ORIGINAL ARTICLE

Cyberbullying and its associated factors among junior high school students in Mahasarakham, Thailand

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ABSTRACT

Cyberbullying is a public health concern influencing the health, well-being, and academic achievement of adolescents, especially junior high school students. In Thailand, research into cyberbullying is limited, and efforts to ascertain its associated factors among Thai junior high school students are scarce. Thus, this study aims to investigate the prevalence of cyberbullying and its contributing factors in Thai schools. A cross-sectional design was conducted with 1,143 students from ten high schools in Mahasarakham Province, Thailand, from August 2023 to March 2024, using multistage sampling methods. The data were collected by a self-reported questionnaire, and binary logistic regression was applied to explore factors that influence cyberbullying victimization (CV). The results show that approximately 50.7% of students reported a high level of CV. Students who were LGBTQ were associated with a significantly higher likelihood of CV (AOR = 5.50; 95% CI: 3.49–8.67), or Female gender (AOR = 5.02; 95% CI: 3.17-7.94), pathological internet use (AOR = 5.53; 95% CI: 3.63-8.42) and high-risk internet behaviors were also contributing factors (AOR = 3.52; 95% CI: 2.95-5.93). Additionally, increased CV was associated with authoritative parenting styles (AOR = 2.33; 95% CI: 1.59-3.41), a low resilience level (AOR = 1.88; 95% CI: 1.15-3.05), and a lack of information on preventing cyberbullying (AOR = 1.76; 95% CI: 1.78-5.59). Thus, it is essential to consider these factors when designing individual- or school-based interventions or anti-cyberbullying strategies to address and prevent CV among students.

Keywords:
cyberbullying; internet addiction; resilience; victimization

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INTRODUCTION

Cyberbullying is a form of bullying arising from modern communication technologies, which influences modern societies regardless of the target audience.[1] Approximately one-third of teenagers worldwide have experienced cyberbullying, and about 41% of students have reported being bullied in schools, stating that bullying happens frequently.[2] In a survey on cyberbullying among junior high school students (grades 7–9) in 14 countries worldwide, it was reported that 45% of Thai youth have experienced cyberbullying, which is four times higher than in the United States, Europe, and Japan.[3] Cyberbullying can be found on various social media platforms (e.g., Facebook, Line, Twitter, and Instagram). It involves sending offensive messages, sharing sensitive information, and intentionally leaving someone out of an online group.[4]

Cyberbullying has several adverse effects on its victims, including psychological distress such as anxiety, depression, shame, stress, feelings of victimization, and even suicide,[5] as well as concentration and learning difficulties, and dropping out of school.[6] Previous studies have found that factors related to cyberbullying victimization (CV) and perpetration include age and gender,[7,8] with LGBTQ members being especially vulnerable to bullying.[9] Although cyberbullying is significantly more prevalent in high schools compared to elementary schools, junior high school students are also subjected to CV.[10] Moreover, students with poor academic performance,[211] poor relationships, or a lack of peer support are more susceptible to cyberbullying.[8] Additionally, parenting style and internet addiction behavior have been found to contribute to cyberbullying.[12,13] Unfortunately, children who face cyberbullying often hesitate to inform adults due to the fear of losing their phones and computers, which leads them to conceal such incidents.[6]

While certain studies indicate that incidences of cyberbullying continue to rise during late adolescence, other research suggests that cyberbullying typically reaches its zenith at ages 14–15, subsequently declining throughout the remaining adolescent years.[14] In Thailand, those who spend more time on social media tend to have a stronger perception of cyberbullying.[15] Furthermore, a survey of students in Northeastern Thailand found that, in comparison to students in Northern, Eastern, and Southern Thailand, they spend the most time on the internet each day—an average of 11 hours and 29 minutes.[16] Research from Mahasarakham Province's student support system for secondary school also shows that bullying behavior through communication technology is the most prevalent problem, especially among LGBTQ students, who reported it the most frequently (about 49.8%).[17] Moreover, just 32.4% of high school students have received information on cyberbullying from teachers, schools, or training programs, and only 15.5% inform their teachers or parents when facing cyberbullying. Overall, students who experience cyberbullying have more problems regarding general health and depression.[11] Hence, due to the increasing occurrence and negative impacts of cyberbullying, it is critical to further examine its effects among Thai high school students.

A review of the literature shows that little research exists on cyberbullying, particularly among junior high school students, who may be the most vulnerable group.[15] Thus, this study investigates the potential factors associated with cyberbullying among junior high students, providing evidence to establish strategies and practical cyberbullying prevention interventions for students.

METHODS

Study setting, design, and population

This cross-sectional study was conducted from August 2023 to March 2024 at ten high schools in Mahasarakham Province, Thailand. The eligible participants a) were junior high students studying in grades 7–9, b) had access to social media platforms (e.g., Facebook, Line, and Twitter), c) had no reported communication or mental health problems, and d) agreed to take part. Participants who submitted incomplete questionnaires were not included in the analysis.

Sample size and sampling procedure

The minimum sample size was calculated using the method of Krejcie and Morgan[18] and was based on an estimated total number of junior high school students at 17,614, and the percentage of high school students who experience CV (75.5%) as reported by Kwamkanung and Kaewchinda,[19] considering a 3% precision and a 95% confidence interval. This calculation resulted in a minimum sample of 1,028 participants, plus 10% for non-response adjustment, equaling 1,143 students. Students who met the eligibility criteria were enrolled using the multistage sampling method. First, high schools in Mahasarakham Province were initially categorized into four sizes (extra-large, large, medium, and small) according to the number of students. The researcher used the lottery method to select ten high schools in proportion to the size of all 35 high schools. Second, six classrooms from each high school were randomly selected from a list of classrooms at each school. Third, all selected school students who met the selection criteria were assigned a random computer-generated number. If the student did not consent or was not ready to participate, the next student on the list was contacted to participate.

Data collection instrument and data collection procedure

The data were gathered through a self-report questionnaire, which was created following a review of existing literature and the principles of social cognitive theory. This theory emphasizes the interaction between personal, behavioral, and environmental factors. All assistants received training based on a field manual specifically designed for data collection, and the research team oversaw the entire data collection process.

Measurements

The structured questionnaire comprised four parts as follows:

Predictors

Part 1: Personal factors: These included gender, age, cumulative grade point average (GPAX), monthly household income, and parenting behaviors. All variables were categorized as dichotomous variables. To measure participants' personal relationships, we administered the personal relationships questionnaire developed by Jitsom et al.[20] This is a fifteen-item scale comprising three dimensions, namely relationships with peers (five items), parents (five items), and teachers (five items). The items are rated on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The total scores were calculated by summing the scores of all items (range 5–20) in each dimension. We dichotomized this scale (high and low) according to the median. The scale showed good internal consistency (Cronbach's alpha =0.87). Moreover, the Resilience Scale for Teenagers in Thailand[21] was used to assess participants' emotional resilience, morale, problem-solving abilities, and obstacle management. This scale comprised fifteen items rated on a three-point Likert-type scale, ranging from 0 (false) to 2

(absolutely). Summary scores range from 0 to 30. The recommended low-level cut-off is 16, whereas a score of 17–26 is moderate, and 27–30 is high. Cronbach's alpha for this scale was 0.77, indicating good internal consistency.

Part 2: Behavioral factors: Internet addiction behavior was measured using Young's Diagnostic Questionnaire.[22] This questionnaire comprises eight items with a binary response format (0 = "no," 1 = "yes"). Total scores were derived by summing all items, ranging from 0 to 8. A scoring method identified three categories, namely adaptive internet users (AIU) (scoring: 0–2), maladaptive internet users (MIU) (scoring: 3–4), and pathological internet users (PIU) (scoring: ≥5). Cronbach's alpha was 0.96, indicating good internal consistency. Risk behavior from using social media on the internet was measured using the Online Risk Behavior Scale.[23] This scale comprises seven items rated on a five-point Likert-type scale, ranging from 0 (strongly disagree) to 4 (strongly agree). The total scores were calculated by summing the scores of all items (range 0–28), with higher scores indicating greater online risk behavior. We divided this scale into two groups (high and low) by the median method cut-off score of 15, whereby high-level risk behavior on the internet is indicated by scores of 15–28 points and low-level scores of 0–14 points. Cronbach's alpha for this scale was 0.88, demonstrating good internal consistency.

Part 3: Environmental factors: The receipt of information on preventing cyberbullying was determined by the students being asked, "Have you ever received information on cyberbullying prevention from your school?"[24] Responses were categorized as a dichotomous variable (Y/N). Place of residence was also dichotomized as rural or urban.

Outcome variable

Part 4: The primary outcome of this study was CV, measured using the Cyber-Aggression Perpetration and Victimization Scale (Thai Version), which was translated and validated by Anuroj and Pityaratstian.[25] This scale comprises twelve items, rated on a five-point Likert scale ranging from 0 (never) to 4 (all the time). The possible total score ranged from 0 to 48 points. We divided this scale into two groups (high and low) based on the median method cut-off score of 27, whereby the high-level includes the CV scores of 27–48 points, while the low-level is indicated by a score of 0–26 points. The scale has good internal consistency, with a Cronbach's alpha of 0.89.

Statistical analysis

Descriptive analyses were applied to analyze all variable characteristics. Next, the bivariate odds ratio (OR) was computed to estimate the associations between each factor and CV. The adjusted OR estimated from binary logistic regression examined the association between personal, behavioral, and environmental factors and CV after adjusting for all other predictors. The variance inflation factor (VIF) test was performed on our model, where the reported VIF was between 1.25–2.13, indicating no evidence of multicollinearity. Some studies show that multicollinearity is present when the VIF is greater than 5, which is taken to indicate multicollinearity.[26-28] The variables that exhibited significance ($P < 0.25$)[29] during the bivariate analysis were incorporated into the multivariate logistic regression model. In Model 1, all personal factors were entered to assess their association with CV. Subsequently, in Model 2, all behavioral factors were entered into Model 1 to investigate the relationship between all personal and behavioral factors and CV after adjusting for each predictor. In Model 3, environmental factors were entered into Model 2 to examine the association between all three group factors and CV after adjusting for all predictors. In all models, low CV levels were the reference group of outcome variables. All statistical

analyses were conducted using SPSS version 25.0 (IBM Corp., Armonk, NY, USA), with a P-value <0.05 considered statistically significant.

Ethical approval

The participants received information on the research and its voluntary nature, as well as a declaration of anonymity and confidentiality. All participants provided written informed consent and completed the self-report questionnaire. This study was reviewed and approved by the Ethics Committee for Research Involving Human Subjects at Mahasarakham University (Ethics no.: 267-236/2566).

RESULTS

About 38.0% of the respondents were female, with a median age of 13 years and a median monthly household income of 30,000 Thai baht (834 US$), while 78.7% reported a GPAX of 3.50 or above. Approximately 50.7% of respondents reported a high level of CV. Over half reported authoritarian parenting (70.6%) and a low level of Rs (47.6%). Moreover, a similar proportion of respondents reported high levels of relationships with peers (72.2%), teachers (75.9%), and parents (53.0%). Regarding behavioral factors, the largest percentage of students were pathological internet users (44.5%), and a majority reported high-risk internet behaviors (74.3%). In addition, more than half (57.1%) of them had received information on preventing cyberbullying, and 56.9% resided in rural areas. There was a significant difference between high and low CV for all personal, behavioral, and environmental factors (P < 0.05) (Table 1).

Table 1: Distribution of personal factors, behavioral factors and environmental factors by cyberbullying victimization

Variable	Cyberbullying victimization			*P*-value¶
	Total (n=1,143)	High level (n=580)	Low level (n=563)	
	n (%)	n (%)	n (%)	
Personal factors				
Gender				< 0.001
LGBTQ	331 (29.0)	214 (36.9)	117 (20.8)	
Female	434 (38.0)	277 (47.8)	157 (27.9)	
Male	378 (33.0)	89 (15.3)	289 (51.3)	
Age (y)				< 0.001
≥ 13	521 (45.6)	396 (68.3)	125 (22.2)	
< 13	622 (54.4)	184 (31.7)	438 (77.8)	
GPAX				< 0.001
< 3.50	243 (21.3)	197 (34.0)	46 (8.2)	
≥ 3.50	900 (78.7)	383 (66.0)	517 (91.8)	
Monthly household income (THB)				< 0.001
< 30,000	490 (42.9)	333 (57.4)	157 (27.9)	
≥ 30,000	653 (57.1)	247 (42.6)	406 (72.1)	
Parenting behaviors				< 0.001
Authoritative	366 (29.4)	214 (36.9)	122 (21.7)	
Authoritarian	807 (70.6)	366 (63.1)	441 (78.3)	
Resilience level (Rs)				< 0.001
Low	544 (47.6)	352 (60.7)	192 (34.1)	
Moderate	399 (29.7)	163 (28.1)	176 (31.3)	
High	260 (22.7)	65 (11.2)	195 (34.6)	

Variable	Cyberbullying victimization			*P*-value¶
	Total (n=1,143)	High level (n=580)	Low level (n=563)	
	n (%)	n (%)	n (%)	
Relationships with peers				< 0.001
Low	318 (27.8)	233 (40.2)	85 (15.1)	
High	825 (72.2)	347 (59.8)	478 (84.9)	
Relationships with teachers				< 0.001
Low	276 (24.1)	213 (36.7)	63 (11.2)	
High	867 (75.9)	367 (63.3)	500 (88.8)	
Relationships with parents				< 0.001
Low	294 (25.7)	232 (40.0)	62 (11.0)	
High	849 (74.3)	348 (60.0)	501 (89.0)	
Behavioral factors				
Internet addiction				< 0.001
PIU	509 (44.5)	365 (62.9)	144 (25.6)	
MIU	260 (22.8)	129 (22.3)	131 (23.3)	
AIU	374 (32.7)	86 (14.8)	288 (51.1)	
Risk behavior on the internet				0.03
High	820 (71.7)	433 (74.7)	387 (68.7)	
Low	323 (28.3)	147 (25.3)	176 (31.3)	
Environmental factors				
Received information on preventing cyberbullying				< 0.001
No	490 (42.9)	304 (52.4)	186 (33.0)	
Yes	653 (57.1)	276 (47.6)	377 (67.0)	
Place of residence				< 0.001
Urban	493 (43.1)	335 (57.8)	158 (28.1)	
Rural	650 (56.9)	245 (42.2)	405 (71.9)	

Note. Values are presented as numbers (%); THB, Thai baht; PIU, pathological internet users; MIU, maladaptive internet users; AIU, adaptive internet users; ¶*P*-value for Chi-square test

In the bivariate model, a statistically significant increase was found in CV among students who were LGBTQ or female and older, had a GPAX of less than 3.5 and a monthly household income of 30,000 Thai baht or above, reported authoritative parenting styles and a low to moderate resilience level, and had poorer relationships with peers, parents, and teachers. Additionally, we found that students were more likely to report a high level of CV if they were urban dwellers, reported maladaptive or pathological internet use, had a high level of risky internet behavior, and had not received any information on preventing cyberbullying (Table 2).

Multivariate analyses in Model 1 revealed that all personal factors were associated with high CV levels, similar to the bivariate model. In Model 2, behavioral factors were added to Model 1, and the results indicated that a higher level of risky internet behavior and maladaptive or pathological internet use were related to higher CV. In the final model (Model 3), environmental factors were added, and the findings represented a similar pattern as in Model 2, as LGBTQ students was associated with a significantly higher likelihood of CV (AOR = 5.50; 95% CI: 3.49–8.67), followed by female gender (AOR = 5.02; 95% CI: 3.17–7.94), pathological internet use (AOR = 5.53; 95% CI: 3.63–8.42), and high-risk internet behaviors (AOR = 3.52; 95% CI: 2.95–5.93). Conversely, students with high resilience were less likely to experience CV (Table 2).

Table 2: Odds ratios and 95% confidence intervals from binary logistic regression for high level of cyberbullying victimization.

Variables	Bivariate		Model 1		Model 2		Model 3	
	Unadjusted OR (95%CI)	*P*-value	AOR (95%CI)	*P*-value	AOR (95%CI)	*P*-value	AOR (95%CI)	*P*-value
Personal factors								
Gender								
LGBTQ (ref: Male)	5.72 (4.21-7.79)	<0.001	5.19 (3.49-7.71)	<0.001	4.89 (3.15-7.58)	<0.001	5.50 (3.49-8.67)	<0.001
Female (ref: Male)	5.93 (4.28-8.24)	<0.001	4.34 (2.89-6.52)	<0.001	4.67 (2.98-7.31)	<0.001	5.02 (3.17-7.94)	<0.001
Age ≥13 (ref: < 13, y)	7.54 (5.78-9.82)	<0.001	3.35 (2.52-4.85)	<0.001	3.12 (2.18-4.46)	<0.001	2.95 (2.04-4.26)	<0.001
GPAX < 3.5 (ref: ≥ 3.50)	5.78 (4.08-8.18)	<0.001	3.28 (2.14-5.01)	<0.001	3.27 (2.03-5.28)	<0.001	2.88 (1.78-4.65)	<0.001
Monthly household income < 30,000 (ref: ≥ 30,000, THB)	3.48 (2.72-4.46)	<0.001	2.33 (1.68-3.23)	<0.001	3.44 (2.29-5.16)	<0.001	2.78 (1.82-4.25)	<0.001
Parenting behaviors								
Authoritative (ref: Authoritarian)	2.12 (1.62-2.74)	<0.001	2.09 (1.49-2.92)	<0.001	2.51 (1.73-3.65)	<0.001	2.33 (1.59-3.41)	<0.001
Resilience level								
Low (ref: High)	5.50 (3.94-7.66)	<0.001	1.90 (1.23-2.93)	0.004	1.86 (1.15-2.99)	0.011	1.88 (1.15-3.05)	0.011
Moderate (ref: High)	2.77 (1.95-3.95)	<0.001	1.25 (1.78-2.01)	0.023	1.21 (1.72-2.03)	0.021	1.31 (1.77-2.21)	0.018
Relationships with peers	3.77	<0.001	1.98	<0.001	1.99	<0.001	1.94	<0.001
Low (ref: High)	(2.84-5.01)		(1.41-2.79)		(1.36-2.91)		(1.32-2.85)	
Relationships with teachers	4.61	0.018	1.89	0.034	1.84	0.032	1.87	0.041
Low (ref: High)	(3.37-6.29)		(1.47-2.69)		(1.42-2.68)		(1.43-2.76)	
Relationships with parents	5.38	<0.001	2.74	0.002	3.25	0.001	2.78	0.005
Low (ref: High)	(3.94-7.35)		(1.45-5.15)		(1.62-6.52)		(1.34-5.64)	
Behavioral factors								
Internet addiction								
PIU (ref: AIU)	8.48 (6.23-10.55)	<0.001	-	-	5.81 (3.86-8.74)	<0.001	5.53 (3.63-8.42)	<0.001
MIU (ref: AIU)	3.29 (2.34-4.64)	<0.001	-	-	4.14 (2.62-6.56)	<0.001	4.57 (2.84-7.33)	<0.001
Risk behavior on the internet								
High (ref: Low)	1.34 (1.03-1.73)	0.027	-	-	3.43 (2.92-5.71)	<0.001	3.52 (2.95-5.93)	<0.001
Environmental factors								
Didn't receive information on preventing cyberbullying (ref: Yes)	2.23 (1.75-2.83)	<0.001	-	-	-	-	1.76 (1.78-5.59)	0.001
Place of residence	3.51	<0.001	-	-	-	-	1.78	0.004
Urban (ref: Rural)	(2.73-4.48)						(1.21-2.62)	

Note. AOR, adjusted odds ratio; CI, confidence interval; ref, reference group; THB, Thai baht; PIU, pathological internet users; MIU, maladaptive internet users; AIU, adaptive internet users

DISCUSSION

This study has demonstrated that personal factors such as gender, age, cumulative GPAX, monthly household income, parenting behaviors, resilience level, and relationship with one's peers, parents, and teachers are significantly associated with higher levels of CV. We found that LGBTQ individuals and females more commonly reported a higher CV. Consistent with prior research, adolescents who were feminine or identified as sexual minorities are disproportionately more likely to become CV.[10,30,31] They have been on the receiving end of harassment due to their sexual orientation and the fear of having their LGBT status revealed.[12] Besides, older individuals have more experienced CVs. According to previous studies,[4,10] junior high school students are subject to cyberbullying, which is very common compared to central and high school primary schools. During the transition from primary to secondary school, students who have transitioned encounter challenges in friendship and peer group dynamics as they are switched from being among the oldest group in their previous school environment to the youngest group in the new one.[7] We also found that students who performed worse academically had a higher CV than those who performed well academically. This aligns with previous studies indicating a connection between cyber-victimization and poor academic accomplishment.[11] One possible explanation is that those exposed to cyberbullying are under considerable emotional stress and unable to concentrate on their studies, whereby their academic achievement is negatively impacted.[11] Moreover, our results show that individuals who reported coming from the lowest-income households had more experience with bullying, in line with previous studies.[32] Low-income families might have other risk factors such as economic stress or limited time to supervise and monitor their children's online behavior, which increases the risk of being bullied. Additionally, students from low-income families might be perceived as a vulnerable group and become easier targets for cyberbullying.[33]

Furthermore, our findings show that students who experienced authoritative parenting had a higher CV.[34] Evidence suggests that with authoritative parenting styles, when students face certain problems, they have no opportunity to talk to their parents.[35] Particularly in Thai culture, children are typically taught to be patient with difficulties, without being heard or supported. Moreover, they are afraid of making mistakes due to family expectations. Consequently, this might result in students being the victims of cyberbullying.[9] Besides, students who had lower Rs more commonly reported a higher CV. According to previous studies,[36] a possible explanation is that those exposed to cyberbullying struggle with self-efficacy and emotional regulation in response to cyberbullying incidents, such as doing nothing or internalizing the harm.[37] Additionally, students with poor relationships or a lack of peer support are more susceptible to CV. They might feel isolated, making them easier targets for bullying,[6,8] and poor relationships with teachers might lead to them feeling helpless and neglected.[8] Furthermore, a lack of family support can lead to self-confidence issues and difficulties in effectively responding to bullying. These factors highlight how weak support networks make individuals more vulnerable to suffering CV.[8]

In terms of behavioral factors, our results show that students who were PIU or MIU regarding internet addiction behavior had more commonly experienced CV. According to previous studies,[30,38,39] MIU could have a more substantial impact on being involved in cyberbullying as either a victim or a perpetrator compared to PIU. By contrast, PIU is more tied to emotional vulnerability and victimization[40] because it

tends to be associated with increasing negative emotions and social withdrawal.[41] Moreover, students with higher risky online behavior had a higher CV. According to previous studies,[13,42] people who demonstrate behaviors such as excessive social media use, online communication with strangers, and sharing personal information and passwords are more likely to be cyber victims. Specifically, meeting face-to-face with an online stranger is associated with CV.[42]

Environmental factors revealed that students who did not receive information on cyberbullying prevention reported a high degree of CV, consistent with previous studies[43] stating that students who do not receive sufficient information about cyberbullying lack self-protection skills and do not understand the risks associated with technology. It is difficult to identify and manage bullying behaviors in unsafe situations.[42,43] In Thai schools, there are no laws or regulations in place to prevent this problem, although government agencies have established practices to address this problem, such as knowledge and skills enhancement, school rules, and coordination with parents and related agencies.[15] Additionally, students who live in urban areas are linked with higher CV than those in rural areas .[38,44] One possible explanation is that it is often linked to higher internet use and greater exposure to digital platforms in urban areas, more social media activity, and more frequent online interactions among urban peers, potentially leading to higher victimization rates.[44] In conclusion, the three-level factors of social cognitive theory—namely personal (e.g., gender, parenting behaviors, and relationships with peers, parents, and teachers), behavioral (e.g., internet addiction behavior and risk behavior on the internet), and environmental factors (e.g., receiving information on preventing cyberbullying and place of residence)—contribute to junior high school students being victims of cyberbullying. The findings might be useful for health providers, teachers, or schools to be aware of CV and establish school-based or individual strategies to prevent or reduce CV.

RECOMMENDATIONS

This research has some limitations. First, considering the cross-sectional design, it was difficult to establish temporality and causality, although these findings could provide useful information for further investigations and reduce cyberbullying in schools. Second, the self-reported nature of the data might make it vulnerable to social desirability bias, and thus proven and standardized contraptions had been used. Third, given that our participants were all students from junior high schools in Mahasarakham Province in Thailand, the results might not be representative of the whole adolescent population. Thus, a nationwide junior high school student sample should be investigated to confirm whether the findings can be generalized for this population. The strengths of this study include the large sample size of participants, the controls employed for a wide range of covariates, and the use of standardized tools. Our results provide a higher understanding of CV and its contributing factors, as well as offering guidance for future policies or strategies to prevent and address CV in educational settings (e.g., anti-bullying campaigns).

AUTHOR CONTRIBUTIONS

J.S: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization,

Writing–original draft, Writing–review & editing; K. S.: Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing–review & editing and S.Y: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing–original draft, Writing–review & editing.

ETHICAL CONSIDERATION

The participants received information on the research and its voluntary nature, as well as a declaration of anonymity and confidentiality. All participants then provided written informed consent and completed a self-report questionnaire. This study was reviewed and approved by the Ethics Committee for Research Involving Human Subjects at Mahasarakham University (approval no. 267-236/2566). Reviewed and approved the research proposal on 27 July 2023.

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CONFLICT OF INTEREST

There is no conflict of interest.

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