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Predictive Factors of Cyberbullying and Cybervictimization

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Abstract:

Due to the increasing prevalence of cyberbullying in Thailand, this research aims to study the influence of ICT self-efficacy, grandiose narcissism, self-esteem, and empathy on cyberbullying and cybervictimization, incorporating perspectives from both perpetrators and victims for a comprehensive analysis. Additionally, it investigates the mediating role of empathy in the relationship between grandiose narcissism and cyberbullying behavior. The sample comprises 395 individuals aged 18–24 years, residing in Bangkok and its metropolitan area in Thailand, selected through convenience sampling. Structural equation modeling (SEM) was employed using SPSS and Lisrel. The results revealed that ICT self-efficacy has a direct and significant positive effect on cyberbullying and negative effect on cybervictimization at the .01 level. Grandiose narcissism has a direct effect on cyberbullying and cybervictimization and an indirect effect on cyberbullying through empathy, with statistical significance at the .01 level. Empathy was found to have a negative effect on cyberbullying, suggesting that fostering empathy could mitigate cyberbullying behaviors. Meanwhile, self-esteem showed no significant effect on cyberbullying and cybervictimization, highlighting potential limitations in traditional self-esteem measures. Conversely, grandiose narcissism emerged as a

Keywords:
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more effective predictor of cyberbullying. This study identifies key factors that contribute to cyberbullying and cybervictimization, explores potential factors that may help reduce cyberbullying among adolescents, and highlights areas that have been less studied in certain regions, including Thailand.

网络欺凌和网络受害的预测因素

摘要：

由于泰国网络欺凌日益盛行，本研究旨在研究ICT自我效能、夸大自恋、自尊和同理心对网络欺凌和网络受害的影响，结合施暴者和受害者的观点进行全面分析。此外，本研究还探讨了同理心在夸大自恋和网络欺凌行为之间的关系中的中介作用。样本包括395名年龄在18-24岁之间、居住在泰国曼谷及其大都市地区的个人，通过便利抽样选出。使用SPSS和利斯雷尔进行结构方程建模(SEM)。结果表明，ICT自我效能对网络欺凌有直接且显著的积极影响，对网络受害有消极影响（0.01水平）。夸大自恋对网络欺凌和网络受害有直接影响，并通过同理心对网络欺凌有间接影响，统计显著性达到0.01水平。研究发现，同理心对网络欺凌有负面影响，这表明培养同理心可以减轻网络欺凌行为。同时，自尊对网络欺凌和网络受害没有显著影响，凸显了传统自尊测量方法的潜在局限性。相反，夸大自恋成为网络欺凌的更有效预测因素。本研究确定了导致网络欺凌和网络受害的关键因素，探讨了可能有助于减少青少年网络欺凌的潜在因素，并强调了包括泰国在内的某些地区研究较少的领域

关键词：网络欺凌、ICT自我效能、夸大自恋、自尊、同理心

1. Introduction

The rapid proliferation of information and communication technology (ICT) has significantly transformed how individuals interact and communicate, particularly among younger generations. Social media platforms and digital communication tools have become integral parts of daily life, especially for those aged 18-24 (Anderson & Jiang, 2018). However, with increasing reliance on digital communication, there has been a corresponding rise in cyberbullying, which poses serious psychological and social risks. Cyberbullying is characterized by repeated deliberate acts of harm or harassment facilitated by technology, affecting both perpetrators and victims with potentially long-lasting effects (Patchin & Hinduja, 2015).

The growing prevalence of ICT has both positive and negative consequences for online behavior. A significant concern in the digital age is cyberbullying, defined as aggressive, intentional actions carried out through electronic means with the goal of causing harm (Hinduja & Patchin, 2015a, 2015b). This issue has drawn considerable attention because of its harmful psychological and emotional outcomes for both perpetrators and victims. The proliferation of Internet usage has resulted in heightened exposure to online dangers, particularly among the young, leading to an increase in their participation in cyberbullying behaviors, both as perpetrators and victims (Patchin & Hinduja, 2019; Florida Atlantic University, 2017). This alarming trend highlights the need for further research and intervention to mitigate the damaging effects of cyberbullying on individuals and society.

A study focusing on Thai youth and the risks associated with the 4.0 era examined cyberbullying behaviors among lower secondary school students. The study surveyed 3,667 students aged between 12-16 from eight schools in Bangkok. The findings revealed that Thai youth exhibit risky behaviors related to cyberbullying. Notably, 65% of the youth had lent their mobile phones to friends while still logged into social media applications, 28% had forgotten to log out of public computers, 55.9% had accepted friend requests from strangers, and 46.9% had chatted online with strangers. Alarmingly, 6% arranged to meet strangers they encountered through online interactions (Pornpadon, 2018).

Research in both Thailand and abroad has shown that victims of cyberbullying face a wide array of negative impacts that are often more severe than those experienced by victims of traditional bullying. Studies conducted in the United States, Australia, and Europe have indicated that victims suffer from stress, fear, depression, emotional disorders, life imbalance, suicidal ideation, neurological problems, substance abuse, sleep disorders, and other physical symptoms. Additionally, victims experience lower self-esteem (Cook et al., 2015) due to their perceived inability to escape online bullying.

Various factors contribute to cyberbullying behavior

and victimization. One such factor is ICT self-efficacy, which refers to an individual's confidence in their ability to use technology effectively (Bandura, 1997). Studies suggest that individuals with higher ICT self-efficacy are more likely to engage in online interactions, increasing their exposure to cyberbullying and risk of victimization. However, other studies have argued that higher ICT self-efficacy can also empower individuals to better navigate and protect themselves from online threats (Scherer & Siddiq, 2015).

Additionally, grandiose narcissism, characterized by an inflated sense of self-importance and need for admiration, has been linked to higher involvement in cyberbullying. Narcissistic individuals often seek to dominate or humiliate others, especially with the anonymity afforded by online environments (Krämer et al., 2017). This trait increases the likelihood of both engaging in cyberbullying and becoming a victim because of provocative behaviors.

The role of self-esteem in cyberbullying is complex. While self-esteem is traditionally seen as a protective factor, findings regarding its role in online aggression are mixed. Some studies suggest that low self-esteem may lead to both perpetration and victimization, whereas others find no significant correlation (Brewer & Kerslake, 2015). This inconsistency highlights the need for further exploration of self-esteem's role in cyberbullying.

Empathy, or the ability to understand and share the feelings of others, is another key factor in mitigating aggressive behavior. Empathy can reduce the likelihood of engaging in cyberbullying by fostering prosocial behavior. However, individuals with high levels of grandiose narcissism often show lower empathy, which makes them more prone to cyberbullying (Hepper et al., 2014).

This study aimed to investigate the influence of ICT self-efficacy, grandiose narcissism, self-esteem, and empathy on cyberbullying behaviors and victimization among young adults in Bangkok and its metropolitan area. Examining these personality traits and their connection to online aggression could provide valuable insights for designing effective interventions to reduce cyberbullying and its detrimental effects on society.

2. Literature Review

2.1. Cyberbullying

Cyberbullying can also be called "electronic bullying" (Rafferty & Vander Ven, 2014), which refers to harassing or abusing others by misusing power through information systems. This can be achieved through various technologies such as mobile phones and the internet. Even when the recipient receives a text message meant as a joke or for entertainment, it supports deliberate actions and repeated behaviors aimed at harming others. These actions are considered aggressive and involve unfriendly or hostile communication that makes the victims uncomfortable and unable to defend themselves.

Cyberbullying constitutes an indirect form of aggression that does not directly involve verbal or physical acts, but rather aims to inflict harm through methods such as disseminating gossip or rumors. It typically avoids direct confrontation with victims (Olweus & Limber, 2018). Cyberbullying occurs when someone is threatened, harassed, or humiliated online.

Kowalski et al. (2014) argued that cyberbullying is defined by key features, such as intentionality, power imbalance, repetition, anonymity, and publicity. The authors emphasize that the anonymity offered by digital platforms and the potential for a wide-reaching audience make cyberbullying distinctly different from traditional bullying. These characteristics not only facilitate such behavior but also heighten its reach and impact, making cyberbullying more pervasive and often more damaging than in-person bullying. Focusing on these distinct elements, this study provides crucial insights into how cyberbullying operates in the digital age.

Various platforms for cyberbullying include mobile phone calls, text messages, photo or video bullying, email, chat rooms, instant messaging, websites, and online gaming. The most common platforms for cyberbullying are Facebook, YouTube, Line, Instagram, and Twitter (Electronic Transactions Development Agency, 2020).

2.2. Cybervictimization

Cybervictimization refers to being bullied by an individual or group through ICT such as computers and mobile devices. Traditional bullying and cyberbullying differ due to anonymity and a broad online audience, leading to distinct negative effects. Common effects include negative emotions such as anger, stress, anxiety, depression, fear, shame, loneliness, and isolation. Victims may exhibit self-harming behaviors and an increased risk of suicide (Vranjes et al., 2017). Some studies have suggested that cyberbullying victims may not be as affected as those experiencing traditional bullying. However, victims facing both tend to perceive cyberbullying as less severe (Olweus & Limber, 2018).

Research using group interviews has suggested coping strategies for cyberbullying, such as blocking the bully, changing passwords or usernames, creating new emails, changing phone numbers, deleting or ignoring anonymous messages, and responding to the bully (Dehue et al., 2008). School children often inform parents, teachers, siblings, or friends. Some choose not to disclose (Dehue et al., 2008). Cyberbullying issues have been reported globally in numerous studies (Patchin & Hinduja, 2019; Pornpadon, 2018; Phuapongsakorn, 2020; Sriwattanapong & Thanninpong, 2015).

2.3. ICT Self-Efficacy

The concept of self-efficacy in technology is rooted in Bandura's (1977) theory of self-efficacy, which refers to an individual's belief in their ability to successfully complete tasks or missions. It also extends to an individual's ability to cope with or face challenges. Bandura's concept demonstrates how technological self-efficacy applies in the context of cyberbullying, both from the perspective of bullying behavior and being a victim of cyberbullying. This concept can be divided into three main components (Bauman et al., 2018):

Privacy and security: This refers to an individual's awareness of their ability to use basic skills, such as maintaining privacy, ensuring security, and mastering advanced skills needed for control in cyberspace.

Differentiation and learning: This aspect involves evaluating an individual's ability to learn and assess information in the cyber world. It includes skills such as using the internet, expressing opinions online, and assessing the accuracy and credibility of the information found on social networks.

Technological communication: This focuses on an individual's communication skills and behavior, both verbal and non-verbal, within the cyber world.

ICT self-efficacy refers to a person's judgment of their own ability to carry out tasks that effectively use the internet and communication technologies. This includes skills related to social networking services (SNS). In the context of self-efficacy in technology, it reflects a person's awareness of their ability and potential to achieve technological goals and capacity to control situations in cyberspace. Further studies have shown that ICT self-efficacy has a significant positive impact on the likelihood of engaging in cyberbullying behavior (Musharraf et al., 2019).

2.4. Grandiose Narcissism

Grandiose narcissism refers to a personality trait characterized by excessive self-admiration, in which individuals often overestimate their abilities and believe they are superior to others. This inflated sense of self typically leads to a strong desire to control or dominate others (Brummelman et al., 2016). In the context of social media, individuals with high levels of narcissistic grandiosity tend to spend significant time online, amass many social media connections, and frequently post self-promoting content. They are known to primarily engage with people who admire them, and their online behavior is often associated with aggression and antisocial tendencies (McCain & Campbell, 2016; Zajenkowski et al., 2018).

Research shows that, while both narcissistic grandiosity and self-esteem involve positive self-assessment, narcissistic grandiosity is characterized by unrealistic self-overvaluation. This distinction has led to concerns regarding the Rosenberg self-esteem scale (RSES), which does not adequately differentiate between genuine self-esteem and inflated self-regard. Researchers often control narcissism to ensure that it does not distort self-esteem results (Hyatt et al., 2018).

The narcissistic grandiosity scale (NGS) is particularly effective in distinguishing individuals with high levels of narcissistic grandiosity from those with authentic self-esteem. While narcissistic grandiosity is not necessarily pathological, it is often shaped by environmental factors such as excessive parental praise or the undue importance placed on the child's abilities. Genuine high self-esteem is typically nurtured through warmth, care, and unconditional love from the family (Brummelman et al., 2016).

Given the link between narcissistic grandiosity and aggression, this study focused on this trait in the context of cyberbullying. Narcissistic grandiosity fits within the general aggression model (GAM), which suggests that traits such as narcissism increase aggression, making it key to understanding cyberbullying behavior (Anderson & Bushman, 2002; Zajenkowski et al., 2018).

2.5. Self-Esteem

Self-esteem refers to an individual's attitude toward themselves, whether positive or negative, and reflects their overall emotional evaluation of self-worth (Rosenberg, 1965). It has been found that individuals with high self-esteem tend to be happier compared to those with low self-esteem. In terms of the relationship between self-esteem and cyberbullying, some researchers found that low self-esteem contributes to engaging in cyberbullying (Lei et al., 2019). A negative correlation has been identified between self-esteem and cyberbullying, particularly in studies involving European high school students (Burns, 2017). Additionally, individuals with low self-esteem are more likely to become victims of cyberbullying than those with higher self-esteem.

However, some studies suggest that individuals with high self-esteem are more likely to engage in cyberbullying behaviors (Bussey et al., 2015).

From the data presented, it is evident that there are inconsistencies in the findings regarding the relationship between self-esteem and cyberbullying. The researchers observed that studies on self-esteem and its connection to cyberbullying present varying outcomes.

2.6. Empathy

Empathy refers to the ability to understand and share another person's emotional state, focusing on the feelings of others rather than on one's own. However, empathy stems from a sense of moral righteousness and appropriateness (Decety & Cowell, 2014). This means that a person who exhibits empathy should be motivated not only by emotional connections but also by the belief that helping others is morally right (Davis, 2017; Sinclair et al., 2017). A robust moral framework enhances the depth of empathetic responses, compelling

individuals to experience a sense of obligation to mitigate suffering in accordance with their ethical principles.

The components of empathy can be divided into two key elements: cognitive and affective empathy. Cognitive empathy refers to an individual's ability to understand and adopt the perspective of others by imagining what it is like to be in someone else's situation. It involves understanding the feelings of others and taking on their perspective (perspective-taking). It is the capacity to visualize oneself in another person's situation and comprehend their emotions. Affective empathy is the ability to share emotions with others. It manifests itself in feeling distress when others are in pain and responding emotionally to their suffering. Affective empathy leads individuals to experience the same emotions as the other person and a genuine willingness to help them. Both types of empathy can play a crucial role in reducing aggressive behavior.

Research has established an inverse relationship between empathy and antisocial or aggressive behaviors. Studies have suggested that individuals with higher empathy tend to display fewer aggressive or antisocial actions. For example, a longitudinal study on bullying behaviors showed that bullies who engaged in aggressive actions exhibited lower levels of both cognitive and emotional empathy (Falla et al., 2021).

3. Methods

3.1. Participants

This investigation constitutes a survey study aimed at examining the predictive factors of cyberbullying and cybervictimization. The research explores the influence of specific personality traits on cyberbullying behavior, focusing on the variables delineated in the research framework, including technology self-efficacy, narcissistic grandiosity, self-esteem, and empathy, in relation to cyberbullying and cybervictimization. This study employed precise selection criteria for participants, targeting individuals aged 18-24 years who had resided in the Bangkok Metropolitan Region for a minimum of one year. The inclusion criteria were established based on data from the National Statistical Office of Thailand (2023), which indicated that the population in the Bangkok Metropolitan Area exhibits a higher Internet usage rate (97.8%) compared to other regions. Furthermore, it was determined that individuals within the aforementioned age group demonstrated the highest Internet usage, with a rate of 99.1%. These factors support the relevance of this population group for studying cyberbullying and cybervictimization. A sample of 395 individuals was selected to study predictors of cyberbullying and cybervictimization. Convenience sampling was used for participant selection, with research promotion conducted through various online platforms, such as Facebook and LINE, to reach individuals who met the specified criteria. A link to a registration form was provided, allowing interested participants to access preliminary information about the research and provide informed consent for the interview (consent form). Data were collected using an online questionnaire distributed through Google Forms.

3.2. Measures

The researchers assessed whether the scale is consistent with and applicable to the context of the sample group in this study. The scale was translated into Thai, and the accuracy of the translation was reviewed to ensure that it aligned with the context of cyberbullying. Subsequently, a back translation was performed, and the reliability of the scale was checked. The reliability was assessed using internal consistency, with Cronbach's alpha coefficient as the measure. A reliability coefficient (α) greater than 0.70 is considered good (Taber, 2018). The researchers collected a sample of 39 individuals and analyzed the corrected item-total correlation (CITC), which must be greater than 0.2. Then, the questions will be refined to align with the operational definitions before the actual data collection takes place, using the following six parts of the scale:

The situational cyberbullying scale developed by the researchers consists of 29 items with a reliability coefficient (α) of .98. Each item reflects the tendency to engage in cyberbullying behaviors in specific situations, divided into four scenarios: Scenario 1 (harassment), Scenario 2 (outgoing), Scenario 3 (denigration), and Scenario 4 (impersonation). Responses were rated on a 6-point Likert scale ranging from 0 (never) to 5 (most often).

The cyber victim and bullying scale developed by Çetin et al. (2011) consists of two sections: the cyberbullying section with 11 items (α = .97) and the cybervictimization section with 11 items (α = .95). Each item describes a form of cyberbullying behavior that participants may have engaged in or experienced. Responses were rated on a 5-point Likert scale ranging from 1 (never) to 5 (very often).

The technology self-efficacy scale developed by Bauman et al. (2018) measures self-efficacy across three domains: privacy and security, differentiation and learning, and communication. This 21-item scale has a reliability coefficient (α) of .96. Responses were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The NGS by Rosenthal and Barbour (2019) consists of seven items with a reliability coefficient (α) of .72. Responses were rated on a 7-point Likert scale ranging from 1 (not at all true of me) to 7 (very true of me).

The self-esteem scale by Wongpakaran and Wongpakaran (2012), a Thai adaptation of Rosenberg's (1965) 10-item self-esteem scale, consists of 10 items with a reliability coefficient (α) of .83. Responses were rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree).

The basic empathy scale (BES) by Jolliffe and Farrington (2006) consists of 20 items with a reliability coefficient (α) of .92. Responses were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale is divided into two subscales: the cognitive empathy subscale (nine items, α = .89) and the affective empathy subscale (11 items, α = .90).

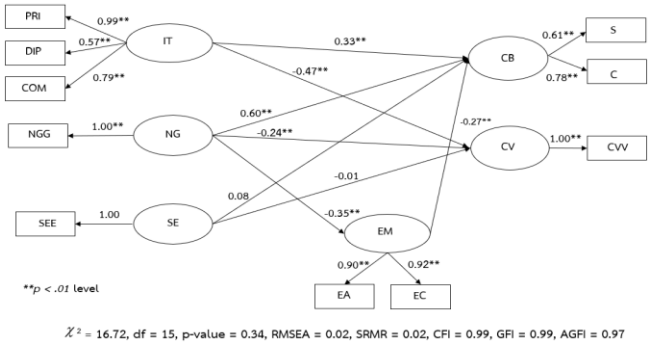
3.3. Statistical Analysis

Descriptive statistics were analyzed utilizing SPSS Statistics 22 to calculate the frequency and percentage for analyzing personal data of the sample group and the mean, standard deviation, skewness, and kurtosis to describe the fundamental characteristics of the variables. Statistical analyses were executed employing the Lisrel software to evaluate the congruence between the predictors of cyberbullying and cybervictimization and the empirical data. Structural equation modeling (SEM) was employed for this analysis.

4. Results

4.1. Analysis of the Structural Equation Model for Predictors of Cyberbullying and Cybervictimization

This study investigated the variables of ICT self-efficacy, empathy, self-esteem, and grandiose narcissism, which were classified as independent, dependent, and mediating. The independent variables consist of three key factors: ICT self-efficacy (IT), which includes three dimensions: privacy and security (PRI), differentiation and learning (DIF), and technological communication (COM); grandiose narcissism (NG), which includes one dimension: grandiose narcissism (NGG); and self-esteem (SE), which also includes one dimension: self-esteem (SEE). The dependent variables include two factors: cyberbullying (CB), which has two dimensions: cyberbullying scale (C) and cyberbullying incidents (S), and cybervictimization (CV), which has one dimension, cybervictimization (CVV). Finally, the mediating variable is empathy (EM), which consists of two components: cognitive (EC) and affective (EA).



χ^2 = 16.72, df = 15, p-value = 0.34, RMSEA = 0.02, SRMR = 0.02, CFI = 0.99, GFI = 0.99, AGFI = 0.97

Figure 1. Structural model of predictive factors of cyberbullying and cybervictimization (The authors)

4.2. Preliminary Analyses

4.2.1. Results of the Normality Distribution Assessment

The assessment of normality distribution for variables observed in the SEM analysis, which explored predictors of cyberbullying and cybervictimization, utilized fundamental statistical metrics: means, standard deviations, skewness, kurtosis, and minimum and maximum values. The results of the basic statistical analysis are presented in Table 1.

Table 1. Statistics of observed variables used in the SEM analysis of factors predicting cyberbullying and cybervictimization (The authors)

Observed variables	Mean	SD	Skew.	Kur.	Min.	Max.
S	2.93	.74	.13	-1.3	1.70	4.60
C	2.23	.94	.45	-1.4	1.00	3.70
CVV	1.97	.86	1.10	-.19	1.00	3.92
EA	3.06	.64	-.09	-.71	1.60	4.60
EC	3.48	.73	-.36	-.57	1.75	4.88
SEE	2.79	.42	-.22	-1.07	2.00	3.60
NGG	3.39	1.16	.45	-.27	1.00	5.86
PRI	3.66	.85	-.89	.42	1.00	5.00
DIF	3.50	.60	.02	.52	1.00	5.00
COM	3.61	1.03	.59	-.67	1.00	5.00

From Table 1, the basic statistics of the observed variables used in the SEM analysis of factors predicting cyberbullying and cybervictimization are as follows: the mean values range from 1.97 to 3.66, with privacy and security (PRI) having the highest mean and cybervictimization (CVV) the lowest. The standard deviations range from .42 to 1.16, with grandiose narcissism (NGG) having the highest standard deviation and self-esteem (SEE) the lowest.

Skewness values range from -.89 to 1.10, with most variables showing positive skewness, indicating right-skewed data. Cybervictimization (CVV) has the highest positive skewness, while privacy and security (PRI) has the highest negative skewness. Overall, the skewness values fall within the acceptable range of -2 to 2, indicating a normal distribution (Hair et al., 2010).

4.2.2. Correlation Coefficient Results of the Observed Variables

To examine whether the observed variables used in the structural equation model for predicting cyberbullying perpetration and victimization have relationships that are not excessively high, Pearson's product-moment correlation coefficient analysis was employed. Typically, a correlation threshold of no more than 0.85 or 0.90 is used to prevent issues related to high multicollinearity (Kline, 2011). The interpretation follows general guidelines based on the correlation coefficient (r), with small correlations around r = .10, medium correlations around r = .30, and large correlations for r = .50 or higher (Cohen, 1988). Detailed results of the correlation analysis are presented in Table 2.

Table 2. Means, standard deviations, and correlations of the observed variables (N = 395) (The authors)

Variables	1	2	3	4	5	6	7	8	9	10
1. S	1.00									
2. V	.43**	1.00								
3. CVV	-.21**	-.17**	1.00							
4. EA	-.47**	-.44**	.17**	1.00						
5. EC	-.41**	-.42**	.18**	.77**	1.00					
6. SEE	.04	.09	.04	-.03	-.04	1.00				
7. NGG	.44**	.61**	-.20**	-.30**	-.31**	.31	1.00			
8. PRI	.34**	.24**	-.57**	-.18**	-17**	.40	.17**	1.00		
9. DIF	.15**	.10*	-.35**	-.11**	-.18**	-.04	.12*	.69**	1.00	
10. COM	.37**	.29**	-.42**	-.22**	-.14**	-.05	.18**	.78**	.68**	1.00
M	2.93	2.23	1.97	3.06	3.48	2.79	3.39	3.66	3.50	3.61
SD	.74	.94	.86	.64	.73	.42	1.16	.85	.60	1.03

*$p < .05$, ** $p < .01$ level

Table 2 presents the relationships among the observed variables used in the analysis of the structural equation model for the predictors of cyberbullying and cybervictimization. The Pearson product-moment correlation coefficient was employed to analyze these relationships, ensuring that the observed variables did not exhibit excessive multicollinearity (correlation coefficients greater than .90) (Hair et al., 2010).

Table 2 shows that the correlation coefficients among the ten observed variables, totaling 45 pairs, ranged from -0.57 to 0.78. Each correlation was statistically significant at the .01 or .05 levels, with the majority showing significance at the .01 level. The pair with the strongest positive correlation was between communication (COM) and privacy and security (PRI). In contrast, the pair with the strongest negative correlation was between privacy and security (PRI) and cybervictimization (CVV). Additionally, self-esteem (SEE) did not demonstrate any statistically significant correlations.

The correlation analysis indicated that the observed variables did not exhibit excessively high relationships. Specifically, none of the observed variable pairs had correlation coefficients exceeding 0.90, leading to the conclusion that the data met the preliminary assumptions. However, although self-esteem (SEE) did not show statistically significant results, it played a role in the research model; therefore, it was included in the SEM analysis to assess whether the overall model supported the theoretical framework.

4.3. Comprehensive SEM Analysis

4.3.1. Preliminary Structural Equation Model Fit Test

This investigation employed a structural equation model to examine the predictors of cyberbullying and cybervictimization within the established research framework. The study encompassed an analysis of the cyberbullying, cybervictimization, ICT self-efficacy, empathy, self-esteem, and grandiose narcissism variables. The research drew upon data collected from a cohort of 395 participants. The researchers conducted an analysis of the full-path structural model to assess its recommended goodness-of-fit parameters. The results indicated that the model for predicting cyberbullying and cybervictimization was consistent with the empirical data. The researchers utilized model modification indices (MI) and adjusted parameters by allowing the residuals of the observed variables to correlate where appropriate. The results of the model fit after modification are presented in Table 3.

Table 3 presents the analysis results for the goodness-of-fit of the predictive model for cyberbullying perpetration and victimization. After model adjustments, the chi-square (χ^2) value was 16.72 with 15 degrees of freedom at a significance level of 0.34. The root mean square error of approximation (RMSEA) was 0.02, the standardized root mean square residual (SRMR) was 0.03, the comparative fit index (CFI) was 0.99, the goodness-of-fit index (GFI) was 0.99, and the adjusted goodness-of-fit index (AGFI) was 0.97. All the indices met the established criteria, confirming that the model was well aligned with the empirical data.

Table 3. Goodness-of-fit indices for the model predicting cyberbullying and cybervictimization (The authors)

Goodness-of-Fit Indices	Criteria for Model Fit	Values	Results
Chi-Square Value (χ^2)	$p > .05$	$p = 0.34$	Fit
RMSEA	≤ 0.05	0.02	Fit
SRMR	≤ 0.05	0.03	Fit
CFI	≥ 0.97	0.99	Fit
GFI	≥ 0.95	0.99	Fit
AGFI	≥ 0.90	0.97	Fit

4.3.2. Results of the Analysis of the Influences of the Model Predicting Cyberbullying and Cybervictimization

The results of the structural equation model analysis for the predictors of cyberbullying and cybervictimization are presented in Tables 4 and 5.

Table 4. Results of the analysis of direct effects (DE), indirect effects (IE), and total effects (TE) of the model predicting cyberbullying and cybervictimization (The authors)

Variables	Variables								
	EM			CB			CV		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
IT				0.33**	-	0.33**	-0.47**	-	-0.47**
NG	-0.35**	-	-0.35**	0.60**	0.09**	0.70**	-0.24**	-	-0.24**
SE				0.08	-	0.08	-0.01	-	-0.01
EM				-0.27**	-	-0.27**			
R^2		**0.12**			**0.75**			**0.31**	
Chi-Square	16.72, df = 15, p = 0.34								
RMSEA	0.02								
SRMR	0.02								
CFI	0.99								
GFI	0.99								
AGFI	0.97								

Latent variable correlation coefficient

	EM	CB	CV	IT	NG	SE
EM	1.00					
CB	-0.05	1.00				
CV	0.11	-0.39	1.00			
IT	-0.06	0.45	-0.51	1.00		
NG	-0.35	0.76	-0.32	0.18	1.00	
SE	-0.01	0.09	-0.00	-0.04	0.02	1.00

**$p < .01$ level

Table 5. Factor loading results of the structural equation model analysis for predictors of cyberbullying and cybervictimization (The authors)

Variables	b	β	SE	t
EM				
EA	0.50	0.90	-	-
EC	0.64	0.92	0.05	12.70**
CB				
S	0.34	0.61	-	-
C	0.64	0.78	0.06	10.75**
CV				
CVV	1.00	1.00	-	-
IT				
PRI	0.84	0.99	0.04	20.36**
DIF	0.34	0.57	0.04	7.74**
COM	0.82	0.79	0.05	16.39**
NG				
NGG	1.00	1.00	-	-
SE				
SEE	1.00	1.00	-	-

** $p < .01$ level

According to the findings presented in Table 4, the analysis of the structural equation model for predicting cyberbullying (CB) and cybervictimization (CV) revealed key findings. Specifically, when examining the direct, indirect, and total effects of the variables in the model, it was found that grandiose narcissism (NG) has the highest overall influence on cyberbullying (CB), with an effect size of 0.70.

Moreover, it exerted the strongest direct effect on cyberbullying (CB) compared to the other variables. On the other hand, the variable that most significantly impacts cybervictimization (CV) is information technology self-efficacy (IT), which shows a negative total effect (-0.47), indicating that higher IT self-efficacy reduces the likelihood of becoming a victim.

Furthermore, when analyzing the standardized total effects of each latent variable, the results can be differentiated into direct and indirect influences. For instance, IT self-efficacy (IT) directly influences cyberbullying (CB) with an effect size of 0.33, which is statistically significant at the 0.01 level. Similarly, it directly impacts cybervictimization (CV), with a negative effect of -0.47, which is also significant at the 0.01 level.

In addition, grandiose narcissism (NG) directly affects cyberbullying (CB), with a statistically significant effect size of 0.60 at the 0.01 level. At the same time, its indirect influence on cybervictimization (CV), mediated through empathy (EM), is 0.09, significant at the 0.01 level, while its direct effect on empathy (EM) is -0.35, which is also significant at the 0.01 level. Lastly, the direct influence of NG on cybervictimization (CV) is -0.24, significant at the 0.01 level.

In contrast, the results indicated that empathy (EM) had a negative direct effect on cyberbullying (CB), with an effect size of -0.27, significant at the 0.01 level. However, the direct effects of self-esteem (SE) on both cyberbullying (CB) and cybervictimization (CV) are not statistically significant, with effect sizes of 0.08 and -0.01, respectively.

Table 5 presents the results of the factor loadings in the structural equation model analysis for predictors of cyberbullying and cybervictimization. Considering the factor loadings of all 10 observed variables, it was found that all standardized loadings were positive, ranging from 0.57 to 0.99, with statistical significance at the .01 level. The variable with the highest standardized factor loading was privacy and security (PRI), whereas the variable with the lowest standardized factor loading and reliability was differentiation and learning (DIF).

Regarding the latent variables, empathy (EM) was measured using two observed variables: affective empathy (EA) and cognitive empathy (EC), with the latter having the highest standardized factor loading of 0.92. Cyberbullying perpetration was measured using two observed variables: cyberbullying situations and the cyberbullying scale, with the latter having the highest factor loading of 0.78.

ICT self-efficacy (IT) was measured using three observed variables: privacy and security (PRI), differentiation and learning (DIF), and communication (COM), with privacy and security (PRI) having the highest standardized factor loading of 0.99.

Finally, the latent variables cybervictimization (CV), grandiose narcissism (NG), and self-esteem (SE) were measured by a single observed variable, with a factor loading of 1.00.

4.3.3. Results of the Predictive Model Analysis for Cyberbullying and Cybervictimization

The predictive model analysis for cyberbullying perpetration and victimization revealed that information technology self-efficacy (IT) had a significant direct positive influence on cyberbullying perpetration, with a path coefficient of 0.33 at the .01 significance level, indicating that higher self-efficacy in technology increases the likelihood of cyberbullying behavior.

Conversely, IT self-efficacy had a significant direct negative influence on cyberbullying victimization, with a path coefficient of -0.47 at the .01 significance level, suggesting that higher self-efficacy reduces the likelihood of becoming a victim of cyberbullying. Narcissism (NG) was found to have a significant direct positive influence on cyberbullying perpetration, with a path coefficient of 0.60 at the .01 significance level, indicating that higher narcissism is associated with increased cyberbullying behavior. It also had a significant direct negative influence on cyberbullying victimization, with a path coefficient of -0.24 at the .01 significance level, suggesting that higher narcissism reduces the likelihood of being a victim.

Furthermore, narcissism had an indirect influence on cyberbullying perpetration through empathy (EM), with a significant indirect effect of 0.09 at the .01 level, indicating that narcissism promotes cyberbullying with empathy serving as a mediating variable. In contrast, self-esteem (SE) had no significant direct influence on either cyberbullying perpetration or victimization, with path coefficients of 0.08 and -0.01, respectively, indicating that self-esteem does not play a significant role in influencing either behavior.

5. Conclusion

This study investigated the predictive factors that cause cyberbullying and cybervictimization, focusing on the impact of these factors on cyberbullying behavior. It examined variables such as ICT self-efficacy, cyberbullying, cybervictimization, empathy, grandiose narcissism, and self-esteem. The analysis of the model on the predictive factors of cyberbullying and cybervictimization revealed critical insights into the factors influencing cyberbullying from the perspectives of both perpetrators and victims, leading to a more

comprehensive understanding of the phenomena. The findings can be summarized as follows:

5.1. Impact of ICT Self-Efficacy

The first main finding of this study highlights the relationship between ICT self-efficacy, cyberbullying, and cybervictimization. The analysis revealed that ICT self-efficacy has positive effects on cyberbullying and negative effects on cybervictimization. Higher ICT self-efficacy enhances the ability to effectively manage online interactions, potentially reducing the likelihood of becoming a victim. However, individuals with greater technological confidence may also use their skills to engage in cyberbullying. Not all individuals with high ICT self-efficacy engage in cyberbullying, suggesting the need to consider additional factors such as narcissism to better understand cyberbullying behaviors. Specifically, individuals with grandiose narcissism are more likely to engage in cyberbullying, as their inflated sense of self and confidence in their technological abilities may amplify harmful behaviors.

5.2. Role of Grandiose Narcissism

The second main finding addresses the relationship between grandiose narcissism, cyberbullying, cybervictimization, and empathy. The analysis revealed that grandiose narcissism had a positive impact on cyberbullying while simultaneously showing a negative effect on cybervictimization. Individuals with grandiose narcissistic traits tend to engage in cyberbullying to assert control or dominance, which reinforces their self-worth, confidence, and peer validation. Conversely, when considering cybervictimization, these individuals often exhibited little fear of confrontation. Their confidence helps them protect themselves from being victims of cyberbullying. Additionally, this study found that grandiose narcissism influences cyberbullying through a lack of empathy. These individuals typically do not feel remorse or concerned about their victims. Furthermore, this study highlights the importance of empathy in mitigating cyberbullying behavior. Both emotional and cognitive empathy play a crucial role in reducing instances of cyberbullying, particularly among adolescents. By fostering empathy, interventions and educational programs can help reduce harmful online behaviors.

5.3. Ambiguity of Self-Esteem

The third main finding reveals the relationship between self-esteem and both cyberbullying and cybervictimization. The analysis found no significant correlation between self-esteem and either cyberbullying or cybervictimization. This unexpected result may be due to the use of the Rosenberg self-esteem scale, a widely used tool in psychological research to assess general self-esteem. While this scale is reliable and valid for measuring self-esteem, it may have limitations in the context of cyberbullying behavior. The scale focuses on individuals' general perceptions of themselves but does not assess specific behaviors or factors influencing cyberbullying. As such, it may not capture the complex dynamics involved in cyberbullying, such as motivation and situational factors. This ambiguity in the relationship between self-esteem and cyberbullying has led to diverse results in past studies, which suggest that both high and low levels of self-esteem can be linked to cyberbullying behavior. Therefore, this study recommends using the NGS to better differentiate traits associated with cyberbullying as it specifically addresses grandiosity and control factors more directly related to cyberbullying than general self-esteem. This research highlights the multifaceted nature of cyberbullying and emphasizes the need for targeted interventions that focus on specific personality traits and behaviors, rather than relying solely on general self-esteem assessments.

In conclusion, this investigation enhances the existing academic literature by elucidating the predictive factors associated with cyberbullying and cybervictimization behaviors within the examined Thai population. The findings highlight the importance of ICT self-efficacy, grandiose narcissism, and empathy in shaping individuals' online experiences. Furthermore, the practical application of these findings supports the development of educational programs to prevent or address cyberbullying, particularly among adolescents. For example, the findings can guide the design of activities or training programs to promote responsible technology use to reduce victimization and foster the development of empathy, which may help decrease cyberbullying behaviors among Thai adolescents. Additionally, understanding the impact of grandiose narcissism offers guidance for preventive measures to mitigate harmful online behaviors. These results can be applied as a framework for educators, parents, communities, and policymakers to develop more effective programs to address cyberbullying in Thailand.

6. Limitations and Further Study

The demographic information of this study indicates that a limitation is the homogeneity of the sample group, which was composed of participants living in the Bangkok metropolitan area and its vicinity, both in terms of age and residence. Consequently, the results may only be generalizable to populations within this specific region, excluding those from other areas, which could restrict the broader applicability of the findings. To enhance the generalizability of the findings, future investigations should gather data from a more heterogeneous population, thereby verifying the measures' consistency across diverse settings. Additionally, the study found that the variable with the greatest total effect on cyberbullying was grandiose narcissism, which also exhibited the highest direct effect on cyberbullying compared to other variables.

Therefore, subsequent studies could focus on grandiose narcissism as a mediating or moderating variable between ICT self-efficacy in technology and cyberbullying to gain clearer insights into the dynamics of cyberbullying.

Author Contributions

Conceptualization, A.C.; methodology, A.C.; software, C.N.; validation, C.N.; formal analysis, C.N.; investigation, C.N.; resources, A.C.; data curation, C.N.; writing—original draft preparation, all authors contributed equally; writing—review and editing, A.C.; visualization, C.N.; supervision, A.C.; project administration, A.C. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Research Ethics Review Committee for Research Involving Human Research Participants, Group 1, Chulalongkorn University (Study Title No. 660101, COA No. 122/67, Date of Approval: May 30, 2024).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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Conflicts of Interest

The authors declare no conflicts of interest.

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