

# The Analysis Of School Well - Being Scale Psychometric Properties For Senior High School Students in Indonesia

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## ABSTRACT

Studies about school well - being have been widely conducted, but none discuss school well - being psychometric property in the Indonesian cultural context. The current study aimed to test the school well - being scale's validity and reliability and compare the school well - being measurement models using confirmatory factor analysis method. The school well - being scale used in this study was based on Konu and Rimpela (2002), consisting of four aspects, namely: having (15 items), loving (8 items), being (11 items), and health (9 items). The study involved 2,410 Senior High School students aged 15-18 years old as subjects. The scale was adapted based on Indonesian culture, and each question got a Very Good content validity (I-CVI = 1,000). The reliability test showed that all aspects got the reliability Alpha above 0.70 and total-item correlation above 0.30. The study also showed that the school well - being scale was valid because the construct validity, concurrent, rank scale, and construct reliability were categorized as very reliable. Besides that, the comparison between measurement models indicated that the accuracy of the model with four factors had the highest parameter score. The findings provided empirical proof that each of the four components of the school well - being construct was separated and independent.

**Keywords:** Psychometric characteristics, school well-being scale, students.

## INTRODUCTION

The study of positive psychology has been getting more popular during the latest years (Oishi, Graham, Kesebir, & Galinha, 2013). Instead of following the main areas of psychology, focusing on psychopathology and behavioral dysfunction, positive psychology focuses on improving the quality of human life. One of the popular topics in positive psychology is well - being and it has been learned systematically for more than four decades (Costa & McCrae, 1980; Ryff, 1989; García-Viniegras & González -Benítez, 2000; Casas, Rosich, & Alsinet, 2000; Casullo & Castro-Solano, 2002; Castro-Solano, 2009; Villar, et al., 2003; Cornejo & Lucero, 2005; Ballesteros, Medina, & Caycedo, 2006; Oramas

Vieyra, Santana López, & Vergara Barrenechea, 2006).

According to the literatures, well - being has two main constructs, namely subjective well - being and psychological well-being (García-Viniegras, 2005; Molina Sena & Meléndez Moral, 2006; Abott et al., 2006; Diaz et al., 2006; Castro-Solano, 2009; Gallardo Cuadra & Moyano-Diaz, 2012; Vivaldi & Barra, 2012; Rosa-Rodríguez & Quiñones Berrios, 2012; Burgos, 2012; García-Alandete, 2013; Medina-Calvillo, Gutiérrez-Hernández, & Padrós-Blázquez, 2013; Chitgian-Urza, Urza, & Vera-Villarroel, 2013; Vera-Villarroel, et al., 2013; Dominguez Lara, 2014; Barrantes-Brais & Ureña-Bonilla, 2015; Rosa-Rodríguez, et al., 2015; Valenzuela, 2015).

The first construct, subjective well - being, is defined as the personal appreciation of life satisfaction which contains affective components (Burgos, 2012) and focuses on the balance between positive and negative influences (Gallardo Cuadra & Moyano-Diaz, 2012). Studies about subjective well - being focus on individual personal happiness (Chitgian-Urúza et al., 2013), experiences, and life satisfaction. Rosa-Rodriguez et al. (2015) stated that subjective well - being refers to the evaluation of emotional, affective, and cognitive aspects. The second construction of psychological well - being more focuses on the process of achieving values that support the growth and development of individual potential that can lead to the improvement of life quality (Keyes, Shmotkin, & Ryff, 2002; Varelius, 2003; Ryff & Singer, 2008; Deci & Ryan, 2008). The main characteristic of psychological well - being is the development of individual potential, as explained in the earlier theory of humanist psychologists like Maslow, Rogers, Allport & Erikson. Furthermore, Deci and Ryan (2000) stated that psychological well - being refers to the development of personal ability and growth and the positive function is the main indicator.

The well - being concept is widely varied, according to some studies. A literature review conducted by Aulia et al. (2020) reported that well - being in the school context could be related to the term well - being (e.g., Opendakker & Van Damme, 2000; Pollard & Lee, 2003; Sarkova, et al., 2013; Statham & Chase, 2010; Miller, Connolly, & Maguire 2013; Soutter, O'Steen, & Gilmore, 2014; McLellan & Steward, 2015; Renshaw, Long, & Cook, 2015), student well - being (e.g., Engels, et al., 2004; Hascher, 2007, 2008; Long, et al., 2012; Tian, et al., 2013; Holfve-Sabel, 2014; Donat, et al., 2016), psychological well - being (e.g., Kern, et al., 2015), subjective well - being (e.g., Liu, et al., 2014; Tian, et al., 2015; Liu, et al., 2016), and school well-being (e.g., Konu & Rimpela, 2002; Konu & Koivisto, 2011; Pietarinen, Soini, & Pyhältö, 2014). Although there are some different terms explaining well -

being in the school context, the current study focused on the discussion of school well - being, considering that the study of school well - being is still limitedly reported in various research approaches.

Kanu and Rimpela (2002) developed a school well - being model by adopting the sociology theory, which combines welfare and well - being in the school identity so that welfare is correlated with teaching and education, learning, and achievement. Konu and Rimpela (2002) found that school well - being is a condition when the individual can fulfill their basic need to study at school that can be supported by four main aspects described below:

- School condition (Having): is the condition of the environment outside and inside the school. The good condition is characterized by the availability of workspace which is safe, comfortable, and not noisy, has ventilation and good temperature, etc. Other aspects of the school condition are related to the learning environment like curriculum, the number of students in a classroom, learning schedule, and punishment if necessary. The next aspects are services to students like the availability of lunch, health care, homeroom teachers, and Guidance and Counseling teachers.
- Social relationship (Loving): refers to the social learning environment, the relationship between students and teachers, and their schoolmates, group dynamics, the collaboration between school and families, decision making at school, and the atmosphere of all organizations at school.
- Means for self-fulfillment (Being): is the individual perception that they are an important part of their environment (school). In this case, the school should provide facilities to realize self-fulfillment. Each student should be treated equally. They should be involved in any relevant decision-making.

- Health status (Health): is the health condition which is indicated by the absence of disease or other interferences. Interferences refer to any disorders existing in the human body that can be identified by medical science. Health status here consists of physical and mental symptoms, flu, chronic diseases, and others.

Although Konu and Rimpela (2002) have formulated aspects of school well - being (having, loving, means being, and health), and they have been validated by Konu and Kolviato (2011), we should confirm the structure model of school well - being aspects.

Considering that the validity was tested by only involving students in Finland, the psychometric properties reported in the study could not be generalized to other students in other countries. Therefore, we should do another validity test involving students in Indonesian Senior High School through the content validity method. Besides that, the last test on the psychometric property of the school well - being scale was performed in 2011, so that it should be tested again.

The psychology scale should be renewed and reviewed every five years to maintain the accuracy of test scores. Therefore, we should perform a test to assess item discrimination power, construct validity, and reliability index by calculating the construct reliability value to ensure the theoretical construct of school well - being so that it can be operationalized on the school well - being scale which has been adapted to the context of high school students in Indonesia. Item discrimination power is analyzed to select items based on the total item correlation value (Hair, et al., 2014). Then, the construct validity is a statistical technique to measure the accuracy and fitness of an item and theoretical construct (Hair, et al., 2014). The construct validity is tested using the confirmatory factor analysis method. Hair, et al. (2014) stated that confirmatory factor analysis is used to measure how appropriate the theoretical model is with

the empirical data. Ruiz et al. (2010) mentioned one of the strengths of confirmatory factor analysis as it can confirm the construct proposed based on the explanatory theory that has been decided used as the reference based on the response from samples in the field.

Confirmatory factor analysis will produce a measurement model fitness index consisting of Chi-square, GFI (Goodness of Fit Index), CFI (comparative fit index), TLI (Tucker-Lewis Index), NFI (Normed Fit Index), RFI (Relative Fit Index), IFI (Incremental Fit Index), SRMR (Standardized root mean square residual), and RMSEA (Root Mean Square Error of Approximation fit), which are popular parameters for various study's purposes (Schumacker & Lomax, 2010; Hair, et al., 2014). The confirmatory factor analysis also reports the average variance extracted (AVE). Besides that, the scale has been revised based on Indonesian cultural context so that the rank scale and concurrent are also validated by correlating two different scales but measuring similar constructs. Hair, et al. (2014) mentioned that construct reliability is a part of confirmatory factor analysis developed by McDonald, which aims to see the consistency of items in discovering the construct of a test instrument.

The psychometric property of the school well - being scale is very important for developing the instruments. Thus, it has to be verified to prove the theoretical model proposed by Konu and Rimpela (2002). The current study aimed to analyze the psychometric property of the school well - being scale and compare the school well - being measurement model and confirmatory factor analysis by involving Indonesian Senior High School students as the research population.

## **METHOD**

### **Design and Subjects**

The study employed a quantitative approach focusing on psychometrics. Borsboom and Molenaar (2015) stated that psychometric is a discipline related to the construction of

psychological instruments like the construction of measurement models, designing the psychological instrument, formalization of psychology theory, and construction of analytic data model which aims to evaluate the characteristics of psychological measurement scale. The research subjects were 2,410 Senior High School students graded X-XII from

different programs spread all over Indonesia (Table 1). There were 758 males (31.452%) and 1.652 females (68,548%) aged between 15 and 18 years old ( $M = 16,632$ ;  $SD = 0,749$ ). The selection of the age was based on the purpose of the study, which was to provide a scale for teenagers (Senior High School students).

**Table 1.** Demographic Data of Subjects (N = 2.410)

| Demographic Data | M (SD)         | f    | %       | Demographic Data | f   | %       |
|------------------|----------------|------|---------|------------------|-----|---------|
| Ages             | 16,632 (0,749) |      |         | Races            |     |         |
| 15 y.o.          |                | 174  | 7,220%  | Aceh             | 33  | 1,369%  |
| 16 y.o.          |                | 762  | 31,618% | Batak            | 79  | 3,278%  |
| 17 y.o.          |                | 1252 | 51,950% | Betawi           | 158 | 6,556%  |
| 18 y.o.          |                | 222  | 9,212%  | Bugis            | 820 | 34,025% |
| Sexes            |                |      |         | Buton            | 82  | 3,402%  |
| Males            |                | 758  | 31,452% | Flores           | 47  | 1,950%  |
| Females          |                | 1652 | 68,548% | Gorontalo        | 60  | 2,490%  |
| Classes          |                |      |         | Jawa             | 140 | 5,809%  |
| X                |                | 936  | 38,838% | Madura           | 32  | 1,328%  |
| XI               |                | 1252 | 51,950% | Makassar         | 591 | 24,523% |
| XII              |                | 222  | 9,212%  | Manado           | 28  | 1,162%  |
| Programs         |                |      |         | Mandar           | 142 | 5,892%  |
| Languages        |                | 65   | 2,697%  | Sumatra          | 24  | 0,996%  |
| Sciences         |                | 1761 | 73,071% | Sunda            | 36  | 1,494%  |
| Social Sciences  |                | 584  | 24,232% | Toraja           | 138 | 5,726%  |

Note: M = Average age; SD = Standard deviation; f = Frequency; % = Percentage.

### Measurement

The study involved two measurement tools. The first was school well - being scale (Konu & Rimpela, 2002). Its validity level had been tested by Konu and Koivisto (2011). The scale contains 43 questions divided into four aspects, namely school condition (having) consisting of 15 question items, social relationship (loving) consisting of 8 question items, means for self-fulfillment (being) consisting of 11 question items, and Health status (health) consisting of 9 question items. In school well - being, the subject determines their fitness with the statements in the form of a Likert scale with four options (1-4). The second was the school-related well - being (ECW) scale invented, tested, and developed by Pyhältö, Soini, and

Pietarinen (2010). The scale consists of 12 question items related to three aspects, namely cynicism (5 items), anxiety (6 items), and thriving in school (1 item). In school-related well - being (ECW), the subjects determine their fitness with the statements using Likert scale with five points (from 1 = very disagree, to 5 = very agree) for items of cynicism and anxiety aspects and the Likert scale with 10 points for the items of thriving in school aspect. Both scales had been translated into Indonesian Languages before being trialed.

### Procedure

Data were collected by distributing scales to the subjects offline or online (G-form). The subjects were Senior High School students

studying in different areas all over Indonesia. The scales were filled in based on the subjects' willingness. Before filling in the scale, the subject got a detailed explanation of the study and filled in the informed consent. All subjects' identities were treated as anonymous, but because the data were used for research purposes, they were asked to submit their email addresses and WhatsApp numbers.

The school well - being scale was adapted following the procedure of measurement tool adaptation by Beaton et al. (2000), consisting of six stages as below:

1. The first step was to translate the Online Student Engagement measurement tool into the Indonesian language by two translators who had Excellent qualifications in English (minimum TOEFL score of 500 or IELTS score of 7.0), mastered the Indonesian language, and had a wide knowledge of Indonesian culture. Besides that, the first translator had not to be an expert in measurement tool construct but had a background in literature and culture area (non Psychology). While the second translator had to understand measurement tool construct and had a background in Psychology.
2. In the second step, the researchers synthesized the translation result by discussing it with both translators. The discussion should be deeper on items perceived differently by those two parties. The result of the synthesis was named Synthesis Translation.
3. Next, the synthesis translation was directed to two persons with similar English skill level with the first and second translators translating the document back to English. It is to ensure that the translated school well - being measurement tool has a similar meaning to the original version.
4. Fourthly, the researchers involved two reviewers with expertise on the topic of Senior High School students' welfare in the school context. The first expert was an

educational psychologist working as a lecturer and psychologist in the Psychology Service Centre of a state university in Indonesia. He actively conducted online learning. While the second expert was a lecturer in the Faculty of Social Science in a state university in Indonesia. He had a background in Literature and Culture and had been involved in studies about school welfare and culture.

The researcher handed over the original school well - being measurement tool and the one that had been synthesized to both experts to be reviewed. Based on the feedback report received from the experts, some items got critiques and should be improved and finalized. One of the inputs received from the experts was that the consistency of the use of the terms siswa (student) and mahasiswa (university student) should be fixed. However, most translations of the synthesis had described the construct well.

5. In the fifth stage, the researchers performed a readability test on seven samples from participants fulfilling the set criteria. It is to ensure that the measurement tool that had been adapted could be read by the participant candidates. After confirming that the measurement tool which had been adapted can be understood well by five samples, it was trialed on 2,410 Senior High Students (research subjects).
6. The last step was to recapitulate all stages of the adaptation of cross-cultural measuring instrument. After performing the trial and collecting data, the researchers analyzed the data (validity and reliability) and measured the feasibility of the measurement tool based on the evaluation of the psychometric property value of trial results. It was then documented as a new and standard measurement tool of a new cultural context.

## **Data Analysis**

The analysis of this study was divided into two stages, namely descriptive analysis, and psychometric property analysis. The psychometric property analysis of the scale consisted of three stages. First, we performed a feasibility test on the content of items that had been adapted to Indonesian culture for Senior High School students as a population using the Content Validity Index (CVI) as the calculation method. The CVI calculation was based on the assessment of each item performed by experts based on the relevancy of the content or the representativeness of the instrument by selecting a score on four point-Likert scale (1= not relevant, and 4= very relevant). Polit, Beck, and Owen (2007) stated that in each item, I-CVI can be obtained by calculating the number of experts giving points 3 or 4 and divided the sum of the scores by the number of experts, it is proportion of agreement on content validity of an item. Besides that, the content validity can also be assessed using S-CVI/UA method, which is defined as the proportion of instrument items that reach the level 3 or 4 (valid) based on the expert judgment. The next method is the S-CVI/Ave which is the average proportion of item obtaining the value of 3 or 4 from the experts. There are three methods that can be applied to calculate S-CVI/Ave. The first is by calculating the average CVI of each item (summing up all I-CVI and dividing it by the number of items); the second way by summing up the total of ranks and multiple it by the number of items regarded as relevant by all experts, and dividing it by the total number of ranks. The third way is the average item proportion which is regarded as relevant by all experts. It should be noted that all approaches will result in a similar value (Polit, Beck, & Owen, 2007).

The second step is to test the estimated reliability using Alpha Cronbach and Omega approaches and to analyse the discrimination power of items by estimating the total - item correlation of each item in the scale. Total item correlation is determined by correcting the spurious effect of each item in each aspect assisted by JASP program version 0.16.1.0. The

second analysis is to test the construct validity (factorial) using a confirmatory factor analysis approach with maximum likelihood method. Results of confirmatory factor analysis will report whether the proposed model has a fit size to measure the fitness of between and research data (Schumacker & Lomax, 2010). Confirmatory factor analysis is performed by proposing two models, one factor-model and four factor-model. The accuracy of both models was compared through an analysis based on the theories of Schumacker and Lomax (2010) and Hair, et al. (2014), namely Chi-square ( $p > 0,05$ ), GFI (Goodness of Fit Index  $> 0,90$ ), CFI (Comparative fit index  $> 0,90$ ), TLI (Tucker-Lewis Index  $> 0,90$ ), NFI (Normed Fit Index  $> 0,90$ ), RFI (Relative Fit Index  $\geq 0,95$ ), IFI (Incremental Fit Index  $> 0,90$ ), SRMR (Standardized root mean square residual  $< 0,05$ ), and RMSEA (Root Mean Square Error of Approximation fit  $< 0,08$ ). After identifying the accuracy of the factor structure model of the scale, the next step is to assess the construct validity based on the factor loading of each item in every construct. The item will be categorized as valid and able to confirm the scale construct if it has a factor loading above 0.50 (Hair, et al., 2014). Besides that, the confirmatory factor analysis also shows the value of the average variance extracted (AVE  $> 0.50$ ), which is part of this analysis. Other validity analyses implemented in this study were concurrent validity and rank scale validity which aim to measure the fitness of the answer option of each question using WINSTEP program version 3.73. The third step of the analysis is to test the consistency and reliability of each item by measuring each construct using the construct reliability method with a threshold value above 0.70 (Hair, et al., 2014).

## FINDINGS

### Descriptive Analysis

Results of descriptive analysis (Table 2) report that female students had higher satisfaction with the school environment than male students. Then, female students had better

social relations and collaboration in the school environment than male students. Female students also perceived themselves more as a valuable part of the school than the male students. However, in the health aspect, male students showed higher average scores than

female students. Furthermore, the results of the analysis on the correlation between the four school well - being aspects and ages show that age and school well - being did not correlate.

**Table 2.** Descriptive analysis on school well - being aspects based on genders

| Aspects | Genders | N    | M      | SD     | SE    |
|---------|---------|------|--------|--------|-------|
| Having  | Male    | 758  | 43,131 | 15,093 | 0,548 |
|         | Female  | 1652 | 44,691 | 14,325 | 0,352 |
| Loving  | Male    | 758  | 23,406 | 7,961  | 0,289 |
|         | Female  | 1652 | 23,662 | 7,801  | 0,192 |
| Being   | Male    | 758  | 30,900 | 10,994 | 0,399 |
|         | Female  | 1652 | 30,317 | 11,168 | 0,275 |
| Health  | Male    | 758  | 25,433 | 8,907  | 0,324 |
|         | Female  | 1652 | 25,258 | 8,890  | 0,219 |

Note: N = The number of subjects; M = Average age; SD = Standard deviation; SE = Standard error.

### Content Validity

To measure the validity of the content of each instrument item which was evaluated by three experts in Psychology and measurement, we measured the Content Validity Index (CVI). Polit, Beck, and Owen (2007) stated that the

scale had a very good validity content if each item got the I-CVI value of 1.000, S-CVI /Ave at least 0.90, and S-CVI / UA at least 0.90 from the three experts.

**Table 3.** The content validity of the school well - being scale

| Parameters                  | Number of items | Values               |
|-----------------------------|-----------------|----------------------|
| I-CVI                       |                 | All items above 0,78 |
| S-CVI/Ave                   | 43 item         | 1,000                |
| S-CVI/UA                    |                 | 1,000                |
| Average proportion of items |                 | 1,000                |

Note: I-CVI (Content Validity Index For Items); S-CVI (Scale-level Content Validity Index); UA (Universal Agreement calculation method); Ave (Averaging calculation method); S-CVI/ UA (Scale-level Content Validity Index, Universal Agreement calculation method); S-CVI/Ave (Scale-level Content Validity Index, Averaging calculation method); Average proportion of items judged relevant across the ten respondents.

Based on the calculation above, it can be concluded that I-CVI, S-CVI/Ave, and S-CVI/UA were satisfying, thus the content

validity of the questionnaire had reached a satisfying level.

### Reliability and discrimination power of the scale items

The Alpha Cronbach reliability is used to evaluate the internal reliability of each scale item of each aspect (Table 4). The alpha reliability of having aspect is 0.997, loving aspect is 0.996, being aspect is 0.996, and health aspect is 0.995. All items of each aspect had the alpha reliability higher than the criteria set by Kaplan and Saccuzzo (2018), which is above 0,70. It means that each aspect has very

satisfying reliability; thus, the measurement tool is reliable.

**Table 4.** Reliability and correlation of item-total construct of school well-being (N=2.410)

| Aspects | Number of items | item-total correlation | Alpha Cronbach | Omega |
|---------|-----------------|------------------------|----------------|-------|
| Having  | 15              | 0,928 – 0,991          | 0,997          | 0,996 |
| Loving  | 8               | 0,966 – 0,992          | 0,996          | 0,995 |
| Being   | 11              | 0,964 – 0,984          | 0,996          | 0,996 |
| Health  | 9               | 0,951 – 0,983          | 0,995          | 0,995 |

The item-total correlation values of each aspect ranged between 0,951 and 0,992 (Table 4). Hair et al. (2014) stated that a good item has an item-total correlation value above 0.30. Based on the analysis above, all items functioned well ( $r_{xy} > 0,30$ ), and can differentiate between individuals who had and did not have the measured construct.

#### Comparison of school well - being measurement models

The measurement model was estimated using the confirmatory factor analysis method using a computer program, JASP version 0.16.1.0. Parameters of model fitness used in this study included chi-square, GFI, CFI, TLI, NFI, RFI, IFI, SRMR, and RMSEA (Table 5). A good model should have insignificant chi-square score and higher GFI, CFI, TLI, NFI, RFI, IFI values but low SRMR and RMSEA values.

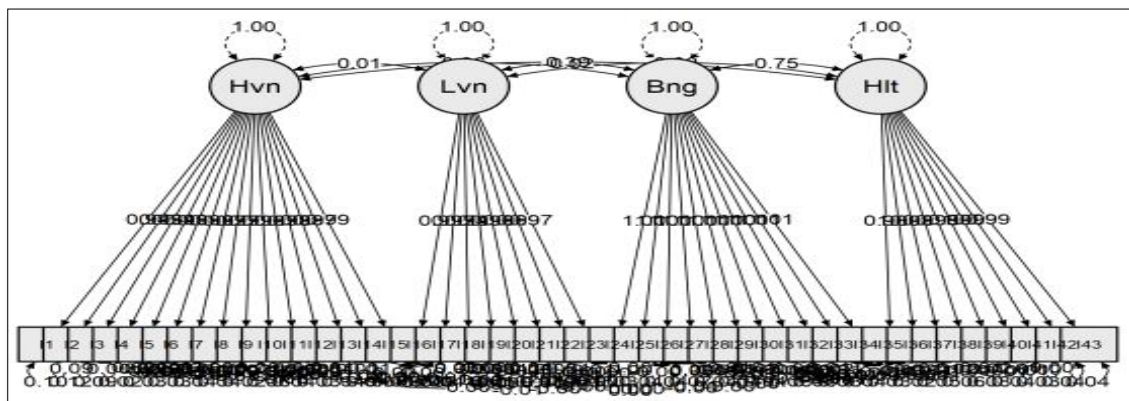
**Table 5.** The comparison of measurement models of school well - being construct

| Models   | $\chi^2$   | p      | GFI   | CFI   | TLI   | NFI   | RFI   | IFI   | SRMR  | RMSEA |
|----------|------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1-Factor | 224763,919 | <0,001 | 0,123 | 0,334 | 0,299 | 0,333 | 0,298 | 0,334 | 0,349 | 0,345 |
| 4-Factor | 5708,718   | <0,001 | 0,905 | 0,986 | 0,982 | 0,984 | 0,979 | 0,986 | 0,009 | 0,054 |

Based on the summary of the comparison between confirmatory factor analysis in the 1-factor model and the 4-factor model in table 5 above, the chi-square scores of each model were significant, meaning that the ideal model is different from the proposed model. However, the chi-square value is very sensitive to the number of samples. When the number of

samples is big, the estimation result will be more significant, thus, the model is not fit (Schumacker & Lomax, 2010). Therefore, in the current study, we used other parameters for the model accuracy, including GFI, CFI, TLI, NFI, RFI, IFI, SRMR, and RMSEA.





**Figure 1.** The model of measurement of school wellbeing with four factors

The comparison between the two models referring to the above parameter shows that the four-factor model has more accurate parameters than the one-factor model. It is because the score of each parameter of accuracy parameter used in four-factor model contains high GFI, CFI, TLI, NFI, RFI, IFI values with low SRMR and RMSEA values. Thus, the model of school well - being measurement with four factors (Figure 1) is the fittest model with the empirical data.

**Construct validity and reliability**

Besides comparing the proper measurement model for the school well - being construct, this study also assessed the construct validity and reliability (Table 6), the factor loading values of each item of having aspect ranged from 0.951 to 0.993, of loving aspect ranging from 0.949 to 0.999, of being aspect ranging from 0.969 to 0.989, and of health aspect ranging from 0.959 and 0.988. All items in each aspect had the alpha reliability above the criteria set by Hair, et al. (2014), which was 0,70. Thus, all items of the school well - being scale functioned well.

**Table 6.** Analysis of school well - being construct validity and reliability

| Aspects | The numbers of items | Standardized Loading Factor (SLF) | Error         | AVE   | CR    |
|---------|----------------------|-----------------------------------|---------------|-------|-------|
| Having  | 15                   | 0,951 – 0,993                     | 0,014 – 0,122 | 0,952 | 0,997 |
| Loving  | 8                    | 0,949 – 0,999                     | 0,002 – 0,099 | 0,957 | 0,994 |
| Being   | 11                   | 0,969 – 0,986                     | 0,028 – 0,061 | 0,959 | 0,996 |
| Health  | 9                    | 0,959 – 0,988                     | 0,024 – 0,080 | 0,956 | 0,995 |

Table 6 also shows that the value of construct reliability of having aspect was 0,997 (AVE = 0,952), of loving aspect was 0,994 (AVE = 0,957), of being aspect was 0,996 (AVE = 0,959), and of health aspect 0,995 (AVE = 0,956). All aspects had the construct reliability higher than the criteria set by Hair, et al. (2014), which was 0,70. It means that each aspect had satisfying reliability so that the school well - being scale was reliable and data produced by the tool could be relied on.

**Concurrent validity**

Concurrent validity was tested by correlating the scores of the school well - being scale (Indonesian version) with the ECW scale (Indonesian version). The results of the correlation analysis between the school well - being scale and ECW scale was 0.045 (p = 0,027), which means that they had a significant and positive correlation (Dancey & Reidy, 2017). The results proved that the school well - being scale was valid based on the concurrent

validity, and it was independently able to measure the school well - being level.

### Rank scale validity

The measure the effectiveness of answer options in each item of modified school well - being scale, it is important to assess the rate scale validity using Andrich RSM method. Linacre (2014) stated that Andrich RSM method (Andrich 1978; Bond & Fox 2012) could be used to determine the properness of reliability index assessment of each answer option of each question, including the category frequency and average number, infit and outfit mean square, and threshold calibration. It is highly related with the results of assessment performed on the psychometric property quality. Bond and Fox (2012) argued that the validity of rank scale measurement could be assessed by investigating each criterion that had been determined. Like in category frequency,

each category must have at least ten responses, and the average size should increase monotonously from the lowest point to the highest point. The average infit and outfit scores must be lower than 2.0. A higher point shows that the category does not contribute to the measurement of latent properties. Lastly, the threshold value must move from none to negative and head to positive, which sequentially represents the answer options (like from Very Disagree to Very Agree). Besides based on the quantification method, the rank validity can also be seen using the probability curve method, which aims to show the tendency of the response of each answer option that is made to visually analyze the fitness of each answer option available in each item. Results of the analysis on rank scale validity can be seen in the Table below.

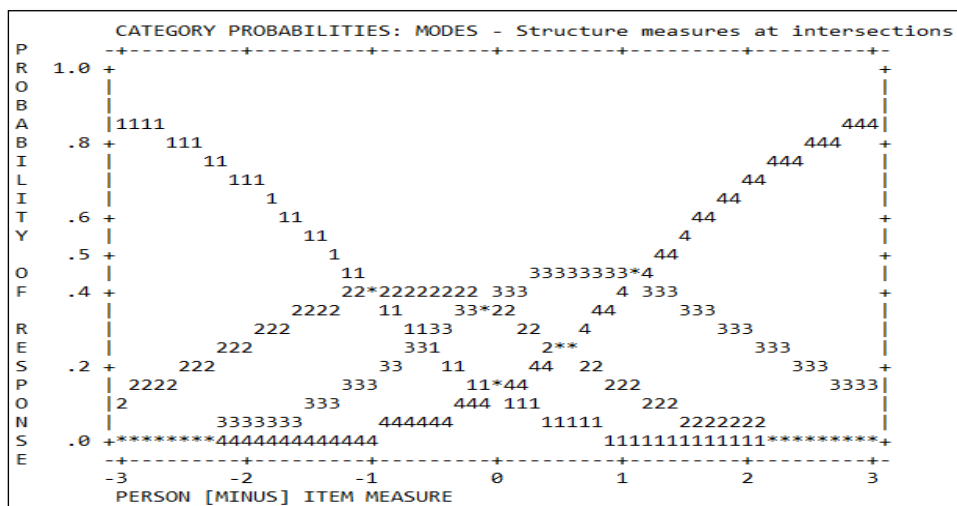
**Table 7.** Validity of rank scale based on response category fitness statistic

| Category | Observed count | Average measure | Infit mean square | Outfit mean square | Andrich treshold | Category measure |
|----------|----------------|-----------------|-------------------|--------------------|------------------|------------------|
| 1 (STS)  | 12439          | -0,77           | 1,03              | 1,08               | None             | (-2,34)          |
| 2 (TS)   | 22787          | -0,03           | 0,91              | 1,00               | -1,01            | -0,70            |
| 3 (S)    | 33764          | 0,65            | 0,77              | 0,90               | -0,10            | 0,66             |
| 4 (SS)   | 34640          | 1,34            | 1,11              | 1,12               | 1,11             | (2,39)           |

Note: STS (Very Disagree); TS (Disagree); S(Agree); SS(Very Agree).

Table 7 shows the result of rank scare validity of each diagnostic index criteria. As per the table, each item scale had met the category frequency criteria as the score was higher than the minimum criteria frequency ( $f > 10$ ). Furthermore, all infit and outfit mean squares were less than 2.0, indicating that the number of

error was in the acceptable range. And the threshold (Andrich threshold) moved from non to negative and headed to positive sequentially. Based on the rank scale validity analysis, options of each item in the school well - being scale were valid.



**Figure 2.** The effectiveness of answer options of the school well - being scale

The additional information that supported the validity of the rank scale is the probability curve (Figure 2) which shows that the subject in the first category gave a low score on the probability level of the school well - being (tended to very disagree). On the other hand, the subject in the fourth category gave a high probability score to the school well - being (tended to very agree). Besides that, the probability curve also shows that the spread of subjects' answers was quite even with the answer options.

## DISCUSSION

The findings show that the school well - being scale has valid and reliable content, construct, concurrent, and rank scale. This study proved the theory of Konu and Rimpela (2002) about the school well - being construct. The comparison between measurement models with one factor and four factors showed that four-factor model had a more accurate parameter. It shows that based on the empirical data, school well - being is more proper to apply a model with four factors that stood alone but correlated with each other. Konu and Koivisto (2011), in their latest school well - being instrument, also emphasized that the aspects of having, loving, being, and health were independent.

Konu and Koivisto (2011) stated that the school well - being should be measured through four separated aspects. A study involving 2,410

students as samples empirically proved the statement of Konu and Koivisto (2011) that four aspects of school well - being construct are separated and independent so that they should be statistically analysed and discussed separately. However, there are some researchers treated the constructs of school well - being as unidimensional by summing up scores of all aspect (Tian, et al., 2016; Chen & van Ours, 2018). While in Indonesia, there was no study providing information about the psychometric property of the school well - being scale. However, there had been many studies using the term of subjective well - being, and the majority of researchers treated the subjective well - being as unidimensional construct or a single construct so that in analysing the data, they sum up all the item scores. Also, it only reported the overall scale reliability (Khairat & Adiyanti, 2015; Dewanto & Alsa, 2016; Tina & Utami, 2016; Christina & Matulesy, 2016; Intani & Indati, 2017; Sari & Maryatmi, 2019).

The findings of current study are contradicted by some earlier studies conducted in Indonesia, so they can contribute new perspectives in school well - being measurement. Therefore, the four-factor model is highly appropriate to be implemented in the Indonesian population. It is supported by adequate construct validity and reliability. Besides that, results of correlation analysis

show that the school well - being scale is positively correlated with ECW scale, which theoretically supports its concurrent validity. Then, the rank scale got high estimation score so that each answer option of each question item is valid and can differentiate research subjects based on the answer they give. Furthermore, the descriptive analysis also reports different scores on the school well - being scale aspect based on the demographic data. Specifically, those differences included female students who had higher social relationships and collaboration at school and perceived themselves as an important part of the school. However, the female students were not satisfied with their physical condition (physic and psychic) when they were at school. Based on our interpretation on the scale, the average score of each aspect of school well - being we obtained from Indonesian samples was relatively higher (having = 2,947; loving = 2,948; being = 2,773; health = 2,813), compared to the research conducted in Finland (having = 2,45; loving = 3,07; being = 2,66; health = 2,57), by Konu and Koivisto (2011). The finding proved the importance of psychometric property measurement involving a larger population from the different cultural backgrounds.

### LIMITATION

This study has some limitations, so that there should be further developed. This study only measured four-factor model of school well - being in one-time correlation, while having. Loving, being, and health components are relatively changing over time. Therefore, the next study should be conducted longitudinally by measuring the school-wellbeing scale in a particular range of time by involving the reliability of test -retest in assessing the internal consistency of the scale. Besides that, this study only focused on school well - being instruments and scale, so that factors influencing the school well - being should be also investigated. Further study should also focus on aspects influencing the four aspects of school well - being.

### CONCLUSION

Based on the psychometric analysis, it can be concluded that to measure the school well-being construct, the Indonesian version of the school well-being scale has satisfying validity and reliability. Besides that, this study also empirically proved that the four-factor model is the fittest model to describe the school's well - being. It means that four aspects of the school well - being construct are separated and independent. The next study can utilize the scale that was validated in the current study in identifying factors influencing school well-being.

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