

An Adaptation and Validation of The Indonesian Version of The Bullying and Cyberbullying Scale for Adolescents

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Abstract. Measurement of bullying behaviour in the Indonesian context has not received much attention let alone a comprehensive measurement of bullying which includes all forms of bullying and the role of individual both as perpetrator and victim. The Bullying and Cyberbullying Scale for Adolescents (BCS-A) developed by Thomas and his colleagues has comprehensive coverage and measures individuals either as perpetrator or victim. The purpose of this study was to adapt and test the psychometric properties of the Indonesian version of the BCS-A scale. This research included two stages: the first stage was adapting the scale from English to Bahasa Indonesia using Beaton's guideline, while the second stage was validating the Indonesian version of the BCS-A scale. The subjects of this study were 330 high school students in the Special Region of Yogyakarta who participated in the study by completing the BCS-A questionnaire through online surveys. The result of the adaptation stage, that is the Indonesian version of the BCS-A scale, was supported by an evidence of validity based on subject response. At the validation stage, the Indonesian version of the BCS-A was found to have a good validity based on internal structure and satisfactory reliability.

Keywords: bullying; the bullying and cyberbullying for adolescent scale; scale adaptation and evaluation; validation; measurement

In the last five years, violence or bullying among school-age children in Indonesia has become an important issue that must be seriously considered. Indonesia is ranked second among countries where bullying incidence is high (Indra, 2015). Bullying has known to have negative impacts on the victims as well as the perpetrators. Bullying is leading the victim to get difficulties in getting sleep, dizziness and headache (Rezapour et al., 2020). Not only physical impact, but bullying also has various mental impacts including depression, excessive anxiety, and in the most extreme cases, suicide ideation or even attempted suicide (Durand et al., 2013). Also, the victims of bullying will tend to experience higher symptoms of somatization compared to non-victims (Susanti et al., 2018), including experiencing frequent headaches or having sleep difficulties. The most pronounced impact on the parents is that their victimized children are reluctant to go to school because of fear of further bullying they will likely experience (Dwipayanti & Indrawati, 2014). This reluctance is reinforced by the effects of bullying which makes the victims' self-esteem low (Darjan et al., 2020) then it leads to lose their trust in others lost.

On the part of the perpetrator, an individual who commits bullying will be shunned and hated by their friends at school (Tarigan, as cited in Susanti et al., 2018). The anger elicited in an individual victimized from the bullying will be vented to other individuals who are lower in status (Arofa et al., 2018) by doing whatever they want to do both verbally and non-verbally to them. Also, bullies (bullying perpetrators) are prone to having higher levels of anger (Hisar et al., 2021), substance uses (Pichel et al., 2022) and aggression (Dunne *et al.*, 2018).

These harmful impacts need to be addressed both curatively and preventively. Curative efforts can be done by providing intervention using a module specifically developed for this purpose, for instance. As for the preventive measures can be done by doing a bullying behaviour assessment the results of which will inform the actions to be taken by relevant stakeholders. To make such a preventive effort, a valid and reliable instrument is needed to measure the bullying behaviours committed by the perpetrators and those experienced by the victims.

Measurements of bullying has been done in several studies in Indonesia and there are many measuring tools for this variable, including that were found in the studies conducted by Dwipayanti and Indrawati (2014), Saribu (2015), Hasanah et al. (2015), Bees and Prasetya (2016), and Istanti and Yuniardi (2018). The five studies developed bullying instruments for the perpetrators. They all carried out reliability testing and calculated the corrected item-total correlation or the item discrimination the result of which did not indicate a good validity. In other words, the instruments were not supported by validity evidence required from a good instrument.

In addition to the bullying measurements conducted in the five studies of bullying which were carried out within less than 5 years period, there was another measurement of bullying that used an instrument adapted from a peer relationship instrument called the Adolescent Peer Relations Instrument (APRI) scale developed by Finger et al. (2008). This scale measures the perpetrators of bullying and the forms of bullying the victims get, including physical, verbal, and social bullying.

Research using this measuring instrument include Zanu and Suryanto's (2018). However, in that study, there is no information regarding the validity and reliability of this instrument. There is not even information about item-level psychometric properties such as item discrimination. A study that gave greater emphasis on the psychometric properties of this instrument was Sandri's (2015) study in which he adapted and tested its psychometric properties. However, the psychometric properties he tested were only limited to its reliability and item discrimination so that other important psychometric properties such as validity based on the internal structure of the instrument and other evidence of validity were not tested in the study. These all show that the measurement of bullying has not been a main focus in the efforts to overcome the problem of bullying in Indonesia.

The measurements that used the APRI did not include a type of bullying referred to as cyberbullying. There is a new measurement that is multi-dimensional in that it measures physical, verbal, social, and cyberbullying both in perpetrators and victims of bullying. This instrument is called Bullying and Cyberbullying Scale for Adolescent (BCS-A). The BCS-A scale was developed by Thomas et al. (2018). In their article, Thomas and his colleagues mentioned various evidence of validity, including validity based on the contents, validity based on the internal structure of the instrument, and validity based on relationships with other variables. In other words, the BCS-A scale is supported by at least 3 out of 5 types of validity evidence standardized by the American Educational Research Association et al. (2014).

Based on the good validity evidence and satisfactory reliability values in each dimension of both subscales this instrument can be said to be comprehensive in measuring bullying behaviour and can be classified as a valid and reliable instrument. Therefore, an adaptation of this measuring instrument needs to be done in the Indonesian context so that it can later be used to measure bullying.

The purpose of this present study was to adapt and analyse the psychometric properties of the Indonesian version of the Bullying and Cyberbullying for Adolescent scale the theoretical benefit of which would be showing whether the Bullying and Cyberbullying for Adolescent scale can be used in context languages other than English, including that of Bahasa Indonesia. Practically, if this research shows that the Indonesian version of the BCS-A has good reliability and validity, the scale can be used by researchers, academics, students, and practitioners concerned with bullying in their academic and professional activities.

Bullying

Many experts have defined bullying and the definition develops with time. Sullivan (2011) proposed similar definition of bullying in his statement that bullying is said as aggressive behaviour that is done consciously and intentionally by either an individual or a group of individuals towards another individual or other group with the intent to hurt. A similar definition was also suggested by Notar et al. (2013) in that bullying is an aggressive behaviour carried out intentionally and repeatedly by an individual to harm or commit violence where the perpetrator has more power than the victim.

In terms of the forms of bullying, Sullivan (2011) divided bullying into two, physical or direct bullying and psychological or indirect bullying. Direct bullying refers to physical bullying as mentioned earlier, whereas indirect or psychological bullying refers to attacking another individual psychologically to harm that person. The latter type of bullying is further divided into two, verbal bullying and non-verbal bullying, both can be done directly and indirectly. Direct non-verbal bullying includes a limb movement to threaten or frighten, for example, whereas indirect non-verbal bullying includes alienating and

isolating others.

Then, Migliaccio and Raskauskas (2013) group bullying into several forms, including physical bullying, verbal bullying, psychological bullying, and technological bullying or cyberbullying. Physical bullying includes pushing, hitting, kicking, and so on. Verbal bullying includes calling another individual by a negative nickname, mocking, teasing, and so on. Psychological bullying or social bullying includes exclusion, spreading false rumours, and so on. Bullying through technology or cyberbullying includes, for example, berating other people via the Internet, both through social media and personal communication via electronic devices. In the end, these four forms are now widely used in research focusing on bullying (Antiri, 2016; Markkanen et al., 2021; Zakiyah et al., 2017).

Method

This study consisted of two stages. The first stage was adapting the BCS-A scale from the English context to that of Bahasa Indonesia, while the second stage was validating the Bahasa Indonesian version of the BCS-A scale. In the first stage, the adaptation process was carried out using the adaptation guidelines of Beaton et al. (2000). As for the second stage, the validation of the Indonesian version of the BCS-A was carried out to obtain validity evidence based on the instrument's internal structure and evidence of discriminant validity and reliability.

The second stage required taking data directly from the research subjects. The subjects of this research were 10th, 11th, and 12th graders from some high schools in Yogyakarta Special Region. The data were collected using a survey method using the Indonesian version of the BCS-A scale. This questionnaire was completed online via the Google form platform.

Participants

The first stage of the study, the adaptation of the BCS-A scale, involved 6 research subjects with the same criteria applied to the subjects in the second stage of the research, namely high school students in Yogyakarta Special Region in the 2019/2020 school year. The 6 subjects were asked to assess the readability of each item and tell what they think about what they understood from each item.

The second stage, the validation of the Indonesian version of the BCS-A scale, involved 330 students with the same criteria applied to subjects in the first stage. The research subjects' age ranged from 14 years to 19 years; 82 (24.8%) male and 248 (75.2%) female. Besides, the majority of subjects came from schools in the city of Yogyakarta (79.4%), while the remaining subjects came from the districts of Sleman (11.8%), Bantul (6.4%), Gunung Kidul (1.5%), and Kulonprogo (0.9%). Around one third (102 or 30.9% of

all subjects) were in the 10th grade, 130 (39.4%) in the 11th grade, and 98 (29.7%) in the 12th grade in the 2019/2020 school year. The majority of subjects majored in the Natural Sciences (87%), while the remaining 13% in the Social Sciences.

Data Analysis

The validation process was carried out with confirmatory factor analysis (CFA). CFA generates goodness of fit and factor loading indices that indicate a validity based on the internal structure of the instrument. Besides, this study also checked the construct reliability as indicated by the reliability and variance extracted values to prove the discriminant validity of the Indonesian version of the BCS-A. The analysis was conducted through *Rstudio* mainly using a package called *lavaan* (Rosseel, 2012).

Results

Stage I: The adaptation of the BCS-A scale

The adaptation process in this study followed Beaton *et al.*'s (2000) guideline that includes 6 stages, including (1) translation, (2) synthesis, (3) back translation, (4) expert committee review, (5) pretesting, and (6) approval from the test developer. The first stage in this present study was translating the scale. The translation from English to Bahasa Indonesia was done by two translators. The first translator (who produced the T1) is a psychology graduate who is knowledgeable about bullying concept and has a good command in English, while the second translator (who produced the T2) is a professional translator who is not psychology graduate and is not knowledgeable (a naïve translator) about bullying concept.

In the synthesis process, the translations generated by the two translators were compared and subsequently discussed by the researchers and the two translators to generate a synthesis of the translation, called T12. Afterwards, the back-translation process, the synthesis of the Indonesian version of the BCS-A scale (T12) was back-translated by two translators who use English as their mother tongue, and both are not knowledgeable about measurement concept. The first back-translator (who produced the BT1) is a native Indonesian, whereas the second back-translator (who produced the BT2) is a Malaysian. Both of them use English for daily conversation and are proficient in Bahasa Indonesia. The generated BT1 and BT2 were discussed together by the back-translators and the researchers and resulted in the BT12 to be sent to the developer. Having got the approval from the developer, the BT12 version of the BCS-A scale was assessed by a committee of experts consisting of two social psychology lecturers, one psychometric practitioner, and the two back-translators the result of which was ready to be tested.

Next, the Indonesian version of the BCS-A scale was then given to 6 high school students in the Special Region of Yogyakarta to be assessed regarding the readability and the appropriateness between subjects' understanding and what is originally intended by each item of the scale. This stage resulted in a BCS-A scale that is readable and no disparity between the subjects' understanding of the items and what is intended by each item. The scale was thus ready to be field-tested.

Stage II: The Validation of the Indonesian Version of the BCS-A

In the second stage of the study, the Indonesian version of the BCS-A scale was tested with 330 respondents. The data obtained were then analysed for its psychometric properties, including the validity based on the internal structure of the test, the reliability, and the extracted variance.

The internal structure of the scale-based validity

The internal structure of the scale-based validity was determined from the results of the confirmatory factor analysis of the BCS-A scale, both for the perpetration and victimization subscales. Such analysis resulted in the goodness of fit indices shown in Table 1.

Table 1.

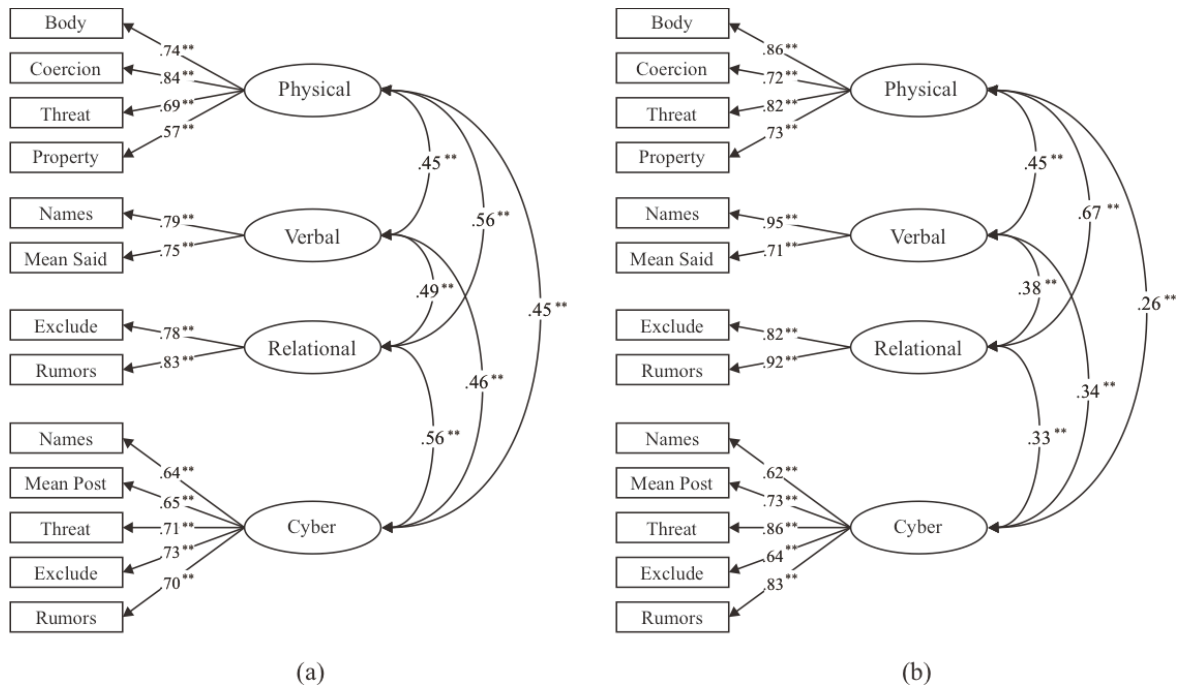
The Goodness of Fit Indices of the Measurement Model of the Indonesian Version of the BCS-A Scale

Subscales	χ^2	<i>df</i>	χ^2/df	<i>p</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>
Victimization	106.45	43	2.48	.00	.97	.94	.07
Perpetration	96.03	49	1.96	.00	.98	.96	.05

As seen in Table 1, the bullying measurement model, both the perpetration and victimization subscales, has a goodness of fit indices 1 because it is supported by the field data obtained that show small chi-square (χ^2) values, normed chi-squared of around 2, CFI and TLI values of above .95, and RMSEA of below .08. The measurement model is illustrated in Figure 1.

Figure 1.

The Final Model of the Indonesian Version of the Victimization (a) and the Perpetration (b) Subscales of the BCS-A Scale



In addition to the goodness of fit indices, items' factor loading indicates to what extent the items represent certain dimension. Figure 1 shows the factor loadings of the BCS-A's victimization (a) and perpetration (b) subscales each of which consists of four correlated dimensions including physical, verbal, relation, and cyber dimensions. Each of these dimensions has items that represent these dimensions proportionally.

Both measurements have a high factor loading in each of their dimensions. The victimization subscale has factor loadings ranging from .57 to .84 for the physical dimension, .75 to .79 for the verbal dimension, .78 to .83 for the relational dimension, and .64 to .73 for the cyber dimension. Similar findings were also found for the perpetration subscale in that it also has high factor loadings ranging from .72 to .86 for the physical dimension, .71 to .95 for the verbal dimension, .82 to .92 for the relational dimension, and .62 to .86 for the cyber dimension.

Besides, the BCS-A measurement model is multidimensional the dimensions of which correlate with each other and thus the correlations between the latent variables or dimensions need to be analysed. The results of such analysis both for the victimization and perpetration subscales are illustrated in Figure 1, Table 2, and Table 3.

Table 2.

The Correlations Between Latent Variables in the Victimization and Perpetration Subscales of the BCS-A Scale

Dimensions	Victimization				Perpetration			
	Physical	Verbal	Relational	Cyber	Physical	Verbal	Relational	Cyber
Physical	(.81)				(.86)			
Verbal	.45**	(.75)			.45**	(.82)		
Relational	.56**	.49**	(.79)		.67**	.38**	(.86)	
Cyber	.45**	.46**	.56**	(.82)	.26**	.34**	.33**	(.86)

Note. ** = significance value of below .01; figures between brackets indicate construct reliabilities.

Table 2 shows that each of the four dimensions has a positive and significant correlation ($p < .01$) with other dimensions in both the perpetration and victimization subscales of the BCS-A scale. In the victimization subscale, the highest correlations are between physical and relational dimensions and between relational and cyber dimensions with the same correlation values of .56. As for the perpetration subscale, the highest correlation is between relational and physical dimensions with a correlation value of .67.

Construct Reliability

In addition to obtaining evidence of validity based on the internal structure of the test, this study also aimed to find the reliability of both the perpetration and victimization subscales of the BCS-A scale. The reliability analysis was carried out to assess the construct reliability the results of which show that all dimensions have construct reliability of above .7 (see Table 2.). For the victimization subscale, the cyber dimension has the highest reliability (.82), while the verbal dimension has the lowest reliability (.75). As for the perpetration subscale scale, the physical, relational, and cyber dimensions have the same values (.86), while the verbal dimension's reliability value is slightly lower than the other three dimensions (.82).

Variance Extracted

This study also conducted a variance extracted analysis to see the extent to which the items in each dimension explain the respective dimensions. The variance extracted values of almost all dimensions in both the perpetration and victimization subscales of the BCS-A scale are above .5 (see Table 3) except for the cyberbullying dimension which has a value of .472. The highest extracted variance value is seen in the relational dimension in the perpetration subscale that is .759 which means 75.9% of the variance of this dimension can be explained by the items in it.

Table 3.*The Variance Extracted Values in the perpetration and victimization subscales of the BCS-A Scale*

Subscales	Dimensions			
	Physical	Verbal	Relational	Cyber
Victimization	.514	.593	.649	.472
Perpetration	.616	.703	.759	.554

Discussion

Bullying is an important issue to be dealt with especially in Indonesia which is ranked second among countries with the highest incidence of bullying (Indra, 2015). Bullying needs to be detected appropriately by using instruments which validly, reliably, and comprehensively measure bullying behaviours committed by the perpetrator and those received by the victim. The BCS-A scale developed by Thomas et al. (2018) measures bullying behaviours in both victims and perpetrators, which is not done by other scales previously developed.

According to Guillemin et al. (1993), a scale that will be used in different populations, countries, contexts, and languages need to be translated and adapted. The BCS-A scale was developed in Australia which happens to be different from that of Indonesia in terms of context and language. Consequently, this scale cannot be simply translated into Bahasa Indonesia but needs to be adapted to the Indonesian context. This study used Beaton et al.'s (2000) guideline for this purpose.

The process of translation and synthesis both in the first and second stages of this present study involved different translators. The translation process involved a translator knowledgeable of the measurement construct to provide equivalent perspective to each item on the scale (Beaton et al., 2000) and a translator not knowledgeable of the measurement construct (naïve translator) with the aim that the translation would reflect the language used by the population of the original scale to find things that are ambiguous in the original scale (Guillemin et al., 1993). At the synthesis stage, the two translators engaged in a discussion with the researchers to reach consensus on the most appropriate translation and avoided compromises or discomfort feelings when differences occurred in the translation (Beaton et al., 2000).

The Indonesian version of BCS-A resulted from the synthesis phase was then back-translated to the original language. This also served as a validity checking process to ensure that the Indonesian version of the BCS-A scale's items reflect the same items as the original scale (Beaton et al., 2000). Two naïve translators were used in the back-translation phase in this stage to avoid information bias due to their knowledge and to find inappropriate

diction on the Indonesian version (Herdman et al., 2016). The back translation resulting from the two translators were then reported in writing to the developer for approval.

After getting approval from the developer, the Indonesian version of the BCS-A scale was reviewed by an expert committee consisting of experts in social psychology especially interested in bullying, psychometrics, and translators. Guillemín et al. (1993) explained that there are at least four things to consider in this phase, including semantic equivalence, idiomatic equivalence, experiential equivalence, and conceptual equivalence. Semantic equivalence focuses on the choice of diction in the resulting translation to check whether the items reflect the same meaning with that of the original version and are unambiguous. Idiomatic equivalence emphasizes that special expressions have been translated correctly into the targeted language. Experiential equivalence aims to ensure that the substance in each item on the original scale happens also in the targeted context.

Conceptual equivalence is the consensus among the expert committee members about the equality of concepts or cultural contexts of the original scale and that of the targeted scale. By going through the expert committee review, the Indonesian version of the BCS-A scale has been ascertained to use appropriate diction, consider using specific expressions in the translation, check that all items correspond with behaviours observed in the community, and check the cultural equality of the original scale and that of the targeted context, that is the Indonesian culture and context. Next, the Indonesian version of the BCS-A scale entered the final stage, the language testing. This stage involved 6 high school students in the Special Region of Yogyakarta in a focus group discussion (FGD) to discuss the readability of each item and ensure that the subjects understanding is consistent with what is intended by each item. This process was carried out to obtain evidence of validity based on subject response (American Educational Research Association et al., 2014). This type of validity evidence confirmed that the subjects' understanding and perception of the Indonesian version of the BCS-A scale's individual items are same the same with what is intended by each item on the original version of the BCS-A scale so that the Indonesian version of this scale is ready to be tested on a larger population of adolescents.

The trial results analysis using confirmatory factor analysis obtained satisfactory results. Ghazali (2017) said that chi-square is the most commonly used parameter in evaluating the fitness of a model. The smaller and the more insignificant the chi-square value, the more fit the model is because the difference in the data obtained with the measurement model is small and thus it is fit. However, in his book, it stated that the chi-square is highly influenced by the number of samples so that the more the number of samples the higher the tendency of the chi-square value to be significant. In this present study, the chi-square and probability values both in the victimization and perpetration subscales were small but significant. This means the difference in the data obtained using the measurement model is significant but this can be ignored because of the large number of subjects.

Another parameter that is not affected by sample size is normed chi-square or relative chi-square formulated by Wheaton et al. (1977). This formula divides chi-square by degrees of freedom. The model is said to be fit if the resulting value is below 2 (Ghazali, 2017; Tabachnick & Fidell, 2014) or not greater than 5 (Schumacker & Lomax, 2016; Wheaton et al., 1977). The normed chi-squared values of the victimization and perpetration subscales of the Indonesian version of the BCS-A scale are, respectively, 2.48 and 1.96, which are quite far below 5 so it can be said from this parameter that both subscales are fit to the data.

In the CFI and TLI parameters, the Indonesian version of BCS-A has a value of above the minimum value of .95 set by to Hu and Bentler (1999). Values that exceed this limit indicate that the model created is supported by the data obtained in the field. In other words, the model is "fit". However, the TLI value of the victimization subscale is .94, which is still acceptable because it is close to .95. Based on these two parameters, both the victimization and the perpetration subscales of the Indonesian version of the BCS-A scale can be said fit.

The next parameter, RMSEA, shows a value of .07 for the victimization subscale and .05 for the perpetration subscale. Hu and Bentler (1999) set a maximum value of .05 to say that the RMSEA indicates an acceptable fitness. However, there is a tolerance up to not exceeding .08 (Hair et al., 2010). Therefore, it can be concluded that both subscales have RMSEA values that indicate good fitness because they are still within tolerable limits.

In addition to the six parameters described above, the factor loading was also checked to eliminate or keep items. According to Furr and Bacharach (2013), the minimum factor loading value of each item is .40 and thus a factor loading value greater than .40 indicates that the item represents the latent variable well. Since the measurement model shows good fitness indices and above-requirement factor loading values, it can be said that the Indonesian version of the BCS-A scale proves to be valid based on the internal structure of the instrument, and it applies to both the perpetration and victimization subscales.

In the Indonesian version of the BCS-A model, it was found that each of the four dimensions was positively correlated to the other dimensions both in the perpetration and victimization subscales. This is similar to the original version of the BCS-A scale developed by Thomas et al. (2018) in which all dimensions of BCS-A are positively correlated with each other. Besides, it was found both in Thomas *et al's* study and the present study that the correlation between physical and relational bullying dimensions is the highest both the perpetration and victimization subscales (the correlation value was .89 in the Thomas et al.'s study and .91 in this present study).

Alpha reliability (α) is the most popular parameter used to determine the internal consistency of a multidimensional measurement (Hogan et al., 2000) despite the possible underestimation or overestimation it may cause (Raykov, 1997, 1998) To overcome this, the construct reliability (CR) which is also called the composite reliability (Brunner & Süß, 2005; Raykov, 1997) is used. Values of above .70 indicate that the measurement has good or

acceptable reliability (Nunnally & Bernstein, 1994). In this present study, each dimension has a CR value of above .70 with .75 as the lowest. Thus, it can be said that the Indonesian version of BCS-A has a satisfactory CR value.

To check the discriminant validity, the extracted variance can be used as evidence of discriminant validity when the value is greater than .50 (Hair et al., 2010). Since this present study found that all dimensions of both the perpetration and victimization subscales have extracted variance values of more than .50, except for the cyberbullying dimension, it can be said that the Indonesian version of the BCS-A scale has a good evidence of discriminant validity.

Unlike the other three dimensions, the cyber dimension of the victimization subscale has an extracted variance of less than .50. Values smaller than .50 value are still acceptable when the CR values exceed .70 (Fornell & Larcker, 1981) or, in other words, the average factor loading of the dimension in question is not less than .70 (Hair et al., 2010). The average factor loading of the cyber dimension in the victimization subscale is .69 which is close to .70, but with a CR value of .82, the extracted variance value of this dimension becomes tolerable. As such, this particular dimension also has good evidence of discriminant validity.

Conclusion

The adapted BCS-A scale has followed the adaptation procedures. The adaptation process generated translation that is equivalent to the original version of the BCS-A scale and valid based on the subjects' response. In the validation process, the Indonesian version of the BCS-A scale proved to be valid based on a good internal measurement structure as evidenced by normed chi-square, CFI, TLI, and RMSEA values that indicate model fitness and satisfying factor loading values. Besides, the correlations between dimensions have the same pattern as those seen on the original version of the BCS-A scale. The Indonesian version of BCS-A also has good CR values and satisfactory extracted variance. These two parameters support the evidence of discriminant validity of the Indonesian version of the BCS-A scale. From these findings, the Indonesian version of the BCS-A scale can be used to measure bullying both for the victims and the perpetrators.

Recommendation

Although this research used the latest concept of validity issued by the American Educational Research Association et al. (2014), the validation process still used the classical testing theory approach that is highly dependent on the characteristics of the subject (Furr & Bacharach, 2013). Besides, the validity of the evidence obtained in this study is limited to only two types of validity evidence, namely validity based on the internal structure of measurement and validity based on subject responses.

Based on the limitation, for further research or development, subjects with other characteristics can be used so that the Indonesian version of the BCS-A scale can be used for broader subject characteristics. Also, future research are encouraged to conduct item response theory (IRT) analysis for polytomous data especially graded response model (GRM) which provide advance psychometric properties. In addition, further research is needed to obtain evidence of other validity such as proof of validity based on the relationship with other variables to strengthen the evidence of validity that has been obtained previously in this study.

Declaration

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Conflict of Interest

We declare that there is no any conflict of interest which can influences this study.

Authors' Contribution

FHS and BP contributed to the research design and wrote some parts of the manuscripts. Then, RDM contributed to the data collection, data analysis, data reporting and wrote the method and finding section also corresponded with the original author of the scale.

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