A Confirmatory Factor Analysis of Cyberbullying Behaviors among Lower Secondary School Students in Thailand

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Abstract

Cyberbullying is one of the most important issues around the world nowadays. Thailand also faces this problem, especially among young teens. Hence, this research study aimed to develop and validate the cyberbullying behavior indicators among lower secondary school students in Thailand. Participants in this study consisted of 532 lower secondary students. In order to validate the indicators of cyberbullying behaviors, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. A questionnaire with 20 questions was distributed to collect data from participants. The LISREL program was used for analyzing data. The results of CFA indicated that the developed model of cyberbullying behaviors among lower secondary school students in Thailand were fitted to the empirical data and had construct validity. There are five factors covering five types of cyberbullying behaviors, namely: flaming, harassment, social bullying, outing and trickery, and impersonating. In further studies, this questionnaire can be used to measure levels of lower secondary students' cyberbullying behaviors in Thailand.

Keywords: *Cyberbullying behaviors, lower secondary school students, Thailand*

Introduction

Technologies are becoming a part of our daily lives because of their conveniences, such as gaining knowledge and information from the Internet, making money online by selling goods, or instantly communicating with anyone around the world. Even though technology brings us convenience, some dangers exist in the online world–for example, meeting strangers online, identity theft, sexting, cyberbullying, and many more. However, one of the most challenging problems around the world nowadays is "cyberbullying."

Cyberbullying is a new form of violence and aggression that happens online via email, chat applications, or social networking sites. The cyber perpetrators intend to harass, deceive, embarrass, and threaten other people. The people being bullied feel embarrassed, stressed, and lose some confidence in living with others in society (Patchin & Hinduja, 2011; Zhou et al., 2018; Sittichai & Tudkuea, 2017). Furthermore, cyberbullying provides anonymity to the bully; thus, the victim cannot know who is the real perpetrator (Dooley et al., 2014).

Various research studies and surveys conducted in Thailand have found that cyberbullying rates are similar. For example, Musikapan et al. (2009 cited in Rungsang, 2017) found that 43.9% of youths in Bangkok admitted that they had been bullied. In 2012, Boonmongkol et al. (cited in Rungsang, 2017) found that 45.4% of female youths were being bullied and in 2018, the Internet Foundation for the Development of Thailand found that 46 percent of 9–18 years old youths were being bullied, and 33% admitted that they bullied others (Prachachart Turakij, 2018). According to these research studies and surveys, cyberbullying has been a problem for many years and still constantly threatens Thai youths. Thai youths perceive that cyberbullying is fun, normal, it does not affect them, and also think that cyberbullying is not their problem (Musikapan et al., 2009; Samor, 2013).

Sriwattanapong and Thaninpong (2015) studied cyberbullying behavior of lower secondary students at schools in Chiang Mai Province, and found that 41.88% of students had been bullied by

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others in the online world. Furthermore, Pornnoppadol (2017, cited in Department of Mental Health, 2018) found that 45 percent of Thai youths in Grades 7–9 had been involved in cyberbullying at least one time. Hence, this research focuses on lower secondary school students (Grades 7-9) in Thailand. Lower secondary students are 12–15 years of age, so they are young teens, and most young teens are moody, sensitive, and short-tempered. When they are not satisfied with something, they easily demonstrate aggression (Koltrakul, 2013; Morin, 2019), and one kind of aggression can be cyberbullying.

Not many research studies about cyberbullying indicators in Thailand have been conducted yet. Only the work of Tudkuea and Laeheem (2014) was found, but that research study focused on youth in Songkhla Province. Therefore, this study has a purpose to develop and validate the cyberbullying behaviors model among lower secondary school students (Grade 7–9) in Thailand.

Literature Review

Some studies pointed out that the indicators of cyberbullying behaviors were derived from various types of cyberbullying. Willard (2005) identified seven cyberbullying behaviors, i.e., flaming, harassment, cyberstalking, denigration, masquerade, outing and trickery, and exclusion. These seven indicators were consistent with the work of Kowalski, Limber, and Agatston (2008), but they added happy slapping. However, they described only types of cyberbully behaviors, but did not investigate the validity and reliability of those indicators.

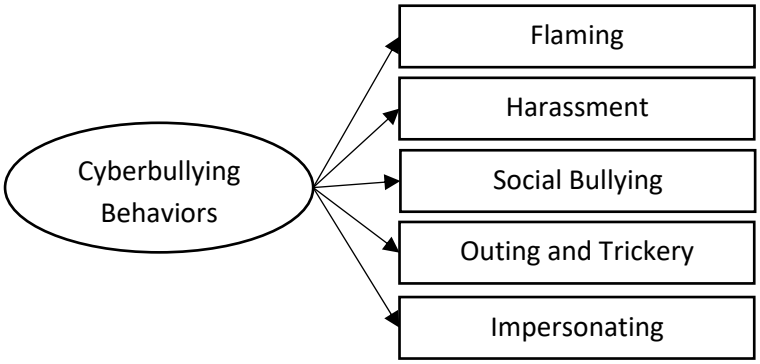
Various research studies developed indicators of cyberbullying behaviors of secondary school students across the globe. Antoniadou, Kokkinos, and Markos (2016) investigated the construct validity of a cyberbullying questionnaire on junior high school students in Greece. They found that cyberbullying behaviors can be separated into two main types: 1) direct cyberbullying behaviors including destruction/abuse of property, verbal cyberbullying, and threats; and 2) indirect cyberbullying behaviors including social exclusion, reputation slandering, and masquerading. Palladino et al. (2015) examined four dimensions of cyberbullying behaviors on Italian adolescents aged between 12 to 20 years old, including verbal/written perpetration, visual/sexual perpetration, impersonation, and social exclusion perpetration. Four cyberbullying behaviors were found from investigating Hong Kong teens aged 12 to 15, namely, relation bullying, pictorial bullying, verbal bullying, and extortion bullying (Wong & McBride, 2018). Furthermore, Tudkuea and Laeheem (2014) developed and validated the cyberbullying behaviors indicators of Thai youth aged 13 to 18. Five indicators were found, including flaming, slander, identity thief, revealing other people's secrets, and deleting or blocking others from the groups.

However, a limited number of research studies about developing indicators of cyberbullying have been conducted in Thailand. Most of the cyberbullying research studies found in Thailand involve levels of cyberbullying behaviors, youth perceptions on cyberbullying, causes, and prevention of cyberbullying behaviors. As mentioned above, only the study of Tudkuea and Laeheem (2014) was found. They developed and validated cyberbullying indicators in Thailand, but that research focused on youths in Songkhla Province.

According to the literature review above, most previous indicators of cyberbullying behaviors consisted of verbal and visual cyberbullying. However, they are not really suitable indicators because they are ambiguous about what actually comprises cyberbullying behaviors. They can be revealed in various indicators; for example, verbal cyberbully can consist of both flaming and harassment. Therefore, cyberbullying behaviors consist of six indicators: flaming, harassment, denigration, outing and trickery, impersonating, and social exclusion. However, the researchers combined denigration and social exclusion because they have the same common point. Both are the bullying that caused others to lose their reputation, social status, or break someone's relationship, and are therefore named "social bullying" (Wong & McBride, 2018).

In conclusion, the cyberbullying behaviors in this present study were composed of five indicators: namely, flaming, harassment, social bullying, outing and trickery, and impersonating. The conceptual framework of this study is represented in Figure 1.

Figure 1 *Conceptual Framework of Cyberbullying Behaviors*



Flaming

Flaming means sending intense, angry, and rude messages to other people that incite anger and cause online contention. (Willard, 2005; Kowalski et al., 2008; Tudkuea & Laeheem, 2014).

Harassment

Harassment is defined as repeatedly sending messages that bother, upset, or threaten others through social media or instant messaging (Willard, 2005; Kowalski et al., 2008; Antoniadou et al., 2016; Wong & McBride, 2018).

Social Bullying

Social bullying refers to the intention to destroy the reputation or social status of others, or to destroy friendships through public social media such as excluding someone from a group, starting rumors, and insulting others. (Willard, 2005; Kowalski et al., 2008; Tudkuea & Laeheem, 2014; Palladino et al., 2015; Antoniadou et al., 2016; Wong & McBride, 2018)

Outing and Trickery

Outing and trickery means sending, posting, or disseminating confidential images or videos or other shameful stories to public social media without the consent of the information's owner(s) (Willard, 2005; Kowalski et al., 2008; Tudkuea & Laeheem, 2014).

Impersonating

Impersonating is pretending to be someone else, and use that identity to damage that person or a third person by sending or posting information (Willard, 2005; Kowalski et al., 2008; Tudkuea & Laeheem, 2014; Palladino et al., 2015; Antoniadou et al., 2016).

Methodology

Participants

The participants in this study were 532 lower secondary school students from 10 public schools in four regions, namely: northern, northeastern, central, and southern Thailand, plus Bangkok. Two public schools were chosen from each region. The researchers used criteria from Hair et al. (2014) to determine the sample size. They suggested sample sizes of between 10 to 20 cases or each variable. This study had five observable variables; thus, the sample size should be 50 to 100 cases. The participants completed the survey during the first semester of the 2019 academic year.

Instrumentation

An anonymous questionnaire was used in this study, which had two sections. The first section gathered general information: gender, grade, and time spent online; and the second contained closed-ended questions to collect data about cyberbullying behaviors from participants during the last six months. The researchers established the period of the last six months in order to get current information about cyberbullying behavior from students. If this time frame had not been set,

students might answer based on their behavior from a few years before the survey, while their beliefs or behaviors may have changed over that time (Robson & Witenberg, 2013; Udris, 2014; Brewer & Kerslake, 2015; Festl, 2016). A Likert scale was used to assess the participants' responses ranging as follows: 1 = I never do this, 2 = I rarely do this, 3 = I sometimes do this, 4 = I often do this, and 5 = I always do this. The questionnaire contains 20 items categorized into five types. Each type has four items written in the Thai language.

To measure content validity, the researchers used the index of item-objective congruence (IOC). The questionnaire was evaluated by three experts: one expert from educational measurement and evaluation, and two experts from educational psychology. A pilot survey was administered with 80 lower secondary school students. The strategy used to recruit participants involved convenience sampling (Creswell, 2012). Furthermore, to measure internal consistency reliability, the researchers conducted two reliability tests including Cronbach's alpha and composite reliability (CR). The results of Cronbach's alpha exceeded a minimum threshold of .70, ranging from .702 to .892 (BrckaLorenz, Chiang, & Nelson Laird, 2013). Composite Reliability also reached the minimum threshold of .70, ranging from .801 to .958 (Hair et al., 2014) (Table 4).

Data Collection

This study received ethics approval from the Research Ethics Review Committee for Research Involving Human Subjects, Chulalongkorn University. As part of a larger study on lower secondary students throughout the country, permission to solicit participants for data collection was sought from school directors. After school directors gave permission, the researchers collected the data from students by coordinating with teachers from each school. Since participants of this study were children, parents were required to give their consent for their children to participate. The informed consent form clearly stated that the survey responses were confidential and used only for research purposes. Students also filled out a consent form to indicate their willingness to participate.

Data Analysis

Exploratory factor analysis (EFA) was employed to explore latent variables representing the dimensions of a cyberbullying behavior model using IBM SPSS Statistics 21.0. Furthermore, second-order CFA was employed to affirm results of EFA using LISREL version 8.72. The fit statistics used in this study included a chi-square test (χ^2), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), root mean square residual (RMR), and root mean square error of approximation (RMSEA) (Schreiber et al., 2006). The fit indexes for determining the model fit of CFA are shown in Table 1.

Table 1 *Criteria for Chosen Fit Indexes*

Indexes	Cutoff criteria
Chi-square (χ^2)	*p*-value > .05; Ratio of χ^2 to *df* ≤ 2 or 3
GFI	≥ .95
AGFI	≥ .95
RMR	< .06 to .08 the smaller, the better; 0 indicates perfect fit
RMSEA	< .06 to .08 with confidence interval

Results

The results of the study were separated into four parts, including: 1) demographics, 2) exploratory factor analysis, 3) confirmatory factor analysis, and 4) construct validity.

Demographics

There were 532 participants. A majority of students were 340 females (63.9%), along with 172 males (32.3%) and 20 students (3.8%) who didn't identify their gender. There were 170 students (32%) in Mathayom Suksa 1 (Grade 7), 98 students (18.4%) in Mathayom Suksa 2 (Grade 8), and 264 students (32%) in Mathayom Suksa 3 (Grade 9). Students mostly spent time online 3 to 6 hours per day (N = 227, 42.7%). More information can be seen in Table 2.

Table 2 *Participants' Demographics*

		Numbers (532)	Percent (100)
Gender	Male	172	32.3
	Female	340	63.9
	Other	20	3.8
Grade Level	M.1 (Grade 7)	170	32.0
	M.2 (Grade 8)	98	18.4
	M.3 (Grade 9)	264	49.6
Time Spent Online	Less than 1 hour/day	10	1.9
	1–3 hours/day	84	15.8
	3–6 hours/day	227	42.7
	6–9 hours/day	122	22.9
	More than 9 hours/day	89	16.7

Exploratory Factor Analysis

Before exploring the results of EFA (Table 3), Bartlett's test of Sphericity was used to test whether the correlation matrix is an identity matrix. The results were χ^2 = 4058.480, *df* = 190, and *p* = .00, indicating that the correlation matrix was not an identity matrix. Furthermore, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was measured to test the sample size validity statistically. The result of the KMO value was .924. The sample size was considered highly acceptable since the KMO value was higher than .90 (Field, 2017).

Table 3 *Factor Loadings for Cyberbullying Behaviors by Exploratory Factor Analysis (EFA)*

Item	Factor Loading				
	1 FLAM	2 HARASS	3 SOCIAL	4 OUTING	5 IMPER
CYBR1	.786				
CYBR2	.743				
CYBR3	.503				
CYBR4	.769				
CYBR5		.655			
CYBR6		.649			
CYBR7		.683			
CYBR8		.719			
CYBR9			.503		
CYBR10			.746		
CYBR11			.532		
CYBR12			.756		
CYBR13				.560	
CYBR14				.644	
CYBR15				.665	
CYBR16				.656	
CYBR17					.641
CYBR18					.815
CYBR19					.721
CYBR20					.735
Eigenvalue	3.489	2.781	2.558	2.416	1.676
% of Variance	17.443	13.903	12.790	12.080	8.381
Cumulative %			64.598		

Note. FLAM = Flaming, HARASS = Harassment, SOCIAL = Social bullying, OUTING = Outing and Trickery, and IMPER = Impersonating

An EFA with Varimax rotation was administered to explore the latent variables representing the indicators of cyberbullying behaviors. As illustrated in Table 3, the eigenvalues of the five factors

were greater than 1.0 (Hair et al., 2014). The results were 3.489, 2.781, 2.558, 2.416, and 1.676 respectively.

Confirmatory Factor Analysis

The results of the CFA are shown in Table 4 and Figure 2. Factor loadings for every indicator–both first order and second order–were found to be significant at the .05 level.

Table 4 *Results of Second-order CFA for Developing Indicators of Cyberbullying Behaviors among Lower Secondary School Students in Thailand*

Indicators	Factor Loadings		R^2	Factor Score Regression
	b(*SE*)	β		
First Order				
I scold others online. (FL1)	.711	.710	.506	.122
I mock others' appearances online. (FL2)	.766*(.073)	.767	.587	.298
I mock disabled people online. (FL3)	.746*(.088)	.747	.557	.413
I rudely counter with people online. (FL4)	.640*(.044)	.639	.409	.206
I repeatedly send messages to bother other people online. (HA1)	.742	.741	.551	.293
I send nasty messages to others online. (HA2)	.693*(.105)	.694	.480	.203
I insult others online. (HA3)	.767*(.116)	.767	.588	.294
I threaten others online. (HA4)	.665*(.102)	.665	.443	.165
I gossip about other people online. (SOC1)	.793	.794	.629	.299
I spread bad rumors about other people online. (SOC2)	.664*(.068)	.666	.443	.169
I ask friends to delete someone I don't like from being friends or groups online. (SOC3)	.735*(.054)	.737	.541	.258
I ask friends to block someone I don't like online. (SOC4)	.720*(.063)	.721	.518	.239
I post people's private information online without their permission. (OU1)	.644	.644	.415	.171
I post friends' parents' names online. (OU2)	.825*(.060)	.824	.681	.338
I post embarrassing pictures or videos of others online. (OU3)	.698*(.057)	.699	.487	.259
I exchange other people's secrets with third person online. (OU4)	.684*(.061)	.683	.468	.250
I use the name of a friend or acquaintance when chatting online. (IM1)	.773	.774	.598	.268
I secretly use my friend's name in a bad way online. (IM2)	.728*(.085)	.730	.532	.284
I pretend to be someone by using names and pictures of people seen online. (IM3)	.609*(.074)	.609	.371	.207
I use the name of the acquaintance to slander the third person online. (IM4)	.719*(.088)	.721	.519	.248
Second Order				
FLAM	.772(.088)	.772	.596	-.001
HARASS	.937(.136)	.937	.878	.344
SOCIAL	.965(.092)	.965	.931	.191
OUTING	.968(.082)	.968	.937	.399
IMPER	.871(.102)	.871	.758	.187
Chi-square = 122.767	*df* = 103	*p*-value = .09		
GFI = .977	AGFI = .954	RMR = .028	RMSEA = .019	

Note. *p < .05, FLAM = Flaming, HARASS = Harassment, SOCIAL = Social Bullying, OUTING = Outing and Trickery, and IMPER = Impersonating

The weights of all five factors of the indicators of cyberbullying behaviors among lower secondary school students were in a positive range from .772 to .968, with statistical significance at the .05 level for all of them. The highest indicator was outing and trickery (.968), the second was

impersonating (.871), the third was harassment (.937), the fourth was social bullying (.965), and the lowest indicator was flaming (.772).

The fit statistics for the second-order CFA developing indicators of cyberbullying behaviors among lower secondary school students in Thailand are also presented in Table 4 and Figure 2. The chi-square was significant (χ^2= 122.767, *df* = 103, p = .09). The GFI (.977) and AGFI (.954) values were close to 1, and RMR and RMSEA (.028 and .019, respectively) values were less than the cutoff score of .06 for determining good model fit.

Construct Validity

To assess construct validity, convergent validity and discriminant validity were conducted. The average variance extracted (AVE) was considered to evaluate the convergent validity. The AVE values of all items, as shown in Table 5, were found to be greater than .50 (Hair et al., 2014). This indicated that all items were representative of the latent constructs. The discriminant validity was confirmed by the AVE values, which should be greater than the square of the correlations between the corresponding constructs (Hair et al., 2014). As illustrated in Table 5, all of the AVE values were greater than the squared correlations of the paired constructs.

Table 5 *Results of Factor Loading, Composite Reliability (CR), Convergent Validity (AVE), and Cronbach's Alpha* (α) *of Developed Model*

Variable	Factor Loading	CR	AVE	α
Flaming		.808	.515	.762
FL1	0.711			
FL2	0.766			
FL3	0.746			
FL4	0.640			
Harassment		.809	.515	.748
HA1	0.742			
HA2	0.693			
HA3	0.767			
HA4	0.665			
Social Bullying		.819	.532	.764
SOC1	0.793			
SOC2	0.664			
SOC3	0.735			
SOC4	0.720			
Outing and Trickery		.807	.513	.702
OU1	0.644			
OU2	0.825			
OU3	0.698			
OU4	0.684			
Impersonation		.801	.504	.719
IM1	0.773			
IM2	0.728			
IM3	0.609			
IM4	0.719			
Cyberbullying Behaviors		.958	.820	.892
FLAM	0.772			
HARASS	0.937			
SOCIAL	0.965			
OUTING	0.968			
IMPER	0.871			

Note. FLAM = Flaming, HARASS = Harassment, SOCIAL = Social bullying, OUTING = Outing and Trickery, and IMPER = Impersonating

Table 6 *Results of Discriminant Validity*

	FLAM	HARASS	SOCIAL	OUTING	IMPER
FLAM	.72a				
HARASS	.62**	.72a			
SOCIAL	.45**	.61**	.73a		
OUTING	.45**	.58**	.61**	.72a	
IMPER	.37**	.58**	.55**	.63**	.71a

Note. **$p < .01$

Discussion

The findings of the present study showed that the model of cyberbullying behaviors among lower secondary school students in Thailand had five factors and twenty indicators as expected. The results of cyberbullying behaviors were flaming, harassment, social bullying, outing and trickery, and impersonating. This study investigated cyberbullying indicators in terms of behaviors, but some research studies examined the cyberbullying indicators in terms of types. For example, Griezel, Craven, Yeung, and Finger (2008) identified two types of cyberbullying, i.e. visual and text, or Bergmann and Baier (2018) separated cyberbullying into two types: psychological and sexual bullying. These present study factors were consistent with Tudkuea & Laeheem (2014), but they were written using different names. However, one factor, harassment, was not found in their study. Harassment is an important cyberbullying behavior (Willard, 2005; Bauman, 2010; Antoniadou et al., 2016). Cyberbullying originates from harassment (Bauman, 2010). Furthermore, as previously mentioned, the definition of cyberbullying is an intention to harass or threat other people. Hence, the harassment factor should be added to the cyberbullying behavior indicators.

Conclusion and Recommendations

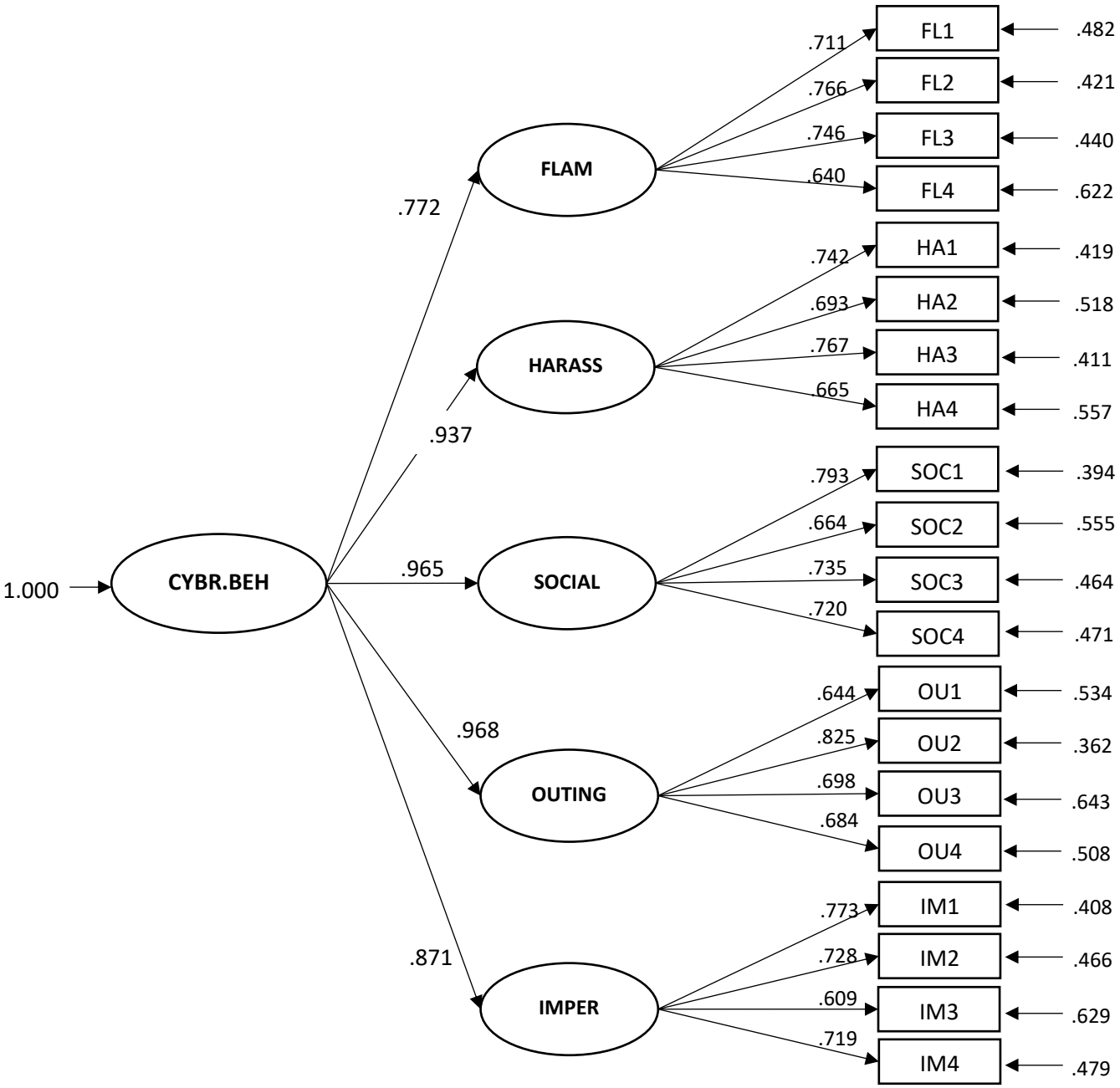
This present study aimed to analyze the construct of the cyberbullying behaviors model using confirmatory factor analysis among lower secondary school students (Grade 7-9) in Thailand. A questionnaire was used to collect the data. The participants were 532 lower secondary students from various public schools in Thailand. The results found that the developed model of cyberbullying behaviors among lower secondary school students in Thailand was fitted to the empirical data. There were five factors and 20 indicators covering five types of cyberbullying behaviors, i.e., outing and trickery, social bullying, harassment, impersonating, and flaming.

Some limitations can be found in this present study. The researchers only studied students in public schools; thus, the results may not be generalizable to the whole country.

According to the findings, the developed model fit the empirical data, so this questionnaire can be used to measure levels of lower secondary students' cyberbullying behaviors in Thailand.

Some recommendations are provided for further studies. This model can be used to study other similar areas such as causal relationships. These indicators can be guidelines for future studies on the development of indicators among other levels of students in Thailand, or in specific provinces. Furthermore, some wording in the questionnaire may have to be adjusted to make it easier for lower secondary students to understand.

Figure 2 *Indicators of Cyberbullying Behaviors among Lower Secondary School Students in Thailand Obtained from the Second-order CFA*



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