Confirmatory Factor Analysis of Cyberbullying Among Undergraduate Students in Higher Education Institutions in Northeastern Thailand

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Abstract

The main purpose of this research was to do a confirmatory factor analysis of cyberbullying behaviors among undergraduate students in higher education institutions in northeastern Thailand. The sample included 1,062 1st–4th years bachelor's degree students in the academic year 2022 from five higher education institutions located in the Northeast of Thailand. Multi-stage sampling was employed. The research instrument was a constructed measurement form of cyberbullying behaviors of undergraduate students in institutions in the Northeast of Thailand. It was a 5-rating scale form with 30 items, each of which had a discrimination of 0.21–0.67 and a reliability of 0.99 by means of Cronbach's alpha coefficient.The findings from the confirmatory factor analysis revealed that the cyberbullying behavior model of the students in higher education institutions in northeastern Thailand consisted of five components; 1) Impersonation, 2) Intimidation and cursing others, 3) Disclose other people's private information, 4) Gossip or defamation of others, and 5) Deleting or blocking others from the group. The cyberbullying behavior model was consistent with the empirical data (Chi-square χ^2 = 1.37, df = 2, p = .50, GFI = 1.00, AGFI = 1.00, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00). This indicates that the model confirms the components of cyberbullying behaviors of undergraduate students.

Keywords: confirmatory factor analysis, cyberbullying, undergraduate students, higher education institutions, northeastern Thailand

1. Introduction

1.1 Overview of Cyberbullying in Thailand

Bullying among the Thai youth both inside and outside schools tends to be severer. Surprisingly, statistics show that the rate of bullying in schools in Thailand is the second highest in the world after Japan (Department of Mental Health, 2020). Moreover, in 2020, cyberbullying in Thailand was ranked the 5th in the world. In this situation, 48% of the Thai youth aged 13 years and over were involved in cyberbullying. 41% of them were cyberbullied. 56% of them were boys who had more experience or became involved in cyberbullying than girls. 43% of cyberbullying cases were more girls being cyberbullied than boys. Most cyberbullying cases or known as bullying are related with physical appearances and genders (Puapongsakorn, 2020). This indicates that bullying in different regions in Thailand is more frequently found at a serious level, particularly cyberbullying. One of the causes of this cyberbullying situation is communication through various technologies. According to statistics of Internet users in Thailand in 2020, the number of Internet users in Thailand was 52 million users, an increase of 1 million users from 2019. The average time spent on the Internet browsing was 9 hours and 1 minute per day, which was the fifth highest in the world. The Thai youth aged 12–16 years spent an average of 4.80 hours a day on social media (Kemp, 2020).

Cyberbullying takes the form of slander, using vulgar language against others or transmitting confidential information to cause damage to others via the Internet such as text messages, video clips, electronic mails to make victims humiliated, hurt, and suffer from psychological consequences (Sahatsapas, 2018). McCann Worldgroup (Thailand) Company Limited has surveyed behaviors and thoughts of 33,000 modern teenagers aged 16–30 years in 18 countries around the world. The survey revealed that Thai teenagers are regarded as the top group who like to leave negative comments in online communities, accounting for 64% of all the target

teenagers (McCann Truth Central, 2017). Another survey of the prevalence and patterns of cyberbullying victims on social media among higher education students by Wang and Teaukul (2019) showed that the prevalence of cyberbullying was 18.5%. 91.7% of the victims reported that they knew who bullied them. Most of the cyberbullying cases were done on Facebook (70.5%), Instagram (45.8%), Line (16.7%), and Twitter (8.3%). The most common patterns of cyberbullying on social media included attacking, threatening, and using vulgar words (34.5%) and blackmail (24.1%). Therefore, it can be pointed out that cyberbullying behaviors require special attention from individuals and agencies directly involved with providing assistance and appropriate guidelines for preventing students from engaging in more violent behaviors.

1.2 Previous Studies

According to documentary research on components of cyberbullying behavior, it is found that there have been scholars in both Thailand and abroad addressing components of cyberbullying behavior. Tudkuea (2014) found that there are 5 components of cyberbullying behaviors; 1) gossiping or insulting others, 2) defaming, 3) impersonating, 4) disclosing secrets, and 5) deleting or blocking others from the group.

Ketsuphan, Thongkhambanjong, and Sabwiraprakorn (2019) found that there are 5 components of cyberbullying behaviors; 1) flaming, 2) denigration, 3) exclusion, 4) tricky, and 5) impersonation.

Phornprasert and Suttipong (2019) studied and discovered 3 components of bullying in the cyberworld, namely 1) forgery and disclosure of other people's information via social media, 2) insult and intimidation, and 3) blocking and removing users from online chat rooms.

Nancy Willard (2006) identified 9 types of cyberbullying behaviors as follows; 1) flaming, 2) harassment, 3) denigration, 4) impersonation, 5) outing and trickery, 6) exclusion/ostracism, 7) cyber stalking, 8) video recording of assaults, and 9) sexting.

Kowalski, Limber, and Agatston (2008) defined the characteristics of cyberbullying as follows; 1) flaming, 2) harassment, 3) outing and trickery, 4) denigration, 5) impersonation, 6) cyber stalking, 7) exclusion or ostracism, 8) happy slapping, and 9) sexting.

Langos (2012) proposed the following characteristics of cyberbullying; 1) harassment, 2) flaming, 3) impersonation, 4) denigration, 5) outing, 6) exclusion/gossip group, and 7) trickery.

1.3 Importance of the Research

As aforementioned, it was worth examining components of cyberbullying behaviors acted by students in northeastern Thailand by doing a confirmatory factor analysis, which would obtain obvious components. Based on the conceptual framework from the results of the analysis and synthesis of components that scholars have proposed above, the five components in this research included 1) Impersonation, 2) Intimidation and cursing others, 3) Disclose other people's private information, 4) Gossip or defamation of others, and 5) Deleting or blocking others from the group. These components were used to build a conceptual framework to study the cyberbullying behaviors.

The results of this research would provide a clear body of knowledge on components of cyberbullying behaviors of students in higher education institutions in the northeastern region of Thailand. The results would be useful to teachers, educational personnel staff, and other agencies to assess cyberbullying behaviors. The results would also be applicable to student development activities and trainings for students in higher education institutions in Thailand.

2. Research Objectives

1) To analyze the confirmatory factors of cyberbullying behaviors of university students in the Northeast of Thailand.

2) To examine the construct validity of cyberbullying behaviors of university students in the Northeast of Thailand with empirical data.

3. Conceptual Framework

The conceptual framework of this research was constructed from the results of the analysis and synthesis of previous studies on bullying behaviors in the cyber world. In total, the conceptual framework consisted of 5 components of cyberbullying behaviors as follows; 1) Impersonation, 2) Intimidation and cursing others, 3) Disclose other people's private information, 4) Gossip or defamation of others, and 5) Deleting or blocking others from the group. The conceptual framework with the 5 components of cyberbullying behaviors is illustrated in Figure 1.
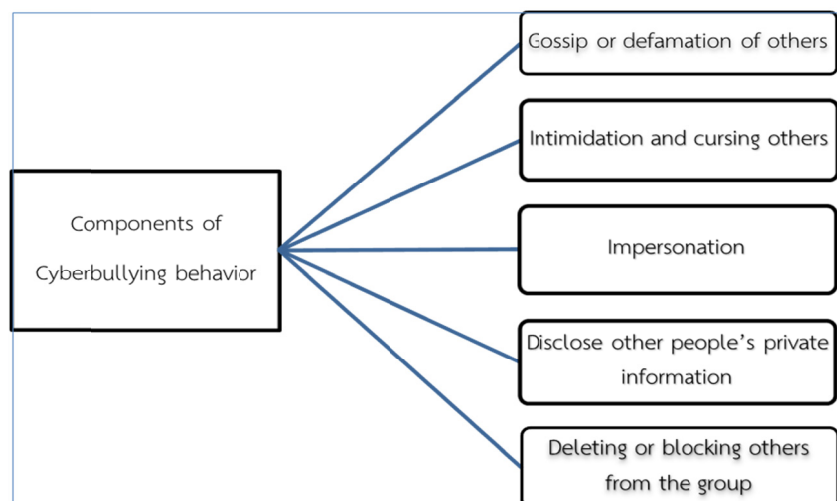
Figure 1. Conceptual framework

4. Research Methodology

The main research design is quantitative research employing confirmatory factor analysis. The research methodology is detailed as follows.

4.1 Population and Sample

The population for the confirmatory factor analysis covered 1st–4th years bachelor's degree students in the academic year 2022 enrolled in 23 higher education institutions located in the Northeast of Thailand and under Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation. The total number of the population was 227,232 students (Office of the Higher Education Commission, 2022).

The sample group for the confirmatory factor analysis (CFA) included 1,200 students, 240 students of which represented each year level. They were enrolled in 5 institutions situated in the Northeast of Thailand and under Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation. They were obtained through multi-stage sampling as follows:

Stage 1 Classifying higher education institutions in northeastern Thailand into 5 province clusters.

Stage 2 Cluster sampling among the 5 province clusters to obtain one province from one province cluster.

Stage 3 Simple random sampling in each of the 5 provinces gained from the above cluster sampling to draw 1 institution from 1 province.

Stage 4 Simple random sampling in each of the 5 institutions gained from the above simple random sampling to draw 1 faculty from 1 institution. The result from stage 4 simple random sampling is as follows. Loei Rajabhat University-Faculty of Education, Sakon Nakhon Rajabhat University-Faculty of Science and Technology, Roi Et Rajabhat University-Faculty of Nursing, Nakhon Ratchasima Rajabhat University-Faculty of Management Science, Ubon Ratchathani University-Faculty of Humanities and Social Sciences

Stage 5 Stratified random sampling in each year level as strata. The determined number of sample students from each year level was 60. This sample size determination followed Comrey and Lee (1992) who considered a sample size of 50 as very poor, 100 as poor, 200 as fair, 300 as good, 500 as good very, and 1,000 or more as excellent.

4.2 Research Instruments

The main instrument in this research was a constructed measurement form of cyberbullying behaviors of undergraduate students in institutions in the Northeast of Thailand. The design of the form was a 5-rating scale form with the following scales; the highest, the high, the medium, the low, and the lowest. The measurement form had the least discrimination of .02 for the total number of 30 items, each of which had a discrimination between 0.21 and 0.67. The measurement form also had a reliability of 0.99 by means of Cronbach's alpha coefficient.

4.3 Data Collection

In data collection, the researcher manually distributed and collected 1,200 copies of the measurement form. In order to prevent errors, an excess of 20% of the measurement form copies were implemented. As a result, 1,062 complete copies were used for the confirmatory factor analysis (CFA). This number was greater than the specified number which was adequate evidence of the construct validity of the measurement form itself.

4.4 Data Analysis

The main data analysis employed the confirmatory factor analysis in order to examine the validity of the model construct of the students' cyberbullying behaviors based on the conceptual framework with the empirical data. The analysis focused on parameters with the method of maximum likelihood, which was considered from the Chi-square value. The Chi-squared value was not statistically significant. A Goodness-of-fit index (GFI) and Adjusted goodness-of-fit (AGFI) were greater than .90. A Root mean square residuals (RMSR) and a Root mean square error of approximation (RMSEA) were less than .05.

5. Research Results

1) The confirmatory factor analysis of the structural model revealed correlation coefficients of the cyberbullying behaviors between 0.50 and 0.88. All the five components were positively correlated with a statistical significance of .05. The highest correlation coefficient was 0.88 between gossip or defamation of others (TAKO) and intimidating and flaming (CURO). The lowest correlation coefficient was 0.50 between gossip or defamation of others and deleting (TAKO) or blocking others from the group (BROO). It was found that the components of the cyberbullying behaviors had no identity matrix, indicating that the components had adequate correlation coefficients for further analysis (Bartlett's Test: χ^2= 4914.10, df = 10 p =. 00). When considering each indicator, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was 0.86. The Measure of Sampling Adequacy (MSA) was between 0.80 and 0.93, indicating that the cyberbullying behavior components among the students had sufficient correlation coefficients to be used in the confirmatory factor analysis as shown in Table 1.

Table 1. Correlation coefficients of the components of cyberbullying behaviors among the students (n=1,062)

Components	TAKO	CURO	REFO	PRIO	BROO
TAKO	1.00				
CURO	0.88*	1.00			
REFO	0.79*	0.87*	1.00		
PRIO	0.75*	0.80*	0.84*	1.00	
BROO	0.50*	0.52*	0.54*	0.60*	1.00
Bartlett's Test: χ^2 = 4914.10, df = 10, p =.00, KMO = 0.86					
Measure of Sampling Adequacy (MSA) between 0.80 and 0.93					

Note. *p < .05.

2) The examination of the consistency between the constructed model for the students' cyberbullying behavior measurement with the empirical data revealed that the constructed model was not consistent with the empirical data. The researcher then adjusted the model by drawing the relationships between the errors of the components until the model was consistent with the empirical data as shown in Table 2.

Table 2. Consistency and comparative indices of the constructed model for the students' cyberbullying behavior measurement (n = 1,062)

Index	Criterion	Value
χ^2	Non statistically significant χ^2 / df below 2.00	χ^2= 1.37, df = 2, p = .50 1.37/2=0.68
GFI	above *0.90*	1.00
AGFI	above *0.90*	1.00
CFI	above *0.95*	1.00
RMSEA	below *0.05*	*0.00*
SRMR	below *0.05*	*0.00*

Note. * Poonpong Suksawang, 2013.

According to Table 2, the examination of the consistency between the constructed model for the students' cyberbullying behavior measurement with the empirical data revealed a Chi-square ($\chi2$) of 1.37, df = 2, p = .50, GFI = 1.00, AGFI = 1.00, RMSEA = 0.00, and SRMR = 0.00. For comparative indices, it was found that CFI = 1.00. When considering the criterion, the Chi-square was not statistically significant. The other indices indicated that the constructed model for cyberbullying behavior measurement was finally consistent with the empirical data. The model confirmed the main five components, namely 1) Gossip or defamation of others, 2) Intimidation and cursing others, 3) Impersonation, 4) Disclose other people's private information, and 5) Deleting or blocking others from the group.

Table 3. Confirmatory factor analysis of the constructed model for the students' cyberbullying behavior measurement (n = 1,062)

Components of cyberbullying behavior	SC	SE	t	CR
Gossip or defamation of others	0.86	0.03	33.19*	0.74
Intimidation and cursing others	0.91	0.02	38.18*	0.83
Impersonation	0.95	0.02	40.92*	0.90
Disclose other people's private information	0.88	0.02	35.86*	0.77
Deleting or blocking others from the group	0.57	0.03	19.86*	0.33

Note. *p < .05.

From Table 3, the cyberbullying behavior had standard factor loadings of 0.57-0.95. All the components had a statistical significance of .05. Impersonation had the highest standard factor loading of 0.95 with a high level of variance with the cyberbullying behaviors (90%). Intimidation and cursing others had the second highest standard factor loading of 0.91 with a high level of variance with the cyberbullying behaviors (83%). Disclose other people's private information had a standard factor loading of 0.88 with a high level of variance with the cyberbullying behaviors (77%). Gossip or defamation of others had a standard factor loading of 0.86 with a high level of variance with the cyberbullying behaviors (74%). Deleting or blocking others from the group had the lowest standard factor loading of 0.57 with also a low level of variance with the cyberbullying behaviors (33%).
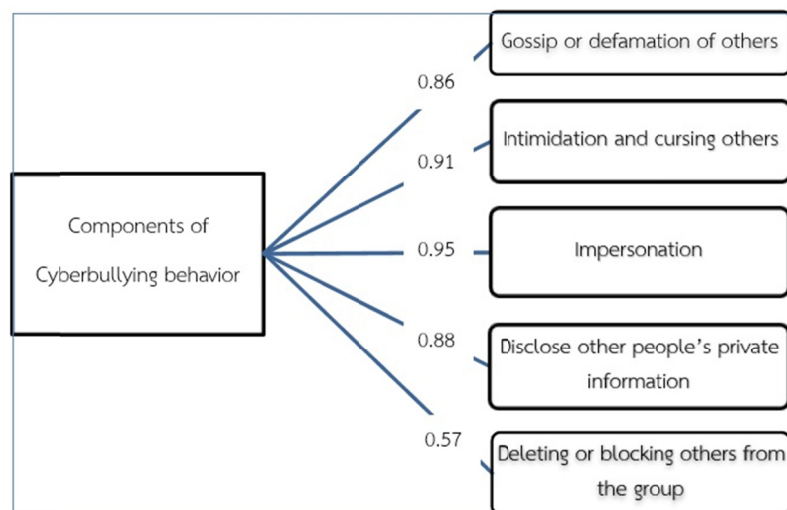

Figure 2. The constructed model for the students' cyberbullying behavior measurement

Note. χ^2 = 1.37, df = 2, p = .50, GFI = 1.00, AGFI = 1.00, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00.

6. Discussions

The results of the confirmatory factor analysis of the cyberbullying behavior model of the students in higher education institutions in the northeastern region of Thailand revealed that the components of cyberbullying behaviors were consistent with the empirical data. The constructed model finally consisted of 5 components of cyberbullying behaviors; 1) Gossip or defamation of others, 2) Intimidation and cursing others, 3) Impersonation, 4) Disclose other people's private information, and 5) Deleting or blocking others from the group. This model is

in accordance with Phornprasert and Suttipong (2019) who found that their model was consistent with the empirical data. The discussions of the components are presented in detail and arranged in a descending order according to their factor loadings as follow.

Impersonation had the highest standard factor loading of 0.95 with a high level of variance with the cyberbullying behaviors (90%). This finding may be due to the fact that in the world of the Internet we can be whatever we want to be. Life on the social media or even in the imagination may be similar to or different from the real-world life. Hence, it is not surprising that there is often news on deceiving others such as opening a bank account in the name of a famous actor/singer and then request victims to donate funds into the bank account. Other purposes of impersonation are to damage a person's reputation and to pretend stealing properties or hacking data (Daopradub, 2017). In line with Hins (2011), falsification and impersonation are easy in the present age due to the fact that a function of social media enables users to simply imitate or impersonate others' data. This causes victims to lose their reputation. This finding is consistent with the research of Ketsuphan, Thongkhambanjong, and Sabwiraprakorn (2019) who found that female students were more cyberbullied than male students. The most common cyberbullying behaviors were impersonation, followed by disclosure of secrets or personal information, cursing, sending disturbing messages or defamation, and deletion or blocking from the group.

Intimidation and cursing others had the second highest standard factor loading of 0.91 with a high level of variance with the cyberbullying behaviors (83%). This finding may be due to easy and fast communication online through various channels. Besides its usefulness, a disadvantage of online communication is inappropriate manner such as communicating with intent to defame others. This may lead to controversy in the real life. According to Anker (2011), easy access to communicative technologies brings bullying to adolescents. This bullying situation has even increased in the traditional form of face-to-face contact. Bullying in this technology age has become more common as children and adolescents have greater access to the Internet. Intimidation appears in the form of sending images and text messaging via mobile phones. As a consequence, victims do not want to show up in the public such as schools and had low learning achievements or encounter depression. In consistence with Samoh, Boonmongkon, Ojanen, Samakkeekarom and Guadamuz (2014) who studied and found that 45.40% of adolescents had been cyberbullied in the forms of attacks, intimidation, and gossip by others in a derogatory way.

Disclose other people's private information had the third highest standard factor loading of 0.88 with a high level of variance with the cyberbullying behaviors (77%). Disclosure of other people's confidential information is done for fun and anger without considering its consequent effects on victims such as embarrassment or damage of reputation. This finding was consistent with a study by Phornprasert and Suttipong (2019) who found that most cyberbullying behaviors involved faking and disclosing information about others on social media, publishing it for fun, revealing secrets through social networks, editing other people's images and publishing them until causing defamation, and secretly accessing others' online media accounts and then pretending to post embarrassing messages or pictures on social media.

Gossip or defamation of others had the fourth highest standard factor loading of 0.86 with a high level of variance with the cyberbullying behaviors (74%). This finding may be due to the fact that posting or sharing false facts that damage reputation of others through cyber channels or applications is popular nowadays (Kowalski, Limber, & Agatston, 2008). The characteristics of gossip or cursing others is sending messages in the form of hostility, aggression, intimidation, insults, and satire to express dissatisfaction (Wolak, Mitchell, & Finkelhor, 2007; Friedman & Currall, 2003; Tudkuea, 2014). This finding also accorded with the research of Lertratthamrongkul (2021) who found the most common form of online bullying was gossip which accounted for 60.73%.

Deleting or blocking others from the group had the lowest standard factor loading of 0.57 with a low level of variance with the cyberbullying behaviors (33%). This might be due to the facts that dissatisfaction often occurs in online networks and various types of applications where inappropriate conversations are made. Online cyberbullying behaviors can lead to exclusion and removal of others from online conversation groups. According to Tawekanachot (2022), deleting or blocking others from the group had the lowest factor loading (a = 0.677). This is also consistent with the research of Kowalski, Limber, and Agatston (2008) who found that it was easy to block and remove others from online conversations. They deleted or blocked them from friends' lists, Internet groups, chat rooms, network groups, or gaming sites.

7. Conclusion

The confirmatory factor analysis concluded that the cyberbullying behavior model of the students in higher

education institutions in the northeastern region of Thailand was consistent with the empirical data. The model consisted of the 5 components which are ranked by factor loadings in a descending order as 1) Impersonation (0.95), 2) Intimidation and cursing others (0.91), 3) Disclose other people's private information (0.88), 4) Gossip or defamation of others (0.86), and 5) Deleting or blocking others from the group (0.57). The cyberbullying behavior model was consistent with the empirical data (Chi-square χ^2 = 1.37, df = 2, p = .50, GFI = 1.00, AGFI = 1.00, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00).

8. Recommendations

8.1 For Application

The results of the confirmatory factor analysis confirmed that the model was consistent with the empirical data. This indicated that the students possessed bullying behaviors in the cyberworld. Therefore, higher education institutions and related agencies can apply the components to develop activities or learning management models to reduce and prevent cyberbullying behaviors.

Teachers and parties involved with student development in higher education institutions can apply the components as a framework for assessment of cyberbullying behaviors among university students.

8.2 For Further Research

More studies on structural equation models of cyberbullying behaviors of students should be done to prevent factors leading to bullying behaviors in the cyberworld.

A training program should be developed to prevent cyberbullying behaviors based on the components studied by various techniques or methods.

There should be research by employing the components obtained from this present research as a guideline for developing cyberbullying behavior indicators and cyberbullying victim indicators of undergraduate students in other regions under their contexts.

Authors' contributions

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Competing interests

Not applicable.

Informed consent

Obtained.

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Data sharing statement

No additional data are available.

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