Development and Validation of Cyberbullying Measurement Instrument: A Mixed Method Approach

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Abstract

This research is motivated by the increasing increase in cyber bullying and the negative impacts it causes. This research aims to develop a cyberbullying measurement instrument using a mixed methods approach involving three stages. Theme exploration stage, namely the qualitative stage with open questionnaire data collection techniques to explore themes surrounding Cyberbullying. At this stage the data analysis technique applied is open coding (65 participants). The testing stage is the content validity stage where the instrument is assessed by experts using the Aiken formula. This stage also includes factor analysis with an exploratory factor analysis (EFA) approach which helps identify the factorial structure underlying the instrument, relationships between items, and grouping items based on dimensions (270 participants). Scale validation stage where at this stage confirmatory factor analysis (CFA) was carried out to test and validate the factorial model identified through EFA (789 Participants). Sampling technique uses convenience sampling technique. The results of the research show that based on the CFA test, the cyber bullying scale showed that all items had loading factor values >0.5 and construct reliability ≥0.7, as well as AVE results ≥0.5, so that all the items used were forming factors of the latent variable. The items used are valid and reliable items so they can be relied upon as research measuring tools. Reliable Cyberbullying measurement instruments can more precisely identify cyberbullying behavior and thus can assist in a better understanding of this phenomenon, so that prevention and intervention efforts can be targeted more effectively.

Key words: cyberbullying, digital, instruments, measurement

Abstrak

Penelitian ini dilatarbelakangi perundungan siber yang semakin meningkat dan dampak negatifnya. Penelitian ini bertujuan mengembangkan instrumen pengukuran perundungan siber dengan pendekatan metode campuran melalui tiga tahapan. Tahap eksplorasi tema, yaitu tahap kualitatif dengan teknik pengumpulan data kuesioner terbuka untuk menggali tema Cyberbullying. Pada tahapan ini teknik analisis data yang diterapkan adalah open coding. (65 partisipan), Tahap uji coba yaitu tahap validitas isi dimana instrumen dinilai oleh ahli dengan rumus Aiken. Tahap ini juga mencakup analisis faktor dengan pendekatan exploratory factor analysis (EFA) yang membantu mengidentifikasi struktur faktorial yang mendasari instrumen, hubungan antar item, dan mengelompokkan item berdasarkan dimensi (270 partisipan). Tahap validasi skala dimana pada tahap ini analisis faktor konfirmatori (CFA) dilakukan untuk menguji dan memvalidasi model faktorial yang diidentifikasi melalui EFA (789 Partisipan). Teknik Pengambilan sampel menggunakan teknik convenience sampling. Hasil penelitian menunjukkan bahwa skala perundungan siber berdasarkan pengujian uji CFA, diperoleh hasil seluruh item memiliki nilai loading factor >0.5 dan reliabilitas construct reliability ≥0.7, serta hasil AVE ≥0.5, sehingga seluruh item yang digunakan merupakan faktor pembentuk dari variabel latennya. Item-item yang digunakan merupakan item-item yang valid dan reliabel sehingga dapat diandalkan sebagai alat ukur penelitian. Instrumen pengukuran Cyberbullying yang handal dapat mengidentifikasi lebih tepat perilaku cyberbullying sehingga dapat membantu dalam memberikan pemahaman yang lebih baik tentang fenomena ini, sehingga upaya pencegahan dan intervensi dapat ditargetkan secara lebih efektif.

Kata kunci : perundungan siber, digital, instrumen, pengukuran

INTRODUCTION

In today's digital era, where connectivity and ways of communicating have undergone rapid changes. Cyberbullying has become an urgent problem that transcends geographical barriers. Various studies show that cyberbullying is a global phenomenon and is increasing rapidly (Jones et al., 2013). As more people inhabit online spaces for social interaction, academic engagement, and entertainment, individuals' risk of facing cyberbullying increases significantly and cyberbullying leaves a major impact on psychological well-being (Hinduja & Patchin, 2018). Cyberbullying is associated with increased levels of depression, anxiety, and suicidal ideation (Kowalski, et al., 2014). Cyberbullying can lead to feelings of fear, humiliation, shame, and social isolation (Slonje, & Smith, 2008). Several studies have found links between cyberbullying victims and physical health problems, such as headaches, stomach pains, and sleep disturbances (Hamm, et al 2015). Victims of cyberbullying often experience a decline in academic performance. Research Farhangpour et al (2019) shows that Cyberbullying has a negative impact on students' academic performance, with victims reporting lower grades and decreased motivation to learn.

Although there are similarities between in-person and online bullying such as the imbalance of dominance between perpetrator and victim (Patchin &; Hinduja, 2015), but there are differences in the context in which oppression occurs. Face-to-face bullying occurs through direct personal interaction, where the abuser may use physical aggression or verbal violence. Instead, cyberbullying occurs through digital platforms, which allow perpetrators to distance themselves from their victims. In face-to-face bullying, perpetrators are easier to identify. Cyberbullying provides anonymity to perpetrators because they can create false identities, making it more difficult to identify and hold accountable for their actions. Face-to-face bullying is often witnessed by a limited number of people; however, cyberbullying can have a wider reach because bullying content can be spread quickly and remain accessible online. Cyberbullying can happen anytime and from anywhere, as long as there is internet access, meaning, victims may face constant threats and find it difficult to escape or seek support compared to in-person bullying, which is usually limited to a specific time and location. The anonymous and persistent nature of cyberbullying can also lead to deeper psychological impacts such as increased anxiety, and feelings of helplessness in its victims (Tokunaga, 2010; Hinduja & Patchin, 2008).

Cyberbullying, a form of aggression that is widespread and facilitated through digital platforms, is influenced by a variety of factors, and one of the main causes, as highlighted by Willard (2005), is low empathy. The secretive nature of cyberbullying exacerbates challenges for perpetrators who are unaware of the enormous impact their actions have on victims. Unlike traditional bullying, the covert nature of cyberbullying allows perpetrators to remain independent of the direct consequences of their behavior. Extensive research corroborates the relationship between low empathy and cyberbullying, showing that individuals who engage in cyberbullying show lower levels of empathy compared to those who engage in outright bullying (Zych, Baldry, Farrington, &; Llorent, 2019; Brewer & Kreslake, 2015; Steffgen & Konig, 2009).

There are at least a few factors why people cyberbully. Calvete et al (2010) states that cyberbullying is related to justification for violence, exposure to violence, and lack of social support. Other factors why people cyberbully include feelings of envy, prejudice, intolerance and anger (Hoff & Mitchell, 2009 ; Jones et al., 2011). Those with low empathy are more prone to cyberbullying, especially targeting victims who are perceived as weaker (Antoniadou, N &. Kokkinos, 2018). Another influential factor that contributes to cyberbullying is self-esteem. Research consistently shows that individuals with low self-esteem are more vulnerable to engaging in cyberbullying (Balakrishnan, 2018). The anonymity afforded by digital platforms allows individuals with low self-esteem to seek validation or control by engaging in aggressive behavior towards others. More according to (Reece, 2012) The anonymous nature of the Internet makes it easy for cyberbullies to say and do things that would not be said or done directly. Cyberbullies feel distant from the victim so that they feel safe for their behavior. In addition, Mardianto et al., (2021) revealed that low self-control in individuals contributes to digital violent behavior, including cyberbullying. This self-control is related to an individual's ability to regulate their behavior, especially when using digital

media. Individuals' inability to regulate behavior causes individuals to tend to carry out cyberbullying (Fiddiana & Priyambodo, 2022).

Given the increasing prevalence of Cyberbullying, interested parties need to have measurements that can adequately describe this phenomenon and problem. Accurate measurement of cyberbullying can help identify the impact associated with cyberbullying and explore the risks that can be changed and their protection factors (Smith, et al., 2008). It can also help these parties develop effective interventions to address the problem of cyberbullying or even further design interventions that can be implemented as cyberbullying prevention programs (Kowalski et al., 2008). A comprehensive review of academic efforts regarding the definition and measurement of cyberbullying in the past decade found that most studies failed to provide a clear definition of cyberbullying. Similarly, research finds that it is difficult to clearly reflect the three main elements of bullying: harm, repetition, and an imbalance of power between the bully and the victim of bullying. With regard to the types of cyberbullying, most present two or three categories, including victimization, deeds, and acts carried out secretly, while some experts suggest four types based on the nature of cyberbullying behavior, including written or verbal, visual, impersonation or false identity, and ostracism towards the victim. If the characteristics are considered, then cyberbullying becomes more specific with several categories, including blasphemy, harassment, defamation, jokes, sexual harassment, and harassing or threatening behavior of the victim (Smith et al, 2008 ; (Kowalski et al, 2008 ; Patchin, & Hinduja, 2010).

Although some studies use validated measurements to calculate the prevalence of cyberbullying, many simply modify survey questions or add new questionnaires from previous studies for no apparent reason. For example, some cyberbullying instruments do not explain how such cyberbullying questions are developed or report the reliability and validity of the item and the scale at which it is developed. (Calvete et al. 2010 ; Smith et al., 2008). In addition to what needs attention is to consider between the measuring instruments used and the research participants, especially tied to the cultural context. In addition, most cyberbullying research, although it has penetrated the Asian region, is still limited compared to what has been done in Western countries (Chun et al., 2020). As researchers grapple with the challenges posed by cyberbullying, it is becoming increasingly clear that universal measurement approaches are inadequate. The cultural context in which cyberbullying occurs plays an important role in shaping the dynamics of this phenomenon. Understanding cyberbullying through a cultural lens is critical to developing effective prevention and intervention strategies.

The call for cultural sensitivity in cyberbullying research is rooted in the understanding that cultural factors shape human behavior and interaction, therefore, a thorough examination of cultural dimensions is essential in developing measurement instruments that accurately reflect the experience of cyberbullying. Kowalski et al (2014) Highlights the challenges associated with language and cultural nuances, emphasizing the need for adaptive approaches that can align with the cultural context in which cyberbullying occurs. Cultural sensitivity, measurement tools, are critical in ensuring an accurate and meaningful assessment of cyberbullying experiences. Cultural adaptation involves not only translating instruments into local languages but also considering cultural nuances, norms, and values that might influence the interpretation of survey questions. This study aims to bridge the gap between global cyberbullying research and the context of cultural nuances by exploring the measurement of cyberbullying by considering the cultural dimension in the construction of cyberbullying instruments.

METHOD

This research adopts a mixed method approach with an exploratory-sequential design, which consists of a series of stages. The initial stage is designed to explore emerging problems by collecting and analyzing qualitative data. After that, the research continued with instrument development which was then tested using a quantitative approach (Creswell, 2015). The relationship between the qualitative and quantitative phases in research on the development and validation of this instrument is integral. The qualitative phase serves as a basis for identifying themes and understanding the nuances of cyberbullying. The themes that emerged from this qualitative

exploration then informed the development of instruments intended for quantitative assessment. In the quantitative phase, the instrument must go through a validation process to ensure its reliability and validity. The factors identified are based on patterns and themes seen from the qualitative phase. These linkages ensure that the quantitative instrument is rooted in a qualitative understanding of cyberbullying, providing depth and relevance to the measurement tool. The validation process continues to test the identified factorial model against the collected data. This step not only validates the quantitative instruments but also ensures that they align with previously obtained qualitative insights.

The data collection technique in the qualitative phase uses an open questionnaire with the aim of exploring themes surrounding Cyberbullying. At the qualitative stage, the data analysis technique applied was open coding. With this approach, researchers can identify patterns, themes, and relationships in the qualitative data collected. This method allows researchers to gain in-depth insight into the problem at hand and assists in the formulation of appropriate and relevant instruments. As a follow-up step, quantitative analysis was carried out to ensure the validity and reliability of the instruments developed in the previous phase. The content validity of the instrument was evaluated by experts using Aiken's V formula, which involves assessing the suitability between the instrument items and the concepts being measured.

Aiken's V is a method for measuring the content validity of an instrument. Content validity reflects the extent to which the instrument actually measures the concept or what it is intended to measure. Implementation of Aiken's V in preparing measurement instruments involves several steps, namely determining an expert (Expert Panel): Selecting several experts who have expertise and knowledge related to the concept being measured. This expert will rate each item in the instrument. Assessment process: Experts will assess each item in the instrument based on its suitability to the concept being measured. They provide a score on the level of suitability of each item to the concept measured with a rating range of 1-5. Aiken's V calculation: Once the scores from the experts are obtained, the Aiken's V formula can be applied.

The results of Aiken's V can be used to assess the overall feasibility of the instrument. The closer to number 1, the items have a very good level of validation. Retnawati (2016) ranges from a value of 0.8 – 1.0 Items that receive low scores can be revised or eliminated to increase the content validity of the instrument. If necessary, the instrument can be revised based on the results of the Aiken's V evaluation, and this process can be repeated until an instrument has sufficient content validity.

The choice of the Aiken's V formula for assessing content validity in this research is to show a quantitative dimension to the evaluation process. The use of Aiken's V formula aims to go beyond qualitative assessments and obtain a numerical measure of agreement among experts regarding the relevance of items in the cyberbullying instrument. This quantitative measure of content validity efficiently utilizes expert input, and recognizes that complete consensus may be difficult to achieve. Additionally, the integration of Aiken's V with other validation steps contributes to a thorough and robust validation process. The iterative nature of Aiken's V facilitates continuous improvement, allowing researchers to refine the instrument based on expert feedback and increasing the overall validity and reliability of the measurement tool.

Next, item analysis of the item-total correlation coefficient was conducted to identify the extent to which each item contributed to the overall instrument. The quantitative analysis stage also includes factor analysis using an exploratory factor analysis (EFA) approach. Exploratory factor analysis helps identify the underlying factorial structure of the instrument, uncover relationships between items, and group items based on specific dimensions. The results of this analysis can provide a clearer picture of the instrument's characteristics and guide the further validation process. Confirmatory factor analysis (CFA) was conducted to test and validate the factorial model identified through EFA. Confirmatory factor analysis (CFA) provides a more detailed statistical test of the proposed factorial model and helps ensure that the factorial structure fits the collected data. This step supports efforts to strengthen the validity of the instrument and ensure that the instrument is reliable in measuring the concept under study.

In this research, the sampling process was carried out through a nonprobability sampling method, using convenience sampling, namely a sampling technique that involves subjects that are

easily accessible to researchers (Creswell, 2015). Convenience sampling was chosen as the respondent sampling method because it was carried out based on the respondent's willingness to participate in the research. Convenience sampling is often chosen because of its practicality and ease of access for participants, making it a suitable choice when there are logistical constraints or limited resources. In certain research contexts, convenience sampling may be an efficient method for collecting data quickly. This allows researchers to select participants based on their availability and willingness to participate, which can be beneficial when time and resources are limited. This method is very commonly used in the exploratory or preliminary research stage. However, a limitation is a lack of representativeness, as the sample may not accurately reflect the wider population. These limitations may affect the generalizability of the findings.

Research participants ranged in age from 11 to 30 years with diverse demographic backgrounds and the digital media platforms used by respondents varied as well. Sampling was carried out through three different stages to ensure sufficient representation in exploring the research themes. The theme exploration stage involved 65 respondents, the testing stage involved 270 respondents, and the sample for the scale validation stage was 789 respondents. The number of respondents is collected according to the respondents' willingness and participation in filling out the questionnaire that has been distributed. It's just that the target achievement for quantitative testing, both EFA and CFA testing, is targeted to exceed 200 respondents. The number of respondents meets the criteria set by the International Testing Commission (2016). Sample quality is the focus of research because it can strengthen the reliability and validity of research results, so that the findings obtained can be relied upon as a basis for preparing and developing appropriate instruments or scales in accordance with research objectives.

RESULTS & DISCUSSION

In the exploration stage of the cyberbullying theme, various themes were gathered from respondents' answers to an open-ended questionnaire consisting of two questions, namely the first question, can brother Describe your personal experiences related to cyberbullying situations that you may experience or witness in your daily life? Please describe in detail about the cyberbullying behavior! Do you see any particular trends in cyberbullying behavior that you experience or in general that you might observe frequently? The results of the open coding analysis of respondents' responses resulted in as many as 25 themes, such as the themes of threats, shaming and hate speech. These themes then become the basis for the preparation of items in the developed measuring instruments. In this initial stage, 30 items were arranged. The response format used is scale *Likert*, a format that has been widely shown to be effective in measuring opinions, beliefs, and attitudes (DeVellis, 2016). Then, a judgement expert was carried out by four psychologists by providing evaluation and revision of these items. The choice of conformity of the item statement consists of five choices that indicate the frequency of the behavior performed, namely very often, often, sometimes, never and never. Assessment is carried out using a rating scale of one to five. The result of this procedure shows that all items are declared valid, with reference to the index *Aiken's V* (Retnawati, 2016).

The results of 25 items were retained then through the *Exploratory Factor Analysis* (EFA) procedure in the test in order to identify the underlying factors. The EFA process is also used to reduce items that do not meet the criteria. *Exploratory factor analysis (EFA) is a factor analysis that has a procedure, which examines data and provides research with information on how many factors are needed to describe the data in* exploratory factor analysis. EFAs are also used in conditions where latent variables have unclear indicators. The EFA test involved 270 respondents. To determine whether or not an item is eligible to be used, using criteria, if r is calculated greater than r table and a positive value then the item or statement is declared valid. To find reliability in this study using the cronbach alpha technique, *a construct is said to be reliable if it gives a* cronbach alpha value *of > 0.70.*

This Efa analysis uses the validity test of *pearson product moment* and reliability test (*cronbach alpha*), the following results are obtained:

Table 1. EFA Validity and Reliability Test (N=270)

Variable	Items	Calculate	Rtabel	Information	Cronbach Alpha
Insulting (X1)	MI8	0.804	0.113	Valid	0.873
	MI17	0.810	0.113	Valid	
	MI1	0.806	0.113	Valid	
	MI2	0.767	0.113	Valid	
	MI12	0.806	0.113	Valid	
	MI19	0.759	0.113	Valid	
Cornering (X₂)	ME3	0.818	0.113	Valid	0.758
	ME22	0.780	0.113	Valid	
	ME25	0.074	0.113	Invalid	
	ME9	0.823	0.113	Valid	
	ME4	0.814	0.113	Valid	
Speech rude & vulgar (X3)	UKV13	0.812	0.113	Valid	0.838
	UKV20	0.846	0.113	Valid	
	UKV5	0.768	0.113	Valid	
	UKV10	0.860	0.113	Valid	
Fake identity (X4)	IP11	0.978	0.113	Valid	0.711
	IP23	0.093	0.113	Invalid	
	IP6	0.975	0.113	Valid	
Divulge (X5)	MID14	0.826	0.113	Valid	0.818
	MID15	0.813	0.113	Valid	
	MID21	0.812	0.113	Valid	
	MID7	0.784	0.113	Valid	
Threaten (X6)	MT24	0.086	0.113	Invalid	0.722
	MT16	0.980	0.113	Valid	
	MT18	0.983	0.113	Valid	

Based on the results of validity testing on EFA testing, it can be stated that values that have a rcal>rtable of 0.113, can be declared valid. From the test results, it can be seen that in the Insulting aspect (X 1) of 6 items, all of them are declared valid, then in the cornering aspect (X 2) of 5 items, there is 1 invalid item, so that the total cornering items (X 2) amount to 4 items, in the aspect of rude & vulgar speech (X3) of 4 items are all valid, in the aspect of fake identity (X4) of the 3 items, there is 1 invalid item, so that the fake identity aspect item (X4) is 2 items, in the aspect of Divulge (X5) of the 4 items are all valid, and in the threatening aspect (X6) of the 3 items, there is 1 invalid item, so that the total threatening items are 2 items. The results of the reliability test, all dimensions have a *cronbach alpha* value of >0.700, so it can be stated that all variable dimensions can be considered reliable.

After revealing the structure through exploratory factor analysis (*EFA),* then the research continued with the validation stage through the confirmatory factor analysis (CFA) procedure. The CFA testing phase is carried out to see the consistency of the research instruments used. Confirmatory analysis or often referred to as *confirmatory factor analysis* (CFA) is designed to test the multidimensionality of a theoretical construct. Validity testing with confirmatory factor analysis is performed to test the unidimensionality of the dimensions that make up each latent variable. The validity of an indicator can be declared valid, if the indicator used can measure a certain construct when the *loading factor* shows a value of 0.5. Reliability tests are used to test whether a research instrument can demonstrate its ability to measure without error and the results are always consistent (remain the same), even if it is used by others or elsewhere to measure the same thing A research instrument is considered reliable if the limit value of the acceptable level of reliability is *construct reliability* ≥ 0.7 and the value of *average variance extracted* (AVE) ≥0.5.
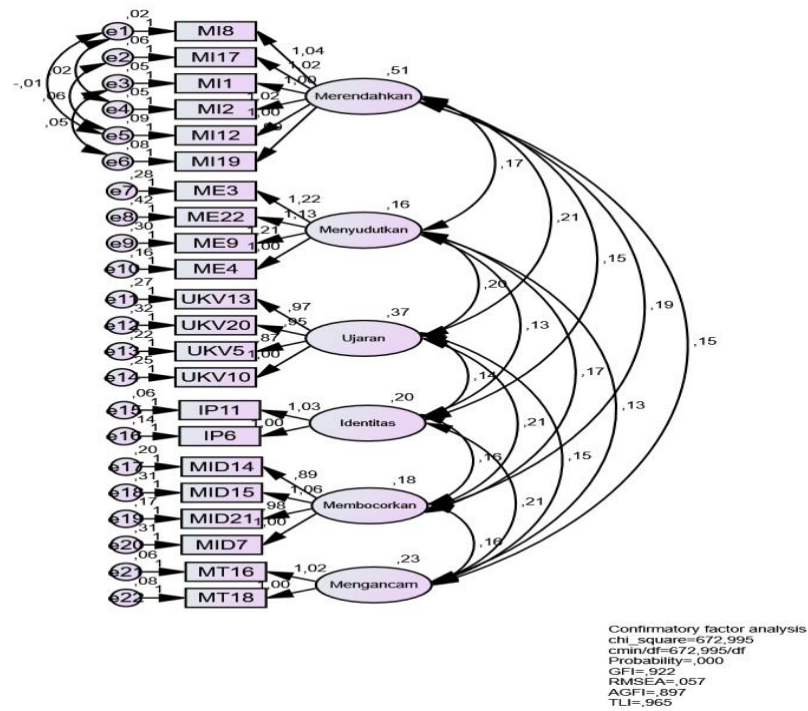
Figure 1. CFA Model

Previously, model conformity testing was carried out through a review of various *goodness of fit criteria.*

Table 2. Goodness of Fit Index

No	Goodness of Index	*Cut-off Value*	Model Results	Information
1.	Chi Square (cmin/df)	Expected small	672,995	
2.	Probability	>0.05	0.000	Marginal Fit
3.	GFI	≥ 0.90	0.922	Good Fit
4.	RMSEA	≤ 0.08	0.057	Good Fit
5.	AGFI	≥ 0.90	0.897	Marginal Fit
6.	NFI	≥ 0.90	0.960	Good Fit
7.	TLI	≥ 0.90	0.965	Good Fit
8.	CFI	≥ 0.90	0.971	Good Fit

From the GOF results in CFA, it can be seen that most of them are in the good fit criteria, which shows that this CFA model is still worthy of further analysis.

Based on these results, the results of loading *factor* or *standardized loading estimates* are obtained with provisions ≥ 0.5, and construct reliability *(CR) tests (>0.7) and* average variance extracted *(AVE)* ≥ 0.5, as follows:

Table 3. CFA Validity and Reliability Test (N=789)

Variable	Items	Loading Factor	Information	CR	AVE
	MI8	0.981	Valid		
	MI17	0.947	Valid		

Variable	Items	Loading Factor	Information	CR	AVE
Insulting (X1)	MI1	0.952	Valid		
	MI2	0.958	Valid		
	MI12	0.919	Valid		
	MI19	0.926	Valid	0.999	0.995
Cornering Embarrassing (X2)	ME3	0.676	Valid		
	ME22	0.570	Valid	0.991	0.988
	ME9	0.659	Valid		
	ME4	0.699	Valid		
Rude & Vulgar Speech rude and vulgar (X3)	UKV13	0.753	Valid		
	UKV20	0.714	Valid	0.993	0.971
	UKV5	0.752	Valid		
	UKV10	0.771	Valid		
Fake identity fake identity (X4)	IP11	0.879	Valid		
	IP6	0.770	Valid	0.995	0.991
Leaking Information Divulge (X5)	MI14	0.649	Valid		
	MI15	0.634	Valid	0.992	0.969
	MI21	0.708	Valid		
	MI7	0.607	Valid		
Threaten Threaten (X6)	MT16	0.888	Valid		
	MT18	0.860	Valid	0.997	0.993

The results of instrument testing with the CFA test, obtained the results that all items have a loading factor value of >0.5 and construct reliability results >0.7, as well as AVE results of >0.5, which shows that all items used are forming factors of the latent variable. Based on the results of CFA (*confirmatory factor analysis*) testing, consistent results are obtained that the items used come from valid items and have reliable reliability as a research measurement tool. This study also shows that this measuring instrument has a high level of reliability. That is, this measuring instrument provides consistent results if used in a variety of different studies. During the research process, we have identified a suitable model for measuring cyberbullying through the use of analytical techniques such as *exploratory factor analysis (EFA)* *and* confirmatory factor analysis *(CFA)*. The results of statistical analysis show that this model has good quality, strengthening the validity of this measuring instrument.

Furthermore, to find out the value of the largest contribution, it can be seen from the results of the coefficient of *variance*, as follows:

Table 4. CFA Variances Coefficient (N=789)

	Estimate	S.E.	C.R.	P
Insulting	0.518	0.030	17.235	***
Cornering	0.156	0.015	10.622	***
Rude & vulgar speech	0.372	0.031	12.088	***
Fake Identity	0.202	0.016	12.491	***
Divulge	0.182	0.020	9.033	***
Threaten	0.225	0.015	14.740	***

The table above, showing the results of the coefficient of variances of each dimension of cyberbullying, based on the results of the estimate and C.R shows that the largest contribution of the dimension comes from Insulting (X1).

Based on the results of the analysis of construct validity and construct reliability, the forms and indicators forming the construct of cyberbullying are declared valid and reliable. Thus, all forms of aspects and items are able to reflect and shape the construct of cyberbullying. The results of instrument testing through Confirmatory Factor Analysis (CFA) show positive and consistent results, strengthening the reliability and validity of this research instrument. CFA is a statistical approach used to test and validate the factorial structure of an instrument or measurement scale. In the context of this study, CFA is used to evaluate the extent to which the instrument items used are able to represent the latent variable to be measured. Based on the results of data processing, it was found that all items in the instrument have a significant loading factor value, which is greater than 0.5. Loading factor measures how well an item can represent the latent variable or concept it wants to measure. A loading factor value greater than 0.5 indicates that each item has a strong correlation with the latent variable, indicating a match between the item and the concept being measured. Furthermore, the reliability results of construct reliability also show a number that exceeds 0.7. Construct reliability measures the extent to which all items in an instrument are interrelated and is consistent in measuring latent variables. A value exceeding 0.7 indicates that this instrument is reliable and consistent in measuring the concept under study. Therefore, it can be considered that this instrument has a high degree of reliability.

Another result that supports the validity of the instrument is an Average Variance Extracted (AVE) value greater than 0.5. AVE measures the extent to which the variability of items in an instrument can be explained by latent variables. An AVE value greater than 0.5 indicates that the instrument is able to explain most of the variability of its items, indicating high construct validity of the instrument. Thus, the overall CFA test results imply that this research instrument has a consistent and reliable factorial structure to measure the latent variable related to the behavior studied, namely cyberbullying behavior. The validity and reliability of the instruments are two critical aspects of psychological research, and these results provide confidence that the instruments used in these studies can provide accurate and reliable data.

In the context of cyberbullying behavior research, the success of this instrument in obtaining consistent and convincing results suggests that the items used are derived from valid and reliable questions. Therefore, the results of studies relying on this instrument can be considered an accurate representation of the observed phenomenon of cyberbullying behavior. Further research could leverage these instruments to investigate factors related to cyberbullying behavior, understand its impact, and design more effective interventions. In addition, positive results from CFA testing also open up opportunities for expanding the use of this instrument in research related to the field of Psychology or other fields of study related to digital behavior. By strengthening the validity and reliability of the instruments, this research makes a meaningful contribution to the understanding of cyberbullying behavior as well as more accurate and reliable measurements.

The development of cyberbullying instruments is based on various definitions of experts, including: According to Willard (2005) that cyberbullying is intentional abuse of others by sending or distributing harmful material or engaging in forms of social aggression using the Internet or other digital technologies. According to Williams & Guerra (2007) Cyberbullying is the act of threatening, harassing, humiliating, or socially isolating others using online technology Smith et al (2008) describes cyberbullying as deliberate and repeated aggressive behavior carried out through electronic media, with the aim of hurting, threatening, or intimidating others. According to Bauman (2008) Cyberbullying is the use of modern communication technology aimed at humiliating, humiliating, playing tricks or intimidating individuals in order to control and govern the individual. Hinduja & Patchin (2022) Defines cyberbullying as "aggressive and repetitive behavior carried out through electronic media, with the intent to hurt, threaten, or intimidate another person. From these various definitions, there are at least a few key points that explain cyberbullying, namely aggressive actions through online technology media, aimed at hurting others and carried out repeatedly. These three key points are then taken as the basis for the operational definition and construct this cyberbullying measurement intervention.

In addition, the development of measurement instruments underscores the importance of building items rooted in observable and measurable behavior. One important effort is to align instrument items with observable behaviors commonly identified as cyberbullying. This approach

ensures that these instruments are based on the real manifestations of cyberbullying, thus allowing for more objective measurements. The Cyberbullying Instrument developed also constructs its items in the context of observed and measurable behavior such as describing behaviors that are often identified as cyberbullying behavior in general that occur in everyday life. By focusing on behaviors empirically related to cyberbullying, this instrument gains credibility and relevance in capturing the manifestations of this phenomenon in the real world. A study conducted by Patchin &; Hinduja (2015) emphasizes the importance of developing measurement instruments that effectively capture the dynamic nature of cyberbullying. They highlight the need for instruments to evolve as the technological landscape and communication platforms in use help ensure that they remain relevant and reflect cyberbullying behavior occurring in the current context.

In this cyberbullying measurement instrument, it consists of several aspects or components that are categorized based on the identification of items arranged in the first stage, namely the theme exploration stage. These aspects or components are Insulting (X1), Cornering (X2), Rude and vulgar Speech (X3), Fake Identity (X4), Divulge (X5) and Threatening (X6). The identification of these aspects or components is bound by the limits of the operational definition that all behavior is in order to attack or hurt others, use digital media and devices and is carried out repeatedly. Based on the results of estimates and C.R shows that the largest dimensional contribution comes from Insulting (X1) has the largest contribution to the elimination of cyberbullying instruments. The first indicator of the Insulting component is the act of insulting people through social media or digital platforms and the second indicator is giving negative epithets to others through social media or digital platforms. Behavior that degrades this category of degrading components are: Making fun of someone's physical appearance on social media or digital platforms, Making derogatory comments on other people's status or posts on social media or digital platforms. Mentioning someone by the name of a specific animal (dog, monkey etc) on social media or digital platforms. Calling someone a negative nickname (illegitimate child, idiot etc.) through social media or digital platforms. Swearing people with derogatory calls (parents' names, ethnic identities etc.) on social media or digital platforms.

The relationship between degrading behavior and cyberbullying is a multifaceted and complex dynamic that requires a comprehensive study to understand the interaction between the two. Cyberbullying, which is characterized by deliberate and repeated acts of harm committed through digital platforms, often involves degrading behavior aimed at insulting, humiliating, or belittling individuals. This form of aggression takes advantage of the anonymity and reach of online communication, thereby increasing its impact on the victim. Research conducted by Tokunaga (2010) delves into the inner aspects of cyberbullying, emphasizing how online platforms provide a means for perpetrators to denigrate their work. The study underscores the intersection between Insulting behavior and the unique characteristics of cyberbullying, and sheds light on the role dehumanization plays in magnifying the devastating impact it has on victims. Patchin &; Hinduja, (2015) Explore the different forms of cyberbullying that Insulting behavior is a common component of cyberbullying, which contributes to the distress and psychological impact experienced by victims. The impact of Insulting behavior in cyberbullying is more than just emotional distress, it also affects the mental health and overall well-being of the victim. Kowalski et al (2014) Discusses the long-term consequences of cyberbullying, highlighting the potential for Insulting behavior that contributes to increased anxiety, depression, and even suicidal ideation among victims. This underscores how serious degrading behaviour can be in the context of cyberbullying.

CONCLUSION

Testing the Cyberbullying scale concluded that all items had a level of reliability and validity. Therefore, this scale can be relied on to measure the level of Cyberbullying in the context of this research. These findings provide confidence in the research results and ensure that the data obtained from this scale can be considered accurate and relevant. Thus, this research makes an important contribution to the understanding of Cyberbullying, provides a reliable measurement tool, and opens up opportunities for further research in this area. The conclusions of this study open several opportunities to further explore cyberbullying behavior. One recommendation for further

research is to consider a deeper investigation into the dynamic nature of cyberbullying behavior over time. Given the ever-evolving technological landscape, future research might investigate the exploration of emerging forms of cyberbullying associated with new communication platforms or as technological advances develop. Further research exploration can also take the form of exploring the relationship between direct bullying and cyberbullying. Do people who carry out direct bullying also have a tendency to carry out cyberbullying or, on the contrary, do people actually carry out cyberbullying because it is not possible to carry out direct bullying? Of course, this requires further research regarding instruments that can be used to measure and explore both bullying behaviors simultaneously.

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