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Psychological Determinants of Cyberbullying: A Theory of Planned Behavior Study on Intentions and Distress Among University Students in South Sulawesi

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ABSTRACT

Background: Cyberbullying has emerged as a serious concern in digital communication environments, particularly among university students in developing countries where research on this phenomenon remains limited. The psychological determinants underlying cyberbullying intentions and their consequences for students' psychological health have not been sufficiently examined within a unified theoretical framework. **Purpose:** This study examines how attitudes, social norms, and perceived behavioral control influence students' intentions to engage in cyberbullying and how these intentions relate to psychological distress among university students in South Sulawesi, Indonesia. **Methods:** A quantitative cross-sectional survey was conducted with 358 university students from multiple institutions in South Sulawesi, Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). **Findings:** Attitude ($\beta = 0.324$, $p < 0.001$), social norms ($\beta = 0.154$, $p = 0.015$), and perceived behavioral control ($\beta = 0.292$, $p < 0.001$) significantly influenced behavioral intention. Behavioral intention mediated the relationship between attitude and psychological distress ($\beta = 0.064$, $p = 0.001$) and between perceived behavioral control and psychological distress ($\beta = 0.057$, $p = 0.010$), while the mediation of social norms was not significant. The model explained 58.7% of behavioral intention and 32.1% of psychological distress. **Research Implications:** Cyberbullying prevention programs should prioritize shifting students' attitudes and reducing perceived behavioral control through digital literacy initiatives and institutional policies that strengthen online accountability. **Originality:** This study extends the Theory of Planned Behavior by linking behavioral intention with psychological distress in the context of cyberbullying, contributing empirical evidence from an underexplored cultural and regional context in Indonesia. **Conclusion:** Attitude, social norms, and perceived behavioral control are significant determinants of cyberbullying intention, with behavioral intention mediating the relationship between these psychological factors and psychological distress. These findings support the theoretical utility of TPB in digital environments and underscore the need for culturally contextual prevention strategies in Indonesian higher education.

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INTRODUCTION

The rapid advancement of digital technology and the widespread adoption of social media platforms have transformed patterns of interpersonal interaction among university students. While digital communication enables faster information exchange and social connectivity, it has simultaneously created environments that facilitate various forms of online aggression, including cyberbullying. Cyberbullying refers to intentional and repeated acts of harm conducted through electronic communication technologies such as social media platforms, messaging applications, and online forums (Kowalski et al., 2014; Smith et al., 2008). In recent years, this phenomenon has become increasingly prevalent among university students who actively participate in digital communication networks.

Compared to traditional forms of bullying, cyberbullying possesses unique characteristics that intensify its potential harm. These include the anonymity of perpetrators, the rapid dissemination of harmful content, and the persistent accessibility of online platforms that allow aggressive interactions to occur continuously across time and space (Slonje et al., 2013). As a result, victims of cyberbullying may experience prolonged exposure to harassment

without clear opportunities for escape or protection. The widespread use of smartphones and social media platforms such as Instagram, Twitter, and WhatsApp further amplifies this risk, particularly among young adults whose daily communication is heavily mediated by digital technologies.

The psychological consequences of cyberbullying are substantial. Individuals exposed to online harassment frequently experience elevated levels of stress, anxiety, depression, and diminished self-esteem (Machackova & Pfetsch, 2016; Martínez-Monteagudo et al., 2020). These psychological outcomes may interfere with students' academic performance, social relationships, and overall psychological health, manifesting as heightened psychological distress. In university settings, where students often experience academic pressure and social competition, cyberbullying can exacerbate emotional vulnerability and undermine mental health stability.

Although cyberbullying has received considerable attention in academic research, understanding the factors that drive individuals to engage in such behavior remains an important challenge. The complex interplay between psychological predispositions, social influences, and technological affordances creates conditions that may encourage aggressive online conduct. Consequently, investigating the determinants of cyberbullying behavior is essential for developing effective prevention strategies among university students.

Literature Review

Scholars have examined cyberbullying through multiple theoretical lenses, identifying behavioral, social, and psychological factors that distinguish it from traditional bullying and contribute to its persistence in digital environments (Kowalski et al., 2014; Langos, 2012). Harmful messages, rumors, public humiliation, and the unauthorized sharing of personal information are among the common forms of cyberbullying behavior observed in online environments (Langos, 2012).

Research has identified several psychological and social factors that contribute to cyberbullying behavior. One important factor is individual attitude toward cyberbullying. Attitude reflects an individual's evaluation of whether engaging in cyberbullying is acceptable or beneficial. Individuals who perceive cyberbullying as justified, entertaining, or socially rewarding may be more inclined to participate in such behavior (Barlett & Gentile, 2012). These attitudes may be reinforced by digital environments that reduce direct interpersonal feedback and emotional accountability.

Perceived behavioral control also plays a significant role in cyberbullying behavior, referring to an individual's perception of their ability to perform a behavior and their confidence in executing it successfully. In online environments, technological features such as anonymity, pseudonyms, and limited institutional oversight may increase individuals' perception that cyberbullying can be conducted without significant consequences (Pabian & Vandebosch, 2016). Individuals with higher perceived behavioral control over online interactions may therefore be more likely to engage in cyber-aggressive behavior.

Social norms also play a critical role in shaping cyberbullying behavior. Social norms represent shared expectations regarding acceptable behavior within a social group (Wright, 2014). Among university students, peer influence is particularly influential in shaping online behavior. When individuals perceive that their peers tolerate or even encourage cyberbullying, they may feel social pressure to conform to these behavioral expectations (Festl & Quandt, 2016). Conversely, peer environments that promote respectful online communication may discourage cyberbullying activities.

The relationships among attitude, social norms, perceived behavioral control, and behavioral intention are explained comprehensively through the Theory of Planned Behavior (TPB). The TPB proposes that behavioral intention is the most immediate predictor of behavior and is influenced by three key determinants: attitude toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). Within the context of cyberbullying, this theoretical framework helps explain how individuals' beliefs and social environments shape their intentions to engage in online aggression.

Several studies applying TPB in digital behavior research indicate that favorable attitudes toward cyberbullying, perceived peer approval, and a high sense of behavioral control can significantly increase individuals' intentions to engage in cyberbullying behavior (Heirman & Walrave, 2012; Kokkinos & Saripanidis, 2017). Furthermore, behavioral intention has been identified as a strong predictor of actual behavior, highlighting its central role in explaining cyberbullying participation (Hayashi & Tahmasbi, 2022).

Beyond behavioral determinants, cyberbullying also has significant implications for psychological distress among those involved. Psychological distress in this study is conceptualized as a multidimensional construct reflecting negative emotional, cognitive, and self-evaluative responses associated with individuals' involvement in cyberbullying-related experiences. This includes distress arising from direct victimization, engagement in cyberbullying behavior, as well as broader exposure to negative interactions in online environments. Such distress manifests in forms such as anxiety, sadness, reduced self-confidence, helplessness, and difficulties in concentration, which have been consistently documented as common psychological outcomes associated with cyberbullying contexts (Kowalski et al., 2014; Martínez-Monteagudo et al., 2020).

Rather than isolating a single role (e.g., victim or perpetrator), this study adopts a broader conceptualization of psychological distress that captures the overall psychological strain associated with cyberbullying involvement within digital social environments. Consistent with this perspective, prior research has shown that involvement in

cyberbullying, whether as a victim, perpetrator, or through exposure to negative online interactions, is associated with adverse psychological outcomes such as depression, anxiety, and social withdrawal (Olenik-Shemesh et al., 2012). The persistent and public nature of online interactions can further intensify these psychological impacts, making them more difficult to manage over time.

Gap Analysis

Despite the growing body of research on cyberbullying, several important limitations remain in the existing literature. Previous studies have extensively documented the prevalence of cyberbullying and its negative psychological consequences, particularly among adolescent populations in secondary school settings. However, relatively limited attention has been given to cyberbullying among university students, who experience different academic environments, social dynamics, and patterns of digital interaction that may shape cyberbullying behavior in distinct ways (Selkie et al., 2017).

In addition, although the Theory of Planned Behavior (TPB) has been widely applied to explain various forms of online behavior, its application to cyberbullying research remains relatively limited. Existing studies tend to examine predictors of cyberbullying behavior in isolation, providing limited understanding of how these psychological and social factors operate simultaneously within the TPB framework. As a result, the psychological mechanisms underlying students' intentions to engage in cyberbullying remain insufficiently understood.

Furthermore, most prior research has primarily focused on identifying predictors or consequences of cyberbullying behavior, while the relationship between behavioral intention and psychological distress has received comparatively less attention. Although cyberbullying has been associated with negative mental health outcomes, the potential role of behavioral intention as a mediating mechanism linking psychological determinants with psychological distress has rarely been examined.

Another limitation relates to the lack of empirical evidence from specific cultural contexts. Cultural norms, communication styles, and patterns of social media use may influence how cyberbullying behaviors are perceived and enacted. Despite Indonesia's position as one of the largest social media user populations in Southeast Asia, empirical studies investigating cyberbullying among university students in the country, particularly those applying the TPB framework, remain scarce (Mardianto et al., 2021). Understanding cyberbullying within this local context is important for developing culturally relevant prevention strategies.

To address these gaps, the present study applies the Theory of Planned Behavior to examine how attitudes, social norms, and perceived behavioral control influence university students' intentions to engage in cyberbullying and how these intentions relate to psychological distress. By focusing on university students in South Sulawesi, this study contributes empirical evidence that expands current understanding of the psychological determinants of cyberbullying and their implications for student psychological distress in higher education contexts.

Rationale of the Study

Considering these gaps, the Theory of Planned Behavior provides a suitable conceptual foundation for investigating the simultaneous influence of attitudes, social norms, and perceived behavioral control on cyberbullying intentions among university students. Applying the TPB framework in the context of university students allows researchers to understand the psychological mechanisms underlying cyberbullying behavior while also examining its potential implications for psychological distress. By integrating psychological constructs and behavioral intentions within a single analytical model, this study aims to provide a more comprehensive explanation of cyberbullying behavior in digital environments.

Furthermore, focusing on university students in South Sulawesi provides valuable contextual insights into cyberbullying behavior in an underexplored cultural setting. Understanding how local social norms and digital communication practices shape cyberbullying behavior may contribute to the development of more effective prevention strategies tailored to the needs of students in this region.

In addition, examining the mediating role of behavioral intention in linking psychological determinants with psychological distress provides a deeper understanding of how cyberbullying-related intentions influence students' psychological outcomes a relationship that has received limited empirical attention, particularly in Southeast Asian university contexts.

Purpose and Hypotheses of the Study

The primary objective of this study is to examine the psychological and social determinants of cyberbullying behavior among university students using the Theory of Planned Behavior framework. Specifically, the study investigates how attitudes toward cyberbullying, social norms, and perceived behavioral control influence students' intention to engage in cyberbullying and how this intention relates to psychological distress. Based on the theoretical framework and previous literature, the study proposes the following hypotheses:

- H1a: Attitude toward cyberbullying has a positive effect on the intention to engage in cyberbullying.
- H1b: Social norms have a positive effect on the intention to engage in cyberbullying.
- H1c: Perceived behavioral control has a positive effect on the intention to engage in cyberbullying.

- H2a: The intention to engage in cyberbullying positively mediates the relationship between attitude toward cyberbullying and psychological distress.
- H2b: The intention to engage in cyberbullying positively mediates the relationship between social norms and psychological distress.
- H2c: The intention to engage in cyberbullying positively mediates the relationship between perceived behavioral control and psychological distress.

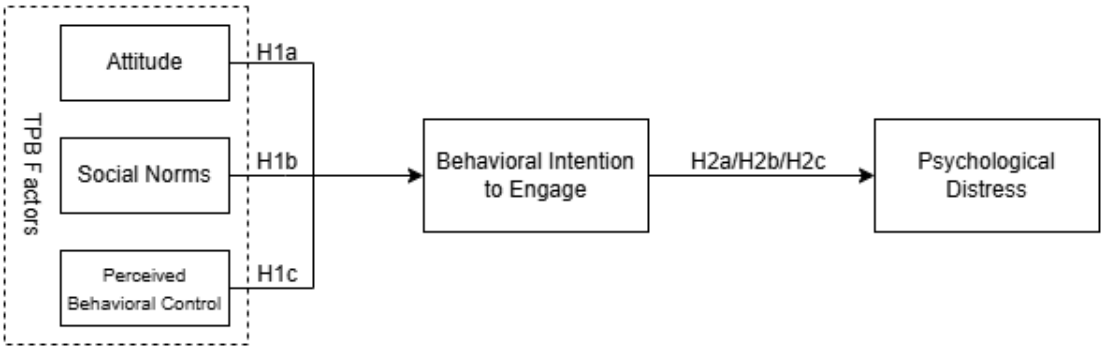

Figure 1. Proposed Theoretical Model of Cyberbullying Determinants and Psychological Distress

METHOD

Research Design

This study employed a quantitative research design using a cross-sectional survey approach to examine the relationships between psychological and social factors associated with cyberbullying behavior among university students. A cross-sectional design allows researchers to analyze relationships among variables measured at a single point in time, making it appropriate for investigating behavioral intentions and psychological outcomes within a defined population (Wang & Cheng, 2020).

The research design was selected because the objective of this study was to examine how Attitude (ATT), Social Norms (SN), and Perceived Behavioral Control (PBC) influence the Behavioral Intention to Engage (BIN) in cyberbullying and how this intention relates to Psychological Distress (PD). The reporting of methodological procedures follows the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) recommendations to ensure transparency in describing participants, data collection, and analytical methods.

Participants

A total of 358 university students participated in this study. Participants were recruited from several public and private universities in South Sulawesi, Indonesia. University students were selected because they actively engage in digital communication and social media interactions, increasing their exposure to online social dynamics including cyberbullying.

Participants were required to meet two inclusion criteria. First, they had to possess basic knowledge of cyberbullying. Second, they had to have experience or exposure to cyberbullying on social media, including witnessing, experiencing, or hearing about such incidents. These criteria ensured that respondents were familiar with the phenomenon and able to respond meaningfully to the questionnaire items. These inclusion criteria were operationally assessed through two screening questions presented at the beginning of the survey. Participants who did not meet both criteria were directed to discontinue the survey.

Population and Methods of Sampling

The population of this study consisted of university students in South Sulawesi who actively use social media platforms such as WhatsApp and Instagram. A purposive sampling technique, a non-probability approach used when participants must meet specific eligibility criteria relevant to the research objectives, was employed to recruit respondents. The minimum sample size was determined following the rule-of-five guideline for multivariate analysis, which requires at least five observations per indicator (Hair et al., 2019). Given that the questionnaire consisted of 25 measurement items, the minimum required sample was 125 participants. The final dataset comprised 358 valid responses, which satisfied this threshold and was further confirmed as adequate by the inverse square root method proposed by Kock & Hadaya (2018), supporting sufficient statistical power to detect minimum effect sizes at $\alpha = 0.05$.

The demographic profile shows that 63.7% of participants were female and 36.3% male. Most respondents were in the fourth semester (42.7%), followed by the sixth semester (33.8%) and second semester (20.7%). The majority of participants were 20 years old (36.6%), followed by 19 years old (28.8%). Regarding exposure to cyberbullying, 41.9% reported witnessing it several times a week, while 10.3% reported witnessing it daily.

Table 1. Sociodemographic Profile of Participants in the Current Study

Background	Full Sample	
	n	%
Gender		
Female	228	63.7%
Male	130	36.3%
Semester		
Second (2024)	74	20.7%
Fourth (2023)	153	42.7%
Sixth (2022)	121	33.8%
Eighth (2021)	10	2.8%
Age		
18	38	10.6%
19	103	28.8%
20	131	36.6%
21	62	17.3%
22	23	6.4%
Experience of witnessing cyberbullying cases on social media		
Every day	37	10.3%
Several times a week	150	41.9%
Several times a month	73	20.4%
Rarely	85	23.7%
Never	13	3.6%

Note. N = 358

Instrument Development

The survey instrument was developed based on established theoretical frameworks related to cyberbullying behavior, psychological distress, and the Theory of Planned Behavior (TPB). Measurement items for Attitude toward cyberbullying (ATT), Social Norms (SN), Perceived Behavioral Control (PBC), and Behavioral Intention to Engage in cyberbullying (BIN) were adapted from the TPB framework proposed by Ajzen (1991). Meanwhile, items measuring Psychological Distress (PD) were adapted to reflect negative psychological outcomes associated with cyberbullying involvement, including anxiety, sadness, reduced self-confidence, helplessness, and difficulty concentrating, outcomes consistently documented among university students exposed to cyberbullying (Kowalski et al., 2014; Martínez-Monteagudo et al., 2020).

It is important to note that the Psychological Distress construct in this study was operationalized to capture a broad range of distress experiences associated with cyberbullying involvement. The measurement items intentionally reflect multiple forms of exposure, including direct victimization, participation in cyberbullying behavior, and general negative interactions in online environments. This approach aligns with the study's objective to capture the overall psychological impact of cyberbullying within digital contexts rather than isolating role-specific experiences. No formal pilot study was conducted prior to full data collection. However, the content validation process involving expert review served as a preliminary quality control measure to ensure item clarity and construct alignment before deployment.

The initial questionnaire consisted of 25 items distributed across five constructs: Attitude (ATT), Social Norms (SN), Perceived Behavioral Control (PBC), Behavioral Intention to Engage (BIN), and Psychological Distress (PD), with five items assigned to each construct. Prior to data collection, content validity was assessed through expert review by faculty members from Universitas Negeri Makassar to evaluate the clarity, relevance, and conceptual alignment of each item with the intended constructs. Based on the experts' feedback, minor wording revisions were made to improve clarity and ensure that the items adequately reflected cyberbullying behavior among university students.

Table 2 presents the initial measurement items used in the questionnaire prior to measurement model refinement. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 2. Measurement Instrument

Variable	Item code	Statement	Reference
Attitude	ATT1	I believe that cyberbullying is not a major issue in everyday life.	**(Ajzen, 1991)**
	ATT2	I believe cyberbullying can be an effective way to take revenge.	
	ATT3	I don't see significant negative consequences from engaging in cyberbullying.	
	ATT4	I feel satisfied after cyberbullying someone I dislike.	

Variable	Item code	Statement	Reference
	ATT5	I think cyberbullying others is a normal thing in the digital world.	
Social Norms	SN1	Most of my friends consider cyberbullying to be normal.	**(Ajzen, 1991)**
	SN2	My peer group supports cyberbullying behavior.	
	SN3	I feel pressured to participate in cyberbullying because the people around me are doing it.	
	SN4	If I cyberbully someone, I won't be criticized by my friends.	
	SN5	I believe that many people I know don't have a problem with cyberbullying.	
Perceived Behavioral Control	PBC1	I feel I can engage in cyberbullying anytime I want.	**(Ajzen, 1991)**
	PBC2	I believe no one can stop me from cyberbullying.	
	PBC3	I believe that I have full control over my actions on social media, including cyberbullying.	
	PBC4	I believe there are no consequences if I cyberbully.	
	PBC5	I can easily hide my identity when cyberbullying.	
Behavioral Intention to Engage	BIN1	I intend to cyberbully someone if I feel annoyed.	**(Ajzen, 1991)**
	BIN2	I might cyberbully if given a safe opportunity.	
	BIN3	I wouldn't hesitate to cyberbully someone I don't like.	
	BIN4	I tend to respond to others' mistreatment with cyberbullying.	
	BIN5	If there were no consequences, I would cyberbully more often.	
Psychological Distress	PD1	I feel more anxious after experiencing or engaging in cyberbullying.	**(Kowalski et al., 2014; Martínez-Monteagudo et al., 2020)**
	PD2	I often feel sad or stressed due to negative interactions on social media.	
	PD3	I feel cyberbullying affects my self-confidence.	
	PD4	I often feel helpless when I am a victim of cyberbullying.	
	PD5	I find it difficult to concentrate in daily life due to the impact of cyberbullying.	

Instrument Validity and Reliability

The psychometric properties of the instrument were evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) with reflective measurement estimation. Reliability and validity were assessed through factor loadings, Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE).

Indicators with factor loadings below 0.50 were removed, following the guideline that each indicator should account for at least 50% of the variance in its respective latent construct, a threshold considered acceptable when measurement instruments are newly adapted or applied within culturally distinct populations (Hair et al., 2019). Internal consistency reliability was confirmed through Cronbach's alpha and Composite Reliability values above 0.70, while Average Variance Extracted values above 0.50 indicated acceptable convergent validity.

Ethical Considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. All ethical safeguards were implemented to protect participants' rights and dignity. Prior to participation, all respondents received a written explanation of the study's purpose, procedures, voluntary nature of participation, and the right to withdraw at any time without consequence. Informed consent was obtained from all participants before they accessed the survey instrument. Anonymity and confidentiality of responses were strictly maintained throughout data collection and analysis, as no personally identifiable information was recorded. Participation was entirely voluntary, and no incentives were offered.

Procedures and Time Frame

Data collection was conducted between February and March 2025 using an online survey distributed through WhatsApp and Instagram, which are widely used communication platforms among university students in Indonesia. Participants first received an informed consent statement explaining the purpose of the study and assuring confidentiality of responses. Only those who agreed proceeded to complete the questionnaire. The survey consisted of two sections. The first section collected information about participants' experiences related to cyberbullying exposure on social media. The second section contained statements measuring the five constructs included in the research model.

Analysis Plan

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software version 4.1.1.1 (Ringle et al., 2020). PLS-SEM is a variance-based structural equation modeling technique used to analyze relationships between observed indicators and latent variables while maximizing the explained variance in dependent constructs (Benitez et al., 2020; Hair et al., 2014). The analysis

followed two stages. First, the measurement model was evaluated to assess reliability and validity through factor loadings, internal consistency reliability, convergent validity, and discriminant validity. Second, the structural model was analyzed to examine direct and indirect relationships between constructs. To assess potential Common Method Bias, Harman's single-factor test and Variance Inflation Factor (VIF) analysis were applied.

Scope and Limitations of the Methodology

Several methodological limitations should be acknowledged. First, the cross-sectional design limits the ability to establish causal relationships between variables. Second, the purposive sampling method restricts the generalizability of the findings beyond university students in South Sulawesi. Third, the use of self-reported data may introduce response bias. Despite these limitations, the methodology provides a structured approach for examining psychological determinants of cyberbullying behavior and their relationship with psychological distress among university students.

RESULTS

Common Method Bias

To evaluate the potential presence of Common Method Bias (CMB), two statistical procedures were applied: Harman's single-factor test and the Variance Inflation Factor (VIF) approach within the PLS-SEM framework. Harman's single-factor test was used to determine whether a single latent factor accounted for the majority of covariance among the measured variables. The analysis indicated that the largest factor explained 45.156% of the total variance, which is below the recommended 50% threshold. This result suggests that common method bias is unlikely to significantly affect the measurement model (Podsakoff et al., 2003).

To further assess CMB, the full collinearity VIF method was applied following the PLS-SEM procedure recommended by Kock (2015). In this approach, VIF values exceeding 3.3 indicate potential pathological collinearity and possible bias in the model. As presented in Table 2, most latent constructs exhibited VIF values below this threshold, ranging from 1.946 to 2.524. The Behavioral Intention to Engage construct recorded a value of 3.333, slightly exceeding the recommended cutoff. However, given that the remaining constructs were well within acceptable limits and that the value marginally exceeds the threshold by less than 1% of the cutoff criterion, this finding does not constitute evidence of pathological collinearity. The result may reflect the central mediating role of behavioral intention in the structural model, which naturally produces higher shared variance with adjacent constructs (Kock, 2015).

Table 3. Full Collinearity VIF Values

Latent factors	Attitude	Social Norms	Perceived Behavioral Control	Behavioral Intention to Engange	Psychological Distress
Full collinearity VIF	2.524	1.946	2.319	3.333	3.198

These findings indicate that multicollinearity among constructs is minimal and that the measurement model remains statistically acceptable for further analysis.

Assessment of the Measurement Model

The measurement model was evaluated using the PLS algorithm in SmartPLS version 4.1.1.1. Following the guidelines proposed by Hair et al. (2019), the evaluation focused on factor loadings, internal consistency reliability, convergent validity, and discriminant validity. All constructs in the study Attitude (ATT), Social Norms (SN), Perceived Behavioral Control (PBC), Behavioral Intention to Engage (BIN), and Psychological Distress (PD) were modeled as reflective constructs (Mode A). The first step involved examining indicator loadings to assess the contribution of each item to its corresponding latent construct.

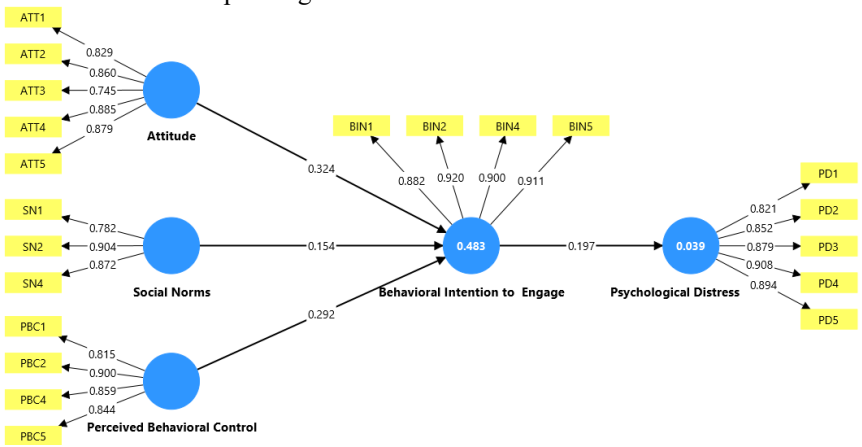

Figure 2. Complete Evaluation of the Measurement Model Using PLS Algorithm

Indicators with factor loadings below the recommended threshold of 0.50 were removed because they did not adequately represent their respective constructs (Henseler et al., 2016). The analysis indicated that four indicators did not meet the loading requirement and were therefore excluded from further analysis. Specifically, two indicators from Social Norms (SN3 and SN5), one indicator from Perceived Behavioral Control (PBC3), and one indicator from Behavioral Intention (BIN3) were removed during the measurement model refinement stage. After removing these indicators, each construct retained at least three indicators, which is considered sufficient for structural equation modeling.

To assess internal consistency reliability, three indicators were used: Cronbach's alpha, Composite Reliability (CR), and Rho_A. These measures evaluate the extent to which indicators consistently represent the underlying constructs. Acceptable reliability levels are generally indicated by values above 0.70 (Hair et al., 2019). The results showed reliability values ranging from 0.707 to 0.947, confirming that all constructs demonstrate adequate internal consistency.

Table 4. Loadings, Reliability, and Validity Indicators for First-Order Constructs

Variable	Item code	Loading	Alpha	Rho_A	CR	AVE
Attitude			0.896	0.900	0.923	0.707
	ATT1	0.829				
	ATT2	0.860				
	ATT3	0.745				
	ATT4	0.885				
	ATT5	0.879				
Social			0.815	0.840	0.890	0.730
Norms	SN1	0.782				
	SN2	0.904				
	SN4	0.872				
Perceived			0.878	0.893	0.916	0.731
Behavioral	PBC1	0.815				
Control	PBC2	0.900				
	PBC4	0.859				
	PBC5	0.844				
Behavioral			0.925	0.927	0.947	0.816
Intention to	BIN1	0.882				
Engage	BIN2	0.920				
	BIN4	0.900				
	BIN5	0.911				
Psychologic			0.920	0.922	0.940	0.759
al Distress	PD1	0.821				
	PD2	0.852				
	PD3	0.879				
	PD4	0.908				
	PD5	0.894				

Convergent validity was assessed using Average Variance Extracted (AVE). A value exceeding 0.50 indicates that a construct explains more than half of the variance of its indicators. The AVE values in this study ranged from 0.707 to 0.816, confirming acceptable convergent validity across all constructs. Discriminant validity was evaluated using two approaches: the Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT).

Table 5. Discriminant Validity Based on Fornell–Larcker Criterion

	ATT	BIN	PBC	PD	SN
ATT	0.841				
BIN	0.640	0.903			
PBC	0.725	0.638	0.855		
PD	0.082	0.197	0.161	0.871	
SN	0.672	0.581	0.714	0.156	0.854

The results show that the square roots of AVE for each construct exceed the inter-construct correlations, confirming that the constructs are empirically distinct.

Table 6. Discriminant Validity Based on $HTMT_{0.85}$

	ATT	BIN	PBC	PD	SN
ATT					
BIN	0.701				
PBC	0.805	0.695			
PD	0.095	0.211	0.177		
SN	0.768	0.657	0.831	0.183	

The HTMT values also fall below the recommended 0.85 threshold, further supporting discriminant validity. Overall, these results indicate that the measurement model demonstrates acceptable levels of reliability and validity, supporting its suitability for structural model evaluation.

Assessment of the Structural Model

After validating the measurement model, the structural model was assessed using consistent Partial Least Squares (PLS) in SmartPLS. The first step involved evaluating Variance Inflation Factor (VIF) values for exogenous constructs to identify potential multicollinearity issues. As shown in Table 2, the VIF values for Attitude (2.524), Social Norms (1.946), and Perceived Behavioral Control (2.319) were below the recommended threshold, indicating no significant multicollinearity concerns.

Next, the coefficient of determination (R^2) was examined to evaluate the model's explanatory power. The R^2 value for Behavioral Intention to Engage (BIN) was 0.587, indicating a moderate level of explanatory power. Meanwhile, the R^2 value for Psychological Distress (PD) was 0.321, indicating a weaker predictive capability. The effect size (f^2) was also calculated to determine the relative influence of each exogenous variable on the endogenous constructs. The results indicate that Social Norms exerted the strongest effect on behavioral intention ($f^2 = 0.392$), followed by Attitude ($f^2 = 0.162$) and Perceived Behavioral Control ($f^2 = 0.098$). Behavioral Intention demonstrated a small effect on Psychological Distress ($f^2 = 0.127$).

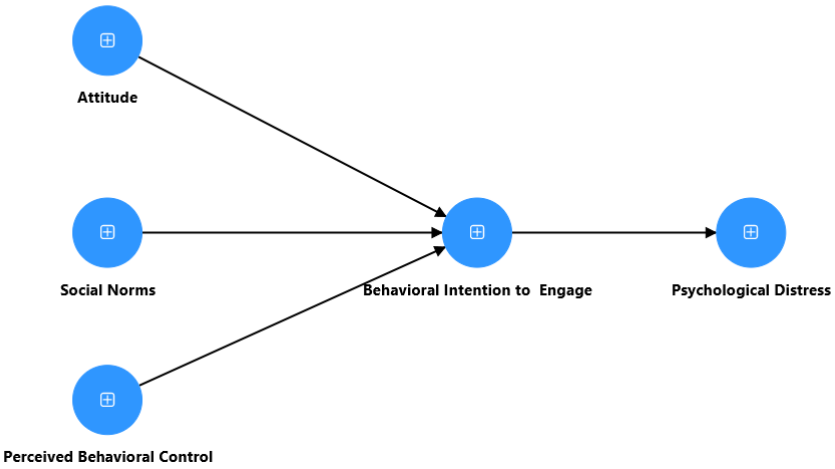

Figure 3. Structural Model with Path Coefficients

Predictive relevance was further evaluated using Q^2 statistics, which assess the predictive accuracy of the structural model. The results indicated moderate predictive relevance for Behavioral Intention ($Q^2 = 0.428$) and small predictive relevance for Psychological Distress ($Q^2 = 0.297$). To test the significance of the hypothesized relationships, a bootstrapping procedure with 10,000 subsamples was conducted.

Table 7. Overview of Hypotheses Testing Results Based on Path Coefficients

Hypothesis	Path coefficient	T Statistics	p	Bias, 95% Confidence interval	Conclusion
ATT→BIN (H1a)	0.324	4.534	0.000	[-0.000, 0.451]	Supported
SN→BIN (H1b)	0.154	2.444	0.015	[0.001, 0.277]	Supported
PBC→BIN (H1c)	0.292	3.943	0.000	[0.001, 0.433]	Supported
ATT→BIN→PD (H2a)	0.064	3.218	0.001	[0.001, 0.105]	Supported (indirect effect significant)
SN→BIN→PD (H2b)	0.030	1.910	0.056	[0.001, 0.067]	Not Supported (based on p-value criterion)
PBC→BIN→PD (H2c)	0.057	2.560	0.010	[0.002, 0.108]	Supported (indirect effect significant)

The Psychological Distress construct represents a general form of cyberbullying-related distress encompassing multiple types of involvement in online interactions. As shown in Table 7, Attitude ($\beta = 0.324$, $p < 0.001$), Social Norms ($\beta = 0.154$, $p = 0.015$), and Perceived Behavioral Control ($\beta = 0.292$, $p < 0.001$) significantly influenced students' intention to engage in cyberbullying, supporting hypotheses H1a, H1b, and H1c.

The mediation analysis revealed that Behavioral Intention significantly mediated the relationships between Attitude and Psychological Distress ($\beta = 0.064$, $p = 0.001$) and between Perceived Behavioral Control and Psychological Distress ($\beta = 0.057$, $p = 0.010$), supporting hypotheses H2a and H2c in terms of indirect effects. However, the mediating effect of Behavioral Intention between Social Norms and Psychological Distress was not statistically significant based on the p-value criterion ($\beta = 0.030$, $p = 0.056$), indicating that hypothesis H2b was not supported.

To provide a more rigorous interpretation of the mediation results, it is important to note that the current analysis focuses on the significance of indirect effects obtained through bootstrapping procedures. The results indicate that behavioral intention significantly transmits the effects of attitude and perceived behavioral control on psychological distress. However, the direct effects of these variables on psychological distress were not explicitly modeled in the current analysis, and therefore the classification of mediation type (e.g., full or partial mediation) cannot be conclusively established.

Furthermore, a discrepancy was observed in the mediation result for social norms (H2b), where the p-value ($p = 0.056$) indicates non-significance, while the confidence interval suggests a marginal effect. In this study, the interpretation of significance follows the p-value criterion, and thus the mediation effect of social norms on psychological distress is considered not supported.

One possible explanation is that peer influence primarily shapes individuals' behavioral intentions rather than directly affecting psychological outcomes. This suggests that while social norms may encourage participation in cyberbullying, the psychological consequences experienced by individuals may depend more strongly on personal attitudes and perceived behavioral control.

DISCUSSION

The findings reinforce the explanatory capacity of the Theory of Planned Behavior (TPB) in the context of cyberbullying among university students. Attitude emerged as the strongest predictor of behavioral intention, suggesting that evaluative beliefs regarding the acceptability of cyberbullying play a central role in shaping intention. This result is consistent with prior TPB-based studies indicating that favorable cognitive appraisals of online aggression increase the likelihood of engagement in such behavior (Heirman & Walrave, 2012; Kokkinos & Saripanidis, 2017; Mardianto et al., 2021).

The interpretation of the findings should consider the operationalization of psychological distress as a broad construct that encompasses multiple forms of cyberbullying-related experiences (Samsudin et al., 2023). The observed relationships therefore reflect general psychological strain associated with involvement in digital aggression contexts rather than role-specific distress (e.g., victim-only or perpetrator-only effects). This broader conceptualization allows for capturing the complex and overlapping nature of cyberbullying experiences in online environments, where individuals may simultaneously occupy multiple roles or be exposed to various forms of negative interactions.

Social norms also demonstrated a significant effect on intention, confirming that perceived peer approval functions as an important social mechanism influencing cyberbullying behavior (Prestera et al., 2025). However, the non-significant mediating effect of behavioral intention between social norms and psychological distress (H2b) suggests that normative pressure may primarily operate at the intention-formation stage without directly translating into psychological outcomes. In collectivist-oriented contexts such as Indonesia, social conformity may shape behavioral tendencies, yet psychological responses appear to be more strongly driven by internal cognitive evaluations rather than external social expectations (Virdiyanti, 2025).

Perceived behavioral control significantly influenced intention, highlighting the role of technological affordances, particularly anonymity in strengthening perceived capability to engage in cyberbullying (Madon & Chin, 2021). The relatively high correlation between attitude and perceived behavioral control ($r = 0.725$) further suggests a conceptual proximity, where perceived ease of engaging in cyberbullying may reinforce favorable evaluations of the behavior. Finally, the slightly elevated VIF value for behavioral intention (3.333) may reflect its central mediating role within the TPB structure rather than indicating problematic multicollinearity, as other constructs remained within acceptable thresholds.

Implications

The findings have several practical implications for educators, policymakers, and digital platform providers. Educational institutions can implement digital literacy programs that emphasize responsible online behavior and raise awareness about the psychological consequences of cyberbullying. These programs can help reshape students' attitudes and reduce the normalization of aggressive online interactions. Policymakers can also promote community-based awareness campaigns that challenge social norms supporting cyberbullying. Encouraging peer groups to adopt positive online behavior may help reduce the social acceptance of cyberbullying. In addition,

collaboration with social media platforms can improve reporting systems and moderation mechanisms to provide better protection for victims of cyberbullying.

Research contribution

This study contributes to the literature in several ways. First, it applies the Theory of Planned Behavior to explain cyberbullying behavior among university students. Second, it highlights the mediating role of behavioral intention in linking psychological determinants with psychological distress outcomes. Third, the study provides empirical evidence from South Sulawesi, Indonesia, an underexplored context in cyberbullying research.

Limitations

Several limitations should be acknowledged. A key limitation of this study lies in the operationalization of the psychological distress construct. The measurement items capture a broad spectrum of distress experiences related to cyberbullying involvement, including victimization, engagement in cyberbullying behavior, and general exposure to negative online interactions. While this approach allows for a comprehensive assessment of psychological strain in digital environments, it limits the ability to distinguish between role-specific effects. Future research is therefore encouraged to employ more narrowly defined constructs that differentiate between victim-related distress and perpetrator-related psychological outcomes. The cross-sectional design restricts the ability to establish causal relationships between variables. Additionally, the sample was limited to university students in South Sulawesi, which may limit the generalizability of the findings. The study also relied on self-reported survey data, which may introduce response bias.

Suggestions

Future research should consider longitudinal research designs to examine changes in cyberbullying behavior over time. Expanding the sample to include different age groups and cultural contexts would also improve the generalizability of the findings. Further studies could explore additional variables such as digital empathy, online moral disengagement, or coping strategies to provide a more comprehensive understanding of cyberbullying dynamics.

CONCLUSION

This study examined the influence of attitude, social norms, and perceived behavioral control on university students' intention to engage in cyberbullying and its implications for psychological distress within the framework of the Theory of Planned Behavior (TPB). The findings confirm that all three TPB determinants significantly predict behavioral intention, highlighting the central role of cognitive evaluations, perceived social expectations, and perceived control in shaping cyberbullying tendencies. In addition, behavioral intention was found to mediate the relationships between attitude and psychological distress, as well as between perceived behavioral control and psychological distress, indicating that stronger intentions to engage in cyberbullying are associated with increased psychological strain. However, the mediating effect of intention in the relationship between social norms and psychological distress was not supported, suggesting that internal cognitive mechanisms may play a more dominant role than external social pressures in shaping psychological outcomes.

These findings provide important implications for the development of targeted cyberbullying prevention strategies in higher education. Universities can design structured digital literacy modules that explicitly address the ethical consequences of online behavior, such as incorporating case-based learning on cyberbullying scenarios, reflective exercises to challenge permissive attitudes, and training on responsible digital communication. In parallel, institutional policies can strengthen preventive efforts by establishing clearer reporting mechanisms, promoting peer-led campaigns to reshape social norms, and collaborating with digital platforms to enhance monitoring and response systems. By addressing both cognitive and environmental factors, these strategies can contribute to reducing cyberbullying intentions and mitigating their psychological impact among students.

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AUTHOR CONTRIBUTION STATEMENT

DA conceptualized the study, developed the theoretical framework, designed the research methodology, and developed the questionnaire instrument. DS, MF conducted the data collection and managed the dataset. FA, DS supervised the research project and contributed to the critical revision of the manuscript. All authors contributed to writing, reviewing, and approving the final version of the manuscript.

AI DISCLOSURE STATEMENT

The author used ChatGPT during the preparation of this work to assist with language refinement, grammar improvement, and clarity of academic writing. After using this tool, the author carefully reviewed, edited, and verified the content to ensure accuracy, coherence, and compliance with academic standards. The author takes full responsibility for the integrity and content of the final manuscript.

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