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Construct Validity of Emotional Intelligence Scale for Sports Students

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Abstract

Emotional intelligence measurement is a potentially important construct and has become one of the most exciting issues in psychological research. This study aimed to test the construct validity of the emotional intelligence scale developed for sports students. The research employed a quantitative approach using a survey method. Participants involved in this study were 280 active sports students. Data were collected through an emotional intelligence scale and analyzed using factor analysis, namely exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) methods on Structural Equation Modeling (SEM) using AMOS 22 software. The fit index test model was based on three categories: absolute fit indices, incremental fit indices, and parsimony fit indices. It indicates that the scale met the valid and reliable criteria for measuring the emotional intelligence of sports students. There were 27 question items declared valid, meaning that all of these items measured the five components, including 14 indicators constructed according to the Bar-on conceptual model.

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INTRODUCTION

Emotional intelligence is the ability to control, understand, and regulate the moods of oneself and others and isolate feelings from thoughts to place oneself in others (Ioannidou & Konstantikaki, 2008). It is also defined as the ability to understand and manage self-emotions and the emotions of others when dealing with oneself (intrapersonal relationships) and others (interpersonal relationships) (Triatna, C., & Kharisma, (2008). These abilities play an important role in the overall quality of a person's personal and professional life.

Every decision and most behaviors are driven by the desire to experience or avoid certain emotions. This ability is not innate (such as talent or personality); it is the ability to manage feelings in such a way that they can be expressed appropriately and effectively in making better choices and achieving goals (Brackett et al., 2011; Goleman, 2005). High social and emotional skills positively impact educational attainment and assist in professional development to achieve higher degrees of achievement, career success, leadership, personal social well-being, and happiness in life (Coskun et al., 2017b). For this reason, these emotional skills are important to increase the ability to focus on a goal, become a strong motivator within yourself, and increase self-confidence for a happier outlook on life.

Emotional intelligence is a potentially important construct in psychological research because implementing cognitive thinking in the social field surely requires understanding and managing the emotions of oneself and others (Triatna, C., & Kharisma, 2008). It is undeniable that emotional skills are not permanent, but according to the conditions they experience (Goleman, 2005). Besides, it is also influenced by different ideas, so the measurements in explaining emotional skills will differ (Davies et al., 2010). Many studies have been developed related to measuring emotional skills, such as the research of Ibrahim (2012) that focused on analyzing intellectually gifted students using explanatory factor analysis (EFA). Research by Wulandari (2013) involved natural disaster volunteers using EFA and CFA analysis with the help of Lisrel software. Another study aimed to revise the existing scale in testing the stability of the factor structure (Coskun et al., 2017b; Davies et al., 2010), such as revising the University Sains Malaysia (USM) Emotional Quotient Inventory (USMEQ-i) conducted by Arifin (2012) which was initially developed as a medical student selection tool to become a measuring tool among applicants for a medical degree program at USM using the CFA model.

However, according to the author's concern, measuring emotional intelligence in student population groups, especially in sports students, is still limited, especially for those testing construct validity using EFA and CFA in a structural equation model. Construct validity is defined as a way of measuring how far the items are able to measure what they want to measure by the previously defined concept and to test if a testing or non-testing instrument can do a measure based on the theoretical construction used as the basis for preparing instrument (Iskandar, 2017). Meanwhile, this measurement is useful for knowing the student's condition in the lecture environment and even the impact of emotional skills. In addition, educators are able to develop emotional skills so that students can be better prepared to live a better and happier life (Ioannidou, F & Konstantikaki, 2008).

The main problem in developing the scale is creating items that can be assessed according to objective criteria and comprehensively cover the conceptual domain of emotional intelligence theory (Muhid et al., 2015). Furthermore, the preparation of items must be in line with the indicators being disclosed and examine whether the items contain high social desirability or not (Azwar, 2012). In addition, giving the wrong score on favorable and unfavorable items can also be caused by too many items, so administrative and alternative scoring procedures to create a logical response based on conceptual, psychometric, and empirical scale problems are not accurate (Muhid et al., 2015; Petrides et al., 2006). Therefore, a practical and efficient scale with the appropriate operational concepts is needed to create an accurate measuring tool to assess the construct.

Valid and reliable criteria are the main characteristics and capital that must be owned or carried out in every research process (Muhid et al., 2015). Therefore, this study tried to develop the instrument by modifying and investigating the validity and reliability of a new scale focused on the sports student population. The previous scale test involved students aged 16-18 years. The scale has been developed by adopting Bar-On R (2006) conceptual theory involving five main domains to build a comprehensive emotional intelligence, namely (1)

intrapersonal domain, including self-awareness, assertiveness, independence, self-esteem, and self-actualization indicators, (2) interpersonal domain including empathy, social responsibility, and social relations indicators, (3) stress management including resilience to bear stress and impulse control indicators, (4) adaptation including problem-solving, reality testing, and flexible attitude indicators, and (5) general mood including happiness and optimism indicators.

Based on these problems, this research conducted a validation study correctly questioning the unidimensional structure of the conceptual theory and determining the scale validity for use in the student population using the confirmatory factor analysis (CFA) method on Structural Equation Modeling (SEM) employing AMOS 22 software, so that the measuring instrument could be used as a basis in research or other development processes. The SEM technique tests the measuring instrument very well to evaluate the differential validity and reliability of a comprehensive population group instrument. Therefore, testing theory or practical application aims to simultaneously develop valid, reliable, and generalizable measurement instruments for a large and wide population (Raines-eudy & Raines-eudy, 2009). The development of this scale can increase the literature and produce some significant steps in another scale development.

METHODS

Participants

The participants of this study were university sports students in West Java. The selection and determination of participants were carried out in two stages using the purposive sampling technique. Only participants who met the inclusive criteria and specific considerations were selected (Campbell et al., 2020; Etikan & Bala, 2017; Singh & Masuku, 2018), including active sports students aged 19-24 years (Myear = 22.50; SDage = 3.24. This study involved 280 participants, consisting of 100 participants determined in the first stage and 180 participants determined in the second stage.

Instrument

The instrument used in this study was the emotional intelligence scale that had been developed. The development process was carried out through the following stages: (1) conducting a theoretical study to determine domains and indicators based on conceptual and operational definitions, (2) compiling questions by determining a scale rating score, and conducting a language pre-test (3) conducting qualitative evaluation carried out by several experts in related fields (expert judgment) and empirical evaluation, (4) reducing and assigning items to a complete scale (Abdurrahman & Suarti, 2016; Azwar, 2012). There were 68 items, consisting of 30 favorable statement items and 38 unfavorable statement items. The items were distributed into 15 indicators forming five constructs in the theoretical concept of emotional intelligence. Alternative answers of each statement of the emotional intelligence scale used a Likert scale model consisting of five alternative answer choices having a 1-5 score on positive items and 5-1 score on negative items, which consisted of strongly disagree, disagree, undecided, agree, strongly agree (Jebb et al., 2021; Joshi et al., 2015; Rungson Chomeya, 2010). The following is the lattice of the emotional intelligence scale instrument presented in Table 1.

Procedure

The developed emotional intelligence scale was given to students selected as respondents. Data collection was carried out in two stages. In the first stage, 100 students were involved as respondents to fill out the emotional intelligence scale. The first stage was called the initial validation stage in factor analysis. The data from the first stage were analyzed using the Exploratory Factor Analysis (EFA) method to analyze the items in the early stages by examining the KMO value. Meanwhile, in the second stage, which was the follow-up step from the first stage, 180 students were involved as respondents to fill in the developed emotional intelligence scale. The data from the second stage was analyzed using the Confirmatory Factor Analysis (CFA) method; it was aimed to analyze the emotional intelligence factor by adding up the item scores selected according to the indicators in the latent construct, which included intrapersonal, interpersonal, adaptability, stress management, and general mood. Participants who became respondents in both the first and second stages gave informed consent for the use of the data to be analyzed for research purposes.

Table 1. Emotional Intelligence Scale Blue Print

Dimension	Indicator	Sub-Indicator	Item		Total
			Favourable	Unfavourable	
Intrapersonal (ITA)	Self-awareness (AW)	Understand and recognize their own feelings	1, 22	31,45	4
	Assertiveness (AS)	Defend opinion, defend themselves, explain thoughts and feelings	-	32, 46, 58	3
	Independence (IN)	Not feeling dependent on others emotionally.	2, 12	33, 59	4
	Self-esteem (ES)	Enjoy and recognize strengths and weaknesses	13, 23	34, 47, 60	5
	Self-actualization (AC)	Feel happy with the achievements or realize their potentials	12, 23	48, 61	4
Interpersonal (ITE)	Empathy (EM)	Be aware of, understand and respect the feelings and thoughts of others	3, 25	35, 49	4
	Social Responsibility (SR)	Cooperative and helpful for community groups	4	36, 50, 62	4
	Social relations (RL)	Foster and maintain relationships with other people	15, 17	37, 51, 63	5
Adaptability (ADA)	Problem Solving (PS)	Identify problem and apply problem solving	5, 16,26	38, 52	5
	Reality testing (RT)	Assess the compatibility between what is experienced and what is objectively happening.	6, 27	39, 53, 64	5
	Flexibility (FL)	Adjust changes in situations and conditions	7, 28	40, 65	4
Stress Management (SM)	Stress endurance (SE)	Overcome stress or stressful situations actively and positively	8, 18, 29	41, 54, 66	6
	Impulse control (IC)	Resist or defend the desire to act	9, 19, 30	42, 55, 67	6
General Mood (GM)	Happiness (HP)	Enthusiastic and passionate in doing every activity	10, 20	43, 56	4
	Optimism (OP)	Unyielding, maintain a realistic positive attitude	11, 21	44, 57, 68	5
Total			30	38	68

Data Analysis

The measurement data were analyzed using factor analysis, an ideal method of test construction testing in administering items and directing their relationship to factor analysis (Kline, 2014). The analytical method used was Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) using Structural Equation Model (SEM) using AMOS 22 software (Arifin et al., 2012; Hidayat & Hambali, 2018; Iskandar, 2017; Kline, 2014; Willmer et al., 2019). This method provides better and more accurate results in measuring the validity and reliability of an instrument (Said et al., 2015). It aims to measure the extent to which the indicator measure is able to reflect its theoretical latent con

struct, thus providing confidence that the indicator measure taken from the sample describes the actual score in the population (Ghozali, 2017). The process of analyzing the CFA test on SEM consists of three main stages, namely (1) assessing the identification of the structural model by calculating the covariance and variance data compared to the number of parameters to be estimated (2) assessing the Goodness-of Fit criteria aimed of knowing how far the hypothesized model fits the sample data. If the model does not fit, then (a) detect the source of the cause in the model that can be seen from the feasibility of the parameter estimate, (b) the suitability of the standard error value (c) the signifi-

cance of the parameter estimate. (3) Conducting construct validity, including convergent validity with variance extracted (AVE) and construct reliability (CR) measurement models (Arifin et al., 2012; Coskun et al., 2017; Ghozali, 2017).

RESULT

1. Stage of Item Analysis

The respondents at this stage were 100 student respondents. The analysis criteria was continued when it met the assumption test by examining the KMO value with criteria > 0.5 and Bartlett's Test with a significance value obtained <0.05; it was aimed to determine the correlation between variables and ensure that the samples had met the requirements, so that the data can be further analysed (Ghozali, 2017; Henson & Roberts, 2006; Yong & Pearce, 2013). In addition, the value to be considered was MSA (Measure of Sampling Adequacy). The MSA value ranges from 0 to 1, if the MSA value is > 0.5, the variable can still be predicted and further analyzed (Gunarto, 2018). At this stage, the items were analyzed based on each construct. It was because the items had been compiled and developed based on the theoretical concepts studied, so the researchers wanted to maintain the items in their respective constructs. From the MSA value point of view, there were four items having MSA value < 0.50 on the intrapersonal construct, namely KD2, SAI, AD2, and AD4. Therefore, the items were not predictable and automatically not selected as the items to be analyzed in the next scale test and excluded from the construct. The results of the KMO and Bartlett's Test analysis are presented in Table 2.

Scale development is strongly influenced by the number of items. Items can represent or explain a construct, the more the number of items, the greater the chance of the construct of being assessed accurately. However, large numbers of items are sometimes counterproductive or multidimensional because they have many similarities with other items, thus using one or two items is enough to explain the conceptual construct model (Davies et al., 2014). Therefore, based on the results of the EFA test analysis in this study, only one to two items, that had the greatest MSA value, were taken for each indicator of each construct. It was conducted to maintain the value of one construct to be stable with the obtained number of indicator scores and to avoid the loss of the forming indicators of each construct. Items measuring a latent construct should be aggregated with a high proportion of variance. Therefore, the factor analysis process was administered only on items owning good values (not dropped). The results of the item selection process showed that from 68 statement items, 29 items were used for further analysis (See Attachment 1).

Table 2. Results of KMO and Bartlett's Test from the Five Emotional Intelligence Constructs

Constructs		ITA	ITE	ADA	SM	GM
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.67	0.67	0.74	0.80	0.75
Bartlett's Test of Sphericity	Approx. Chi-Square	608.8	271.7	407.5	345	215.4
	df	190	66	105	66	36
	Sig.	0.00	0.00	0.00	0.00	0.00

Note: ITA = Intrapersonal; ITE = Interpersonal; ADA = Adaptability; SM = Stress Management; GM = General Mood

2. Confirmatory Factor Analysis (CFA) Test

The next stage was analyzing the emotional intelligence factor by adding up the scores of the selected items according to the indicators on the latent construct, which included intrapersonal, interpersonal, adaptability, stress management, and general mood. The five latent constructs measured the emotional intelligence component. The results of the first analysis stage obtained 29 statement items declared eligible and fulfilled the valid item criteria. These items were then tested on 180 respondents. At this stage, testing the emotional intelligence measurement model aimed to construct a reliable and valid instrument (Iskandar, 2017; Said et al., 2015; Yee et al., 2010). The results of the initial analysis of the CFA test can be seen in Table 3.

Based on the initial results of the CFA test (Table 3), one indicator had a loading factor value on standardized estimates < 0.50, namely the Self-Awareness (AW) indicator on the intrapersonal construct. Therefore, this indicator was one of the indicators that were not included in the next analysis because it had a standardized estimates value of 0.389. In other words, there were 14 indicators that had standardized estimates values above 0.50. These indicators showed a standardized loading estimate value > 0.50, so it could be said that the items in the 14 emotional intelligence indicators had

met the valid criteria. However, from the model fit view, a significant chi-square value was obtained with p -values ≤ 0.05. It can be seen in Table 4, showing that in the initial model, the chi-square value was significant with p-values of 0.021. According to Ghozali, (2017) if the chi-square result is significant, the model is the same as the empirical data and rejected, it means that the model is not fit. A good model must have a not statistically significant chi-square value. Therefore, a modification on the model was carried out to decrease the chi-square value and increase the probability value. Modifications were made because it was suspected that the item indicates a relationship to one another (Iedliany et al., 2018). Therefore, the next modification indices (MI) could be administered by covariating the errors or residuals that had the highest value on the AMOS software output based on theory or logic, since without theory, the model were meaningless (Ghozali, 2017). Modifications were carried out once on the covariance between e3 and e9 so that they were correlated with each other. The results of the analysis of the modified model are presented in fig. 1.

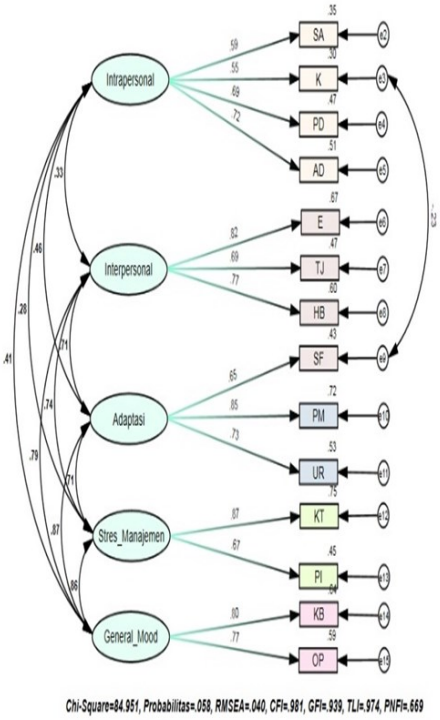

Fig.1 Result of Standardized Estimates Model of Intelegency Emosional Measurement Models

Table 3. Standardized Regression Weight Model

Indicator			Estimates	Indicator			Estimates
HP	<---	General_Mood	.801	AW	<---	Intrapersonal	.389
SE	<---	Stress_Manajemen	.869	IC	<---	Stress_Management	.670
OP	<---	General_Mood	.768	FL	<---	Adaptation	.648
PS	<---	Adaptation	.849	AS	<---	Intrapersonal	.585
RT	<---	Adaptation	.728	SR	<---	Interpersonal	.687
EM	<---	Interpersonal	.819	IN	<---	Intrapersonal	.554
RL	<---	Interpersonal	.772	ES	<---	Intrapersonal	.682
AC	<---	Intrapersonal	.719				

Table 4. Results of Goodness of Fit (GoF) of Emotional Intelligence Model

Criteria	Threshold Value	Initial Model	Final Model	Final Result
Absolut Fit Indices				
X^2-Chi square, Significance probability	p-values ≥ 0.05	0.021	0.058	Fit
CMIN/DF	≤ 2.00	1.380	1.287	Fit
GFI	> 0.90	0.933	0.939	Fit
RMSEA	≤ 0.08	0.046	0.040	Fit
Incremental Fit Indices				
CFI	> 0.90	0.975	0.981	Fit
TLI	> 0.90	0.965	0.974	Fit
Parsimony Fit Indices				
PNFI	> 0.90	0.674	0.669	Not Fit

Based on Table 4, the overall fit of the model on the emotional intelligence measurement model was acceptable and fit according to the empirical data. Furthermore, it could be evaluated separately by examining the significance of the loading indicator (Figure 1) and assessing the construct reliability and the variance extracted. Measurements of construct reliability (CR) and variance extracted (AVE) are indicators of convergent validity aimed to assess whether these indicators can adequately describe the construct or not. The construct reliability (CR) with a value of > 0.70 indicates a good value, while 0.60 - 0.70 value is acceptable if the factor validity in the model is good. Meanwhile, the value of variance extracted (AVE) ≥ 0.05 indicates a good convergence (Ghozali, 2017; Gunarto, 2018; Kusnendi, 2008). This value is used to measure the amount of variance that can be captured by the construct compared to the variance caused by measurement errors. A summary of the reliability and variance extracted measurements based on the constructs of the emotional intelligence model is presented in Table 5.

Table 5. Summary of Reliability and Variance Extracted Measurements

Construct	$\sum\lambda$	$\sum\lambda^2$	$\sum$Errorvar*	CR	AVE
Intrapersonal	2.54	1.63	2.37	0.73	0.41
Interpersonal	2.23	1.68	1.33	0.78	0.55
Adaptation	2.28	1.74	1.26	0.81	0.58
Stress Management	1.54	1.20	0.79	0.75	0.61
General Mood	1.57	1.23	0.76	0.76	0.61

DISCUSSION

This study aimed to test the construct validity of the emotional intelligence scale developed for sports students. In the item selection stage, the study identified limitations of 68 items. A large number of items are sometimes counterproductive or multidimensional because they have many similarities with other items, so using one or two items is enough to explain the conceptual construct model (Davies et al., 2014). Therefore, stage one was developed by extracting one to two items on each indicator from each construct that had the most prominent MSA value. It was conducted to keep the value of one construct stable with the number of indicator scores obtained and to avoid the loss of the forming indicators of each construct that had been compiled and developed based on the theoretical concepts studied so that the items that were in line with the construct structure were maintained in accordance with the Bar-on conceptual model (Ba-on R, 2006; Davies, Lane, Devonport, & Scott, 2014; Lane et al., 2009). In addition, item cross-loading can hinder theoretical understanding and tend to result in model specification problems (Pichardo et al., 2014). The analysis obtained 29 items; each indicator had two items except social responsibility. The social responsibility indicator had four items, but three of the four did not have relative independence. One of the items was "I ask for payment when a friend asks for help." According to Stein S. J. & Book (2000), social responsibility is the ability to be a community member who can work together and benefit community groups. The item appeared to be related to the ability to be a useful person, but the item did not show emotion externally in society; hence the measurement process on this indicator did not occur.

The scale was then retested to 180 different respondents for CFA analysis. This method is designed to test whether a theoretical construct is multidimensional or undimensional, to test whether these indicators are indicators that measure one or more latent constructs. In addition, it is aimed to analyze the validity and reliability of the construct measurement model that cannot be observed directly (Kusnendi, 2008). The first analysis on 29 items was carried out by adding the item scores on each indicator. One indicator with a value < 0.50, self-awareness (0.389) on the intrapersonal dimension, was obtained. This dimension is related to our ability to know and control ourselves, while the self-awareness indicator is the ability to recognize feelings and understand the causes of our feelings and our influence on others (Stein, S. J., & Book, 2000). One selected item was "when angry, I immediately realize it." Although it appeared to be related to the ability to understand one's own feelings, the item did not show emotion externally and did not show influence on others; thus, the expression of emotion could not be identified. Emotion refers to a biological and psychological state that drives individuals to respond or behave (Goleman, 2005; Triatna, C., & Kharisma, 2008).

Based on the valid criteria in the CFA analysis, the minimum standardized loading estimate for early-stage research is > 0.50 or, more ideally,> 0.07 (Ghozali, 2017). The results can be seen in Table 3. The reference

made the self-awareness indicator drop out of the model. Although self-awareness indicators were issued on intrapersonal constructs, there were still indicators representing a forming construct, namely assertiveness, independence, self-esteem, and self-actualization, which were interrelated in the ability to control one's own feelings. Furthermore, the analysis was carried out on fourteen indicators containing 27 valid statement items. It obtained a chi-square value of 92,482 with p-values of 0.021. A good model must have a statistically insignificant chi-square value; hence model modification was required. Basically, a small or insignificant chi -square value is strongly influenced by sample size and often results in statistically significant differences, especially in large samples, even though it looks good when using other indices; thus, it is difficult to fulfill (Ghozali, 2017; Gunarto, 2018). Before any modifications were made, this analysis had to go through a model identification assessment. Model identification focuses on seeing the unique set of parameters and whether it is consistent with the data. If there is a unique solution from the structural parameter values at this stage, the model is said to be identified. Therefore, the parameters can be estimated, and the model can be tested. According to Ghozali (2017), the model that can be analyzed is the overidentified model, with the number of estimated parameters smaller than the number of variance and covariance data to produce positive degrees of freedom and allow the model to be rejected. This emotional intelligence model was identified with the overidentified category so that the model could be identified. In addition, the distribution of data estimated with the maximum likelihood on the observed variables had to meet the normality of the data. In AMOS software, it can be seen from the normalization estimation of skew and kurtosis. Normality assumption is stated if the critical ratio value (C.R.) ± 2.58 at a significance level of 1%, thus it is suspected that there is an assumption of error if the critical ratio value (C.R.) > 5.0 (Arifin et al., 2012). The output results of the multivariate normality assumption were not met, so the bootstrap technique was used. The recommended sample size was 170; thus, the analysis was carried out on 170 student samples. The value of the chi-square distribution with a 500 bootstrap sample was 88.246 with a probability of 0.398; thus, it was not significant, according to Bollen Stine, or the model was good. The mean chi-square value showed that the clustered value at the center of the normal multivariate was 88, and the distribution of chi-square values was normal because there were several comparable values above and below 88 (Ghozali, 2017).

The modification indices (MI) stage is carried out by covariate errors or residuals based on theory or logic; without theory, the model becomes meaningless (Ghozali, 2017). It is conducted based on the similarities in the items, and usually, the item indicates a relationship with each other (Iedliany et al., 2018). Modifications were made by covariate the measurement error between e3 and e9. The covariance was shown in the independence and flexible attitude indicators. The two indicators were on different dimensions. For example, one of the items stated, "(K1) I can complete various coursework independently" and "(SF1) I am easy to adapt to new conditions". The meaning of the item indicates that a person can manage problems independently and positively. This is in line with emotion dimensions; according to Mayer and Salovey (2011), the management of emotion use facilitates cognitive activities, such as reasoning, problem-solving, and interpersonal communication. Meanwhile, according to Goleman (2005), the definition of the self-regulation dimension underlies both indicators where self-regulation is related to appropriately handling feelings, being aware of what is behind their feelings, and finding ways to deal with fear and anxiety, anger, and sadness.

After the model was modified, the chi-square value was 84,951 with p-values of 0.058 and was by the assumptions. In addition to the chi-square and p-values, a value did not meet the specified assumptions, namely PNFI (> 0.90). This PNFI is part of the parsimony fit indices category. This category makes adjustments to the fit measurement so that it can compare models with different coefficients. Meanwhile, according to Ghozali (2017), this measure relates the goodness of the fit model with a number of estimated coefficients needed to achieve the fit level. The aim is to diagnose whether the fit model has been achieved with 'overfitting' data with multiple coefficients. Research that measured parsimony fit indices using PNFI obtained a value of 0.699. This measure aims to compare models with different degrees of freedom; if the two models are compared with a difference of 0.60 to 0.90, it shows a significant difference. The higher the PNFI value, the better. Therefore, the fit model criteria on the emotional

intelligence model based on three categories were considered to be in the good category of the goodness of fit (see Table 4) and feasible based on the criteria determined by goodness of fit. (Gunarto, 2018).

After the model was considered feasible, it was evaluated by examining the significance of the loading indicator. Convergent validity value > 0.50 – 0.60 is still acceptable for early-stage research, while the loading factor value > 0.70 is considered to have good validity. Viewed from the results of standardized loading estimates (Figure 1), in general, the loading factor on the indicator was statistically significant, showing a value > 0.60, while the independence and assertive attitude indicators showed a loading factor value of > 0.50. For early-stage research, convergent validity was acceptable and considered good. Furthermore, each construct's model's reliability was assessed through construct reliability (C.R.) and variance extracted (AVE). Reliability is a measure of the internal consistency indicator of a construct. It should be noted that reliability does not guarantee validity. Validity measures the extent to which an indicator accurately measures what it intends to measure. Another reliability measure is the variance extracted to complement the construct reliability measure. The recommended number for the variance extracted value is ≥ 0.50. Table 5 shows that all constructs have a C.R. value of > 0.70; thus, the validity of each construct is considered good. High reliability provides confidence that all indicators are consistent with the measurement. Generally accepted level of reliability ≥ 0.70. Meanwhile, in the AVE value, one intrapersonal construct shows a value of ≤ 0.50, so this indicator only measures the amount of variance that the construct can capture by 40%. According to Ghozali (2017), This was presumably because, in the intrapersonal construct, two indicators had a small standardized loading factor value of no more than > 0.6, so it could reduce the reliability of the construct.

These findings strengthen the roadmap of previous research exploring the validity of the emotional intelligence scale conducted by Ibrahim (2012) focused on the process of analyzing intellectually gifted students and only used exploratory factor analysis (EFA). Besides that, Wulandari (2013) involved natural disaster volunteers using EFA and CFA analysis employing Lisrel software. In addition, many studies have revised the scale of several experts (Arifin et al., 2012; Davies et al., 2014; Hambali et al., 2020, 2021; Hidayat & Hambali, 2019; Lane et al., 2009; Ng et al., 2008). Meanwhile, in general, emotional intelligence measuring tools developed in Indonesia on student samples with valid construct structures have not been found; hence the purpose of this study was to determine the construct validity of the emotional intelligence measurement model using a structural equation model (SEM) with the help of AMOS 22 software.

Construct validity provides confidence that the indicator measure taken represents the actual score in the population (Ghozali, 2017). In addition, it tests the extent to which a test or non-test instrument can conduct a measure based on the theoretical construction used as the basis for the instrument's preparation (Iskandar, 2017). The short version of the emotional intelligence scale with the college student sample has become a reasonable alternative to the full version (reliability and validity). However, other studies should confirm these findings and generalize them to other fields (Davies et al., 2014). The results of this study indicate differences between the proposed model and several other scales (Ibrahim, 2012; Wulandari, 2013; Arifin et al., 2012). The data reflect the structure of the 27 items on five dimensions (intrapersonal, interpersonal, adaptability, stress management, and general mood) which are conceptually and theoretically supported to the same extent as the factors from the full version (Bar -On R., 2006). The model fit index of 27 items with a college student sample showed a better model.

CONCLUSION

Based on the results of research using the EFA and CFA analysis, it concludes that the emotional intelligence scale with a shorter version on the student sample has become a reasonable alternative to the theoretically conceptual complete version (Bar-On R., 2006). This model has good internal consistency. It is indicated by acquiring a good model size fit index and acceptable convergent validity. This scale can evaluate the impact of various activities and monitor student emotional development. In addition, it can be used to investigate various relationships between emotional intelligence and other variables in future studies.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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