpha of > 0.6 which means that the scale in this study is reliable. The composite reliability and Cronbach alpha values can be seen in Table 6. The results of the construct reliability test in table 6 shows that the optimism scale has good reliability and it means that the dimension which measures the optimism variable meets the unidimensional criteria (Hair, Hult, Ringle and Sarstedt, 2014). This is indicated by the composite reliability value of 0.800 and Cronbach alpha value of 0.625.

The analysis of research data using the outer model testing shows that the measurement model can be accepted, because all dimensions are able to reflect the variables formed.

DISCUSSION

Based on the results of the analysis of construct validity and construct reliability, the dimensions and indicators that make up the optimism variable are declared valid and reliable. This shows that all dimensions and existing indicators are able to reflect and shape optimism variables. The most dominant dimension which is able to reflect optimism is permanence with a loading factor of 0.781. The dimension of permanence is illustrated by the belief in students that good things are permanent and bad things are temporary. This is supported by valid and reliable indicators that show that students believe that bad events experienced can be changed with effort and prayer, and students still help friends even though they do not get reward. The weakest dimension and which can reflect optimism is personalization with a loading factor value of 0.721. The dimension of personalization is illustrated by the students' belief that failure comes from external factors and success comes from within. Valid and reliable indicators that show the cause of student misfortune so far are themselves, and perception that they get good grades by chance.

The results of previous studies that examined the optimism variables and are relevant to this study is the research of Hayley and Holt (2015) which proves that the optimism scale meets the reliability requirements with a Cronbach alpha value of 0.540. Other research results that also explain the validity and reliability are the studies of Van De Ven, Crawford, Kippax, Knox and Prestage (2000) proving that the optimism scale has met the reliability requirements with Cronbach alpha 0.570, Camp (2016) with Cronbach alpha 0.620, Juntunen and Wettersten (2006) with Cronbach alpha 0.560, Giltay, Geleijnse, Zitman, Buijsse, and Kromhout (2007) with Cronbach alpha 0.610. These results, if compared with the results of this study, shows that the optimism scale of the results of this study is also appropriate to be used or applied in expressing optimism in students, because the analysis results show that this optimism scale has better and reliable validity and reliability with composite reliability of 0.800 and Cronbach alpha of 0.625. The results of this study are expected to provide an overview of the validity and reliability of the optimism scale, especially in expressing optimism to students, so that it can become a reference in further research related to optimism.

Conclusion

Based on the results of the analysis and discussion it can be concluded that: 1) the optimism scale meets the validity and reliability. 2) all dimensions and indicators can form optimism variables, namely permanence, pervasiveness, and personalization. The dimension that has the most dominant influence on optimism is permanence and the weakest dimension that reflects optimism is personalization. In this study, an optimism scale measurement model was formed that is in accordance with empirical data obtained from the subject.

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