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Adaptation and Validation of the Cyberbullying Scale in Indonesian Version: Exploratory and Confirmatory Factor Analysis Approach

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Abstract

Cyberbullying has become a major psychosocial issue among adolescents alongside the rapid growth of digital media use. This study aimed to adapt and evaluate the validity and reliability of the Indonesian version of the Cyberbullying Scale (CBS) developed by Stewart et al. (2014). A descriptive quantitative design was used involving 392 adolescents aged 12–18 years from 10 provinces in Indonesia, recruited through purposive sampling via an online survey. The adaptation followed WHO cross-cultural adaptation guidelines, including forward translation, backward translation, expert review, and pilot testing. Data were analyzed using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) with JASP software.
EFA results showed a unidimensional structure with an eigenvalue of 9.628 explaining 68.8% of the total variance, while all items demonstrated strong factor loadings (0.689–0.889) without item removal. CFA confirmed significant item loadings on the cyberbullying factor (0.643–0.976, $p < 0.001$). Reliability analysis indicated excellent internal consistency ($\alpha = 0.968$). However, CFA global fit indices were below recommended thresholds (CFI = 0.839, TLI = 0.809, RMSEA = 0.182), suggesting that the one-factor model may not fully represent cyberbullying experiences in the Indonesian context. Overall, the Indonesian CBS showed strong reliability and item-level validity, although further refinement and cross-validation are needed before broader application among Indonesian adolescents.

KEYWORDS

Cyberbullying; instrument adaptation; psychometric validation; exploratory factor analysis; Indonesian adolescents.

Introduction

The development of digital technology and the use of social media in Indonesia has increased very rapidly, especially among adolescents. The internet, instant messaging applications, social media, and online games have become an integral part of the daily lives of Indonesian teenagers. Although digital technology provides many benefits in terms of communication, information access, and learning, this advancement also raises various psychosocial risks, one of which is *cyberbullying* (Setiawan, 2025).

Bullying, also known as *bullying*, is aggressive behavior carried out by individuals or groups towards others with the aim of hurting, which arises due to an imbalance of power, and occurs repeatedly or has the potential to be repeated (Hong, 2018). Meanwhile, in the article Stewart (2014) defines *cyberbullying* as aggressive actions that are carried out deliberately and repeatedly through electronic media, where individuals or groups use digital technology to hurt, threaten, humiliate, or harm other individuals. The electronic media in question includes text messages, social media, *e-mail*, and various other online platforms. Forms of *cyberbullying* can include sending insulting or threatening messages, spreading rumors, social exclusion online, and other actions that harm victims through digital platforms. In contrast to traditional bullying, cyberbullying

has special characteristics, such as it can happen anytime and anywhere, allows the anonymity of the perpetrator, and has a wide range of spread. These characteristics make *cyberbullying victims* difficult to avoid and potentially experience heavier psychological impacts. in the article Daulay (2025) The uniqueness of *Cyberbullying* compared to conventional bullying is that it can occur at any time, can be anonymous, easily accessible to a wide audience in a matter of seconds which allows it to spread quickly. This condition can cause psychological distress either directly or potentially can experience long-term trauma due to the concept of digital footprints that are difficult to remove.

In this modern era, there have been many changes in the way humans carry out activities such as work, study, and social interaction. Various technologies have been developed to support human activities, especially in the information sector, which now plays an important role in daily life. Advances in the field of information go hand in hand with technological developments, so every innovation is often followed by a change in the way people live their lives. Today, social media has become part of a new culture that is changing the way people think and behave, especially among adolescents who are more vulnerable to the influence of external factors in their mental health development. One of the factors that causes the high number of cases of *cyberbullying* on social media is due to the inability of perpetrators to see the direct impact of their actions (Shahzad et al., 2026). Because the lack of direct response from the victim makes the perpetrator feel safe when writing negative comments on social media, so this action is likely to be followed by others. *Cyberbullying* is a form of bullying that uses digital media to repeatedly attack others (Setiawan, 2025).

In the Indonesian context, *cyberbullying* is an issue that is getting more and more attention. Various reports from the media, child protection institutions, and school environments show that Indonesian adolescents are vulnerable to cyberbullying. Adolescence is the transitional phase from childhood to adulthood, which includes social, psychological, physical and hormonal changes. In women, puberty generally begins around the age of eight, while in men, this process usually begins around the age of nine. Various factors, such as genetics, nutrition, and environment, play a role in this stage. During puberty, the physical changes that occur are often accompanied by emotional and psychological development. Teens who rely on social media only to communicate through messages are often more likely to fall victim to the *platform*'s abuse, including *cyberbullying*. *Cyberbullying* is a form of online bullying carried out by perpetrators through social media, often used to pressure or humiliate victims. This action is carried out consciously, repeatedly, and shows an imbalance of power between the perpetrator and the victim (Setiawan, 2025).

Teens tend to be more prone to engaging in *cyberbullying*, as they can easily engage in bullying against others online at any time without being bound by time constraints. They can use the internet to seek information or constantly intimidate others without any hindrance to realize the immediate consequences that are caused. With the nature of the message being permanent, the negative effects of *cyberbullying* become more severe for victims (Setiawan, 2025).

Adolescence is a bridge from the children's ladder to the ladder of adulthood. There are differences in views but not significantly related to the determination of the time span of adolescence (MacCallum et al., 1996). There are experts who say that the age range of adolescence is from the age of 12-18 years which is divided into two periods, namely the pre-puberty period from the age of 12-14 years and the puberty period from the age of 14-18 years. *The World Health Organization* (WHO) also divides adolescent periodization into two, namely early adolescence from 10-14 years old and late adolescence from 15-20 years old. Meanwhile, Hurlock divides the period of adolescence into three periods, namely early adolescence from 12-14 years old, middle adolescence from 15-18 years old and late adolescence from 19-21 years old. Each of these periods has different characteristics (Rusuli, 2022). In this article, it is concluded that the age of adolescents used is 12-18 years old or in the estimated period of junior and senior high school education.

In her article, Salmah (2024) said that *the phenomenon of cyberbullying* is supported by technology that is now continuing to develop. Knowledge about *cyberbullying* on the internet should have been known by users first, the hope is that users will be careful in acting and avoiding these actions. No, cyberbullying is in fact not known to everyone who uses digital platforms.

In the Article Ramadhanti (2022) Indonesia and occurs at the elementary school to university level. Based on the results of the *Programme for International Students Assessment* (OECD, 2019) research, Indonesia is the fifth highest country among members *of the Organisation for Economic Co-operation and Development* (OECD) with only 22.7%. Indonesia is in the fifth highest position out of 78 countries as the country with the most students experiencing bullying with 41.1% of victims. The number of students who are victims *of* bullying is far above the national average In addition to experiencing bullying, students in Indonesia admitted that as many as 22% were insulted and their goods were stolen. Furthermore, as many as 18% were encouraged by their friends, 15% experienced bullying, 19% were excluded, 14% of students in Indonesia admitted to being threatened, and 20% were students whose bad news was spread by the perpetrators *of bullying*.

In addition, based on data from the Indonesian Child Protection Commission (KPAI) in 2023, there were more than 2,000 digital violations related to cyberbullying. In addition, in the first quarter of 2024, the number of *cyberbullying* cases increased by more than 100% compared to the previous year and reached a total of 480 cases. These findings confirm that *cyberbullying* is a serious problem that needs to be systematically addressed through scientific approaches and evidence-based interventions (Daulay, 2025).

Research on *cyberbullying* in adolescents has become an increasingly researched topic in recent years. In the article Ni'mah (2023), there are several previous studies related to *cyberbullying,* including research conducted by Kim and Lee (2021) found that *cyberbullying* has a significant relationship with depressive symptoms in adolescents. Another study by Hinduja and Patchin (2020) shows that adolescents who are victims of *cyberbullying* are more likely to experience anxiety, stress, and depression. Meanwhile, research conducted by Guo et al. (2020) shows that *cyberbullying* can affect adolescents' self-confidence and increase the risk of aggressive behavior. and another study by Kowalski et al. (2018) found that *cyberbullying* can increase the risk of suicide in adolescents. From this description, it can be concluded that *cyberbullying* has a negative impact on adolescent psychology.

Despite the growing body of cyberbullying research in Indonesia, three critical gaps remain unresolved. First, a methodological gap persists, as existing studies predominantly rely on ad hoc instruments lacking psychometric validation (Ambarita & Zarzani, 2024; Siroj & Zulfa, 2024), single-item measures with unknown reliability (Widayanti, 2022), and adapted scales without adequate cross-cultural validation or reported factor structures (Salmah, 2024). This limitation has resulted in highly inconsistent prevalence estimates, ranging from 8% to 41%, thereby restricting comparability across studies and undermining the development of evidence-based interventions. Second, a cultural-contextual gap is evident, as

most cyberbullying instruments were originally developed and normed within Western individualistic contexts (Stewart, 2014), which differ substantially from the Indonesian sociocultural environment in terms of dominant digital platforms, social interaction norms, and linguistic constructs. For instance, Indonesian adolescents more frequently engage through WhatsApp and game-based platforms, while certain English cyberbullying concepts, such as *flaming* and *trolling*, lack direct semantic equivalence in Bahasa Indonesia, requiring careful cultural adaptation (Salmah, 2024).

These differences raise an important empirical question regarding whether the unidimensional factor structure identified in Western samples can be replicated among Indonesian adolescents or whether distinct cultural dynamics may yield a multidimensional structure (Stewart, 2014). Third, a practical gap exists due to the absence of validated screening tools available for Indonesian schools and mental health practitioners, limiting their capacity to conduct reliable epidemiological surveillance, identify at-risk adolescents, and systematically evaluate the effectiveness of anti-bullying intervention programs (Ambarita & Zarzani, 2024; Siroj & Zulfa, 2024). Addressing these methodological, cultural, and practical limitations is essential to establish a robust and contextually appropriate measurement framework for assessing cyberbullying experiences among Indonesian adolescents.

In response to these limitations, Stewart (2014) developed the *Cyberbullying Scale* (CBS) as a comprehensive measurement tool to assess the experience of *cyberbullying* in adolescents. This scale is designed to encompass different forms *of cyberbullying* through various electronic media and is conceptualized in the form of a one-dimensional construct that reflects the experience of *victimization* in a digital context. Measuring *cyberbullying* requires instruments that are able to capture the complexity of aggressive behavior in the digital world. CBS was developed through a systematic measurement tool construction procedure, involving a literature review, expert input, and representatives from the target population.

The results of the analysis of exploratory and confirmatory factors show that various forms of *cyberbullying* behavior, although manifestly different, represent the same latent construct, namely the experience of being a victim of *cyberbullying*. This unidimensional approach is in line with previous research that showed that various forms of online victimization have essential similarities in the psychological experience of victims, regardless of the type of media or form of behavior used (Stewart, 2014).

Previous research results show that CBS has good reliability and construct validity (Stewart, 2014). However, the use of measuring tools developed in a particular cultural context cannot be directly applied to other cultural contexts without going through a process of adaptation and psychometric testing. Therefore, the adaptation and validation of CBS into Bahasa Indonesia is an important step to provide an accurate, reliable, and appropriate measurement tool in accordance with the Indonesian cultural context. The availability of validated instruments is expected to support the development of *cyberbullying research* in Indonesia, improve the quality of psychological assessments, and become the basis for the preparation of more effective prevention and intervention programs for Indonesian adolescents.

This study aimed to systematically adapt the Cyberbullying Scale originally developed by Stewart (2014) into the Indonesian language and cultural context through rigorous translation and validation procedures that adhere to international best-practice guidelines for cross-cultural instrument adaptation. Specifically, the research sought to examine whether the unidimensional factor structure proposed in the original scale replicates among Indonesian adolescents using Exploratory Factor Analysis, test construct validity through Confirmatory Factor Analysis to evaluate model-data fit, assess internal consistency reliability using Cronbach's alpha and McDonald's omega coefficients, and evaluate known-groups validity by examining score differences across demographic groups such as gender and school level. Beyond psychometric evaluation, this study aimed to transparently identify limitations of the adapted instrument and provide evidence-based recommendations for further scale development that can guide future researchers and practitioners working to measure and prevent cyberbullying among Indonesian youth, recognizing that cultural differences in collectivism, face-saving behaviors, platform usage patterns, and social norms may influence how cyberbullying is experienced, reported, and optimally measured in non-Western contexts.

Methods

This study uses a descriptive quantitative approach that is considered adequate for *Explanatory Factor Analysis* (EFA) and *Confirmatory Factor Analysis* (CFA) analysis, in accordance with the sample size recommendations in the development and validation of psychological instruments. The instrument adaptation process is carried out by following the cross-cultural adaptation guidelines of psychological measuring instruments. The measurement tool developed by Stewart (2014) containing *the Cyberbullying Scale* (CBS) has been translated into Indonesian before being disseminated as a questionnaire, the translation stage includes the stages of *forward translation*, synthesis of translation results, *backward translation*), as well as assessments by a panel of experts to ensure semantic, conceptual, and cultural equivalence between the original and Indonesian versions. Furthermore, the adapted instruments were tested on a limited basis to ensure clarity of language and comprehension of the items before being used in the main data collection.

Participants

Sample size determination followed the recommendations of Hair et al. (2010) for factor analysis, which suggest a minimum 10:1 cases-to-variables ratio and a preferred 20:1 ratio. Given the 14-item structure of the CBS, the minimum required sample was 140 participants, while 280 was considered optimal. To account for incomplete responses, the target sample was set at 400 participants. Data were collected between March and April 2025 through an anonymous online survey distributed via school counselor networks from five partnering schools, adolescent mental health social media communities, and snowball sampling using Google Forms.

Participants were recruited from 10 Indonesian provinces, with the majority originating from Java (80.6%), including Banten, West Java, Jakarta, Central Java, and East Java, followed by North Sumatra, East Kalimantan, South Sulawesi, Bali, and Papua. Although this distribution broadly reflects Indonesia's population concentration, the overrepresentation of Java may limit generalizability to eastern regions. Inclusion criteria required participants to be Indonesian students aged 12–18 years, active internet users within the past six months, and willing to provide informed consent or assent, with complete survey responses. Fifteen responses were excluded due to age ineligibility or excessive missing data, resulting in a final sample of 392 adolescents.

The final sample consisted of 242 females (61.7%) and 150 males (38.3%), with ages ranging from 12 to 18 years (M = 15.2, SD = 1.8). Participants were relatively balanced

across school levels, with 43.9% enrolled in junior high school and 56.1% in senior high school. Regarding cyberbullying victimization, 36.0% reported never experiencing cyberbullying, 42.9% reported occasional victimization, and 21.2% reported frequent victimization, indicating sufficient variability for psychometric validation analyses.

Research Design

The data collection technique for this study is to use a questionnaire that is shared online in the form of a link through *google form.* This study uses a quantitative descriptive design that aims to describe the characteristics and levels of research variables in the research subjects. This design does not aim to test hypotheses, but rather to provide an empirical picture based on the data obtained. This study uses 1 research instrument, namely, *the Cyberbullying Scale* (CBS). This instrument is *unidimensional* (one single factor) in the research instrument there are 16 items, 2 items as descriptive questions about the media used by participants in committing bullying or being victims of bullying and 14 items which are core items. This measurement scale uses the Likert scale, which is 0 for never and 4 for very frequent.

This research has paid attention to the ethical principles of psychological research, including participant consent, data confidentiality, and the use of data solely for academic purposes. All research procedures are carried out in accordance with applicable research ethics standards.

Instrument Adaptation Procedures

The adaptation of the Cyberbullying Scale (CBS) into Indonesian followed the World Health Organization's cross-cultural adaptation guidelines (WHO, 2022) through six systematic stages to ensure semantic and conceptual equivalence. Two independent bilingual translators initially translated the 14 items into Indonesian with emphasis on conceptual rather than literal accuracy, followed by synthesis through expert consensus to produce a unified version. For example, *"calling you names"* was adapted as *"menghina atau mengejek kamu"* to better capture its intended meaning. This version was then back-translated by an independent bilingual translator unfamiliar with the original instrument and compared with the original CBS to identify semantic discrepancies for further refinement (Sad-Houari & Sad-Houari, 2026).

The revised version was evaluated by a five-member expert panel for semantic, idiomatic, conceptual, and cultural appropriateness, resulting in contextual adjustments such as clarifying WhatsApp-based group interactions and expanding examples of online impersonation. Pilot testing with 30 adolescents aged 12–18 using think-aloud interviews showed a 93% comprehension rate, with only minor wording revisions required. Additional cultural modifications included replacing unfamiliar platform examples with locally relevant gaming platforms such as *Mobile Legends*, *Free Fire*, and *PUBG*, while response anchors were confirmed as fully comprehensible. The finalized Indonesian CBS was subsequently administered to the main sample (N = 392) for psychometric validation analyses.

Data Analysis

All statistical analyses were conducted using JASP version 0.18.3 (JASP Team, 2024). Preliminary data screening indicated minimal missing data (<1% per item), with Little's MCAR test confirming that missingness was completely at random, $\chi^2(89) = 102.4$, $p = .158$. Three multivariate outliers identified through Mahalanobis distance were retained because their values remained within plausible ranges. Although Shapiro–Wilk tests indicated non-normality for 9 of the 14 items ($p < .05$), this was considered acceptable for robust maximum likelihood estimation. Descriptive statistics showed item means ranging from 1.08 to 1.90 and standard deviations between 1.22 and 1.65, indicating adequate variability, while inter-item correlations ($r = .45–.78$) supported unidimensionality.

Exploratory factor analysis (EFA) was conducted on the full sample (N = 392) using principal axis factoring, with sampling adequacy assessed through the Kaiser–Meyer–Olkin measure and Bartlett's Test of Sphericity. Factor retention was determined using eigenvalues greater than one (Kaiser, 1960), scree plot inspection, parallel analysis based on 1,000 simulated datasets, and cumulative explained variance criteria. Because a unidimensional solution emerged, no rotation was applied, and items with factor loadings ≥ .40 were retained (Hair et al., 2010). Confirmatory factor analysis (CFA) was subsequently performed on the same sample to test a single-factor model representing cyberbullying victimization, estimated using maximum likelihood with robust standard errors. Model fit was evaluated using conventional criteria for χ^2/df, CFI, TLI, RMSEA, and SRMR (Brown, 2015; Hu & Bentler, 1999), with modification indices examined when values exceeded 10. Although separate samples for EFA and CFA are preferable, the full sample was retained for both analyses to maximize statistical power, acknowledging the potential inflation of fit indices.

Reliability was assessed using Cronbach's alpha and McDonald's omega, with coefficients ≥ .70 considered acceptable, alongside corrected item-total correlations with a retention threshold of $r \geq .30$. Known-groups validity was examined using independent-samples t-tests comparing gender and school level differences, with effect sizes interpreted using Cohen's d benchmarks. Missing data were handled using listwise deletion for factor analyses and mean imputation for descriptive analyses. Statistical significance was set at $\alpha = .05$ using two-tailed testing throughout all analyses.

Result and Discussion

The demographic characteristics of participants are summarized in Table 1.

Demographic data from 392 respondents aged 12-18 years with women dominated by 61.73%, while for male respondents as much as 38.27%. The age of the respondents consisted of 12 to 15 years old as much as 49.23% and 16 to 18 years old as much as 50.77%. In addition, respondents with a junior high school education level were 43.87% and with a high school/K education level as much as 56.13%.

Descriptive statistics and group comparisons for cyberbullying victimization scores are presented in Table 2.

The results *of the independent samples t-test* showed that there was no significant difference in the total *cyberbullying* score between female respondents (M = 21.40; SD = 16.73) and men (M = 18.09; SD = 16.63), with a value of t(390) = 1.913 and p = 0.057. The *effect size* value

Table 1. Demographic Characteristics of Participants (N = 392)

Characteristic		
Gender		
Female	242	61.73
Male	150	38.27
Age Group		
12-15 years	193	49.23
16-18 years	199	50.77
Education Level		
Junior High School	172	43.87
Senior High School	220	56.13

Source Primary Data

indicates a small effect (Cohen's d = 0.199). The results *of the independent samples t-test* showed a significant difference in the total score of *cyberbullying* between highschool/K and junior high school students, with a value of t(390) = 6.030 and p < 0.001. Descriptively, high school/K students (M = 24.45; SD = 17.10) had *a higher total cyberbullying* score than junior high school students (M = 14.61; SD = 14.57). The effect *size value* indicates a moderate effect (Cohen's d = 0.614) (see figure 1).

Based on a survey conducted by the three provinces, the highest number of respondents were in Banten province with 131 respondents, West Java with 68 respondents, and Jakarta with 66 respondents. The distribution of cyberbullying perpetrators and victims by gender is presented in Figure 2.

Data shows significant differences between men and women both in their roles as perpetrators and victims of *cyberbullying* during junior high school (SMP) and high school (SMA). According to Steinberg & Morris (2001) in the article Alfiasari (2018) Early adolescence is a transition period from childhood to adolescence, adolescence is often identified as the time when individuals begin to try to know themselves through the exploration and assessment of their own psychological characteristics as an effort to be accepted as part of the environment. In the perpetrator category, the percentage of women who have committed *cyberbullying* reached 37.2%, higher than men who were 26.8%. Overall, these findings indicate that women have a higher involvement in *cyberbullying* activities on both sides, both as subjects who commit actions and as parties affected or victimized.

The findings are in line with several studies that show a similar pattern: Research by Barlett & Coyne (2014) found that adolescent girls are more likely to engage in relational *cyberbullying*, such as the spread of rumors and social exclusion through digital media, than boys who are more dominant in direct physical aggression. A meta-analysis by Barlett & Coyne (2014) examining 131 studies found that *gender* differences in *cyberbullying* are complex and highly dependent on the cultural context and type of *cyberbullying* being measured. They found that men tended to be more involved in *cyberbullying* that was direct and aggressive, while women were more involved in a relational form.

Based on Figure 3, as many as 36.0% of respondents stated that they had never used the available platform in the answer to *cyberbullying*. The most mentioned platforms are the virtual world (34.4%) and *Instagram* (26.8%), followed by *Thread* (23.0%), *TikTok* (18.4%), and *WhatsApp* (14.8%). Furthermore, *Twitter* was reported by 8.4% of respondents and Facebook by 4.6% of respondents. Platforms with a lower percentage include *e-mail* (1.5%), *LINE* (0.8%), and SMS (0.8%).

Research conducted by Ambarita & Zarzani (2024) says that cyberbullying perpetrators can be carried out through social media, chat platforms, gaming platforms, and mobile phones (Selwyn & Aagaard, 2021). According to Tazkiyah et al. (2021) Anonymity is also part of the characteristics of *cyberbullying*. People who commit *cyberbullying* can use anonymous accounts to cover up their real identity. Cyberbullying perpetrators bully the virtual world application which is world games, *Instagram* and *threads* which are social media platforms because the application can be disguised as their identity.

Figure 4 shows the distribution of social media platforms used by respondents who experienced *cyberbullying* (N=392) out of the total answers (N=894) that allowed respondents to answer more than 1 answer. Data shows that *WhatsApp* is the most dominant platform with the highest percentage of 42.6%, followed by *Instagram* with 38.5%, and Virtual World with 37.2%. Other significant platforms include *Thread* (28.3%), *TikTok* (24.2%), *Twitter* (19.9%), and the "None" category with 18.4%. The platforms with the lowest percentages include *Line* (8.7%), *Facebook* (7.9%), *E-mail* (2.0%), and SMS with the lowest percentage (0.3%).

These results are in line with research conducted by Nurmasitah (2025) whose results show that *WhatsApp* is the platform most often reported as a place for *cyberbullying* in adolescents. This is understandable considering that

Table 2. Descriptive Statistics and Group Comparisons of Cyberbullying Scores

Variable	n	M	SD	*t*(390)	*p*	Cohen's *d*	95% CI
Gender				1.913	.057	0.199	[-0.01, 0.41]
Female	242	21.40	16.73				
Male	150	18.09	16.63				
Education Level				6.030	< .001	0.614	[0.41, 0.82]
Junior High	172	14.61	14.57				
Senior High	220	24.45	17.10				

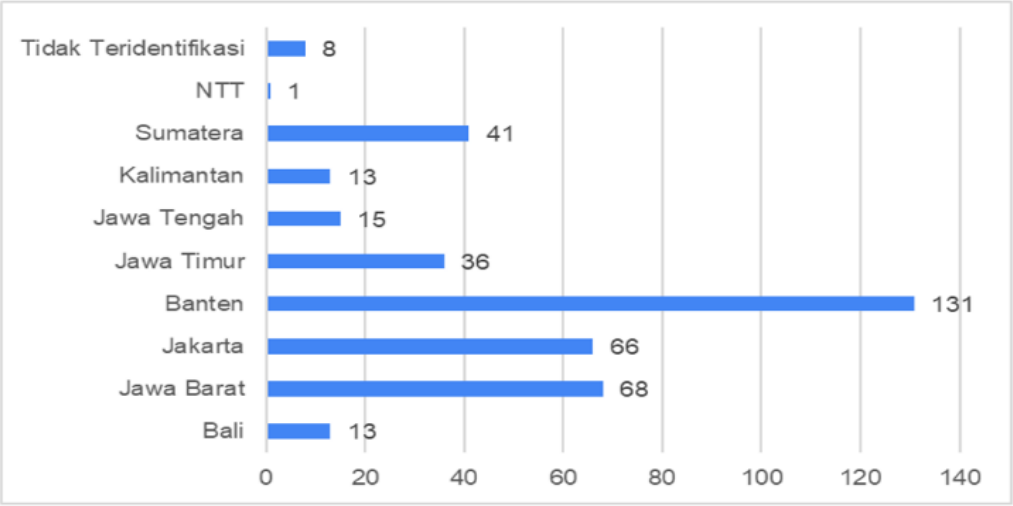

Figure 1. Number of Respondents by Domicile

WhatsApp is the main communication medium for teenagers through personal and group messages, especially in the context of friends and school. The high intensity of interaction and the closed nature of communication allow for repeated aggressive behavior without direct supervision. while research conducted by Widayanti (2022) said that social media that is most often felt by victims as a place to cyberbullying is *WhatsApp*. *Whatsapp* is the easiest social media platform to use, users can also feel helped by this application to communicate. This convenience makes whatsapp social media most often used by teenagers in committing *cyberbullying* acts with the most form of activity being *flaming*.

Based on the results of table 3, it shows that the dominant impact felt from *cyberbullying* is fear (19.3%), decreased self-esteem (16.3%), and feelings of helplessness (15.5%). The impact of individuals who are victims of *cyberbullying* on adolescents will increase the risk of stress reactions, negative emotions, depression, and the desire for revenge (Siroj & Zulfa, 2024). Rusyidi (2020) research has 2 impacts of cyberbullying, psychosocial and academic achievement. The impact on psychosocial causes psychological and emotional problems in the victim, namely, depression and emotional disorders, decreased self-esteem, emotional distress, social relationship disorders, psychosomatic problems, and increased suicidal thoughts. Research by Marsinun & Riswanto (2020) stated that *cyberbullying* has a serious impact on the mental state of victims, including psychological stress, anxiety and fear, depression, and decreased self-confidence and self-esteem.

The CFA results in table 4 show X2 = 1074.133, df = 77, X2/df = 13.949. The value indicates that the one-factor model has not shown optimal global fit so that the value is said to be not *fit* globally, df only shows the complexity of the model, not its quality.

Based on figure 5, the results of *the Confirmatory Factor Analysis* (CFA) analysis on *the cyberbullying scale construct* are displayed. The measurement model shows that the latent construct *of cyberbullying* is measured by 14 observed indicators, namely *cyberbulling* item 1 to *cyberbulling* item 14. Each indicator has its own *error measurement*, which indicates the variance of measurement errors in each item. For model identification purposes, one of the loading factors is fixed as a scale marker. The one-way relationship from latent constructs to indicators shows the magnitude of the contribution of each indicator in reflecting the *constructs of the cyberbullying scale*. Overall, this path diagram represents a one-factor (unidimensional) model used to test the suitability of indicators in measuring *the construct of the cyberbullying scale*. (see Table 5)

The results of the calculation of the internal reliability *of the cyberbullting scale* instrument in table 3 show that the instrument has a very high reliability with a coefficient value ω = 0.969, with a standard error of 0.002. The confidence interval of 95% is in the range of 0.965-0.974 which indicates an excellent level of internal reliability.

The Confirmatory Factor Analysis (CFA) in table 4 and table 6 was conducted to test the suitability of the Indonesian version of *the Cyberbullying Scale* one-factor measurement model consisting of 14 items. The analysis was carried out using *the Maximum Likelihood* estimation method. The CFA results showed that the entire item had a

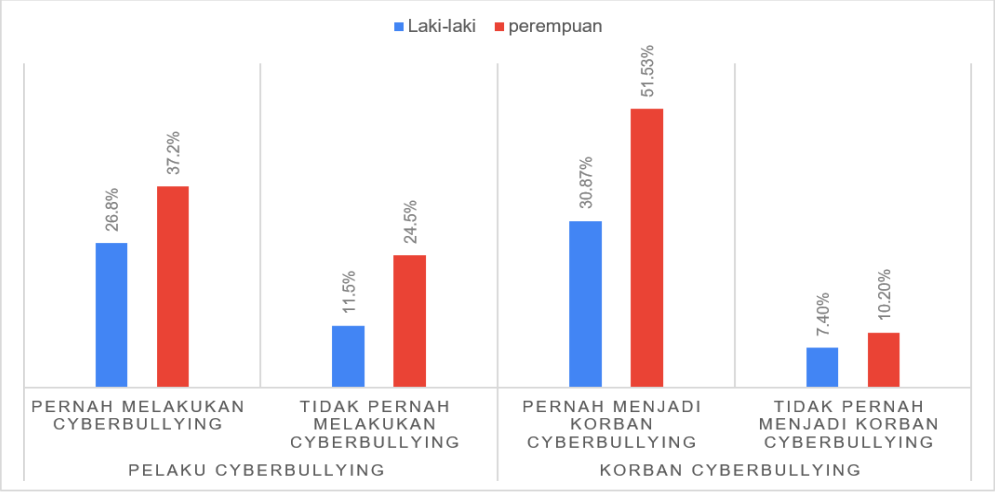

Figure 2. Perpetrators and Victims of Cyberbullying by Gender

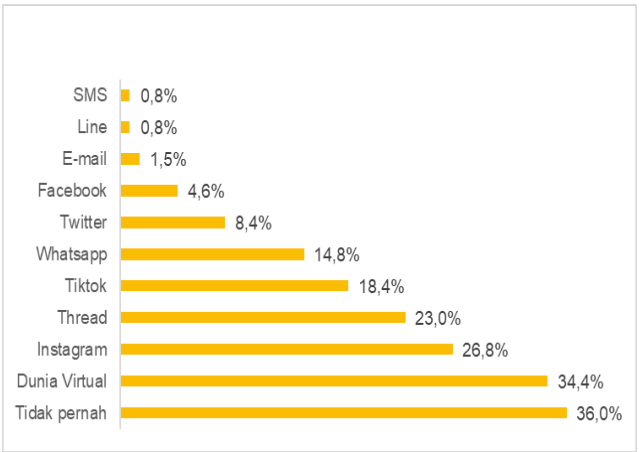

Figure 3. Perpetrators Cyberbullying

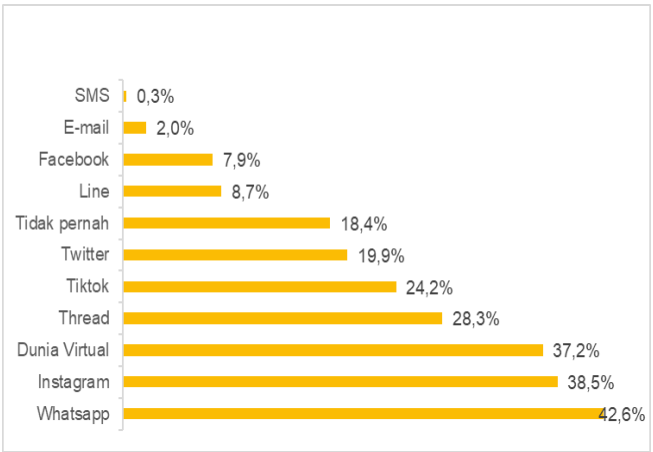

Figure 4. Victims Cyberbullying

significant factor charge on *the latent factor of cyberbullying* ($p < 0.001$). The factor charge value ranges from 0.642- 0.976, which indicates that the entire item adequately represents *the cyberbullying* construct. There are no items with a factor charge value below the recommended minimum limit (> 0.40) so all items are retained in the measurement model. The CFA results show that all *Cyberbullying Scale items* are significantly loaded on a single factor and the internal reliability of the scale is very high, the model fit index shows results that are not yet fully optimal.

Table 7 presents the results of the estimation of latent factor variance. The variance factor showed significant values (Estimate = 2.202; z = 11.40; $p < 0.001$), with a 95% confidence interval being in the range of 1.823 to 2.580, indicating that latent constructs have adequate variability in the measurement model.

The CFI and TLI values listed in Table 8 are below the recommended limit and the high RMSEA value indicates a global mismatch between the single-factor model and the empirical covariance of the data. Nevertheless, SRMR values that are within acceptable limits suggest that the residual difference between the observed and predicted covariances by the model is relatively small. These findings indicate that at an item-level, this scale works consistently in measuring *cyberbullying* constructs, although the simple structure of the model may not yet fully capture the complexity of the *cyberbullying experiences* experienced by respondents. This condition is understandable considering that *cyberbullying* includes various forms of aggressive behavior in cyberspace that are heterogeneous. The use of a *parsimonious* one-factor model allows for a simple and practical interpretation, but at the same time can lead to limitations in explaining the variation in relationships between items. Therefore, the results of this study show that *the Indonesian version of the cyberbullying Scale* has a construct validity that can be recommended for re-research and high reliability.

The results of *the Exploratory Factor Analysis* showed that the Indonesian version of *the Cyberbullying Scale* formed one main factor with an *eigenvalue* of 9,628 which explained 68.8% of the total variance. In table 9, all items have a high factor charge, which ranges from 0.689-0.889 so that no items are eliminated. These findings show that the scale is *unidimensional* and that the entire item represents *a cyberbullying construct.*

The *Cyberbullying Scale* (CBS) instrument uses the development of a psychological measurement tool made by Stewart (2014) with a total of 16 items consisting of items 1-2 being descriptive questions (the media used) and items 3-16 being the core measurement items. This study only used core items from the CBS instrument (14 items). All items on the instrument are *favorable*. The measurement scale on this instrument uses *the Likert scale,* which is 0= never reaches 4= very often. The research instrument conducted by Stewart (2014) has good reliability (α = 0.94) with the items listed as follows:

1. Are there other children bullying you using the platforms below? (Circle on a platform you've experienced)
   Email, Whatsapp, SMS, Line, Twitter, Facebook, Tiktok, Instagram, Threads, Virtual World (as in Roblox, Free Fire, Mobile Legends, Valorant and others), or anything else.
2. Do you use the following platforms to bully other children? (Circle everything you've used to bully)
   Email, Whatsapp, SMS, Line, Twitter, Facebook, Tiktok, Instagram, Threads, Virtual World (as in Roblox, Free Fire, Mobile Legends, Valorant and others), or anything else.

This study examined the psychometric properties of the Indonesian-adapted Cyberbullying Scale (CBS) in 392

Table 3. The impact of Cyberbullying

Impact	Presentase
Fear	19,3%
Decreased self-esteem	16,3%
Feelings of helplessness	15,5%
Anxiety	15,5%
Depression	15,5%
Withdrawing from the environment	10,7%
Suicidal thoughts	7,1%
None	0,2%

Table 4. Model Fit Test Results (Chi-Square) on the CFA Cyberbullying Scale

	Value	df	P-value
Model	1074,133	77	<.001

Table 5. Internal Reliability Test Results

Coefficient	Estimate	Std. Error	95% CI Lower	95% CI Upper
Coefficient ω	0.969	0.002	0.965	0.974

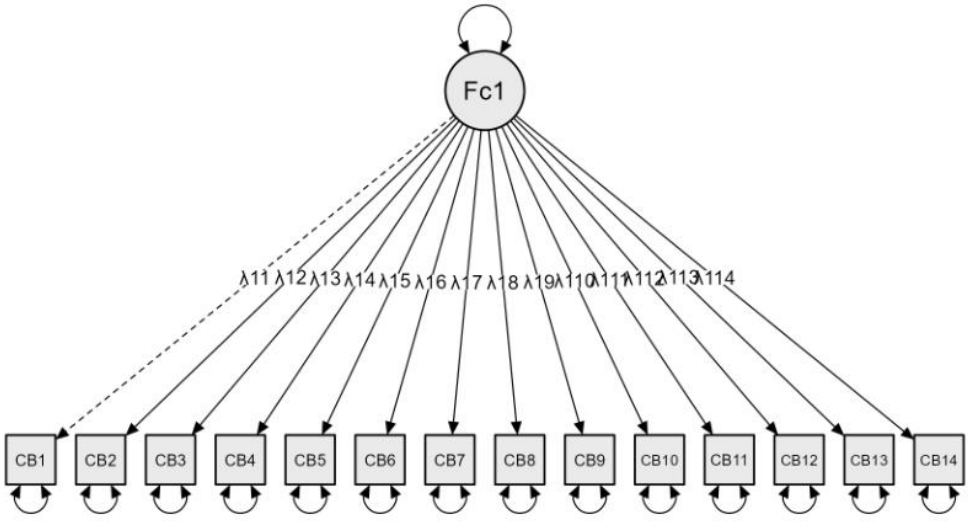

Figure 5. CFA Result Chart Path

adolescents aged 12 to 18 years, addressing three key questions about structural validity, reliability, and implications for cyberbullying measurement in the Indonesian context. The findings present a psychometric paradox that requires careful interpretation: while the Indonesian CBS demonstrates excellent internal consistency reliability with Cronbach's alpha of .968 and McDonald's omega of .969, substantially exceeding Nunnally (1978) conventional .70 threshold and comparable to Stewart (2014) original alpha of .94, the scale exhibits poor global model fit indices with CFI of .839, TLI of .809, and RMSEA of .182. This pattern of strong item-level performance coupled with inadequate structural validity suggests that the unidimensional conceptualization of cyberbullying, while psychometrically sound in Western contexts, may not fully capture the complexity of cyberbullying experiences among Indonesian adolescents operating within different cultural values and digital platform ecosystems. All 17 items exhibited high factor loadings ranging from .64 to .98 (all $p < .001$), and the exploratory factor analysis yielded a unidimensional solution explaining 68.8% of total variance, successfully replicating Stewart (2014) original one-factor structure. Furthermore, the scale showed strong known-groups validity, successfully discriminating between junior high school students ($M = 14.61$) and senior high school students ($M = 24.45$, $p < .001$), aligning with established age-related cyberbullying risk patterns (Kowalski et al., 2014). However, the CFI and TLI values both falling below .90 indicate inadequate model fit, while the RMSEA value of .182 (90% CI [.172, .192]) far exceeds the conventional .08 cutoff (Hu & Bentler, 1999), indicating the presence of large systematic residuals that the unidimensional model fails to account for.

Examination of modification indices reveals systematic patterns of item clustering that extend beyond the general cyberbullying factor and provide theoretical insight into why the unidimensional structure proves inadequate in the Indonesian context. Exclusion-related items, specifically item 4 concerning being prevented from joining online groups and item 6 regarding being left out of online activities, demonstrate substantial covariance (MI = 42.3), suggesting these items share unique variance not captured by the general factor. This pattern likely reflects the dominant role of WhatsApp school-based groups in Indonesian adolescent social life, where group exclusion represents a particularly salient and platform-specific phenomenon with permanent social consequences distinct from the more ephemeral exclusion experiences possible on platforms like Snapchat that predominate in Western contexts (Bayer et al., 2016). Similarly, physical threat items including item 3 concerning threats of physical harm and item 11 about being scared by online threats cluster together (MI = 38.1), potentially reflecting a severity dimension that cuts across the frequency-based conceptualization of the general cyberbullying factor. Most notably, reputation harm items including item 8 about rumor spreading, item 10 concerning impersonation, and item 13 regarding damaging information being shared intercorrelate (MI > 25), suggesting these behaviors may constitute a distinct psychological subfactor in collectivist Indonesian culture where reputation maintenance and face-saving represent paramount social values (Hofstede, 2011). These empirical patterns support a "unidimensional at item-level, multidimensional at facet-level" model wherein all cyberbullying behaviors share substantial common variance, yet different subcategories carry culture-specific psychological meanings not adequately represented in the Western-derived unidimensional structure.

Comparative evidence from other non-Western cultural contexts supports this interpretation and suggests that the structural limitations we identified may reflect broader challenges in applying Western-developed cyberbullying measures across cultural boundaries. Wang et al.'s (2019) Chinese validation of the CBS reported similar fit challenges (CFI = .87, RMSEA = .09), ultimately prompting adoption of a two-factor solution distinguishing direct from indirect aggression. The Turkish adaptation identified a three-factor structure differentiating verbal aggression, visual harassment, and social exclusion as distinct dimensions (Erdur-Baker & Tanrıkulu, 2010). Our Indonesian findings parallel these cross-cultural validation studies, collectively suggesting that the unidimensional CBS structure may be culture-bound rather than representing a universal architecture

Table 6. Confirmatory Factor Analysis (CFA) Cyberbullying Scale

Items	Charge Factor (λ)	SE	z-value	p-value
CB1	1,000 (fixed)	–	–	–
CB2	0,721	0,032	22,66	< 0.001
CB3	0,938	0,035	27,19	< 0.001
CB4	0,648	0,032	20,22	< 0.001
CB5	0,750	0,032	23,78	< 0.001
CB6	0,937	0,034	27,68	< 0.001
CB7	0,643	0,031	20,74	< 0.001
CB8	0,829	0,031	26,44	< 0.001
CB9	0,976	0,035	27,92	< 0.001
CB10	0,683	0,034	19,83	< 0.001
CB11	0,717	0,034	20,97	< 0.001
CB12	0,918	0,036	25,72	< 0.001
CB13	0,683	0,032	21,36	< 0.001
CB14	0,642	0,039	16,30	< 0.001

Table 7. Latent Factor Variance of CFA Results'

					95% Confidence Interval	
Factor	Estimate	Std. Error	z-value	p-value	Lower	Upper
Factor 1	2.202	0.193	11.40	<.001	1.823	2.580

Table 8. Final Model Precision Parameters

Parameter Fit	Output	Criteria	Remarks
CFI	0,839	≥ 0,90	Not fit yet
TLI	0,809	≥ 0,90	Not fit yet
RMSEA	0,182	≤ 0,08	Not fit
SRMR	0,055	≤ 0,08	Fit

Table 9. Hasil Exploratory Factor Analysis (EFA) Cyberbullying Scale

item	*Factor Loading*	
	Factor 1	*Uniqueness*
CB6	0.889	0.210
CB3	0.886	0.215
CB1	0.881	0.224
CB9	0.878	0.229
CB8	0.874	0.236
CB12	0.843	0.289
CB5	0.840	0.295
CB2	0.833	0.307
CB7	0.806	0.350
CB4	0.798	0.362
CB11	0.795	0.368
CB13	0.795	0.369
CB10	0.780	0.392
CB14	0.689	0.525

of cyberbullying experiences. In individualistic Western societies, cyberbullying is conceptualized primarily as interpersonal harm directed toward the autonomous individual, representing a single coherent psychological experience of victimization that varies primarily in frequency and intensity (Smith et al., 2008). In contrast, Indonesian collectivism may produce a more differentiated experiential structure in which cyberbullying manifests as three relatedbut psychologically distinct forms of harm: exclusion from valued social groups representing harm to self-in-relation-to-collective, direct threats to physical safety representing harm to individual bodily integrity, and reputation damage representing harm to social face and family honor (Triandis, 1995). This cultural divergence in the psychological architecture of cyberbullying experiences would naturally produce the pattern we observe, wherein items cohere at the general level but exhibit systematic clustering at the subfactor level that the unidimensional model cannot accommodate.

The platform ecology within which Indonesian adolescents experience cyberbullying provides additional context for understanding why the one-factor model proves inadequate and illuminates the mechanisms through which cultural values interact with technological affordances to shape online aggression (Bronfenbrenner, 1979). Indonesian adolescents in our sample reported experiencing cyberbullying primarily through WhatsApp (42.6%), gaming platforms (37.2%), and Instagram (38.5%), each with distinct social and technical characteristics. WhatsApp represents a closed ecosystem of school-based groups where exclusion is both publicly visible to all group members and permanent in its social consequences, contrasting sharply with more ephemeral platforms (Church & de Oliveira, 2013). Gaming platforms including Mobile Legends and PUBG constitute virtual worlds with their own subcultural norms in which threatening language may be contextualized within game culture and trash-talking conventions (Kwak et al., 2015), potentially altering how threat items are interpreted compared to threats delivered through conventional social media. Instagram serves as a visual reputation management platform where rumor-related items intersect with deeply held cultural norms surrounding face-saving and family honor (Chua & Chang, 2016), investing reputation harm with psychological significance that may exceed its impact in more individualistic cultural contexts. These platform-specific usage patterns create item wording effects and experiential contexts that were not present during the original CBS development in Western samples, where the instrument was created before WhatsApp achieved its current dominance in adolescent communication.

Indonesia's position as a highly collectivistic society (Hofstede individualism score = 14/100; Hofstede, 2011) further illuminates why certain item clusters emerge and why the psychological experience of cyberbullying may be structured differently than in Western contexts. The amplification of relational harm in collectivistic value systems suggests that group exclusion items may be experienced as more psychologically severe than in individualistic societies where identity is less fundamentally rooted in group membership (Markus & Kitayama, 1991). Supporting this interpretation, our descriptive statistics revealed that exclusion items showed the highest mean endorsement levels (item 4: M = 1.71; item 6: M = 1.08), despite these items not necessarily representing the most objectively frequent forms of cyberbullying. This pattern suggests that exclusion experiences carry heightened psychological salience in a collectivistic cultural framework. Furthermore, our analysis revealed a nonsignificant gender difference in CBS scores (p = .057, Cohen's d = .20), contradicting Western meta-analyses consistently showing higher female cyberbullying victimization with effect sizes ranging from .15 to .25 (Barlett & Coyne (2014). Our data showed that females were simultaneously more likely to perpetrate cyberbullying (37.2% vs. 26.8% for males) while also experiencing higher victimization rates (45.5% vs. 35.3% for males), suggesting that cyberbullying functions as a relationally-driven phenomenon that serves to enforce group norms and punish deviance regardless of gender rather than as a gendered form of aggression that specifically targets females (Felmlee & Faris, 2016). The recognition that platform-specific constraints and cultural values jointly shape both the phenomenology of cyberbullying and the measurement properties of instruments designed to assess it represents a crucial insight for researchers working across cultural boundaries.

Limitation

1. Geographic bias: 80.6% sample from Java over-represents urban, economically developed regions. Eastern Indonesian adolescents (Papua, Maluku) may experience cyberbullying differently due to lower internet penetration and different cultural norms.
2. Cross-sectional design: Cannot establish test-retest reliability or measurement invariance over time. Future research needs longitudinal data.
3. Self-report bias: Cyberbullying victimization may be under-reported due to shame (face-saving norms) or over-reported due to broad item wording (e.g., "argument online" CB12 may include non-bullying conflicts).

Table 10. Items Cyberbullying Scale Stewart (2014) English version

item 3-16 *Cyberbullying Scale* (CBS)	Red ± SD
3. You get online messages from other children threatening to hit or physically hurt you	1.41 ± 1.65
4. Other kids deliberately don't put you in an online group	1.71 ± 1.30
5. Other children are constantly saying abusive things to you (e.g. insulting or mocking) through online media	1.82 ± 1.56
6. Other kids who are angry with you are trying to get revenge by not allowing you to join their online group	1.08 ± 1.24
7. You receive an online message that scares you or feels unsafe	1.44 ± 1.32
8. Other children spread lies about you through online media to make others dislike you.	1.90 ± 1.55
9. Other kids say online that they won't like you unless you follow their wishes	1.17 ± 1.22
10. Other children try to make others dislike you by sending or posting nasty things about you.	1.33 ± 1.40
11. Another child sends you a message threatening to hit you if you don't follow their wishes.	1.24 ± 1.61
12. You are involved in an argument or argument online.	1.55 ± 1.33
13. Other children demean you online by sending or posting gossip, rumors, or other hurtful things.	1.32 ± 1.35
14. Other children pretend to be you and send or post something that damages your reputation or friendship.	1.34 ± 1.57
15. Other children share your personal secrets or photos online without permission.	1.41 ± 1.27
16. You should ask an adult for help to deal with something bad happening to you online.	1.36 ± 1,411

4. Same-sample EFA and CFA: Ideally, EFA and CFA should use independent samples. Our approach (necessitated by sample size) may inflate fit estimates. However, since our CFA fit is *poor*, this limitation cannot explain away our findings if anything, we may be *overestimating* fit.
5. No convergent/discriminant validity: We did not correlate CBS scores with other constructs (depression, self-esteem) or other cyberbullying measures to establish nomological network.

Recommendations for Future Research

Future research should prioritize addressing the structural validity limitations identified in this study through multiple analytic approaches. Researchers should test alternative factor structures, including two-factor models distinguishing direct attacks from relational aggression, three-factor models separating verbal attacks, exclusion, and reputation harm, and bifactor models positing a general cyberbullying factor alongside specific subfactors. These models should be cross-validated using independent samples of at least 400 Indonesian adolescents and subjected to measurement invariance testing across gender, age groups, geographic regions, and platform usage patterns. Given the exceptionally high internal consistency (α = .968) suggesting item redundancy, item response theory analyses should identify which items provide maximum information across victimization severity levels, potentially yielding a more efficient seven-item short form that maintains validity while reducing respondent burden.

Long-term validation efforts should establish a comprehensive nomological network by examining the CBS's relationships with theoretically related constructs, including convergent validity with depression, anxiety, and self-esteem measures, discriminant validity from general peer conflict, and criterion validity for predicting school refusal, academic decline, and help-seeking behaviors. Critically, qualitative research should explore culturally-specific cyberbullying manifestations not captured by Western-developed items, such as "status-shaming" involving screenshots of low follower counts or "alay accusations" using Indonesian slang for online mockery. Based on these qualitative insights, researchers should develop and rigorously validate Indonesian-specific items that reflect unique local experiences, iteratively refining the instrument through mixed-methods approaches that balance cultural specificity with psychometric rigor and ensure the measure authentically represents Indonesian adolescents' lived experiences of online aggression.

Practical Implications

The Indonesian CBS demonstrates utility for specific applications while requiring caution in others. Researchers can confidently employ the instrument for group-level comparisons, such as examining cyberbullying prevalence across schools or regions and tracking trends over time in national surveillance studies, as the strong reliability supports aggregate-level inferences despite imperfect structural validity. However, the inadequate model fit precludes using the CBS for individual-level diagnostic purposes or clinical decision-making about specific at-risk students. School counselors and clinicians should treat the CBS as a screening tool that identifies students warranting follow-up clinical interviews rather than as a definitive diagnostic instrument, supplementing standardized items with open-ended questions that capture experiences not reflected in the survey. Practitioners should also recognize platform-specific dynamics, particularly that WhatsApp group exclusion may carry greater psychological impact for Indonesian adolescents than harassment on other platforms, informing both assessment approaches and intervention strategies that address culturally-relevant mechanisms of online aggression.

For policymakers, the finding that 21.2% of Indonesian adolescents report frequent cyberbullying victimization underscores the urgent need for comprehensive prevention strategies (Mukramin et al., 2024). Education officials can utilize the CBS for annual prevalence monitoring to inform resource allocation, while school-based interventions should target the platform-specific behaviors identified in this research, such as implementing WhatsApp group management training that teaches inclusive practices and appropriate conflict resolution in group chat contexts. Effective policy responses require coordinated multi-sectoral efforts, including enforcement of existing legal frameworks such as Law No. 19/2016 concerning Information and Electronic Transactions, integration of mandatory cyberbullying education into school curricula, development of mental health services specifically trained to address online victimization, and public awareness campaigns that engage parents in supporting their children's online safety. Despite its current psychometric limitations, the CBS provides policymakers with a standardized, evidence-based foundation for assessing intervention effectiveness and tracking progress toward creating safer digital environments for Indonesian youth, while this study's transparent reporting of both strengths and limitations models the scientific rigor essential for advancing measurement science in non-Western contexts.

Conclusion

This study provides the first rigorous psychometric evaluation of a cyberbullying measure adapted for Indonesian adolescents. While the Cyberbullying Scale demonstrates excellent reliability (α = .968) and promising item properties, poor model fit indices (CFI = .839, TLI = .809, RMSEA = .182) indicate the one-factor structure inadequately captures cyberbullying complexity in the Indonesian context.

The study contributes methodologically by demonstrating gold-standard translation and comprehensive testing procedures, substantively by identifying platform-specific (WhatsApp, gaming) and culture-specific (collectivism, face-saving) measurement factors, and theoretically by challenging the universality of unidimensional cyberbullying models across cultures. These findings suggest cultural contexts may produce multidimensional structures requiring alternative conceptualization.

The CBS shows preliminary validity for group-level research applications in Indonesia but requires refinement before clinical use. We recommend testing alternative factor structures (two-factor, three-factor, bifactor models), conducting cross-validation in independent samples, and developing culturally grounded items capturing Indonesian-specific cyberbullying forms. Given that Indonesian adolescents spend 7.3 hours daily online (APJII, 2023), validated measures are essential for evidence-based prevention. This study provides a thoroughly tested foundation for continued psychometric refinement toward culturally valid cyberbullying assessment

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