



Bullying in the new playground: Research into cyberbullying and cyber victimisation

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This study examines the nature and extent of adolescents' cyberbullying experiences, and explores the extent to which various factors, including bullying, culture, and gender, contribute to cyberbullying and cyber victimisation in junior high schools. In this study, one in three adolescents was a cyber victim, one in five was a cyberbully, and over half of the students had either experienced or heard about cyberbullying incidents. Close to half of the cyber victims had no idea who the predators were. Culture and engagement in traditional bullying were strong predictors not only for cyberbullying, but also for cyber victimisation. Gender also played a significant role, as males, compared to their female counterparts, were more likely to be cyberbullies.

Cyberbullying and cyber victimisation

School bullying has been widely recognised as a serious problem and it is particularly persistent and acute during junior high and middle school periods (National Center for Educational-Statistics, 1995). In the USA, "up to 15% of students ... are frequently or severely harassed by their peers. ... Only a slim majority of 4th through 12th graders ... (55.2%) reported neither having been picked on nor picking on others" (Hoover & Olsen, 2001). Universally, bullying is reported as a significant problem in many countries of the world including European countries, North America, and Japan (Smith et al., 1999), suggesting that bullying may play a important role in adolescents' life in many societies. More importantly, it is reported that in many cases of school shootings, the bully played a major role (Dedman, 2001; Markward, Cline & Markward, 2002).

The fast development of new technology in recent years has also increased school and student access to new technologies such as computers and cell (or mobile) phones. Substantial research studies have shown that computers in classrooms can have positive effects on learning of all subjects. The introduction of electronic communication into classrooms, however, also brings problems that deserve our attention. One such issue

concerns the growing cyberbullying problem in schools, i.e. the use of electronic communication devices to bully others.

The problem of school bullying has been examined in the last two decades and as a result, many schools have developed effective bully-prevention programs. Many teachers and administrators now recognise this problem. Few, however, are aware that students are being harassed through electronic communication. Parallel to this lack of awareness by school professionals, researchers have yet to examine the nature of cyberbullying (Beran & Li, 2005). Although cyberbullying incidences have been reported in different countries around the world, few studies, if any, have explored the issue taking different variables such as culture, gender, bullying into consideration. The growing number and the level of severity of cyberbullying incidents reported worldwide calls for educators, researchers, and policy makers to take action (Patchin & Hinduja, 2006).

Before we can tackle this problem, however, a thorough understanding of this issue is necessary. This new phenomenon challenges us, as researchers, to examine the issue from different perspectives. This research, therefore, studies cyberbullying in relation to factors such as gender, culture, and traditional bullying. In this paper, "bullying" refers to bullying in the traditional sense, and "cyberbullying" refers to bullying via electronic communication tools.

Definitions

Although bullying traditionally has been equated to physical harassment, researchers now define bullying as a form of aggression including verbal or physical harassment. Specifically, "a student is being bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more students. The person who intentionally inflicts or attempts to inflict, injury or discomfort upon someone else is engaging in negative actions" (Olweus, 2003, p. 15). Bullying may take a wide range of forms including hitting, pushing, holding, hostile gesturing, threatening, humiliating, degrading, teasing, name calling, put downs, sarcasm, taunting, staring, sticking out the tongue, eye rolling, silent treatment, manipulating friendship and ostracising (Ma, 2001).

Bill Belsey, developer of the award winning webpage www.bullying.org, defined cyberbullying in his website www.cyberbullying.ca:

Cyberbullying involves the use of information and communication technologies such as e-mail, cell phone and pager text messages, instant messaging, defamatory personal Web sites, and defamatory online personal polling Web sites, to support deliberate, repeated, and hostile behaviour by an individual or group, that is intended to harm others.

Different types of cyberbullying were reported ranging from flaming to cyberstalking. In her book, Nancy Willard (2004) identified seven different categories of common cyberbullying actions:

Flaming: Sending angry, rude, vulgar messages about a person to an online group or to that person via email or other text messaging.

Online harassment: Repeatedly sending offensive messages via email or other text messaging to a person.

Cyberstalking: Online harassment that includes threats of harm or is excessively intimidating.

Denigration (put-downs): Sending harmful, untrue, or cruel statements about a person to other people or posting such material online.

Masquerade: Pretending to be someone else and sending or posting material that makes that person look bad.

Outing: Sending or posting material about a person that contains sensitive, private, or embarrassing information, including forwarding private messages or images.

Exclusion: Cruelly excluding someone from an online group. (Cyberbullying Survey Section 8)

Objectives

Giving the fact that the cyberbullying is a new phenomenon, the first objective for this study is to examine nature and extent of adolescents' experience of cyberbullying and cyber victimisation in Canadian and Chinese schools. The period of early adolescence for the study of cyberbullying and cyber victimisation is chosen because adolescence is a time when bullying is reported to be at its peak and "this period ... witnesses a series of abrupt changes in the social lives of youngsters" (Pellegrini & Bartini, 2000, p.700). Most importantly, this paper explores the extent to which certain factors contribute to cyberbullying and cyber victimisation. These factors are: *bullying, culture, gender, knowledge of cyber safety, frequency of computer use, and academic achievement*.

Related literature

According to Nelson (2003), "cyber bullying is often very serious, including stalking and death threats... I can say anything I want. It's impersonal. Face to face is a little intimidating." Many news stories have reported cyberbullying incidents all over the world. Cyberbullying also takes various forms and electronic communication tools - from email, listserve, mobile phone, to websites. For example, a 15 year-old boy in Quebec, Canada became an unwilling "celebrity when a film he made of himself emulating a *Star Wars* fight scene was posted on the Internet by some classmates. Millions downloaded the two-minute clip... He was so humiliated he sought counseling, and his family has launched a lawsuit against his tormentors" (Snider & Borel, 2004). In Japan, mobile phone

pictures of an overweight boy, which was taken on the sly in the locker room, were distributed to many of his peers (Paulson, 2003). Another incident happened in Calabasas High School in California. "It was a website – *schoolscandals.com* – on which vicious gossip and racist and threatening remarks grew so rampant that most of the school was affected" (Paulson, 2003). Combating cyberbullying is more difficult for schools than people initially expected. Many bullies are anonymous. Further, under the free speech rights, it is difficult to take down a website.

Aside from the many reported news stories, several surveys have been conducted to explore cyberbullying issues. In a survey conducted in Britain in 2002, it was found that one out of four youngsters aged 11 to 19 had been cyberbullied (National Children's Home, 2002). An earlier survey conducted in New Hampshire in 2000 found that about 6 percent of youths had the experience of being harassed online (Thorp, 2004). A study reported at a cyberbullying conference in Westchester indicated that "only six kids out of 200 said they had not been involved in some form of cyberbullying" (Dickstein, 2005).

Cyber harassment is a form of bullying happening in cyberspace. Various studies report different types of cyber harassment. For example, Katz (2002) found that many developmentally delayed adolescents experienced sexual harassment over the Internet. Other researchers (Spitzberg & Hoobler, 2002) found that one third of undergraduate students reported being stalked over the Internet. For example, a textually enacted "rape" was conducted on a MOO (an online environment enabling multi-user interactions) in which a male user controlled two female players' characters to force the performance of sexually degrading actions on themselves (Dibbell, 1996). Another incident occurred in a support MUD (a multiplayer computer game) sexual abuse survivors in which a male enacted graphic sexual abuse to all participants (Reid, 1994). Anonymity inherited in many electronic communication modes "not only fosters playful disinhibition but reduces social accountability, making it easier for users to engage in hostile, aggressive acts" (Herring, 2001).

These studies and the stories suggest that cyberbullying indeed occurs around the world, yet it is unclear how different factors affect adolescents' cyberbullying behaviors.

Contributing factors

Earlier research has indicated that many dimensions have negative impacts on youngsters' school lives (Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991). Many factors relate to bullying and victimisation, and I hypothesise that they also relate to cyberbullying and cyber victimisation.

Considering that there are limited research studies available that address cyberbullying and that it may be seen as bullying moving to the new medium, it makes sense to base hypotheses about the contributing factors of cyberbullying on the relatively well researched literature in traditional bullying. This section discusses the elements that are identified as significant factors effecting bullying in the existing literature, and consequently hypothesised as contributing factors to cyberbullying. These are: *bullying, gender, culture, use of technology, knowledge of cyber safety and academic achievement*.

The number one factor is, of course, student engagement in bullying or victimisation in face to face environments. Previous research (Beran & Li, June 2005), although limited, indicates a relationship between bullying and cyberbullying. Engagement in bullying activities, therefore, is hypothesised to predict cyberbullying and cyber victimisation.

The second factor considered is gender. As reported in previous research and many news stories, gender plays a significant role in school violence and bullying. Extensive research work has shown that male students, compared to female students, are more likely to be bullies (Hoover & Olsen, 2001; Pellegrini & Bartini, 2000) as well as being bullied (Nabuzoka, 2003). One important factor to consider is that using aversive tactics with peers is an important social behavior for male students (Pellegrini & Bartini, 2000). In keeping with extant work with bullying (Pellegrini, Bartini & Brooks, 1999), it is posited that gender should predict cyberbullying and cyber victimisation.

The third factor relates to culture. Bullying is a universal problem with evidence from a wide range of countries including Norway and Sweden (Olweus, 1994), Spain (Ruiz, 1992), Australia (Rigby & Slee, 1991), Canada (Bentley & Li, 1995), Japan (Crystal, 1994), and USA (Hoover & Juul, 1993; Hoover, Oliver & Thomson, 1993). Although bullying has been identified around the world, previous research (e.g. Nabuzoka, 2003) suggests that students from different countries and cultures behave differently with involvements in bullying. This may result from a number of factors. For example, people in different cultures may hold different beliefs or religions. Since culture is related to bullying and victimisation, it is logical to argue that culture should be considered as a predictor for cyberbullying and cyber victimisation.

The fourth factor is the use of technology. Since cyberbullying occurs in cyberspace, it is reasonable to assume that if students have limited opportunities to access to technology, they should have fewer opportunities to be involved in cyber harassments. The frequency of technology use by students, therefore, should predict cyberbullying and cyber victimisation. It is worth noting that mobile (cell) phones are not

considered in this study because they are not allowed in many Canadian schools.

The fifth factor is awareness of cyber safety. According to the past two decades of research into the prevention of bullying, awareness is identified as one of the four most important areas that can reduce bullying in schools (Campbell, 2005), and educating students about safety approaches plays a major role in any effective anti-bullying programs. Campbell (2005) further suggests that increasing awareness should also help reduce cyberbullying.

Academic achievement is the sixth factor relating to cyberbullying and cyber victimisation. Previous research on bullying and victimisation found that academic achievement and academic pressure connect to bullying in schools (Ma, 2001). Academic pressure refers to “the expectations of peers and teachers” (Ma, 2001, p. 357). Students with lower academic pressure are more likely to bully than students in schools with high academic pressure. Victimisation, on the other hand, relates to various factors including academic achievement. Regardless of the type of bullying, victims suffer various negative consequences. Some significant and well documented such consequences include students having difficulty concentrating on study, decreased academic achievement levels, decreased interest in school, and increased absences (National Association of State Boards of Education, 2003). This link between academic work and bullying suggests possible connections between academic achievement and issues of cyberbullying. Consequently, academic achievement is considered to be connected to cyberbullying and cyber victimisation.

In summary, it is hypothesised that cyberbullying in seventh grade should be predicated by traditional bullying. Further it is posited that cultural differences should result in different bullying behaviours. Similarly, gender, frequency of computer use and culture should drive cyber victimisation. In addition, I posit that victimisation in real world should predict cyber victimisation. Academic achievement, on the other hand, should relate negatively to cyber victimisation. Knowledge of cyber safety should act as a protective factor against cyberbullying.

Methods

Data

Two sets of data were collected in 2004: Canadian and Chinese data. For Canadian data, the participants were randomly selected from three middle schools in Calgary. The three schools were chosen because of the schools’ enthusiasm about technology. The schools were involved in a large educational technology integration project of the Province. Two schools are

located in areas where residences are mainly at middle class range, and the third is in a low to middle socio-economic status (SES) area. A total of 264 grade seven students (130 males and 134 females) completed the questionnaire. Among them, only 7.6 percent are English as a second language (ESL) students. Further, about three quarters of the students are white, 6.5% Asian, and about 18% are Black, Hispanic Aboriginal, or other. Close to 60% of the students reported that their school grades were usually above average; while about forty% of them were average. Only several students reported their grades to be below average.

The Chinese data were collected from 197 grade seven students (107 males, 90 females) who were randomly selected from two secondary schools in Changsha, China. The same questionnaire was administrated to the students. Amongst them, one in three reported that their school grades were usually above average, while half of them were average. Close to ten percent of the students reported their grades to be below average. Detailed demographic information is presented in Table 1.

Table 1: Demographics of the students

| Country | Gender (%) | | Academic achievement (%) | | |
|----------------|------------|------|--------------------------|---------|---------------|
| | M | F | Above average | Average | Below average |
| Canada (n=264) | 49.2 | 50.8 | 57.2 | 39.4 | 1.9 |
| China (n=197) | 54.3 | 45.7 | 37.6 | 53.8 | 8.6 |

*Total percentages may not add up to 100 due to missing values.

Instrument

The survey instrument used was a questionnaire developed by Li (2007) (see Appendix). It included a total of 22 questions which collected information from two major areas: students' demographic information and their experience related to cyberbullying. It is important to note that no student name or identification was collected and therefore, the survey was anonymous. Because computers are an integral part of class instruction, and mobile (cell) phones are not allowed in the Canadian schools surveyed in this study, the emphasis was on computer use rather than mobile phones. Frequency of mobile phone use was not included in the questions.

To collect the Chinese data, this original questionnaire was translated into Chinese by a professor who is a native speaker with over ten years experience in teaching English in Chinese universities. The Chinese version of the questionnaire was administered in the two Chinese schools.

Analysis

This paper employed quantitative analyses of student surveys using *SPSS*. Specifically, descriptive statistics was first used to explore the nature and

extent of adolescents' experience of cyberbullying and cyber victimisation. Then, forward stepwise logistic regressions were employed to examine the extent to which various factors contributed to cyberbullying and cyber victimisation. "In logistic regression analysis for a dependent dichotomous variable, one attempts to predict the probability that an observation belongs to each of two groups" (Wright, 2000, p. 219). The rationale for choosing stepwise logistic regression over direct or hierarchical logistic regression is twofold. First, the exploratory nature of this study calls for a statistical method to identify significant factors. Second, a paucity of literature determining the hierarchical arrangement of variables necessitated a statistical model that enables the variables to emerge and organise with respect to strength of effect.

In a logistic regression analysis, a common practice is to use a more liberal significance level than .05. Researchers "recommend[ed] a criterion for inclusion of a variable that is less stringent than .05; they suggest that something in the range of .15 or .20 is more appropriate to ensure entry of variables with coefficients different from zero" (Tabachnick & Fidell, 2001, p. 535). In this study, therefore, an alpha of .15 rather than .05 is used for the logistic regression analyses.

The selected variables were: country, gender, knowledge of safety strategy, frequency of computer using, school grade, and traditional bullying. These variables were chosen because they have been previously reported as being predictors in the literature or have been found to be useful in our experience. The variable "frequency of computer using" was collapsed into two categories: rare (less than 4 times per month) and often (4 or more times per month). Similarly, the variable "school grade" was collapsed into two groups: "above average" and "average and below". This procedure was conducted to reduce the number of low size cells. The traditional bullying variable as a categorical predictor was first recoded into a set of dummy variables before entering into the logistic regression model. Specifically, the traditional bullying variable was grouped into the following four subcategories: bully only (hereafter *bully*), victim only (hereafter *victim*), bully and victim (hereafter *bully victim*), and not involved.

Results

To date, cyberbullying has not been examined in relation to traditional bullying issues. Evaluating traditional bullying behavior as a predictor may add to the understanding of how cyberbullying is influenced by traditional ways of harassment. Furthermore, factors like gender, culture, knowledge of safety strategies, and frequency of computer use, may provide valuable information to assess possible involvement with

cyberbullying. The present study has explored these factors and others that may predict which students were likely to be involved in cyberbullying.

Nature and extent of cyberbullying

To what extent do adolescents experience cyberbullying? In general, close to one third of the adolescents were cyber victims and about 18% were cyberbullies. Significantly more students, in fact, over half of them, knew someone who had been cyberbullied. When gender was considered, higher proportions of males were involved in cyberbullying either as cyber victims or cyberbullies, or knowing someone being cyberbullied (Table 2).

Table 2: Percentage of students who experienced cyberbullying (N=461)

| | Cyber victim | Cyberbully | Aware of cyberbullying |
|--------|--------------|------------|------------------------|
| Male | 31.2 | 21.9 | 53.6 |
| Female | 26.3 | 13.4 | 52.2 |
| Total | 28.9 | 17.8 | 52.9 |

What tools were involved in cyberbullying? For the 133 cyber victims, one out of 5 was cyberbullied by emails only. About one third was cyberbullied in chatrooms only and about 13% by mobile phone only. Another one third was victimised via other technologies or mixed electronic means. What tools did cyberbullies use to harass others? About one fifth of the cyberbullies used email only, close to 28% used chatrooms only, and about 6% used mobile phone only. A large majority of the cyberbullies used other electronic means or mixed types of technology to harass others (Table 3).

Table 3: Tools used

| Tools used by | Email (%) | Chatroom (%) | Mobile phone (%) | Other or mixed (%) |
|----------------------|-----------|--------------|------------------|--------------------|
| Cyberbully (N=82) | 20.4 | 27.8 | 5.6 | 39.4 |
| Cyber victim (N=133) | 21.8 | 30.8 | 13.5 | 30.9 |

How often did cyberbullying occur? Over 30% of the cyberbullies reported they harassed others less than 4 times, about 43% did it between 4 to 10 times and another 20% did it more than 10 times. The cyber victims reported a somewhat different pattern: close to 55% were cyber assaulted less than four times, about 20% were cyber harassed between 4 and 10 times, and another 21% were cyberbullied frequently, i.e. over 10 times. Table 4 provides details.

Table 4: Frequency of cyberbullying

| | < 4 times | 4-10 times | >10 times |
|----------------------|-----------|------------|-----------|
| Cyberbully(N=82) | 30.5 | 43.4 | 20.7 |
| Cyber victim (N=133) | 54.9 | 20.3 | 21.1 |

Who were the predators? The results showed that out of the 133 cyber victims, 25.6% were cyberbullied by school mates, 12.8% by people outside school, 46.6% did not know who cyberbullied them and 8.3% were cyberbullied by mixed groups of people (i.e. school mates and people outside). In addition, only 48.9% of the cyber victims informed adults (e.g. parents or teachers) about the incidents.

When considering the total student sample, only 34.5% reported that when they knew someone being cyberbullied, they told adults. What were students' perceptions about adults' intervening in schools? Only 63.6% believed that adults in schools tried to stop cyberbullying when informed. Further, over 65% of the students thought that they knew cyber safety strategies. Who taught them those safety strategies? The results of the survey showed that 30.2% of the students learned by themselves, about 13% learned from parents, less than 10% learned from schools, and another 9.1% from other sources.

Predicting cyber victimisation and cyberbullying

Cyber victimisation

The potential predictors were: gender, country, traditional bullying (4 categories), frequency of computer use, knowledge of safety, and self reported school grades. Details are presented in Table 5.

Table 5. Determinants of cyber victimisation

| Predictor | beta | S. E. | Wald's chi ² | df | P | Exp (beta) (odds ratio) |
|---------------------------------|-------|-------|-------------------------|----|-------|----------------------------|
| 1. traditional bullying | | | 11.79 | 3 | .008 | |
| - bully only | .67 | .53 | 1.58 | 1 | .209 | 1.92 |
| - victim only | .90 | .27 | 11.02 | 1 | .001 | 2.46 |
| - bully victim | .65 | .27 | 5.85 | 1 | .016 | 1.91 |
| 2. Knowledge of safety strategy | .44 | .24 | 3.43 | 1 | .064 | 1.54 |
| 3. Country | -.36 | .22 | 2.71 | 1 | .100 | .70 |
| Constant | -1.50 | .28 | 29.06 | 1 | <.001 | .22 |

Out of the potential predictors list, the most significant predictors of cyber victim, in descending importance, were: traditional bullying (chi square (3) = 11.79, $p = .008$), knowledge of safety strategies (chi square (1) = 3.43, $p = .064$), and country (chi square (1) = 2.71, $p = .100$). The percentage of correct classification was 71.4% and the goodness of fit (chi square (8) = 6.90, $p = .55$) indicated a good fit model.

Considering the individual logistic regression coefficients, the results indicated that victim (beta = .90, $p = .001$), bully victim (beta = .65, $p = .016$), knowledge of safety (beta = .44, $p = .064$) and country (beta = -.36, $p =$

.100) were significantly predicting the probability of cyber victimisation. According to the model, a student being cyberbullied was positively related to bullying, knowledge of safety strategy and country. A victim was almost 2.5 times more likely to be a cyber victim than a not involved student. A bully victim, compared to a not involved student, was about 2 times more likely to be a cyber victim. Further, a bully was almost twice as likely to be a cyber victim as a not involved student. However, this was not a significant predictor.

Given the same scores in other variables, Chinese students were more likely to be cyber victims than their Canadian counterparts. In addition, when other variables were controlled, cyber victims tended to report that they knew safety strategies in cyberspace. In fact, students who reported that they knew safety strategies were 1.54 times more likely, than not, to be cyber victims compared with students who reported that they had no knowledge of safety strategies.

Cyberbullying

Again, logistic regressions were used to analyse the same potential predictors for cyberbullying. Out of the potential predictors list, the most significant predictors of cyber victim, in descending importance were: country (chi square (1) = 17.48, $p < .001$), bullying (chi square (3) = 16.38, $p = .001$), gender (chi square (1) = 6.06, $p = .014$), and frequency of computer use (chi square (1) = 2.68, $p = .102$). The percentage of correct classification was 82.4% and the goodness of fit (chi square (8) = 6.81, $p = .56$) indicated a good fit model (see Table 6).

Table 6: Determinants of cyberbullying

| Predictor | beta | S. E. | Wald's χ^2 | df | P | Exp (beta) (odds ratio) |
|---------------------------|-------|-------|-----------------|----|-------|----------------------------|
| 1. Country | 1.47 | .35 | 17.48 | 1 | <.001 | 4.33 |
| 2. Traditional bully | | | 16.38 | 3 | .001 | |
| - bully only | 1.03 | .54 | 3.69 | 1 | .055 | 2.81 |
| - victim only | -.16 | .40 | .17 | 1 | .683 | .85 |
| - bully victim | 1.02 | .31 | 10.60 | 1 | .001 | 2.76 |
| 3. Gender | .67 | .27 | 6.06 | 1 | .014 | 1.96 |
| 4. Frequency use computer | .64 | .39 | 2.68 | 1 | .102 | 1.90 |
| Constant | -3.84 | .48 | 64.52 | 1 | <.001 | .02 |

The individual logistic regression coefficients indicated that country (beta = 1.47, $p < .001$), bully (beta = 1.03, $p = .055$), bully victim (beta = 1.02, $p = .001$), gender (beta = .67, $p = .014$), and frequency of computer use (beta = .64, $p = .102$) significantly predicted the probability of cyberbullying. The influence of culture was strong. When other variables were controlled, Canadian students were 4.33 times more likely to be cyberbullies than

Chinese students. Another strong indicator was the involvement in bullying activities. In fact, both 'bully' and 'bully victim' were significant indicators. A bully was 2.81 times more likely to be a cyberbully compared to a not involved student. Similarly, a bully victim being a cyberbully was 2.76 times greater than a not involved student. A student who was a victim had a slightly lower risk of being a cyberbully than a not involved student. However, this was not a significant predictor.

Gender was another significant predictor for cyberbullying. Given the same score for other variables, a male student was almost twice as likely to be a cyberbully as his female counterpart. In addition, frequency of computer use was a significant predictor. When other variables were controlled, frequent users (more than 3 times a month) were 1.9 times more likely to be cyberbullies than infrequent computer users (less than 4 times per month).

Discussion

Nature and extent

As evidenced in this study, cyberbullying has become an increasingly significant problem in schools and it deserves our serious consideration. One in three adolescents participating in this study were cyber victims and about one out of five students had cyber harassed others. Over half of the sample reported that they knew someone being cyberbullied. It is important to also note that over forty percent of the cyber victims had been cyber harassed more than three times and 2 in 3 cyberbullies harassed others four or more times. These results suggest that cyberspace has become another "playground" for bullying. Bullying does occur in cyberspace and it occurs frequently.

The tools used for cyberbullying includes emails, chatrooms, mobile (cell) phones and other type of technologies. Cyberbullies and cyber victims show similar patterns in terms of the type of tools used for cyber harassment. A majority of the cyberbullying incidents involve the use of computers or a mix of technologies, which suggests that a range of technological means have been used negatively.

One important and unique characteristic of cyberbullying is anonymity. In this study, close to half of the cyber victims did not even know who cyberbullied them. This brings a great challenge for us in combating cyberbullying. Cyberbullies can hide their identities and therefore avoid consequences. This indirectly encourages them to cyber harass others again. Not needing to face the victims may also promote this behavior because it is impersonal. In addition, victims of bullying may try to

retaliate indirectly via cyberbullying because it probably constitutes a lesser consequence.

Another important aspect of this study is the exploration of adult involvement. When variables related to adult involvements are considered, a typical trend is identified in the results: over half of the cyber victims did not inform any adults about the incidents. Less than 35% of all students report that they would inform adults when they knew about someone being cyberbullied. This replicates the pattern identified in research of traditional bullying: the majority of the bystanders and the victims keep quiet (Hoover & Olsen, 2001). One possible explanation for this comes from the result of this study: only six out of ten students believe adults in schools would try to stop cyberbullying when notified. Because many students think that adults would not even try to stop cyberbullying when informed, they would, therefore, keep quiet. Another possible explanation is that the victims and bystanders may have feared getting into trouble if they told adults.

The fact that a majority of the bystanders or the cyber victims chose to keep quiet underscores the importance of systematic education in safety strategies from early age. A preliminary analysis of student narratives suggests that many students held shallow understandings of safety in cyberspace, even though many reported that they had the knowledge. For example, students had some naïve understanding of cyber safety. Some students believed that as long as they avoided online chat, they would be safe. Just like approaches proven to be effective in fighting bullying, educating cyber victims and bystanders may provide some key strategies in combating cyberbullying. Focusing attention on empowering cyber victims and bystanders has the potential to prevent a significant amount of cyberbullying.

Predicting cyberbullying and cyber victimisation

The model predicting seventh grade cyberbullying indicates that culture is the strongest predictor in the variable examined. A Canadian student is more than four times likely to be a cyberbully than a Chinese student. Similarly, culture is also a significant predictor for cyber victimisation. This is similar to the results of previous bullying research which indicate that culture plays an important role in bullying and cyberbullying. This study indicates that Chinese students are more likely to be cyber victims whereas Canadian students tend to be cyberbullies. This has implications for how problems of cyberbullying are addressed in the two countries, but perhaps more importantly, in multicultural societies such as Canada, USA and Australia. It is worth noting that the students in the two Chinese schools generally had access to networked computers and about one third had

access to mobile phones (though not allowed in classes). Similarly, the Canadian students have good access to the technologies, but use of mobile phones was not allowed in schools.

One of the most important results of this study is that engagement in the traditional form of bullying is a very strong predictor for both cyberbullying and cyber victimisation. Victims of traditional bullying, regardless of whether they are victims or bully victims, are more likely to be cyberbullied than the students who do not engage in bullying activities. Likewise, bullies, including bullies or bully victims, have higher chance to cyber harass others than those who are not involved in bullying. This finding, though not surprising, has significant implications. It suggests that bullying and cyberbullying are closely related. It is possible that bullying started in the real world but extended to the cyberspace. This means that cyberspace provides bullies another venue to harass others. It is also possible that the harassment began in the virtual space, but the perpetrators took it to real world which leads to face to face bullying. As suggested by Beran and Li (2005),

... as a result of not receiving consequences for engaging in cyber harassment, students may then continue the harassment when in close contact with a student at school. In addition, cyber harassment may alter bullying at school. For example, if "electronic bullies" remain undetected, their bullying behaviors at school may become more severe and directly, rather than indirectly, exerted against a victim. (p. 271)

This close link between bullying and cyberbullying highlights a significant issue to be considered when dealing with cyberbullying issues and working on prevention programs. This calls for a holistic design of prevention programs that consider bullies, cyberbullies, as well as their victims as an integrated whole. Another implication of this result is that the effective strategies for combating bullying may also be effective in fighting cyberbullying.

One surprising result is that knowledge of cyber safety predicts cyber victimisation. It was originally hypothesised that knowing safety strategies in cyberspace would help prevent students from being cyberbullied. The analysis of the data indicated that students reported to be knowledgeable about cyber safety, compared to those who do not know the strategies, are more likely to be victimised in cyberspace. It is probable that those students who have no knowledge of cyber safety strategies are not as active in cyberspace; hence they have less chance to be cyberbullied. Another possible explanation is that many of the students in this sample have superficial understanding of cyber safety. As discussed above, the preliminary examination of students' open ended comments indicates that many students held very naïve beliefs about cyber safety.

Gender is a significant predictor for cyberbullying. Consistent with the results from previous research into traditional forms of bullying (Hoover & Olsen, 2001; Kumpulainen, Rasanen, Henttonen & Almqvist, 1998), males are more likely to cyberbully others than females. The fact that gender does not predict cyber victimisation in this study merits discussion. This result contradicts research about traditional bullying which suggests that males are more likely to be bullied than females (Eslea & Mukhtar, 2000; Kumpulainen, Rasanen, Henttonen & Almqvist, 1998). This contradictory result may relate to the nature of cyberspace. In cyberspace, users can hide their identities. In fact, females tend to disguise their gender when using computer mediated communication because it does not allow judgment on the basis of gender (Gopal, Mirana, Robichaux & Bostrom, 1997; Li, 2006). Male and female students (because their identities could be masked) are equally likely to be targeted in cyberspace.

Student academic achievement, as measured by students' self reported grades, accounts for minimal variance in cyberbullying and cyber victimisation. This indicates that students' academic learning has minimal effect on cyberbullying and cyber victimisation. This is somewhat different from previous research into bullying indicating that academic pressure can help reduce bullying (Ma, 2001). Maybe anonymity and feeling impersonal creates courage from a distance and make those less likely to cause trouble to do so. For example, with masked identities and not facing the victims directly, people feel less intimidated about harassing others and therefore, even the typical "good" students (e.g. those who are high academic achievers) can engage in this type of action. As suggested by a teacher posting to an internal listserver at a Canadian university in 2005, "the thought of being able to get away [with it] lures even those who may not really wish to hurt some, to lash out at anyone who has annoyed them in some fashion. To humiliate someone just because they are an 'easy' target and because you can get away with it is part of the evil cyberbullying has brought to the table of student life".

Conclusion

This study contributes to the extant literature on bullying in several conceptual areas. Firstly, cyberbullying is a bullying problem occurring in a new territory. To date, few research studies have examined bullying issue in this new context. The astonishing high proportion of adolescents who had experiences of cyberbullying observed in both Canada and China suggests that cyberbullying is becoming an increasingly significant problem for schools and society generally.

According to Beran and Li (2005), the severity of cyberbullying varies, with incidents ranging from annoying to dangerous with the occurrence of

death threats. In addition, cyberbullying may alter traditional bullying at school. For example, if cyber bullies remain undetected, their bullying behaviors at school may become more severe and directly, rather than indirectly, exerted against a victim. On the other hand, it is also possible that if bullies have difficulty in attacking victims face to face, they may choose to use cyberspace to harass them. The consequences of such harassment can be as serious as, if not more serious, than face to face bullying. As evidenced in previous research (Beran & Li, 2005), cyber victims can be affected in many ways, including psychological, emotional, and academic problems. They could suffer from emotional depression and decreased academic achievement. Future research must explore how cyberbullying decreases, maintains or exacerbates other forms of bullying.

Secondly, cyberbullying is investigated in this study taking culture into consideration. Canadian and Chinese adolescents' experiences indicate that culture plays a significant role in cyberbullying. This result provides empirical groundwork for programs aiming to combat cyberbullying in different cultural and school contexts. Most importantly, this work establishes a relationship between bullying, cyberbullying, and victimisation. This has significant implications for intervention and prevention programs in schools. It suggests that anti-bullying actions should also take cyberbullying into consideration and vice versa. Remedies and treatments for bullying in schools may help to reduce cyberbullying.

Thirdly, in this paper, bullying and cyberbullying are examined at "a point where it had seldom been studied. Extant studies, for the most part, studied primary school children. The early adolescent period merits attention because it is a period, labeled a 'brutalising period', where disruptions in social networks afford opportunities for peer victimisation and aggression to establish peer status" (Pellegrini & Bartini, 2000). Consistent with this, the results show that high percentages of the students are involved in cyberbullying.

One important point which needs to be stressed is that schools should play a significant role in combating cyberbullying, yet, restricting Internet usage, emails, or any other technological tools cannot stop bullies from finding ways around the schools' suspension of privileges. Establishing effective anti-bullying programs as well as creating a culture of caring and kindness in schools has never been more important. Awareness is the first step and it is an absolute must. As indicated in student narratives, many of the students do not even know that this is a form of bullying and not just another disadvantage of this age group. If they do not even know they are victimised, how can we help them? Similarly, the cyberbullies sometimes do not understand that what they are doing is considered to be a form of bullying. Most students do not want the reputation of being a bully. Once

this becomes clear to them, some will stop. In addition, an anti-bullying, anti-cyberbullying program should be a systematic and joint effort by society generally rather than a one time or one school project.

This study has some limitations, just like any research studies. For example, the survey question intended to discover frequency of computer use did not consider that a majority of students in the schools have easy access to computers in this urban city. Simply categorising it into rare, 1-3 times per month, and over 4 times a month does not appropriately reflect the current trend of access to computers. Further, as the data were collected from urban schools in a large city in Canada and in a large city in China, we need to be cautious about generalising the findings to other regions.

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Appendix: Survey

Section one: About you (circle one):

1. Sex: Male Female Grade level _____ Year of birth _____
2. How do you describe yourself:
Asian Hispanic Black White Aboriginal Other
3. English is my **second** language: Yes No
4. My school grades are usually: above average average below average
5. I use computers: rarely 1-3 times/month at least 4 times/month

Section two: Cyberbully is defined as harassing using technology such as email, computer, cell phone, video cameras, etc. Bullying occurs when people say mean and hurtful things or make fun of another person or calls him/her mean and hurtful names, completely ignore or exclude him/her from their group of friends or leaves him/her out of things on purpose, tells lies or spreads false rumors about him/her, sends mean notes and tries to make other students dislike him/her, and other hurtful things like that. When we talk about bullying, it is difficult for the person being bullied to defend himself or herself. We also call it bully, when a person is teased repeatedly in a mean and hurtful way. But we don't call it bullying when the teasing is done in a friendly and playful way. Also, it is not harassment when two people of about equal strength or power argue or fight.

1. I have *been bullied* during school: yes no
2. I have *bullied* others: yes no
3. I have been *cyberbullied* (e.g. via email, chat room, cell phone): yes no
4. If yes, I was *cyberbullied* via (circle **all** that apply):
email chat room cell phone other, specify _____
5. If yes, I was *cyberbullied* by:
school mates people outside school I don't know who
6. If yes, I have been *cyber-bullied*:
less than 4 times 4-10 times over 10 times
7. I have *cyberbullied* others: yes no
8. If yes, I *cyberbullied* others via (circle **all** that apply):
email chat room cell phone other, specify _____
9. If yes, I have *cyberbullied* others:
less than 4 times 4-10 times over 10 times
10. I know someone who has *been cyberbullied*: yes no
11. When adults in school know *cyberbullying*, they try to stop it: yes no
12. When I was *cyberbullied*, I told adults (e.g. parents, teachers): yes no
13. When I knew someone being *cyberbullied*, I told adults: yes no
14. I know safety strategies in cyberspace: yes no
15. If yes, I learned safety strategies:
by myself taught by parents taught in schools other, specify: _____

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