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Factors Associated with Adolescent Cyberbullying Perpetration and Victimization in Malaysia †

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Abstract: Cyberbullying is emerging as a serious concern in schools with the proliferation of digital and communication technologies. This cross-sectional survey study examined the cyberbullying experience, comprised of both cyberbullying perpetration and victimization, of 990 secondary school students in Malaysia, with a mean age of 15.22 years old (S.D. = 1.358). The Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach was used to examine the posited research hypotheses and the results indicated that media exposure ($\beta = 0.364$, $p = 0.00$), environmental factors ($\beta = 0.294$, $p = 0.00$), and individual coping strategies ($\beta = -0.075$, $p = 0.02$) emerged as significant factors and explained 30.9% of cyberbullying perpetration and victimization experiences in Malaysia. Overall, 13.3% of the participants reported having experienced cyberbullying perpetration and victimization in the past 1 year. Educational intervention programs should be built to address and target the factors identified in this work.

Keywords: cyberbullying; prevalence; media exposure; environmental factors; individual coping strategy; cyberbullying perpetration; cyberbullying victimization; Malaysia; youths

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1. Introduction

Adolescents today are popular users of the Internet, text messages, and mobile devices such as smartphones and tablets [1] and are the leading consumers of social media platforms such as Instagram and Snapchat [2]. This generation appears to exhibit a growing dependence on technology, mainly due to exposure to the Internet throughout their childhood years and the readily available access to digital media [3]. Such increasing reliance on digital technologies and innovations as well as a shift from face-to-face communication to online communication has led to rising deviant Internet behavior such as cyberbullying, cyber harassment, cyberstalking, and other cyber-related abuses, with studies reporting links to youth suicides in the past decade [4,5].

Cyberbullying is described as "any behaviors performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others" [6] and is associated with systemic abuse of power [5] when a person uses digital technology opportunistically and

deliberately to repeatedly harass, humiliate, embarrass, torment, threaten, pick on, or intimidate another person. Cyberbullying victims and perpetrators reported poorer academic performance and greater behavioral problems in school [7] with cyberbullying victims reportedly suffering from lower well-being and mental health status and being the least likely to seek professional help [8].

Interestingly, the factors predicting both cyberbullying perpetration and victimization appeared to be consistent when it comes to media exposure to risky behavior on information and communications technology (ICT) usage—e.g., accepting strangers as online contacts [9] and parental support in monitoring online behaviors [10]. However, research showed mixed findings on individual coping mechanisms' effectiveness [11]. Given the effects and factors are different, for both cyberbullying perpetration and victimization, it would require school counselors to develop, design and implement various intervention programs, based on identified factors, to address them respectively instead of having a program that fixes all.

Cyberbullying incidence rates appear to be rising among Malaysian schoolchildren and university students. It was reported that 37% of school students in Malaysia are encountering or have previously been involved with cyberbullying as internet usage amongst school children in all states in Malaysia is more than 90% on average [12]. One-third of Malaysian young adults confessed that they had cyberbullied someone while two-thirds had witnessed cyberbullying incidents [13], whereby commonly they were bullied either on Facebook or through mobile phones [14]. To achieve the Shared Prosperity Vision (SPV) 2030—i.e., build a progressive society that will make use of modern science and technology by increasing the participants' knowledge, awareness, and behavior towards online user rights and protection—it is imperative for studies to focus on the interaction effects among various factors that contribute to cyberbullying perpetration and victimization as a whole. Hence, this study aims to study the interaction among these factors, based on the research framework below, on cyberbullying experience among adolescents.

The Social Cognitive Theory (SCT) [15] has been widely used to define traditional bullying and cyberbullying, which is a form of individuals' social behavior greatly influenced by personal and environmental factors. Personal factors such as internet self-efficacy, motivation, and cyber victimization experience have contributed to cyberbullying behavior [16]. In addition, the exposure one has to the media also contributes to one's cognitive, behavior, and involvement in cyberbullying [17] according to the Media Effect Model [18]. The Media Effect Model (MEM) postulated that audiences' behaviors and thoughts are affected by the exposure to media, thus, heavy usage or longer time spent using information and communications technology (ICT) were reported to increase individual involvement in cyberbullying [9].

This triadic relationship between personal, environmental, and media exposure was proven statistically significant with Hong Kong university students [16] and is used as a theoretical framework in this current study to identify the factors influencing the cyberbullying perpetration and victimization scenario in Malaysia. They comprised of: (a) Media Exposure, which is comprised of negative online experiences, sexting behaviors, and exposure to harmful sites such as drug, pro-anorexic, or self-harm sites; (b) Environmental Factors, which are comprised of both peer pressure and parent–child relationship; and (c) Personal Factors, which involves individual coping strategies used in dealing with cyberbullying (Figure 1).

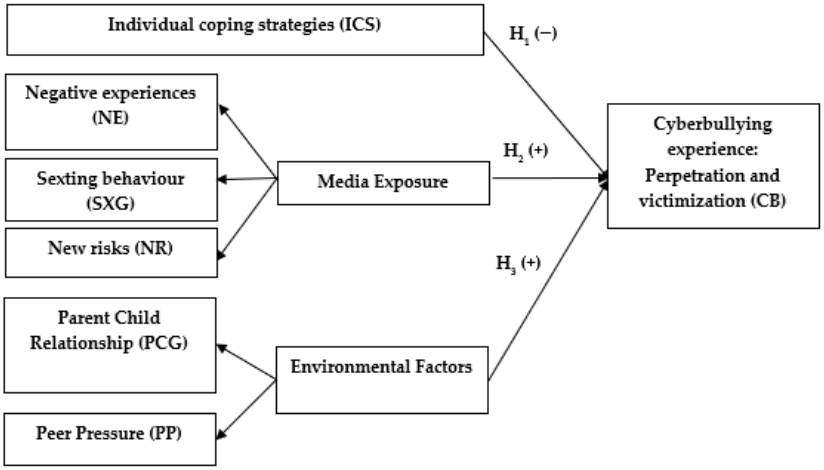

Figure 1. Research model.

2. Materials and Methods

In this cross-sectional study, an anonymous self-report questionnaire was administered to 1200 participants at 12 public secondary schools from the Selangor state in Malaysia, selected randomly via an online randomizer (https://www.random.org/lists/, accessed on 10 June 2019), over 4 months in 2019. All schools share the same setting (i.e., they are public government secondary schools, hosting students aged 13–17 years old). The schools were invited to participate in this study once the approvals from the Ministry of Education Malaysia, Selangor Education Department, and University Institute Ethics Committee were obtained. Consent forms were distributed to all the parents in the schools randomly to allow the students to participate in the study voluntarily. Participants with consent were approached by researchers and recruited to answer a paper-and-pencil questionnaire. No compensation was given and participants could withdraw at any point, without penalty. A total of 1200 copies of questionnaires were randomly distributed to the students with consent, 1009 were returned (84.08%), and 19 outliers were excluded (1.88%), resulting in a total number of 990 participants.

The 48-item questionnaires were part of the Digi 2015 National Survey, derived from the CyberSAFE 2015 Programme, and approval was obtained from Digi Telecommunications for the survey to be used in this study. The survey was submitted to two experts (K.W.L. and M.C.H.) for face and content validations. The questionnaire took 20–30 min to be answered by each participant. Participants were asked to answer on a 5-Likert scale, ranging from "strongly disagree" to "strongly agree". The original questionnaire was made available in both the English Language and translated into Bahasa Malaysia (Malay Language). All schools opted for the Bahasa Malaysia version.

The SmartPLS 3.0 software was used to conduct the Partial Least Squares (PLS) analysis [19] and to examine the association between measured constructs and cyberbullying experience. PLS simultaneously estimated the measurement and the structural parameters involving two stages, which are the measurement model and the structural model. Finally, a bootstrapping method was used to determine the significance of the path coefficients and the factor loadings [20].

3. Results

The participants were 518 (52.3%) females, 417 (42.1%) males, and 55 participants (5.6%) did not indicate their gender. The mean age was 15.22 (S.D. = 1.358) years. The majority of them were Malay (47.2%), followed by Chinese (38.6%), Indian (10.8%), and others (3.4%).

3.1. Prevalence of Cyberbullying Experience

Almost all (91.9%) participants used the Internet in the past year and 82% reported being always online every day (69.9% for always and 12.1% for almost every day). The prevalence of students having experienced cyberbullying was 13.3%—by answering "Yes" to the statement that they have been bullied by others on the Internet in the past 1 year. The majority of the students (64.4%) stated that they were bullied off and online by the same person (Table 1).

Table 1. Descriptive analysis of cyberbullying perpetration and victimization experience (n = 990).

Items	Frequency (Mean)	Percentages (SD)
Have you used the Internet in the past 1 year?		
Yes	910	91.9
No	17	1.7
Missing	63	6.4
Frequency of using the Internet		
Always online every day	692	69.9
Almost every day	120	12.1
3–5 times a week	53	5.3
1–2 times a week	58	5.9
Seldom	0	0
Missing	67	6.8
I have been bullied by others on the Internet in the past 1 year.		
Yes	130	13.13
No	860	86.87
The person who has bullied me on the Internet also bullied me offline (e.g., in school).		
Yes	638	64.4
No	352	35.6

3.2. Assessment of the Measurement Model

In PLS-SEM, the measurement model is assessed for reliability, convergent validity, and discriminant validity. To assess the reliability of measurements in a PLS model, the composite reliability (CR) was used and the threshold value suggested for CR is 0.7 [20,21]. The composite reliability (CR) values of the latent variables were reported to have CR above 0.7, which indicates good reliability of constructs.

The PLS captured the convergent validity of each construct in the scale using the measure of average variance extracted (AVE). AVE provides the overall construct's variance explained by all its indicators. Of note, AVE was considered as established convergent validity if the value was above 0.5, which indicates 50 % of the variance explained [21]. The AVE in the measurement model was above 0.5, therefore it is concluded that the convergent validity of the constructs was established. Lastly, discriminant validity was determined by assessing whether the value of the square root of AVE of a construct was more than the inter-construct correlation between the construct of interest and other constructs assessed in the model [21].

Tables 2 and 3 reported the discriminant validity analysis at the construct level for both the first and second stage model. The inter-construct correlations of all constructs were used to compare with the square root of AVE values of every construct. The square root of AVE values of the constructs are presented as the diagonal entries in Tables 2 and 3 (in bold numbers). The AVE values are greater than any inter-construct correlations [22]. Therefore, in conclusion, the measurement model possessed discriminant validity.

Table 2. Discriminant validity for first stage measurement model.

Variables	CB	ICS	NR	PCG	PP	NE	SXG
CB	**0.738**						
ICS	−0.240	**0.703**					
NR	0.371	−0.223	**0.720**				
PCG	0.389	−0.281	0.321	**0.792**			
PP	0.422	−0.200	0.349	0.402	**0.823**		
NE	0.364	−0.229	0.338	0.377	0.361	**0.708**	
SXG	0.388	−0.173	0.403	0.366	0.383	0.405	**0.843**

Note: CB: Cyberbullying experience; ICS: Individual coping strategies; NR: New risks; PCG: Parent–child relationship; PP: Peer pressure; NE: Negative experience; SXG: Sexting. Bold: The square root of the AVE.

Table 3. Discriminant validity for second stage measurement model.

Variables	Cyberbullying	Environment Factors	Media Exposure	Individual Coping Strategy
Cyberbullying experience	**0.738**			
Environment Factors	0.485	**0.837**		
Media Exposure	0.489	0.560	**0.767**	
Individual coping strategies	−0.240	−0.285	−0.271	**0.703**

The analysis presented above provides additional evidence on the discriminant validity of the measurement model in the first stage and second stage. Bold: The square root of the AVE.

3.3. Analysis of The Structural Model

The principle of a PLS model assessment is based on the latent constructs and the path coefficients' weights on the same lines as regression analysis [23]. The path coefficients, T values, and significance level of the antecedents of cyberbullying post bootstrapping technique were employed with 5,000 sub-samples. The bootstrapping results confirm that all path coefficients report a significant level of 0.05 [22].

The results shown in Table 4 affirmed that environmental factors and media exposure have contributed as positively significant to cyberbullying and individual coping strategy was negatively significant to cyberbullying. Media exposure has the highest contribution ($\beta = 0.364$, $p = 0.00$), followed by environment factors ($\beta = 0.294$, $p = 0.00$), and, finally, individual coping strategies ($\beta = -0.075$, $p = 0.02$), which have very little bearing on cyberbullying experience.

Table 4. Path significance and t values (Bootstrapping results).

	Standard Beta	Standard Deviation	t-Value	Result	R^2
H1: Individual coping strategies → Cyberbullying experience	−0.075	0.035	2.151	Supported	0.309
H2: Media Exposure → Cyberbullying experience	0.364	0.291	8.085	Supported	
H3: Environment Factors → Cyberbullying experience	0.294	0.037	8.319	Supported	

The magnitude of variability of a variable that is shared by another was represented with R^2 measures [24]. R^2 is defined as the squared values of the correlation between a dependent construct and its predicted values, thus it is used to measure a model's predictive accuracy [24]. Then, R^2 also indicates the combined effect of independent constructs on a dependent construct [25]. R^2 values for dependent constructs are considered strong, moderate, or weak if the value is 0.75, 0.50, and 0.25 respectively [22]. In this study, the R^2 or the weight of the endogenous construct of cyberbullying is 0.309, which is a moderate relationship, and this indicated that the environmental factors, media exposure, and individual coping strategies account for 30.9% of the variation in cyberbullying experience.

4. Discussion

The evidence from this study suggests that nine out of ten Malaysian secondary school students go online daily. Despite the high usage, only a small number who took part in this study experienced cyberbullying (i.e., a prevalence rate of 13.13%). The current findings reported lower cyberbullying experiences among secondary school students compared to the other studies conducted in Malaysia [13,14]. There are three main potential reasons for the current findings. Firstly, parental consent was required as part of the research design; thus, the study was unable to establish if the low prevalence rate was reported as a result of the refusal or other concerns when answering. In the past, studies which included parental consent have resulted in lower or no reply or refuse to participate outcomes [26]. Secondly, all the awareness-raising may have sensitized students to the fact that cyberbullying is not well-accepted (by adults) and social desirability may have influenced the reported rates. Lastly, over the years, many awareness campaigns and talks have been exposed to students and family members, which may be associated with greater cyber safety awareness and coping strategies among youths. For example, families were encouraged to have computers placed in common areas of their homes to promote and exercise more rules on cyber safety [12]. In Malaysia with the CyberSAFE campaign, there appeared to be a high degree and increase of digital resilience among the adolescent students surveyed and, generally, positive online usage and positive influence of parents regarding Internet use [27,28].

Interestingly enough, the current study also revealed that 64.4% of the participants reported that the person who has bullied them on the Internet also bullies them offline (i.e., physical bullying) in schools. The relationship between cyberbullying and traditional bullying is inevitable and often cyber victims are also victims of traditional bullying [29]. The power imbalance between bullies and victims may result in the latter being labeled or perceived as weak students, thus, the school counselors or school authorities must consider introducing and implementing cyberbullying prevention and education campaigns that address both traditional bullying and cyberbullying, which frequently overlap, in an integrated manner. Permanent suspension of bullies from school may solve traditional bullying in school but not when the bullies have access to the victims offline. Thus, the cyberbullying prevention and education campaigns should empower the cyberbullying victim/bully victims to recognize, prevent, report, and be free from being the victim.

Among the three factors, media exposure was reported the most significant contributing factor to adolescent cyberbullying experience in Malaysia. Media exposure, especially messaging with sexting and exposure to new risks, is becoming a norm. Proactive actions need to be in place to educate users on users' privacy and digital literacy and not to fall into digital scams. Sexting and exposure to online sexual content is a new element added in the study because of the changeable technology and online environment. It was observed that often Malaysian adolescents endured online harassment and sexually based cyberbullying [30]. Other means of sexual violations are through unwelcomed "exposure to sexual materials such as pornographic pictures, pornographic video clips" and "sexual solicitations"—willingly or unwilling interacting in sexual activity with making the victims feel sexually abused [31]. Despite the dangers implicated, adolescents engage regularly with the Internet and communication technologies to attain knowledge of sexuality and self. This study highlighted the new online bullying behavior that needs immediate attention—a need to call for a healthy relationship and sex education openly in schools and the home, where parents, schools, and students can openly discuss topics such as consent, coercion, prevention, and boundaries in sexting activities.

Lastly, the present result showed there is a statistically negative association between individual coping strategies in dealing with cyberbullying perpetration and victimization experience among Malaysian adolescents. Those who have a higher ability to cope with the cyberbullying experiences and establish a better coping strategy as coping mechanisms reported less cyberbullying experiences. The example of a coping strategy such as changing privacy settings in devices was perceived as a positive step to prevent unwanted viewers and restriction of this access to a limited number of people. Education interventions such as

character-building or perspective-changing and empathy workshops could be introduced to build greater digital resilience. With that, youths could enhance their ability to adapt and safeguard their digital privacy when they experience cyberbullying.

5. Conclusions

Cyberbullying experiences are generally associated with individual exposures to risk factors, support systems, and a conducive environment one lives in as well as exposure to unpleasant and potentially unguided and harmful sites. These findings, although provisional, do have practical implications. This information could be used to develop targeted intervention programs for the school setting. The intervention programs should be built to address these factors considering the wide range of stakeholders (parents, schools, school counselors, and authorities) that are involved and contribute indirectly to the cyberbullying experience of the students. In light of the identified risk factors of cyberbullying among adolescents, it is imperative that future research examines potential mediating and moderating processes that might influence the effect of cyberbullying on overall adolescent health and psychological performance. In summary, managing cyberbullying perpetration and victimization would require a holistic approach, targeting not just the environmental factor or media exposure but also strengthening the individual coping strategies.

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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. The data are not publicly available due to data being part of the industry partner's property.

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