



# Traditional Victims and Cybervictims: Prevalence, Overlap, and Association with Mental Health Among Adolescents in Singapore

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## Abstract

Traditional bullying typically occurs in schools and has been associated with a myriad of mental health problems. Recent evidence has indicated that cyberbullying may just be traditional bullying that is extended to the online world, but this possibility has received only limited study in Asian countries. This study explored the co-occurrence of traditional and cybervictimization and its association with mental health among 3319 adolescents aged 12 to 17 years in Singapore. Victims of bullying were categorized into mutually exclusive groups: traditional-only victims, cyber-only victims, or combined traditional and cybervictims. Results indicated that there were substantial overlaps between victimization in traditional bullying and cyberbullying and that traditional victimization was more prevalent than cybervictimization. Being a victim of either form of bullying (i.e., traditional-only or cyber-only victims) was associated with higher reports of internalizing and externalizing problems, and combined traditional and cybervictims reported the most internalizing problems. However, there were no significant differences in problem scores between traditional-only victims and cyber-only victims. The findings highlight the need to consider the extensive overlap between traditional and cybervictimization when investigating their differential association with adolescents' mental health. Prevention and intervention efforts by school staff and mental health practitioners need to target both traditional bullying and cyberbullying in an integrated manner, and extra attention should be provided to adolescents who are victims of both forms of bullying.

**Keywords** Bullying · Cyberbullying · Victim · Internalizing problems · Externalizing problems

Bullying is defined as an intentional and repeated act of aggression against individuals who find it difficult to defend themselves (Olweus, 1993). There are two forms of bullying, real-life “traditional” bullying and online “cyber” bullying. In this paper, traditional bullying refers to bullying behaviors that happens offline (i.e., verbal, physical, and relational)

that typically happens in schools, while cyberbullying refers to online bullying behaviors that involve the use of electronic media (e.g., the Internet). Both forms of bullying are common worldwide, with a claimed average prevalence rate of 35% for traditional victimization and 15% for cybervictimization among adolescents (see Modecki, Minchin, & Harbaugh, 2014). Being bullied is associated with mental health problems (Zych, Ortega-Ruiz, & Del Rey, 2015) and negative physical, mental, and socioeconomic outcomes that persist into adulthood (see Arseneault, 2018, for a review).

The relatively high prevalence of bullying and its potentially dire consequences for bullied children highlights the need to understand it and develop prevention and intervention strategies. Yet, while bullying has received considerable attention in research, most studies have been conducted in Western countries (Sittichai & Smith, 2015), especially with regard to cyberbullying (Kowalski et al., 2014). The present study aims to contribute to the limited literature in Southeast Asian countries by examining traditional and

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cybervictimization in Singapore schools, and the association between victimization and adolescents' mental health.

## Co-occurrence of Traditional Victimization and Cybervictimization

Researchers have debated whether traditional bullying and cyberbullying are distinct phenomena, or whether they constitute the same phenomenon expressed in different ways. While opinions have been divided, a recent review (Antoniadou & Kokkinos, 2015) suggests that most researchers acknowledge that traditional bullying and cyberbullying are not entirely distinct phenomena. Both forms of bullying are highly related to each other, with victims of traditional bullying also being more prone to victimization online (Smith et al., 2008; Sourander et al., 2010; see Kowalski, Giumetti, Schroeder, & Lattanner, 2014, for a meta-analysis). Co-occurrence rates between traditional and cybervictimization have been reported to be as high as 88 and 93% (Hase, Goldberg, Smith, Stuck, & Campaign, 2015; Olweus, 2012; Olweus & Limber, 2018). These findings suggest that cybervictimization rarely occurs in isolation (Hase et al., 2015) and that cyberbullying may be an extension of traditional bullying, with bullies using new "online" tools against victims that they are equally likely to target in real life.

It is also important to examine demographic characteristics to find out which groups of children are more at risk of experiencing either form of bullying, or both. Systematic review has found trivial effect sizes for both gender and age differences for victimization (Zych et al., 2015). However, few studies have examined demographic differences in co-occurrence of traditional bullying and cyberbullying, with some evidence suggesting that older children and girls are more likely to be victims of both (Kowalski et al., 2014; Wachs, Junger, & Sittichai, 2015).

## Traditional Bullying Versus Cyberbullying: Prevalence and Impact

How does the prevalence and impact of cyberbullying compare to traditional bullying? Reviewing studies published between 2007 and 2014, Antoniadou and Kokkinos (2015) noted that 41 studies had examined both traditional bullying and cyberbullying simultaneously, with most studies conducted in Western countries. Findings suggested that cybervictimization appears to be less prevalent compared to traditional victimization (e.g., Hase et al., 2015; Payne & Hutzell, 2015; Wolke, Lee, & Guy, 2017). In fact, Payne and Hutzell (2015) found that traditional victimization was three times more prevalent than cybervictimization (9%) among 6547 adolescents aged 12–16 years. Another study by Wolke

et al. (2017) reported that only 1% of adolescents were pure cybervictims.

However, only limited studies have considered the overlap between traditional bullying and cyberbullying when examining the effects of victimization (Mitchell, Jones, Turner, Shattuck, & Wolak, 2015; Waasdorp & Bradshaw, 2015). By studying each form of bullying without comparison, researchers cannot distinguish any unique effect associated with each form of bullying from the effects of both forms of bullying simultaneously. The negative effects of cybervictimization may be more severe compared with traditional victimization due to characteristics such as the potential anonymity of the bully and the accessibility of the victim (Campbell, 2005; Perren, Dooley, Shaw, & Cross, 2010). Adolescents who are victims of both forms of bullying may be at the greatest risk of maladaptive problems (Mitchell et al., 2015). It is therefore critical to use mutually exclusive bullying groups (i.e., traditional-only, cyber-only, and combined traditional and cyber) when investigating the effects of bullying to partial out the unique association between each form of bullying and adolescents' well-being (Beckman, Hagquist, & Hellström, 2012).

Studies that have compared traditional victims and cybervictims on psychosocial problems have revealed contradictory findings. For example, a study by Campbell et al. (2012) found that cybervictims reported more psychosocial difficulties than traditional victims, while another study (Kubiszewski, Fontaine, Potard, & Auzoult, 2015) reported that traditional victims displayed more internalizing problems than cybervictims. Yet other studies conducted found that victims of traditional-only forms of bullying did not differ from victims of cyber-only forms of bullying on reports of psychosomatic and depressive symptoms, and behavioral difficulties (Beckman et al., 2012; Wolke et al., 2017). However, researchers generally agree that bullying victims who experience bullying with both face-to-face *and* online elements tend to report the most distress (Mitchell et al., 2015). Victims of both types of bullying tended to report more internalizing and externalizing problems than victims of one form of bullying (Campbell, Spears, Slee, Butler, & Kift, 2012; Perren et al., 2010; Waasdorp & Bradshaw, 2015; Wolke et al., 2017).

## Studies in Asian Pacific Rim and Southeast Asian Countries

While numerous studies on bullying have been conducted in Western countries, few studies have been conducted in Asian Pacific Rim countries (Sittichai & Smith, 2015). This is especially evident for cyberbullying research: a review and meta-analysis by Kowalski et al. (2014) found only seven studies (out of 131 studies) examining cyberbullying among youths in Asian countries. With increasing electronic media

use among children and youths, cyberbullying remains understudied in the Asia-Pacific region, where it is likely an equally pertinent issue. Past research also suggests that bullying behaviors may manifest differently in Asian Pacific Rim countries as compared to the West, for example, in terms of the perpetrators of bullying or types of bullying behaviors (for review, see Sittichai & Smith, 2015).

However, as with studies conducted in Western countries, fewer studies conducted in the Asia-Pacific region have simultaneously examined adolescents' involvement in both traditional bullying and cyberbullying. Findings from these studies suggest that, as with research elsewhere, there is an extensive overlap between traditional bullying and cyberbullying—more than half of cybervictims tend to also be traditional victims (e.g., Dunne, Pham, Le, & Sun, 2016: Vietnam, 90%).

Numerous studies have shown that traditional victimization is more prevalent than cybervictimization in Western countries, with prevalence rates of traditional bullying two to four times higher than that of cyberbullying (Modecki et al., 2014; Smith, 2012). In contrast, few studies have compared prevalence rates between traditional and cybervictimization in Asian countries, and findings so far have been inconsistent. For example, a study conducted by Microsoft (2012) found that in Asian countries such as China and Singapore, online bullying rates exceeded offline bullying rates. In contrast, in Western countries such as the USA, offline bullying rates were higher. Chang et al. (2013) also found that cybervictimization was more prevalent than traditional victimization in Taiwan. On the other hand, a study conducted in Thailand found similar rates of victimization across both types of bullying (Wachs et al., 2015; 24.7% traditional victimization and 24.1% cybervictimization). Research in Vietnam, however, indicated that traditional victimization was more than four times more prevalent than cybervictimization (Dunne et al., 2016). The varied and mixed findings on the co-occurrence of traditional bullying and cyberbullying, even within Asia-Pacific countries, highlight the need for more research in the Asian context.

## The Present Study

Singapore is an independent island state in Southeast Asia with a total population of 5.6 million (Singapore Department of Statistics, 2017). Like other Southeast Asian countries, Singapore is considered a relatively collectivistic culture, compared to more individualistic Western countries (Hofstede, Hofstede, & Minkov, 2010). Research comparing English and Chinese children suggests that being from a collectivistic culture with strong social norms and lower tolerance of deviance may contribute to Chinese children's lower involvement in bullying and aggression (Ji, Zhang,

& Jones, 2016). On the other hand, with a high Internet penetration rate of 81.2% (Internet World Statistics, 2017), ease of accessibility to electronic media makes cyberbullying potentially a very relevant issue in Singapore, which is therefore an especially suitable country in which to study it.

To our knowledge, few studies in Southeast Asian countries have examined the co-occurrence between traditional bullying and cyberbullying, and none have examined whether traditional or cybervictimization is differentially associated with adolescents' mental health.

Our aims and hypotheses are as follows:

- (a) To examine the co-occurrence of traditional victimization and cybervictimization in Singapore. We hypothesize that there would be an extensive overlap between traditional and cybervictimization, with traditional victims more likely to be cybervictims as well. We also predict that traditional victimization will be more prevalent than cybervictimization.
- (b) To explore gender, ethnicity, and age differences in the co-occurrence of victimization.
- (c) To investigate the differential association between victimization and adolescents' mental health using mutually exclusive victimization groups. We hypothesize that there would be no statistical differences in reports of internalizing and externalizing problems between traditional-only victims and cyber-only victims. However, we expect that adolescents in the combined traditional and cybervictimization group would report more internalizing and externalizing problems than the traditional-only and cyber-only groups considered separately.

## Methodology

Data were collected in 2014 as part of a cross-cultural study examining the impact of cyber environments on adolescents. The study design and questionnaires were adapted from Sourander et al. (2010) as part of a cross-cultural comparison study. This study received ethics clearance from the National Healthcare Group's Domain Specific Review Board (DSRB) and was approved by the Ministry of Education, Singapore. A two-stage sampling strategy was employed: mainstream schools were first stratified according to school type<sup>1</sup> and geographical region (i.e., north, south, east, and west); schools were randomly selected from each stratum

<sup>1</sup> School types in Singapore include "government schools" which are fully funded by the government, "government-aided" schools which are not fully funded by the government and maintain some autonomy in operations, and "other" schools, which include independent schools not funded by the government.

based on the proportion of schools in the respective strata. In the second stage, planned recruitment of approximately 120 students (4 classes) from each school was carried out in order to achieve representative educational levels and academic streams<sup>2</sup> (for secondary schools) across the sample. Passive consent was obtained from parents. Participation was strictly voluntary, and students were explicitly informed that they could decline to participate or discontinue the survey at any point without penalty. The survey was administered in school by trained study team members, and students took 30–45 min to complete the survey.

## Participants

A total of 3329 adolescents were recruited from 28 local schools in Singapore. Ten adolescents were excluded from our analyses as they provided invalid responses. The final sample, which consisted of 3319 adolescents (age range 12–17 years;  $M = 14.4$ ,  $SD = 1.5$ ), was of equal gender distribution (1665 boys, 50.2%) and was roughly proportionate across educational levels. Most adolescents were Chinese (66.4%). Of the remaining adolescents, 22.1% identified themselves as Malay, 6.0% Indians, and 5.5% were from other ethnicities. The distribution of ethnicity in our sample was proportionate to that of the Singapore population aged 10–19 years (Singapore Department of Statistics, 2017).

## Measures

### Traditional Victimization and Cybervictimization

In order to improve the validity of responses, Solberg and Olweus (2003) recommended providing definitions of bullying to respondents. Students self-reported their bullying experiences following provided definitions of traditional bullying and cyberbullying (Sourander et al., 2010). The following definition was provided for traditional bullying:

A student is being bullied when he or she is exposed repeatedly over time to negative and hurtful actions on the part of one or more students. It is difficult for the student being bullied to defend himself or herself. Bullying may take place frequently or infrequently. Bullying can be verbal (e.g. name-calling, threats), physical (e.g. hitting) or psychological (e.g. rumours, shunning/exclusion). It is bullying when someone is teasing repeatedly in a mean or hurtful way.

Adolescents responded to the questions “How often have you been bullied in school in the past six months?” and “How often have you been bullied outside of school in the past six months?” on a 4-point response scale (1 = “Not at all”; 2 = “Less than once a week”; 3 = “More than once a week”; 4 = “Most days”). Adolescents who experienced bullying in school and/or outside school at least sometimes in the past 6 months (responses of “2” or more) were categorized as traditional victims.

The following definition was provided for cyberbullying:

Cyberbullying is when someone repeatedly makes fun of another person online or repeatedly picks on another person through email or text messages or when someone posts something online about another person that they don't like.

Adolescents indicated how frequently they had been cyberbullied in the past six months on a 4-point response scale (1 = “Never”; 2 = “Less than once a week”; 3 = “More than once a week”; 4 = “Almost every day”). Adolescents who experienced cybervictimization at least once in the past 6 months (responses of “2” or more) were categorized as cybervictims.

### Mental Health

The Strengths and Difficulties Questionnaire (SDQ 11–17 years version; Goodman, 1997) is a 25-item self-report questionnaire which assesses emotional and behavioral difficulties in adolescents. The SDQ has been found to be a reliable measure of overall child mental health problems (Achenbach et al., 2008). It consists of five subscales with 5 items each: emotional problems, peer problems, conduct problems, hyperactivity/inattention, and prosocial behaviors. Adolescents respond on a three-point scale (0 = “Not True”; 1 = “Somewhat True”; 2 = “Certainly True”) based on their experiences over the last six months. Following the developer's guidelines on missing data, subscale scores were calculated and prorated if at least 3 items were completed (2.7% of sample). As the adolescents in the current study were from the general population, the broader internalizing problems (emotional problems and peer problems; sample  $\alpha = .70$ ) and externalizing problems (conduct problems and hyperactivity/inattention; sample  $\alpha = .65$ ) subscales were used, as recommended by the developers of the SDQ (Goodman, Lamping, & Ploubidis, 2010). Higher scores on these subscales indicate more difficulties.

### Statistical Analysis

To investigate whether adolescents were victims of traditional bullying and cyberbullying, Chi-square tests and logistic regression were conducted. Pearson Chi-square tests

<sup>2</sup> In mainstream secondary schools in Singapore, students are also assigned to one of three academic streams (Express, Normal Academic, Normal Technical) based on their performance in a national examination at the end of primary school.

**Table 1** Gender and ethnicity across victimization groups

Variable	All groups ( <i>n</i> = 3304)	Not victimized ( <i>n</i> = 2395)	Traditional only ( <i>n</i> = 510)	Cyber only ( <i>n</i> = 124)	Trad + Cyber ( <i>n</i> = 275)
<i>Gender<sup>a</sup> [n (%)]</i>					
Female	1648 (49.9)	1218 (50.9)	209 (41.0) <sup>#</sup>	64 (51.6)	157 (57.1) <sup>^</sup>
Male	1656 (50.1)	1177 (49.1)	301 (59.0) <sup>^</sup>	60 (48.4)	118 (42.9) <sup>#</sup>
<i>Ethnicity<sup>b</sup> [n (%)]</i>					
Chinese	2192 (66.3)	1641 (68.5) <sup>^</sup>	289 (56.6) <sup>#</sup>	88 (71.0)	174 (63.3)
Malay	734 (22.2)	486 (20.3) <sup>#</sup>	158 (31.0) <sup>^</sup>	27 (21.8)	63 (22.9)
Indian	197 (6.0)	147 (6.1)	29 (5.7)	2 (1.6) <sup>#</sup>	19 (6.9)
Others	181 (5.5)	121 (5.1)	34 (6.7)	7 (5.6)	19 (6.9)

Values have an adjusted residual <sup>^</sup>greater than 2; <sup>#</sup>smaller than 2

<sup>a</sup> $\chi^2(3, n = 3304) = 22.94, p < .001$

<sup>b</sup> $\chi^2(9, n = 3304) = 39.07, p < .001$

for independence were also carried out to test for gender, ethnicity, and age differences across victimization groups. As the data failed to meet the assumptions of normality, the Kruskal–Wallis test was conducted to determine whether the two SDQ subscale scores differed across victimization groups. Post hoc pairwise comparisons were carried out using Mann–Whitney U tests. In addition, multinomial logistic regression was conducted individually for each SDQ subscale to examine the association between reported internalizing and externalizing problems and victimization group membership. Given the large sample size (*n* = 3319) and the multiple comparisons performed, a more conservative *p* value (*p* < .001) was used to determine statistical significance for all analyses.

## Results

Overall, 23.8% (*n* = 788) of the adolescents reported being victims of traditional bullying, while 12.1% (*n* = 400) of the adolescents were victims of cyberbullying. There was substantial overlap between the two victim groups: of those who experienced traditional bullying, 35.0% had also experienced cyberbullying; of those who experienced cyberbullying, 68.9% had also experienced traditional bullying. Chi-square analysis indicated that there were more students who were victims of both traditional bullying and cyberbullying than would be expected by chance,  $\chi^2(1, n = 3304) = 511.00, p < .001, = .39$ . Being a traditional victim significantly predicted a student's likelihood of being a cybervictim (Wald = 389.98, odds ratio (OR) = 10.42 [8.25, 13.14], *p* < .001), with traditional victims nearly 10.5 times more likely to also be a cybervictim compared with those who were not traditional victims.

Participants were further categorized into mutually exclusive victimization groups for subsequent analyses: not victimized, traditional-only victim, cyber-only victim, and

combined traditional and cybervictim. Slightly more than one-third of the students were victims of bullying: 15.4% (*n* = 510) were traditional-only victims, 3.8% (*n* = 124) were cyber-only victims, and 8.3% (*n* = 275) were combined traditional and cybervictims. That is, of those who reported being a victim of bullying (*n* = 909), 30.3% of them reported experiencing both forms of bullying.

Demographic characteristics by victimization group are presented in Table 1. Pearson Chi-square tests for independence indicated that there were significant gender differences [ $\chi^2(3, n = 3304) = 22.94, p < .001, Cramer's V = .08$ ] and ethnic differences [ $\chi^2(9, n = 3304) = 39.07, p < .001, Cramer's V = .06$ ] across victimization groups. Examination of adjusted residuals (Adj. Res.) suggested that male students were more likely to be in the traditional-only victimization group (4.4, Adj. Res. > 2), while female students were more likely to be in the combined traditional and cybervictimization group (2.5, Adj. Res. > 2). In terms of ethnic differences, Chinese students were more likely to be in the not victimized group (4.3, Adj. Res. > 2), while Malay students were more likely to be in the traditional-only victimization group (5.2, Adj. Res. > 2). No age differences were observed across victimization groups,  $\chi^2(15, n = 3296) = 30.62, p = .010$ .

There were significant differences between victimization groups on the SDQ internalizing problems<sup>3</sup> subscale,  $\chi^2(3, n = 3294) = 323.71, p < .001, \eta = .10$ . Post hoc Mann–Whitney U tests indicated that adolescents who were not victimized (Md = 5.0, *n* = 2388) reported

<sup>3</sup> We recognize that the SDQ Peer Problems subscale contains an item that addresses being bullied by others, i.e., “Other children or young people pick on me or bully me.” However, most other studies (e.g., Campbell et al., 2012) have used the subscale in its entirety. We repeated all analyses with the aforementioned item removed from the internalizing problems score. The results obtained were identical in terms of significance level (*p* < .001) and comparable in terms of effect sizes and odds ratios.



**Table 2** Associations Between Bullying Victimization and Mental Health

Characteristics <sup>a</sup>	Total, No.	Traditional victims only		Cybervictims only		Trad. and cybervictims	
		OR	95% CI	OR	95% CI	OR	95% CI
Internalizing problems	3286	1.22	(1.19–1.26)***	1.11	(1.05–1.18)***	1.35	(1.30–1.40)***
Externalizing problems	3286	1.13	(1.09–1.17)***	1.15	(1.08–1.22)***	1.22	(1.17–1.28)***

Abbreviation: CI, confidence interval; OR, odds ratio

<sup>a</sup> Results of multinomial logistic regression analyses. All analyses were adjusted with the effect of sex, age, and ethnicity. Odds ratio indicates the likelihood of an individual being in a specific victimization group with each 1-point increase in the predictor

Reference Group: Not Victimized

\*\*\* $p < .001$

lower internalizing problem scores ( $p < .001$ ) than those who were traditional-only victims (Md = 7.0,  $n = 509$ ,  $z = -12.60$ ,  $r = .23$ ), cyber-only victims (Md = 6.0,  $n = 124$ ,  $z = -3.76$ ,  $r = .07$ ), and combined traditional and cyber-victims (Md = 9.0,  $n = 273$ ,  $z = -14.19$ ,  $r = .28$ ). The combined traditional and cybervictimization group reported significantly higher internalizing problem scores than the traditional-only ( $z = -4.91$ ,  $p < .001$ ,  $r = .18$ ) and cyber-only ( $z = -5.70$ ,  $p < .001$ ,  $r = .29$ ) victim groups. However, there were no significant differences between the traditional-only and cyber-only victimization groups in terms of internalizing problem scores ( $z = -2.80$ ,  $p = .005$ ).

There were significant differences in externalizing problem scores across victimization groups,  $\chi^2$  (3,  $n = 3294$ ) = 146.65,  $p < .001$ ,  $\eta = .04$ . Post hoc pairwise comparisons revealed that adolescents in either the traditional-only (Md = 7.00,  $n = 509$ ,  $z = -8.53$ ,  $r = .16$ ), cyber-only (Md = 7.00,  $n = 124$ ,  $z = -3.82$ ,  $r = .08$ ), or combined traditional and cyber (Md = 8.00,  $n = 273$ ,  $z = -9.24$ ,  $r = .18$ ) victimization group had significantly higher externalizing problem scores compared to those not victimized (Md = 6.00,  $n = 509$ ),  $p < .001$ . No significant differences in externalizing scores were observed between the traditional-only and cyber-only victimization groups ( $z = -.49$ ,  $p = .63$ ); traditional-only and combined victimization groups ( $z = -2.88$ ,  $p = .004$ ); and cyber-only and combined traditional and cybervictimization groups ( $z = -2.22$ ,  $p = .026$ ).

Controlling for demographic variables (i.e., gender, ethnicity, and age), students who reported increasing internalizing and externalizing problems scores had increased odds of being in the traditional-only victimization group (Wald = 170.21,  $OR_{\text{internalizing}} = 1.22$  [1.19, 1.26]; Wald = 53.87,  $OR_{\text{externalizing}} = 1.13$  [1.09, 1.17]), cyber-only victimization group (Wald = 13.52,  $OR_{\text{internalizing}} = 1.11$  [1.05, 1.18]; Wald = 19.91,  $OR_{\text{externalizing}} = 1.15$  [1.08, 1.22]), and combined traditional and cybervictimization group (Wald = 237.61,  $OR_{\text{internalizing}} = 1.35$  [1.30, 1.40]; Wald = 91.39,  $OR_{\text{externalizing}} = 1.22$  [1.17, 1.28]),  $p < .001$ ,

compared with those who were not victimized. Results are presented in Table 2.

### Additional Analyses

In this paper, we classified victims into mutually exclusive groups (i.e., traditional-only victims only, cyber-only victims, and combined traditional and cyber-victims) to examine the association between different forms of victimization and adolescents' mental health. This is in line with the analysis approach adopted in other studies (e.g., Beckman et al., 2012; Campbell et al., 2012; Wolke et al., 2017), and it allows for clear distinctions and comparisons between different forms of victimization (Beckman et al., 2012). However, we recognize that grouping of victims into dichotomous categories (i.e., victim or not) does not take into consideration the frequency of victimization experiences (e.g., less than once a week versus most days), which may also be associated with adolescents' mental health.

We conducted additional analyses to find out whether the association between bullying victimization and mental health would be different if victimization was treated as a continuous variable. Such an approach has been chosen by some researchers (e.g., Bonanno & Hymel, 2013; Hase et al., 2015; Menesini, Calussi, & Nocenti, 2012) as it takes into consideration the frequency of victimization and allows for the use of regression analyses to find out whether there is an additive effect of cybervictimization on outcomes after controlling for traditional victimization (and vice versa; although see Olweus & Limber, 2018 for a recent critique of this approach). Examination of interaction effects will also allow us to determine whether the interaction between traditional victimization and cybervictimization has a synergistic effect on mental health outcomes, or it is simply a sum of their separate effects. Our additional analyses using hierarchical regression revealed that: (1) independently, both traditional victimization and cybervictimization significantly predicted internalizing and externalizing problems ( $p < .001$ ); (2) both traditional victimization and cybervictimization

remained significant predictors of internalizing and externalizing problems ( $p < .001$ ) and contributed unique variances to the model ( $\Delta R^2_{\text{internalizing}} = 7\%$  and  $1\%$ , respectively,  $\Delta R^2_{\text{externalizing}} = 2\%$  and  $1\%$ , respectively) after controlling for the other type of bullying; (3) the interaction between traditional victimization and cybervictimization did not significantly predict internalizing and externalizing problems ( $p_{\text{internalizing}} = .17$ ;  $p_{\text{externalizing}} = .60$ ). Conclusions from these additional analyses are similar to that obtained from when victims were classified into mutually exclusive groups and will be discussed together below.

## Discussion

The present study examined the co-occurrence of traditional and cybervictimization and the association between these two forms of bullying and adolescents' mental health. Our findings indicated that 23.8% of the adolescents were traditional victims, while 12.1% were cybervictims. These prevalence rates were lower than the prevalence rates (36% traditional victims; 15% cybervictims) reported in a meta-analysis of 80 studies (Modecki et al., 2014).

As predicted by hypothesis (a), we found that there was substantial overlap between traditional and cybervictimization: traditional victims were 10.5 times more likely to also report being a cybervictim compared to those who had not experienced traditional bullying. These findings are consistent with the co-occurrence rates reported in both Western (e.g., Hase et al., 2015; Olweus, 2012) and some Southeast Asian (e.g., Dunne et al., 2017; Wach et al., 2017) countries. There were few adolescents in the cyber-only victimization group. As Olweus (2012) argued in his seminal review, "... cyberbullying, when studied in proper context, is a low-prevalence phenomenon" (p. 520) and had not created many "new" victims. That is, cyberbullying rarely occurs in the absence of traditional bullying. Our findings provide further evidence that cyberbullying appears to be part of a larger bullying pattern and even when not all that "low-prevalence" may be better understood as an extension of traditional bullying to the online medium (Olweus, 2012). Our results would clearly seem to support this view.

Traditional victimization remained more prevalent than cybervictimization, even after accounting for those who were victims of both forms of bullying. Our findings are in line with some of the studies conducted in Western countries (e.g., Hase et al., 2015; Payne & Hutzell, 2015) and in Southeast Asian countries like Vietnam (Dunne et al., 2017). However, findings differ from studies conducted by Microsoft (2012) and Chang et al. (2013), which reported that the prevalence of online victimization exceeded offline victimization. Other studies in Thailand like Wachs et al. (2015) had found similar rates of traditional and cybervictimization.

Cultural factors, varied anti-bullying policies, along with methodological variations, may account for the differences in co-occurrences rates (Kowalski et al., 2014). For example, differences in the time frame when bullying was assessed (current study: past six months; Wachs et al. (2015): past 12 months) may account for the variation in the prevalence of both forms of bullying. Differences in bullying trends, even within Asian countries, highlight the need for cross-cultural research using the same definitions and measures before plausible explanations with regard to differences in prevalence rates can be made.

Turning to demographic variables under aim (b), observed gender differences were consistent with previous research, indicating that girls were more likely victims of combined traditional and cybervictims (Kowalski et al., 2014). This could be related to existing literature where girls are found to be more likely to seek help for their bullying experiences (Hunter, Boyle, & Warden, 2010), perhaps as girls are socialized to rely on relationships for social support, while boys may be expected to solve the problems by themselves (Kochenderfer-Ladd & Skinner, 2002). However, as the effect sizes were rather small, the observed differences should be interpreted with caution.

Ethnic differences were also observed, with an even smaller effect size: Malay students were more likely to be traditional-only victims, and Chinese students were the least likely to be victimized. These results are in line with a previous study conducted in Singapore, which found that the prevalence rate for victimization was higher among Malay adolescents compared to Chinese and Indian adolescents (Koh & Tan, 2008). Although some research (e.g., O'Keefe & Sela-Amit, 1997) has suggested that ethnic minorities are at a greater risk of exposure to school violence, findings regarding the association between ethnic minority status and victimization have been inconsistent (Hong & Espelage, 2012). Other factors besides ethnic minority status per se may explain the differences as other ethnic minorities in our study (Indian adolescents, and adolescents of other ethnicities) did not experience proportionately more victimization. More research on how ethnic dynamics influence bullying behaviors is needed before we can conclusively explain these differences. In any case, the small effect size for ethnic differences observed is in line with meta-analytic findings from Vitoroulis and Vaillancourt (2015), suggesting that differences in victimization across ethnic groups are likely minimal.

We did not observe significant age differences, perhaps because while victimization is observed to increase after late childhood, it peaks and remains relatively stable in adolescence (Bradshaw, Waasdorp, & O'Brennan, 2013).

Our third aim was to investigate the relationship between victimization and mental health. Victims of bullying, regardless of which form was experienced, had significantly higher

reports of internalizing and externalizing problems compared to adolescents who reported no victimization. However, traditional-only and cyber-only victims did not differ significantly in their reports of internalizing or externalizing problems. Our results are consistent with findings from current literature (Beckman et al., 2012; Wolke et al., 2017), providing further evidence that the association between victimization and mental health is not stronger for either traditional victimization or cybervictimization and that any form of victimization is related to poorer mental health. Additional regression analyses also revealed that both traditional victimization and cybervictimization contributed uniquely to predicting mental health problems, even after controlling for the other type of bullying. Collectively, these findings suggest that although there is a strong association between both forms of victimization and mental health, each is characterized by specific features (beyond frequency) that might explain this association. Accordingly, other researchers have raised the need to look beyond the frequency of bullying forms (e.g., face-to-face and online bullying) and to also consider the severity of bullying. The two constructs are distinct, and certain bullying behaviors may occur with low frequency but high severity, and vice versa (Chen, Cheng, Wang, & Hsueh, 2015). To better inform intervention, future research should examine both frequency and severity of traditional and cyberbullying behaviors, and their association with adolescents' well-being.

Consistent with past research (e.g., Campbell et al., 2012; Waasdorp & Bradshaw, 2015; Wolke et al., 2017), adolescents who experienced combined traditional and cybervictimization reported more internalizing problems than those who experienced only one form of victimization (hypothesis (c)). Our additional analyses further revealed that experiencing both forms of victimization concurrently, and not the interaction between the two forms of victimization, is associated with experiencing more internalizing problems. It could be that multiple victimizations may increase the number of risk adolescents are exposed to, resulting in cumulative negative effects (Raskauskas, 2010). It could also be that adolescents with more internalizing problems are more at risk of being bullied (Arseneault et al., 2006).

Hypothesis (c) also predicted that combined traditional and cybervictims would report the most externalizing problems, but this was not supported. The effect sizes for the comparison of externalizing problems across victimization groups were rather small. This could be that externalizing problems may not be as strongly associated with victimization compared with internalizing problems. Recent research indicated that profiles of victims were characterized by more internalizing problems, while profiles of bullies were characterized by more externalizing problems (Kubiszewski et al., 2015). The association between externalizing problems and perpetration of bullying can be explored in future research.

## Limitations

As our study is cross-sectional in nature, causal inferences cannot be drawn from our data. While we found significant associations between experiences of bullying and mental health problems, it is possible that victimized adolescents may be more likely to develop problem behaviors, just as it is also possible that adolescents that exhibit problem behaviors may be more likely to be bullied. To establish a causal relationship between victimization and problem behaviors, longitudinal studies are needed.

The current study only examined bullying victimization and did not look at perpetration of bullying. The perpetration of bullying is also associated with mental health problems such as internalizing and externalizing difficulties (e.g., Bonanno & Hymel, 2013; Kubiszewski et al., 2015). Adolescents may also be both a victim of bullying and also bully others (i.e., bully-victims). Bully-victims have been shown to be at increased risk of maladaptive outcomes (Wolke, Copeland, Angold, & Costello, 2013). Future studies should also investigate perpetration of traditional bullying and cyberbullying as well as the phenomenon of bully-victims, and their possible effects on adolescents' well-being. This would help us gain more comprehensive information on the dynamics of bullying behaviors and bullying roles offline and online.

## Implications for School Mental Health

The current study advances our understanding about the co-occurrence of traditional bullying and cyberbullying in a Southeast Asian country and the comparative impact of both forms of bullying. These findings can be useful for school personnel and mental health professionals in their anti-bullying prevention and intervention efforts.

Researchers have cautioned that the extensive public and academic attention devoted to cyberbullying may overshadow the substantially higher occurrence of traditional bullying (Wolke et al., 2017), as it is clearly "the most prevalent and most serious problem (p. 535)" (Olweus, 2012). Our findings, along with past research, suggest that cyberbullying is not a new epidemic and creates few new victims who are not already traditional victims. School personnel need to be aware that traditional bullying remains a pertinent problem in schools and should not be overlooked. As victims of one form of bullying may be more likely to be a victim of the other, the more visible traditional bullying behaviors may serve as a warning sign for potential cybervictimization (Kowalski, Morgan, & Limber, 2012). This allows for early detection of bullying



behaviors, traditional or cyber, for bullying prevention and interventions efforts.

The extensive overlap between traditional and cybervictimization, and low cybervictimization rates, highlights the need to target prevention and interventions efforts at the broader category of “bullying behaviors,” instead of focusing on its offline or online forms. Cyberbullying can be seen as another form of bullying as with traditional forms such as verbal, physical, and relational bullying (Olweus & Limber, 2018). Tailored cyberbullying programs and interventions may not be a necessity in reducing cyberbullying. For example, general anti-bullying programs (e.g., KiVA project; Salmivalli, Kärnä, & Poskiparta, 2011) have been effective in reducing cyberbullying. Researchers can also explore the utility of effective traditional bullying prevention programs to reduce both traditional bullying and cyberbullying (for reviews on bullying interventions, see Della Cioppa, O’Neil, & Craig, 2015; Ttofi & Farrington, 2011). In particular, adopting a whole school approach, where interventions are targeted at the whole school context rather than just the students involved, has been proven to be effective in reducing the prevalence of bullying in school (Ttofi & Farrington, 2011).

Adolescents who experience victimization, regardless of form, may be more susceptible to mental health problems. In particular, combined traditional and cybervictims reported significantly more internalizing problems than victims of only one form of bullying. Thus, it is important to continue evaluating adolescents’ experiences of both traditional and cybervictimization. Besides actively addressing the mental health needs of victimized adolescents, both schools and mental health practitioners need to recognize that combined victims may require even greater support in handling their victimization experiences.

Any form of bullying, whether offline or online, has potential long-term effects on adolescents’ mental well-being. Researchers have suggested that there is a vicious cycle of reciprocal influence between peer victimization and internalizing problems: peer victimization predicts changes in internalizing and externalizing problems, and vice versa (Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Reijntjes et al., 2011). Moreover, longitudinal research has highlighted the considerable costs for society arising from childhood bullying as victims continue to experience psychiatric and socioeconomic difficulties in adulthood (Arseneault, 2018). Yet, bullying is a modifiable risk factor for mental illness (Scott, Moore, Sly, & Norman, 2014), and it can be addressed via well-developed interventions. As adolescents progress through the school system, early detection and intervention by school staff and practitioners will prevent the vicious cycle of victimization and reduce mental health problems of adolescents in schools.

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## Compliance with Ethical Standards

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

**Conflict of interest** All authors declare that they have no conflicts of interest related to this study.

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