Finding a suitable model for measuring student engagement of high school students in an Indonesian language subject

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Abstract

This study looks at the model fit and the validity and reliability of the student engagement measurement tool for high school students learning Indonesian. This study uses a quantitative approach. The population of this research is high school students in Bandung and its surroundings aged 15-18 years in class X-XII who take Indonesian subjects. The sampling technique used in this study used a non-probability sampling technique. In this study, the number of samples used in the validity and reliability test was 200 high school students in Bandung and its surroundings. The variables in this study used student engagement in high school students in Bandung. The student engagement used is behavioral engagement, emotional engagement, behavioral disaffection, and emotional disaffection. Based on the analysis of this research model fit, it follows the CFA analysis requirements. The student engagement scale has a validity of 0.5 and has 24 valid items with the reliability of each dimension, namely behavioral engagement =0.89, behavioral disaffection =0.897, emotional engagement =0.918, and emotional disaffection =0.927.

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INTRODUCTION

Student engagement is considered a dynamic construct centered on student motivation (Skinner et al., 2009). Student engagement is an outward manifestation of the combined effect of home context, school context, and self-perception on students' emotional regulation and behavioral engagement in classroom learning (Appleton et al., 2008; Finn, 1989; Fredricks et al., 2004; Skinner et al., 2009). According to (Kaensige & Yohansa, 2018) student involvement is students' contributions to the class, obedience to class rules, focus during learning, and listening to the instructions given by the teacher well. The manifestation of motivation can be seen through student engagement in learning (Wigfield et al., 2015). According to Appelton and Fredricks, student engagement combines several research areas, including motivation, ownership, and academic engagement, into a comprehensive model (Skinner et al., 2009). This multidimensional construct consists of observable and internal indicators of student learning (Appleton et al., 2008). *Observable indicators* are behaviors usually considered indicators of classroom learning, such as participation, active listening, and academic effort. Internal indicators are emotional states which are usually also considered indicators of learning in the

classroom. These emotions include interest in learning, pleasure, and excitement (González et al., 2015; Mustika & Kusdiyati, 2015; Skinner et al., 2008). However, behavioral and emotional engagement are generally identified as central constructs of student engagement and are most commonly defined across engagement theory (Finn, 1989; Fredricks et al., 2004; Lloyd, 2014; Skinner et al., 2009; Yazzie-Mintz, 2010). A study shows a significant relationship between school well-being and student engagement (Hidayatishafia & Rositawati, 2017). Meanwhile, behaviors that show disaffection are passive, not paying attention, and less effort (Skinner et al., 2008). This behavior is often associated with frustration, hopelessness, resignation, rejection, sadness, and apathy (González et al., 2015).

There has been a lot of research conducted related to student engagement. One of them is found in the research of (Sa'adah & Ariati, 2020). Which discusses the student engagement of high school students in mathematics subjects. In this study, high school student's academic achievement in mathematics was influenced by their student engagement. The higher the student engagement is, the higher the academic achievement they can reach (Gunuc, 2014; Sa'adah & Ariati, 2020; Utami & Sulisworo, 2015). Dogan (2015) also states that academic motivation and cognitive engagement, subdimensions of student engagement, predict academic performance. However, related to research on student engagement, a researcher has not found any research related to student engagement in Indonesian language subjects.

According to Hernawan (2004), the Indonesian language subject has benefits for students. Indonesian language subject has also been taught to students since elementary school (Hernawan, 2004). One of the goals of studying the Indonesian language subject is to improve intellectual abilities, emotional maturity, and social maturity (Hernawan, 2004). Within the scope of education, at every level, whether elementary (SD), junior high (SMP), high school (SMA), to university, there are subjects related to language, especially for elementary to middle school levels. Indonesian language subject is as important as other subjects such as Mathematics, Physics, Chemistry, Biology, Sociology, Economics, Geography or History. But, based on an online survey conducted by the researcher, the initial data showed that 75 out of 100 high school students stated that they were less enthusiastic and less concerned about Indonesian subjects than other subjects, especially those that are going to be tested in the final exam (UN). Several studies also state that high school students' engagement in the Indonesian language is in a low category (Juwita & Kusdiyati, 2015; Nofiyana & Barasandji, 2018).

Based on the survey in the field, the researchers found several student behaviors shown when learning Indonesian in class. These behaviors include being inactive in discussions, chatting with friends, not paying attention to the teacher while teaching, disturbing a friend next to him, falling asleep during an assignment session, not doing assignments as asked by the teacher, looking indifferent to the teacher who explains the lesson, and plays gadgets during the lesson. Apart from the observations, the researcher also interviewed Indonesian language

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teachers. 4 out of 6 teachers stated that the students were less enthusiastic about Indonesian language subjects than other subjects. The teacher also stated that students considered the Indonesian language subject insignificant.

High school students (SMA) with an age range of 15-19 years who are in the adolescent period, the school experience is considered not an opportunity to attain some achievements but an obstacle to maturity (Papalia et al., 2009). This obstacle to maturity can occur because of various problems that high school students face, such as emotional problems, behavior, and learning difficulties (Battin-Pearson et al., 2000). Other studies also state that there is a relationship between juvenile delinquency and a decrease in student involvement in school (Jeannefer & Garvin, 2017; Putri et al., 2019). This makes it difficult for high school students to be actively involved in learning activities in class, especially in Indonesian.

Through the initial data obtained, observations, and interviews with students and teachers, high school students are less able to be actively involved in Indonesian language subjects than in other subjects. In addition, the students considered the subject accessible, so they were less able to be actively involved in learning Indonesian in class. Based on this phenomenon, the researcher wants to develop a student engagement measurement tool for high school students in Indonesian language subjects. It is obtained that high school students tend to show disengagement behavior when participating in Indonesian language lessons in the classroom. This study aims to determine the validity and reliability of student engagement. The benefits of this research are measuring student engagement in high school students, especially in studying Indonesian language subjects.

METHOD

This study used a quantitative approach. The population of this research is high school students in Bandung and its surroundings aged 15-18 years in class X-XII who take Indonesian subjects. The sampling technique used in this study was a non-probability sampling technique. This technique is an approach to selecting respondents based on their comfort and willingness (Shaughnessy et al., 2012). In this study, the number of samples used in the validity and reliability test was 200 high school students in Bandung and its surroundings. The data was collected through the non-probability sampling technique.

Table 1. Number of items for each aspect of student engagement

Aspects	***Total Items***
behavioral engagement	5
behavioral disaffection	5
emotional engagement	5
emotional disaffection	12

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The operational definition of *student engagement* is the participation of students who are emotionally and behaviorally involved in Indonesian language subjects in class. Aspects of student engagement are Behavioral engagement, students' efforts to be actively involved (listening to the teacher, paying attention to the teacher, actively discussing) when studying in Indonesian language lessons. Behavioral disaffection is passivity and negative behaviors shown by students (annoying friends, chatting, not paying attention) in learning Indonesian in the classroom. Emotional engagement is students' positive emotional responses (happiness, excitement, interest) shown by students involved in learning Indonesian lessons in class. Emotional disaffection is a negative emotional response (being frustrated, annoyed, bored, unhappy) shown by students involved in learning Indonesian lessons in class. The number of items in this measuring tool is adapted through a student engagement measurement tool developed by Skinner in the journal *Engagement vs. Disaffection*. The adaptation stages of the student engagement measurement tool using TRAPD consist of translation, review, adjunction, pretesting, and documentation (Harkness, 2003). The translation is the stage where experts translate the measuring instrument. A review is a study carried out by an expert to assess the results of the translation of measuring instruments. Adjunction is a stage to assess the measuring instrument. Pretesting is the stage where the measuring instrument is tested on the respondent to determine whether or not the sentence has been understood. The last step is documentation which is collecting quantitative data to assist reporting. At the translation stage, the researcher translated the measuring instrument using *forward-backward translation*. After going through the translation stage, the researcher conducted a review and adjunction simultaneously by expert judgment. After getting the results from the review and adjunction stages, the researchers tested the measuring instrument on the respondents according to the high school students' criteria. In the documentation stage, the researcher attached the results of the measuring instrument testing in the form of quantitative results from the validity and reliability of the measuring instrument.

The measurement scale that the researcher used in the questionnaire was a Likert scale involving "always," "often," "sometimes," "rarely," and "never." Data was collected online through Google forms distributed through social media such as *WhatsApp, Instagram*, and other applications. The criteria for students who became respondents in this study were high school students aged 15-17 years who lived in Bandung.

Data analysis techniques for validity testing were carried out with *confirmatory factor analysis (CFA)* to test the construct validity (Brown, 2015). The reliability was tested using *Cronbach's Alpha* test to see internal consistency (Cohe et al., 2013) *Confirmatory analysis or CFA* and testing the reliability of the student engagement measurement tool using the statistical software Lisrel.

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RESULTS AND DISCUSSION

Tabel 2. Fit Model Statistic and Criteria

No.	*Statistic p-value*	Result	"fit" criteria	Description
		0.026	**>0.06**	**fit**
1.	RMSEA	0.04	<0.08	fit
2.	CFI	1.00	>0.9	fit
3.	IFI	1.00	≥0,9	fit
4.	NFI	1.00	>0.90	fit
5.	PNFI	0.19	0: not fit,the greater-the fitter	fit

The table above is a table of criteria for model fit for a measuring instrument using CFA (confirmatory factor analysis). Based on the validity results of the test using the CFA (confirmatory factor analysis) analysis technique, student engagement measurement tools for high school students in Indonesian language subject are as follows;

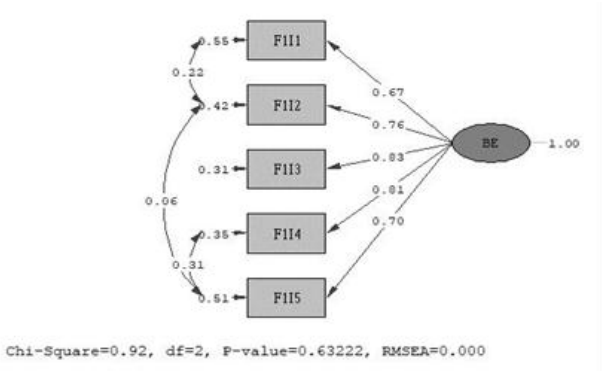

Figure 1. Confirmatory Model of Behavioral Engagement

Abbreviations and Acronyms

The extensions of standard abbreviations, such as UN, SI, MKS, CGS, sc, dc, and RMS, are not necessary to be described. However, it is crucial to give the extension for uncommon abbreviations or acronyms made by authors. For instance: OIDDE (Orientation, Identify, Discussion, Decision, and Engage in behavior) learning model can be used to train mastering solving problem skills. It is suggested not to use abbreviations or acronyms in the manuscript title unless unavoidable.

Based on the results of t-values as shown in Figure 1, the t-count value for each item is 0.67; 0.76; 0.93; 0.81 ; 0.70 in a row. These values are greater than the t-table at significance level = 0.05. Based on the results of the analysis above on the behavioral engagement dimension, RMSEA = 0 > 0.08, CFI = 1 > 0.9, NFI = 1> 0.9 (model fit). Based on these results, the value of 0, if the RMSEA is less than 0.05, means that the probability of the variable is above 5%, and it was a fit model. This means that the five items in this aspect meet the CFA

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requirements in the behavioral engagement dimension. They can be a measuring tool for high school students taking Indonesian language subjects.

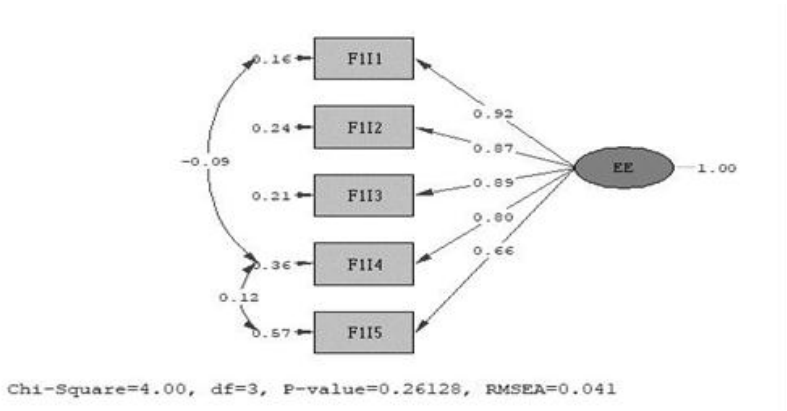

Figure 2. Confirmatory Model of Emotional Engagement

Furthermore, the results of the t-values in Figure 2, the t-count value for each item is 0.92; 0.87; 0.89; 0.80; 0.66 in a row. These values are greater than the t-table at significance level = 0.05. Based on the results of the above analysis on the dimensions of emotional engagement, the value of RMSEA = 0.041 < 0.08, CFI = 1 > 0.9, NFI = 1> 0.9 (model fit). Based on these results, the value is 0.041, which if the RMSEA is less than 0.05, the probability of the variable is above 5% and can be said to be a fit model. This means that in the emotional engagement dimension, the five items in this aspect meet the CFA requirements, so they can be used as a measuring tool for high school students taking Indonesian language subjects.

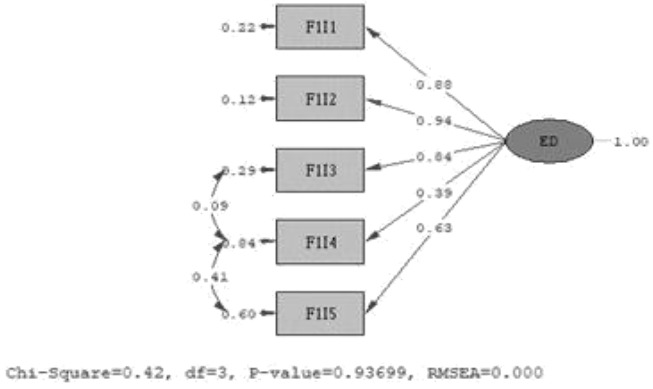

Figure 3. Confirmatory Model of Behavioral Disaffection

As shown in Figure 3, the t-count value for each item is 0.88; 0.94; 0.94; 0.39; 0.63 in a row. These values are greater than the t-table value at a significance level of = 0.05 with four items and 1 item below the t-table value at a significance level of = 0.05. Based on the results of the analysis above on the behavioral disaffection dimension, the RMSEA value = 0 > 0.08, CFI = 1 > 0.9, NFI = 1> 0.9 (model fit). Based on these results, the value of 0, if the RMSEA is less

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than 0.05, means that the variable's probability is above 5% and can be said to be a fit model. This means that in the behavioral disaffection dimension, four of the five items in that aspect meet the CFA requirements, so they can be used as a measuring tool for high school students in Indonesian lessons. However, one item must be discarded because it does not meet the CFA criteria.

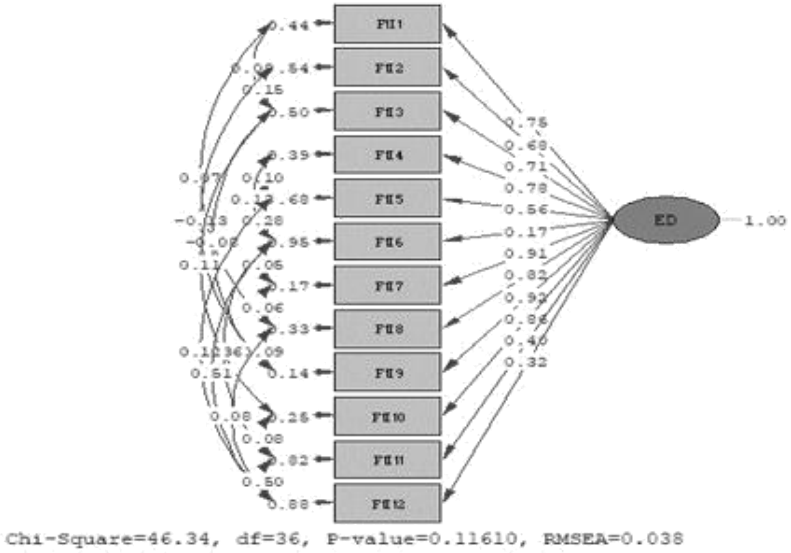

Figure 4. Confirmatory Model of Emotional Disaffection

Finally, the results of the t-values are shown in Figure 4 above. The t-count value for each item is 0.75; 0.68; 0.71; 0.78; 0.56; 0.17; 0.91; 0.82; 0.92; 0.86; 0.4; 0.32 in a row. Some of these values are greater, and some are lower than the t-table value at a significance level of = 0.05. Based on the results of the above analysis on the dimensions of emotional disaffection, the value of RMSEA = 0.038 > 0.08, CFI = 1 > 0.9, NFI = 1> 0.9 (model fit). Based on these results, the value of 0 if the RMSEA is less than 0.05 means that the probability of the variable is above 5% and can be said to be a fit model. This means that in the emotional disaffection dimension, the ten items from the twelve items in that aspect meet the CFA requirements, so they can be used as a measuring tool for high school students in Indonesian lessons. However, two items must be discarded because they do not meet the CFA criteria.

Based on the results of the confirmatory analysis factor (CFA) on the student engagement measuring instrument that was tested on respondents of high school students in Bandung, the following results were obtained;

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Table 3. Statistics and Model Fit Criteria

Statistics	**Behavio-ral Engagement result**	**Descrip-tion**	**Emotional Engagement result**	**Descrip-tion**	**Behavio-ral Disaffection result**	**Descrip-tion**	**Emotional Disaffection result**	**Descrip-tion**
Chi Square	0.92	FIT	4	FIT	0.42	FIT	46.34	FIT
P Value	0.63	FIT	0.26	FIT	0.93	FIT	0.12	FIT
RMSEA	0	FIT	0.041	FIT	0	FIT	0.038	FIT
CI RMSEA	0.11	FIT	0.13	FIT	0.5	FIT	0.067	FIT
CFI	1	FIT	1	FIT	1	FIT	1	FIT
NFI	1	FIT	1	FIT	1	FIT	1	FIT
GFI	1	FIT	0.99	FIT	1	FIT	0.96	FIT
AGFI	0.99	FIT	0.99	FIT	1	FIT	0.92	FIT

Based on the results obtained through the CFA (confirmatory factor analysis), the four dimensions of student engagement meet the FIT criteria. This is because the value of the RMSEA of the four dimensions is > 0.08, the CFI value is > 0.9, and the NFI value is > 0.9. Suppose the result of the RMSEA calculation is more than 0.08. In that case, each dimension in student engagement meets the model fit criteria following the validity obtained through CFA (confirmatory factor analysis) so that the items in the four dimensions of student engagement are declared valid.

Table 4. Statistics and Model Fit Criteria

No	**Variable**	**Aspects**	**Code**	**Item number**	**Validity Coeficient**	**Conclusion**
1.	Student Engagement	Behavior Engagement	BE1	1	0.67	Valid
			BE2	2	0.76	Valid
			BE3	3	0.83	Valid
			BE4	4	0.81	Valid
			BE5	5	0.7	Valid
		Behavior Disaffection	BD1	11	0.88	Valid
			BD1	12	0.94	Valid
			BD1	13	0.84	Valid
			BD1	14	0.39	invalid

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		BD1	15	0.63	Valid
	Emotional Engagement	EE1	6	0.92	Valid
		EE2	7	0.87	Valid
		EE3	8	0.89	Valid
		EE4	9	0.8	Valid
		EE5	10	0.66	Valid
	Emotional Disaffection	ED1	16	0.75	Valid
		ED2	17	0.68	Valid
		ED3	18	0.71	Valid
		ED4	19	0.78	Valid
		ED5	20	0.56	Valid
		ED6	21	0.17	invalid
		ED7	22	0.91	Valid
		ED8	23	0.82	Valid
		ED9	24	0.92	Valid
		ED10	25	0.86	Valid
		ED11	26	0.4	Valid
		ED12	27	0.32	invalid

Table 5. Statistics and Model Fit Criteria

No	Variable	Aspects	Number of items	Reliability Coeficient	Description
1	Student Engagement	Behavior Engagement	5	0.869	Reliable
		Behavior Disaffection	4	0.897	Reliable
		Emotional Engagement	5	0.918	Reliable
		Emotional Disaffection	10	0.927	Reliable

Based on the validity results obtained, the items contained in student engagement amounted to 24 of 27 items. This is said to be valid because almost all of the validity coefficients of the 24 items are > 0.4 as a determinant of the validity value. Based on the results obtained through the CFA (confirmatory factor analysis) for validity, the four aspects of the student engagement variable, namely behavioral engagement, emotional engagement, behavioral disaffection, and emotional disaffection, have a fit model according to the statistical criteria in the CFA. In addition, the validity coefficient of each item in table 1.4, only three

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items are invalid because the value is less than 0.5, namely items on the behavioral and emotional disaffection dimensions. Among the 27 items that can be used to measure student engagement of high school students in Bandung in studying Indonesian subjects, only 24 items can be used.

Based on table 1.4, the reliability of the four aspects of student engagement is reliable with a value of > 0.7 according to Cronbach's alpha criteria. Thus, the four aspects of the student engagement variable, five items of behavior engagement, four items of behavior disaffection, five items of emotional engagement, and ten items of emotional disaffection, can be used to collect data on high school students in Bandung in attending Indonesian language lessons.

Based on the results of validity and reliability that have been obtained, this study has several advantages and disadvantages. The advantage of this research is that the use of CFA analysis can effectively determine the value of the validity of a measuring instrument. In this case, the student engagement measuring instrument, the student engagement measuring instrument can be used for high school students even though three items are not valid but are still suitable for use in school settings. The weakness in this study is the lack of research respondents, so it is difficult to get the validity of all items. If there are more than 200 respondents added, hopefully, the validity and model fit of the student engagement measurement tool will be better.

CONCLUSION

Based on the discussion described, it is concluded that the dimensions of the student engagement variables used in high school students in Bandung, namely behavioral engagement, emotional engagement, behavioral disaffection, and emotional disaffection, meet the requirements of the CFA analysis. The model is “fit” with the following validity and reliability: five valid behavioral engagement items, five valid emotional engagement items, four valid behavioral disaffection items, and ten valid emotional disaffection items.Based on the discussion and conclusion above, among the 27 items student engagement items, only 24 items are valid, and for the reliability value, each behavioral engagement dimension has a reliability of 0.869, emotional engagement has a reliability value of 0.918, behavioral disaffection has a reliability value of 0.897, and emotional disaffection has a reliability value of 0.927. The researcher suggests that the number of respondents can be increased so that it can produce a high CFA value and will reduce removed items. If the research respondents are added, hopefully, all the items in this measuring instrument can be used, and no items are removed.

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