Revisiting cyberbullying: Perspectives from Taiwanese teachers

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ABSTRACT

Cyberbullying among students has received extensive attention from researchers and educators. Most research is, however, based on student reports while teachers' perceptions of this aggressive behavior among students have rarely been studied. We surveyed 2821 Taiwanese teachers on their perceptions of cyberbullying among students, including the types and tools, the ability to remain anonymous, students' responses, and their own practices of handling cyberbullying incidents at school. The results showed that teachers believed that the circulation of embarrassing pictures and videos was the most prevalent type of cyberbullying but that instant messaging was the most frequently used tool. Our findings also revealed teachers' tendency of overestimating students' willingness to report cyberbullying. The students' grade level that the teachers taught and whether they take on administrative duties were found to influence their perceptions of student cyberbullying. We found that teachers were not confident to handle cyberbullying incidents and we suggest that anti-cyberbullying training be included in teacher education.

1. Introduction

With the widespread information and communication technologies among teenagers, cyberbullying has received increasing attention from parents, teaching practitioners, and education researchers. Previous cyberbullying studies address mainly students' self-reporting and, thus, shed little light on another critical side of the story: the perspectives of teachers, including their perceptions of different student responses to, and different types and tools, as well as practices of, cyberbullying. Insofar as teachers can help counter school bullying, a legitimate line of research would be to understand their perceptions of, responses to and current practices toward cyberbullying and then to develop prevention strategies accordingly. Cyberspace-based bullying, entailing no direct physical injury and no face-to-face confrontation, might be ignored or underestimated by teachers and other adults. This exploratory study sets out to identify and to explore Taiwanese teachers' perceptions of cyberbullying among students and the interwoven relationship between teacher backgrounds and their cyberbullying-related practices. Additionally, the current study examines teacher-perceived discrepancies among tools and types of cyberbullying.

1.1. The emerging aggressive behavior of cyberbullying among teenagers

It is acknowledged that several ongoing national projects have a research focus on cyberbullying, such as *Center of Safe and Responsible Internet Use (CSRIU)* in the U.S., and the *National Safe Schools Framework* in Australia; yet, relevant research on the new form of bullying in cyberspace is limited, especially on teachers' perspective regarding this matter. Previous studies have reported that the cyberbullying experience is widespread, both in Eastern and Western countries, such as Canada (Li, 2005), the United States (Ybarra, 2004), Japan (Akiba, 2004), and Taiwan (Huang & Chou, 2010). In order to gain a comprehensive view of the intricate nature of this aggressive behavior, the present study thus refers to the broader bullying literature for conceptual definitions and possible consequences.

Cyberbullying theoretically could cause negative emotional problems as serious as any other recognized type of bullying (Bond, Carlin, Thomas, Rubin, & Patton, 2001; Rigby, 2003). Bullying has long been confirmed as having negative effects on not only victims' mental health but also the bullies' mental health during these individuals' school years and later in life (Olweus, 1993, 1995, 2003; Rigby, 2003), and

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cyberbullying experience is likely to make both bullies and victims feel unsafe in school and uncared for by the teachers (Sourander et al., 2010), and lead to lower self-esteem and more suicidal thoughts (Patchin & Hinduja, 2010). In Taiwan, depression is reported as a major consequence of school violence (Chen & Wei, 2010). Though no longitudinal study regarding the influence of cyberbullying has been conducted, the consequences of cyberbullying cannot be ignored and should be addressed carefully, especially for the well-being of adolescents.

1.2. The characteristics of cyberbullying

Cyberbullying, with distinct features from face-to-face bullying, has been a serious concern for researchers and educators. Two characteristics of cyberbullying seem unique: rapid dissemination and anonymity, both resulting from the technology element of cyberbullying. This rapid-dissemination characteristic of cyberbullying has been confirmed by the vast majority of studies so far (e.g., Kowalski, Limber, & Agatston, 2008; Li, 2005); yet, the second characteristic, anonymity, remains a point of dispute in the literature. Cyberbullies usually can easily remain anonymous in cyberspace (Kowalski, 2008; Li, 2007). However, other recent investigations (e.g., Huang & Chou, 2010; Juvonen & Gross, 2008) show that two-thirds of victims knew or at least could suspect who had bullied them in cyberspace. The inconsistent findings suggest more research on the consistency of cyberbullying-related anonymity across different contexts.

A majority of previous findings have rested on self-report surveys completed by students; however, victims and bullies, even bystanders, might feel reluctant to tell the truth even in an anonymous survey regarding bullying incidents. Huang and Chou (2010) compared the cyberbullying experiences of bullies, victims, and bystanders and found that the victimization experiences were twice as numerous as the bullying experiences, indicating that cyberbullies seemed concealing their behaviors. Also, it is possible that cyberbullies mean no harm, meaning that they spread potentially embarrassing images or other forms of information with no ill intention while the referenced person still experiences the negative effects of the embarrassment, as categorized by as unintentional bullying (Rigby, Smith, & Pepler, 2004). It is, nonetheless, as dangerous as intentional bullying. In regards of cyberbullying, fewer than half of the victims know how adequately respond (e.g., to block the person who cyberbullies others, or to delete the insulting messages) to decrease or avoid further emotional harm (Görzig, Haddon, Livingstone, & Ólafsson, 2011). Bullying in cyberspace sometimes manifests itself as the unintentional type of bullying: embarrassing photos and rumors quickly spread even when the original disseminator of this information does not intend to bully.

1.3. Gender and technology as factors influencing cyberbullying

Factors identified affecting bullying include gender (e.g., Nabuzoka, 2003), academic achievement (e.g., Ma, 2001), socioeconomic status, relationships with parents, and visual media with specific reference to the Internet (Sahin, 2010). For cyberbullying, gender is a possible indicator (Huang & Chou, 2010), but no direct evidence has confirmed academic achievement to be influential in cyberspace bullying. The literature has basically confirmed that there are significant gender differences. Li's (2006) cyberbullying study suggested that males were more likely to be both bullied and cyberbullied than females, and a more recent and specific cyberbullying study (Huang & Chou, 2010) also showed that male students experienced greater levels of both cyberbullying and victimization than female counterparts.

Technology use plays a significant role in cyberbullying (Li, 2005; Raskauskas & Stoltz, 2007; Sahin, 2010; Ybarra & Mitchell, 2004), and contributes to various cyberbullying types (e.g., threats, circulation of rumors) and tools (Huang & Chou, 2010). The general use of these tools may vary according to age group and to country or culture, resulting in varied types of cyberbullying (Görzig et al., 2011). For instance, frequent use of cell phones can lead to a high incidence of text-message bullying (Raskauskas & Stoltz, 2007). Instant messaging (IM) was reported the dominant tools used for cyberbullying in Taiwan (Huang & Chou, 2010), while that was cell phone in Japan (Akiba, 2004) and social-networking sites in the United States. The types and tools of cyberbullying vary along lines of age and culture (Huang & Chou, 2010). Thus, in exploring significant dimensions for cyberbullying prevention, people should consider not only factors typical of traditional bullying but also the complex nature assignable to the role played by technology therein. However, it is important to note that the aforementioned studies rested mainly on students' self-reports, so that diverse data sources remain conspicuously absent from this research field.

1.4. Teachers' perception of school bullying

A wealth of literature describes school bullying in various contexts from students' views, but that addressing the perspectives of teachers is comparatively small and insufficient. Past research has found that teachers' actions, students' perceptions of sympathetic teacher attitudes (e.g., teachers' dislike of unfairness), teachers' care and support (Reinke & Heran, 2002), and student–teacher relationships are all associated with school bullying (Chen & Astor, 2010; Lee, Buckthorpe, Craighead, & McCormack, 2008; Santinello, Vieno, & De Vogli, in press), suggesting that school teachers can positively affect students' bullying behavior, and teacher perspectives can help to produce an all-round view of school bullying (Battistich, Solomon, Kim, Watson, & Schaps, 1995; Chen & Wei, 2010). However, almost none of the studies specifically discuss cyberbullying from teachers' perspectives. This paucity of research is not only limited to teachers' perspectives on cyberbullying, but also to their practice and responses in particular.

Previous literature also indicates that there tends to be a huge gap between teachers' and students' perceptions of bullying. According to findings of a Canadian study (Pepler, Graig, Ziegler, & Charach, 1994), 85% of participating teachers claimed that they had effectively intervened in bullying events, while students in the same school reported that teachers intervened in only 35% of the bullying events. It seems that there was actually more school bullying than teachers and other adults perceived. Also, students traditionally hold doubts about teachers' ability to handle bullying appropriately and effectively (Charach, Pepler, & Ziegler, 1995; Hoover, Oliver, & Hazler, 1992). In regard to cyberbullying, research findings also suggest that adolescents tend to remain silent when experiencing cyberbullying (Huang & Chou, 2010; Li, 2007), while it is evident that adolescents have frequent involvement in cyberbullying (e.g., Akiba, 2004; Li, 2007; Ybarra & Mitchell, 2004). Kowalski (2008) reported that teachers are likely unaware of cyberbullying and teenagers seem reluctant to report the cyberbullying; and school teachers are one of the least likely groups of people to whom teenagers would want to turn for help (e.g., Huang & Chou, 2010). One of the explanation of the perception gap between students and teachers on bullying or cyberbullying is "incident seriousness"

(Ellis & Shute, 2007) as a major factor influencing teachers' decision to intervene. Notwithstanding this possible gap, teachers are a critical component in efforts to prevent school bullying, and their perception could serve as a key to preventing cyberbullying among students.

Moreover, discrepancies might exist in students' perceptions and understanding of the action and concept of cyberbullying across different cultures. Teachers and students in Chinese cultural context might judge and react to aggressive behaviors in cyberspace based on different values from those in western countries. In Taiwan, where law (e.g., Educational Fundamental Act) prohibits physical punishment and may land the teacher in serious trouble, teachers may find their hands tied when attempting to handle bullying or cyberbullying (Judicial Yuan, 2006). It is possible that an acceptable discipline for teachers would constitute an act of bullying that target students and that violates the law (James, 2008). Handling bullying incidents can be a difficult and troublesome task for teachers, but with training and support, they can be more confident and feel greater willingness in undertaking the task (Doll, Song, & Siemers, 2004). Empirical evidences and according prevention program specific to Taiwan context are in need for all stakeholders to deal with the emerging cyberbullying in schools.

1.5. Teacher practices in response to school bullying

Teachers deal with bullying incidents in various ways and teachers' responses are affected by multiple factors, including the teachers' moral orientation, teachers' perception of seriousness of bully incidents (Ellis & Shute, 2007), and teachers' own childhood bullying experiences (Kokko & Pörhölä, 2009). Strategies for handling bullying include ignoring the incident, working with the bully, working with the victim, enlisting other adults, and disciplining the bully (Bauman, Rigby, & Hoppa, 2008). With various factors involved and the dynamic contexts, bullying occurring in cyberspace could be even more difficult for teachers to notice and deal with owing to the possible anonymity and rapid-dissemination features of the involved technologies.

Identification and effective intervention are two major challenges for teachers who attempt to tackle bullying at school (Kokko & Pörhölä, 2009). On top of professional and practical awareness of any troublesome interaction among interaction, it might also require teacher some knowledge and understanding of students' technology use to notice cyberbullying. Unfortunately, national surveys, such as *The Digital Disconnect: The Widening Gap between Internet-Savvy Students and Their Schools* (Levin & Arafeh, 2002), suggested that school teachers do not use technology effectively in instruction and communication. Similarly, the National School Board Association (NSBA) report *Are We There Yet?* (Grunwald Associates, 2002) found significant lack of teacher preparation in instructional technology integration and suggested technology-related training for teachers. Among different types of bullying, relational bullying (e.g., spreading rumors, excluding individuals from groups), especially for teachers who are not equipped with sufficient training or knowledge of technology, is relatively more difficult to identify than direct verbal or physical bullying, resulting in underestimations of both the extent and the seriousness of this type of bullying.

Cyberspace as a place traditionally lacking adults' presence may help bullying to flourish. However, teachers' practices against and perceptions of cyberbullying remain a topic seldom explored in the literature. For the critical role that teachers play in cyberbullying among students, educators should promptly understand how teachers perceive this type of relatively new aggressive behavior and should establish corresponding support training and school policies. The present study has investigated the following cyberbullying-related issues and aspects:

(1) teachers' perceptions of the types and tools of cyberbullying;
(2) teachers' perceptions of the anonymous feature of cyberbullying;
(3) teachers' perceptions of students' responses to cyberbullying;
(4) teachers' concerns and current practices relative to cyberbullying;
(5) the influence of teachers' backgrounds (gender, school level, and professional roles) on the teachers' perceptions of and practices targeting cyberbullying.

2. Method

2.1. Participants

We conducted a national survey regarding Internet-related behaviors on K-12 students and teachers based on a probability sampling method, and we only used data collected from teachers of their perceptions of cyberbullying among students. We chose school teachers as the data source of this study for two reasons: (1) teachers play a critical role in preventing school bullying, and (2) teachers might see cyberbullying among students from different angles and their opinions could complement the existing literature based on students' self-reports. In other words, the present study is taking a different angle to examine the behavior, in order to reveal different perspectives of the complex of cyberbullying behavior.

In order to obtain a representative sample, we used stratified sampling techniques for the selection of 4–12th graders (students' age between 10 and 18) according to the demographic characteristics of the general and student populations of each district from each geographical area of Taiwan (northern, central, southern, and eastern parts). A total of 2821 teachers participated in this study, and 2781 teachers (98.58%) presented valid responses.

2.2. Data collection

Teachers' opinions were collected through print anonymous questionnaires distributed to the schools by postal mail. Adult teachers in each selected school were offered opportunities to participate in this study; no incentive was given. Participating teachers were well informed the nature of the study, and asked to read the written instruction carefully, which detailed that their data would only be used for research purposes, and how their data would be securely stored. The procedures were conducted responsibly in accordance with the institutional and national ethical standards.

In the survey, we sought to avoid possible ambiguities by replacing the term 'cyberbullying' itself with a long definitional elaboration consisting of multiple Chinese characters. Conceptualizations of bullying vary from individual to individual, and from culture to culture (Smith, Cowie, Olafsson, & Liefooghe, 2002). Indeed, several previous investigations (e.g., Dake, Price, Telljohann, & Funk, 2003; Harris, 2003) were criticized for not providing specific definitions of 'bullying' in the data-collection procedure. In addition, the direct Chinese translations of the words 'bullying' (ba-lin) and 'cyberbullying' (wanlu ba-lin) are relatively negative and are not often used in daily contexts; therefore, we provided the participants with a textual paragraph of cyberbullying definitions (the English-language translation of which is below):

Terminology: (*Important! Please read carefully!*)

(1) *Using the Internet* includes using e-mails, instant messaging, chat rooms, discussion forums, blogs, and other online applications.
(2) *Using a cell phone* includes making phone calls and sending text messages or pictures.
(3) *Hurting* includes causing emotional pain through verbal or textual language that results in threats, insults, harassment, teasing, circulation of rumors, and any other behaviors that cause negative feelings, such as depression and isolation.

2.3. Instrument

The anonymous survey used in this study comprises three parts addressing personal information, general teachers' perceptions of cyberbullying, and actual teacher practices in response to cyberbullying. The personal-information part surveyed gender, age, school level, and position (job title) in school. The teacher-perception part surveyed teachers' views on both types of cyberbullying and tools for dealing with cyberbullying. The teacher-practice part surveyed teachers' perceptions of cyberbullying's anonymity, students' handling of cyberbullying, and the issue of whether teachers would actively intervene in cyberbullying.

Some questions in the last two cyberbullying-related parts were adapted from a student survey on cyberbullying (Huang & Chou, 2010). These items were revised into a 4-point Likert format, and the language was changed so that it would appropriately reflect teachers' perspectives of these matters. All items, both added and adapted questions, were revised for content and language use by subject matter experts, including another cyberbullying researcher and two current school teachers who have relevant expertise and knowledge. For their statements, respondents were asked to identify either frequency of occurrence ("usually," "sometimes," "seldom," and "never") or extent of agreement ("strongly agree," "agree," "disagree," and "strongly disagree") according to the respondents' personal teaching experiences (see appendix for details).

2.4. Analysis

The survey data collected in this study account for the teachers' demographic characteristics and for various aspects of teachers' perceptions of cyberbullying. The outcomes of the survey are either single dichotomous (yes – no or agree – disagree) or 4-point Likert-style ordinal variables (strongly agree to strongly disagree).

This study presents descriptive statistics to clarify and to facilitate the examination of teacher background, teachers' perceptions, and teacher concerns relative to cyberbullying itself, the possible necessity of anti-cyberbullying guidance, and student responses to cyberbullying. Types and tools of perceived cyberbullying incidents were compared through repeated one-way analyses of variance tests (ANOVA); in this way, we examined the discrepancies among four types of aggressive behavior (harassment, teasing, rumor circulation, and spreading videos) and the discrepancies among six tools (IM, chat rooms, social-networking sites, Website & BBSs, e-mails, and cell phones) regarding cyberbullying, as perceived by teachers.

The current study compares teacher background (gender, school level, and professional roles) with teacher perception of and teacher handling of cyberbullying. There are three school-level groups (elementary, junior high, and senior high school) and two professional-role groups (academic-subject teachers and administrative-duty teachers). We conducted statistical analyses to examine the influence of teacher background on teachers' knowledge of and actions taken in response to cyberbullying. The SPSS 15 package was used for statistical analyses.

3. Results

3.1. Teacher participants' demographics

As shown in Table 1, of all the participants, 1526 (54.9%) were males and 1254 (45.1%) were females. More than 99% of the teachers had at least a bachelor degree and 1137 (41.5%) had at least a master degree. Of all the teacher-participants, 1490 (53.6%) worked at elementary schools, 976 (35.1%) worked at junior high schools, and the rest – 309 (11.1%) – worked at senior high schools. The participants' teaching experience ranged from a few months to 38 years, but still distributed rather evenly. Participating teachers include pre-service teachers in practicum training, academic-subject teachers, administrative-duty teachers (e.g., administrative directors), and school principals. Finally, 93.1% of all participating teachers used computers and the Internet on a daily basis.

3.2. Teachers' perceptions of different cyberbullying types and cyberbullying tools

As shown in Table 2, the survey results indicate that general school bullying was prevalent, as perceived by the teachers. With respect to perceptions of participating teachers, 93.5% of them reported that verbal or physical bullying occurred in school. With respect to cyberbullying types, 80.7% of the teachers reported at least one teasing incident, 70.7% reported at least one threat or harassment incident, 66.3% reported at least one rumor-circulation incident, and 51.9% reported at least one incident involving the circulation of an embarrassing picture or video.

We examined teachers' perception of four types of cyberbullying (threats or harassment, teasing, circulation of rumors, and circulation of embarrassing photos or videos), as shown in Table 2. The results show that Wilks' Lambda is significant ($F = 405.754$, $p < .05$), indicating the

Table 1
Demographic characteristics of the participants ($n = 2781$).

		n	% of valid responses
Gender	Male	1526	54.9
	Female	1254	45.1
Educational background	Vocational school	23	.8
	Bachelor	1567	57.1
	Master	1137	41.5
	Ph.D.	15	.5
School level	Elementary school (1st – 6th grade)	1490	53.6
	Junior high school (7th – 9th grade)	976	35.1
	Senior high school (10th – 12th grade)	310	11.1
Teaching experience	Fewer than 6 years	567	20.7
	6–10 years	859	31.3
	11–20 years	934	34.1
	More than 20 years	382	13.9
Professional roles	Pre-service teacher in practicum	16	.6
	Academic-subject teacher	1398	51.0
	Administrative-duty teacher	1324	48.3
	School principal	4	.1

*Percentages for each item may not total 100% owing to missing data.

presence of significant differences among teachers' perceptions of the four types of cyberbullying. The post-hoc analysis further reveals that the mean scores of the "circulation of embarrassing photos or videos" type were higher than the mean scores of the other three types. The findings suggest that, according to teachers' perceptions, the "circulation of embarrassing photos or videos" type was the most prevalent type of cyberbullying. Online threats or harassment was the second most common type, and teasing others was the third most prevalent type. Circulation of rumors was considered the least common cyberbullying type.

Table 2 also demonstrates teachers' perceptions of cyberbullying tools (instant messaging, chat rooms, social-networking sites, Websites and BBSs, e-mails, and cell phones). To further explore whether significant differences exist among these tools, we conducted another repeated one-way ANOVA. The results show that Wilks' Lambda is significant ($F = 70.199$, $p < .05$), suggesting a significant difference. The post-hoc test further showed that the mean score of IM use was significantly higher than those of the other five tools. The second most prevalent tool used for cyberbullying was chat rooms. Also according to the post-hoc test, there is no significant difference between the prevalence of general Websites and BBSs, and e-mails; therefore, these two types of tools were categorized in the same second-place group. Having about the same numerical prevalence, cell phones and social-network sites ranked in last place as the least common tools used for cyberbullying in this study.

3.3. Teachers' perceptions of the anonymity of cyberbullying

The participating teachers were asked two questions regarding their perceptions of cyberbullying's anonymity, as stated in Table 3. Survey items in this part were in a yes/no or agree/disagree format. The majority (81.7%) of the teachers agreed that cyberbullying students

Table 2
Teachers' perceptions of bullying/cyberbullying types and tools ($n = 2781$).

Frequency survey item		Usually	Sometimes	Seldom	Never	Mean	SD	F (Wilks' Lambda)	Sorting in post-hoc test
		n (%)							
	Students verbally or physically threaten, harass, or hurt others in face-to-face contexts.	337(12.1)	1368(49.2)	896(32.2)	166(6.0)				
Type	By using Internet or other electronic devices, students							405.754[a]	Embarrassing photos/videos > threats or harassment > teasing > rumors
	- threaten, or harass others.	95(3.4)	821(29.5)	1048(37.7)	798(28.7)	2.08	.85.		
	- make fun of or humiliate others (teasing)	138(5.0)	902(32.4)	1203(43.3)	521(18.7)	2.00	86		
	- spread rumors causing negative emotions in others.	102(3.7)	716(25.7)	1024(36.8)	921(33.1)	1.77	.84		
	- spread embarrassing pictures or videos of others	57(2.0)	560(20.1)	826(29.7)	1319(47.4)	2.24	.81		
Tool	Students threaten, harass, or hurt others by using one of the following tools?							70.199***	IM > chat rooms > Websites & BBSs, e-mail > cell phones, social-network sites
	- Instant messaging (e.g., MSN)?	48(1.7)	396(14.2)	1045(37.6)	1264(45.5)	1.72	.77		
	- Online chat rooms?	36(1.3)	352(12.7)	1011(36.4)	1353(48.7)	1.66	.75		
	- Social-networking sites (e.g., Facebook)?	29(1.0)	263(9.5)	861(31.0)	1597(57.4)	1.54	.71		
	- Public Websites or BBSs?	39(1.4)	318(11.4)	872(31.4)	1523(54.8)	1.59	.75		
	- E-mails?	25(.9)	313(11.3)	907(32.6)	1507(54.2)	1.58	.72		
	- Cell phones?	29(1.0)	292(10.5)	859(30.9)	1571(56.5)	1.56	.72		

[a] Percentages for each item may not total 100% owing to missing data.

Table 3
Teachers' perceptions of the anonymity, students' response of cyberbullying, and relevant concerns and practices ($n = 2742$).

Survey item	Agree/Yes		Disagree/No		M	SD
	n (%)					
Anonymity						
Students hide their identities when bullying others in cyberspace.	2274	(81.7)	468	(16.8)	2.44	.681
I am able to identify students who bully others in cyberspace.	1360	(49.0)	1387	(49.9)	2.93	.817
Students' response						
Students would actively seek help when being bullied online.	1248	(44.8)	1497	(53.3)	2.44	.612
Students deliberately conceal the fact of being bullied online.	1566	(56.3)	1177	(42.3)	2.52	.611
Other students usually report cyberbullying incidents to me when they happen.	1688	(60.7)	1058	(38.0)	2.62	.650
Concern and practice						
I am concerned about the negative impact of cyberbullying on students.	1939	(70.7)	760	(27.7)	1.28	.450
I think it is imperative to deliver anti-cyberbullying guidance to students.	2591	(94.5)	132	(4.8)	1.05	.214
I have provided relevant instruction or guidance on anti-cyberbullying.	345	(12.6)	2396	(87.4)	1.87	.332
I would intervene immediately were cyberbullying to occur among my students.	2410	(87.9)	310	(11.3)	1.11	.317

*Percentages for each item may not total 100% owing to missing data.

would manipulate technologies in order to conceal their identities while cyberbullying others. This finding suggests that school teachers were generally aware of this anonymity feature of cyberbullying. In the question regarding teachers' ability to identify cyberbullies, fewer than half (49.0%) of the teachers considered themselves were able to do so.

3.4. Teachers' perceptions of students' responses to cyberbullying

As also shown in Table 3, three questions in the survey concerned the teachers' perceptions of students' (victims' and bystanders' of cyberbullying) responses to cyberbullying. Fewer than half (44.8%) of the teachers thought that students would seek help when being cyberbullied; more than half (56.3%) even agreed that students would hide the fact of being cyberbullied. In regard to bystander-related responses, 60.7% of teachers stated their perceptions that any student who would witness or be aware of cyberbullying would report the incident to them.

3.5. Teachers' cyberbullying-related concerns and practices

Teachers' concerns imply their anxieties and worries arising from cyberbullying among students, and their practices suggest the actions they would take to intervene or prevent cyberbullying. A total of 70.7% of the teachers were anxious about the negative impact of cyberbullying, and 94.5% of them considered anti-cyberbullying guidance imperative and necessary (Table 3). Yet, only 12.6% of them had provided relevant guidance to students. When responding to the last item about teachers' willingness to intervene in cyberbullying, 87.9% of the teachers agreed that they would immediately take action.

3.6. Teachers' backgrounds that influence cyberbullying-related perceptions and practices

In order to explore the relationship between teachers' personal backgrounds (gender, school level, and professional role) and their cyberbullying-related perceptions and practices, we conducted t-tests and a one-way ANOVA accordingly. We surveyed teachers' perceptions of both types and tools of cyberbullying, and related perceptions of anonymity. Along with teachers' anti-cyberbullying practices, we also surveyed their perceptions of students' possible responses to cyberbullying, and these items focused on whether or not students – from the perspective of the teachers – would report cyberbullying incidents to teachers (see appendix for the survey item, part III, question 5). The items to which teachers responded focused on whether or not they would actively intervene in an ongoing case of cyberbullying (question 12). As shown in Table 4, there is little gender difference characterizing teachers' perceptions of students' responses to cyberbullying, of cyberbullies' anonymity, and of the teachers' own practices in handling cyberbullying. Both male teachers and female teachers had very similar perceptions of each type of cyberbullying; however, in the responses to items about cyberbullying tools, slightly more male teachers than female teachers perceived e-mail to be popular among cyberbullies ($t = 2.399$, $p < .05$).

The factor of administrative duty was much more effective than the factor of gender in helping expose general differences in teachers' perceptions of cyberbullying. As can been seen from Table 4, teachers without administrative duties usually perceived significantly more cyberbullying for both the type category and the tool category and also were more aware of the anonymity feature of cyberbullying than were teachers with administrative duties. Nevertheless, administrative duty revealed no difference in either teachers' perceptions of students' responses to cyberbullying or teachers' practices in handling cyberbullying.

Differences in the school levels at which teachers taught were significantly associated with teachers' perceptions of cyberbullying. As Table 4 shows, significant differences were found on almost every tested item (the one exception being students' responses to cyberbullying) among the three school levels: elementary school (grades 4–6), junior high school (grades 7–9), and senior high school (grades 10–12). Teachers' perceptions of cyberbullying types, cyberbullying tools, teachers' own handling of cyberbullying, and the anonymity of cyberbullying exhibited notable differences that reflected school-level status. Nevertheless, teachers' perceptions of students' responses was consistent at all school levels.

The participants of the present study, 3rd to 12th graders, generally spend 8 h or more every weekday in school, and school teachers are usually the adults who have the most contact with the students. It is also noteworthy that the mean scores of the junior-high teachers were

Table 4
Gender, professional-role and school level differences in teachers' perceptions of cyberbullying.

Gender/Administrative duty/School level	Male (n = 1526)		Female (n = 1254)		t	With (n = 1414)		Without (n = 1328)		t	Elementary (n = 1490)		Junior high (n = 976)		Senior high (n = 310)		F
	M	SD	M	SD		M	SD	M	SD		M	SD	M	SD	M	SD	
Types																	
Threats/harassment	2.07	.83	2.08	.87	-.312	2.03	.87	2.13	.82	−3.27	1.85	.81	2.38	.80	2.21	.82	132.59***
Teasing	2.00	.84	1.99	.88	.290	1.95	.89	2.05	.83	−2.99	1.74	.80	2.23	.84	2.18	.81	161.76***
Rumors	1.79	.84	1.74	.85	1.578	1.71	.85	1.82	.83	−3.27	1.51	.75	2.06	.87	2.05	.79	161.24***
Embarrassing photos/videos	2.24	.80	2.23	.83	.280	2.19	.84	2.29	.77	−3.45	2.01	.79	2.54	.76	2.39	.75	142.97***
Tools																	
Instant messaging	1.73	.77	1.71	.78	.417	1.66	.77	1.78	.76	−4.16	1.55	.69	1.95	.82	1.78	.77	85.28***
Chat rooms	1.67	.74	1.66	.76	.398	1.59	.74	1.74	.74	−5.42	1.50	.68	1.89	.79	1.75	.73	88.20***
Social-networking sites	1.54	.70	1.53	.72	.214	1.48	.70	1.60	.72	−4.30	1.38	.63	1.73	.77	1.65	.69	77.19***
Websites/BBSs	1.60	.74	1.58	.76	.474	1.55	.75	1.64	.74	−3.06	1.42	.65	1.81	.81	1.73	.76	91.59***
E-mail	1.61	.72	1.55	.73	2.39	1.50	.70	1.67	.74	−6.26	1.46	.67	1.75	.77	1.66	.73	49.20***
Cell phones	1.55	.72	1.56	.73	-.302	1.51	.72	1.60	.72	−3.00	1.37	.63	1.78	.78	1.71	.71	110.24***
Anonymity	1.17	.38	1.17	.38	-.295	1.20	.40	1.14	.35	4.38	1.18	.38	1.56	.36	1.18	.38	1.244***
Students' responses	1.54	.50	1.55	.50	-.114	1.55	.50	1.54	.50	.09	1.45	.50	1.65	.48	1.68	.47	58.36
Anti-cyberbullying practices	1.11	.32	1.11	.32	.056	1.11	.31	1.12	.32	-.57	1.09	.29	1.15	.36	1.13	.33	10.14***

*p < .05, **p < .01, ***p < .001

generally higher than the mean scores of the other two teacher groups, suggesting that teachers in junior high schools were aware of more school-based cyberbullying than were teachers in the other two school levels.

4. Discussion

Based on the findings of this findings, this section addresses discussion on: (1) the types and tools of cyberbullying, (2) the anonymity of cyberbullying, (3) students' responses to cyberbullying, (4) concerns over cyberbullying and current anti-cyberbullying practices, and (5) associations between teachers' background (gender, school level, and professional roles) and (a) teachers' perceptions of cyberbullying and (b) teachers' anti-cyberbullying practices.

4.1. Types of cyberbullying: less direct but may be more harmful and long-lasting

In general, school bullying in face-to-face contexts is prevalent from grades 4 through 12, as the teachers perceived. More than half of this study's participating teachers perceived cyberbullying, regardless of the type (e.g., threats or harassment, teasing, circulation of rumors). The teachers perceived different types of cyberbullying, including teasing (80.7%), threats or harassment (70.2%), and circulation of rumors (66.2%), as least once. On the other hand, a recent study, conducted in the same social context of Taiwan, on student perceptions of cyberbullying (Huang & Chou, 2010) found that among the 545 students targeted, 64.3% were aware of teasing directed to other people, 63.5% had witnessed threats or harassment among peers online, and 60.9% had witnessed circulation of rumors; the percentage of students who observed each of these types of bullying in cyberspace was smaller than the percentage of teachers who perceived cyberbullying in the current study. The inconsistency between the results of the current study on teacher perception and of the recent study (Huang & Chou, 2010) on student perception shows that teachers seem to be more aware of cyberbullying regarding its types and means.

Previous studies have shown that teachers usually underestimate or are less aware of school bullying incidents than students (e.g., Holt & Keyes, 2004), but the findings of the current study suggest teachers were more aware of the types and tools of cyberbullying than students. Taking both arguments into consideration, one possible explanation we propose for this inconsistency is that cyberbullying is truly becoming more frequent in the few years between the current study and the other of Taiwanese context (Huang & Chou, 2010). Another possible cause could be discrepancy between students' and teachers' understanding of cyberbullying. Students might not consider the act of teasing others online to be a type of cyberbullying, and hence, there would be a lower percentage of cyberbullying reports from students than from teachers.

The current study's findings suggest that the most common type of cyberbullying perceived by teachers is the circulation of embarrassing content. The reason that the embarrassing content, including photos and videos, becomes the most common type is probably because of the popularity of using digital cameras or camera-build in cell phones among Taiwan student population. Students carry these digital devices to take daily life snapshots for their memories and upload those contents for circulations. The circulation of embarrassing content, as the dominant type of cyberbullying, might somehow reflect the rapid-dissemination feature of this aggressive behavior in cyberspace. In a sense, these snapshots may be embarrassing for the people to be shot and the circulation on the Internet could make it more embarrassing or even damaging. Although the Internet-based circulation of embarrassing content seems less direct than other types of cyberbullying, it causes no less harm. Adolescents may not be fully aware of the serious negative consequences of uploading materials like this, but teachers should be. Unawareness and lack of understanding could be the twin reasons for the high frequency of this type of cyberbullying. However, even in cases involving no ill intention, the content might hurt the subject person's feelings and damage his or her social relationships; furthermore, the absence of an attempt to cause harm originally cannot stop the spread, whether malicious or not, of the embarrassing content once the material is posted online. In short, even non-malicious posting of embarrassing content can have consequences just as harmful as physical bullying and as dangerous as intentional bullying. There is a strong possibility that unintentional bullying takes place in cyberspace, where harmful content is sometimes next to impossible to eliminate. The nature of digital content, which is easily and quickly copied, spread, and manipulated, reinforces the harm.

Even with the potential danger of cyberspace-based circulation of rumors, teachers were less likely to perceive cyberspace-based circulation of rumors than other types of cyberbullying. A malicious circulation of rumors might push the victim out of a clique or even out of a much wider class of individuals, resulting in negative effects no less harmful than effects associated with direct harassment. Discrepancies between students' and teachers' respective understanding of cyberbullying might result in a mismatch between their perceptions of various cyberbullying types. Sometimes teachers may consider rumors to be nothing more than jokes; and sometimes students do not realize that they themselves are actually cyberbullying others by spreading embarrassing content online or by teasing others online. The unawareness may lead to more cyberbullying and its negative consequences.

4.2. Tools of cyberbullying: synchronous instant messaging

In regard to cyberbullying tools, the findings of the current study suggest that instant messaging (IM) (e.g., MSN and Skype) is the dominant tool of cyberbullying (see Table 3). The trend of using IM likewise appears in another Taiwan-based cyberbullying study (Huang & Chou, 2010). Owing to the popularity among Taiwan-based teens regarding the use of MSN messaging for communication and social purposes, this specific IM tool could be a fertile ground for cyberbullying; and the surveyed teachers indeed perceived MSN as the number one cyberbullying tool. Next to the IM in teachers' perception, the second most common cyberbullying tool was chat rooms, both of which share a common synchronous feature. This finding is consistent with that of student perception (Huang & Chou, 2010).

The synchronous feature of IM and chat rooms associated with cyberbullying in Taiwan is unique, and it may be interpreted as a culturally specific tool for communication among Taiwanese teenagers. Regarding the tools used in cyberbullying, both IM and chat rooms are distinct from the prevalent social-networking sites in the United States (Kowalski, 2008; Mesch, 2009) and from cell phones in Japan (Akiba, 2004; Rios-Ellis, Bellamy, & Shoji, 2000). Such findings underscore the importance of recognizing adolescents' varying preferences for technology. Different tools may lead to different types of cyberbullying; the critical roles that technology plays in cyberbullying in

different countries and cultures should be noted. It is suggested that school teachers can minimize the damage of cyberbullying by sufficient understanding of popular electronic devices.

4.3. Anonymity in cyberspace, but not for cyberbullies?

Anonymity was commonly regarded as a unique feature of cyberbullying, one that was not noticeably present in face-to-face school bullying (e.g., Li, 2007). Due to the nature of communication technology, cyberbullies do not confront victims directly and may feel invisible or anonymous online, and the condition might lead to a greater willingness to engage in negative actions. The findings (Table 3) indicate that the vast majority of the participating teachers (81.7%) were aware of the anonymity of cyberbullies and agreed that students, in particular, could engage in cyberbullying while hiding their identity through skillful use of technology. Unfortunately, a much smaller percentage of teachers (49.0%) had confidence that they could identify cyberbullies, and such a lack of confidence among so many teachers would serve only to limit educators' effective intervention in cases of cyberbullying. It would be helpful if school teachers have more knowledge about the medium and mechanism of the new form of bullying among students. There seem to be a gap between teachers' anti-cyberbullying abilities and the practical skills needed to combat cyberbullying problems effectively.

If the bully intends to remain anonymous in cyberspace, it could be extraordinarily difficult – if not impossible – for teachers to identify the offending individual. From the finding of the present study, it is encouraging to know that cyberbullies are not all invisible but actually trackable. According to a recent student survey on cyberbullying (Huang & Chou, 2010), both a majority of the bystanders and a majority of the victims claimed that they were aware of the given bully's identity. It seems that even if cyberbullies could technically hide behind the screen and so do most teachers perceived, students (bystanders and victims) could still figure out their identities based on the interpersonal relations involved. Notwithstanding teachers may not be always present where or monitor whenever cyberbullying takes place, or might have no access to certain IM or chat rooms, they could work with other peer students, including bystanders and victims, to identify the cyberbullies and take necessary steps in response.

Cyberbullying together with face-to-face bullying are involved in complex relationships among students; thus school teachers who have frequent interaction with the students are in a good position to figure out the reasons and individuals involved in cyberbullying incidents. It is noteworthy that the dominant cyberbullying tool in Taiwan is IM, which requires account log-ins and each individual user's confirmation of friending; it would be apparent, therefore, who is threatening or maliciously spreading embarrassing rumors about others. The point here is by no means that teachers should strictly police students' online social networking or messaging behaviors which is both impossible and unnecessary. Yet, school teachers are in a good position to understand the interwoven relationships involved in the cyberbullying incident, and it is not the Internet filtering software but a better understanding of students' technology use that teachers need the most to prevent cyberbullying (Willard, 2007).

4.4. Teachers' perception of students' response to cyberbullying: overestimating the students' willingness to report?

In the dynamics of school cyberbullying, all student involvers can be thought to fall into at least one of the following three categories: bully, victim, and bystander. In regard to the third research question, the current study's findings reveal that different cyberbullying roles may lead to their respective corresponding acts. The bullies reasonably would hide their doings, and victims should look for help. Yet, it is somewhat discouraging to know the result that less than a half of the teachers (44.8%) thought that cyberbullying victims would seek help from them, and 56.3% of teachers agreed victims would even hide the truth of being cyberbullied (see Table 3). The situations that the victims themselves tend to hide their victimization and were reluctant to report to adults for help is consistent with previous findings of students' cyberbullying perception (Huang & Chou, 2010). The reluctance of victims to report being bullied was found in traditional bullying as well (e.g., Olweus, 1993). In Unnever and Cornell' study (2004), 25% of the victims told no one and 40% did not tell an adult; and the low percentage of victims' reporting was associated with chronicity of victimization, school climate and family context, rather than type of bullying. The factors that influence students' willingness of reporting bullying in traditional context might also be influential in cyberbullying incidents. Regarding victims' response to cyberbullying, teachers' perception was consistent to students' perception of cyberbullying, and to previous bullying research.

However, our study found that teachers seem to overestimate bystanders' willingness to report. There are 60.7% of the participating teachers stated that bystanders who witness an act of cyberbullying would report the incident (see Table 3). Huang and Chou (2010) examined students' self-reported perceptions and behaviors and found that only 3.9% of the witnessing bystanders would report acts of cyberbullying to teachers. Comparing the teachers' perception of this current study and students' perception in Huang and Chou's (2010) study, teachers seem to overestimate students' willingness and ability to report cyberbullying. The discrepancy between teachers' and students' perception of reporting cyberbullying might be also caused by various concepts and understanding of this aggressive online behavior, especially when students usually were not taught about the issue and how to respond to this.

Teachers and school staff should possess sufficiently keen awareness of acts of bullying (Kokko & Pörhölä, 2009). Among other preferable characteristics attributable to teachers handling cyberbullying, the most crucial is the ability to take note of cyberbullying with sensitivity, even though the possible anonymity of cyberbullying makes the challenge particularly difficult. Combined with the aforementioned results of this study that victims tend to hide the truth and be reluctant to report, and it might be reasonable to assume that cyberbullying is actually even more pervasive among school students than what was perceived by school teachers. The gap between teachers' perception and students' perception may indicate teachers' overestimation of students' willingness to report; and on the other hand, it may also suggest students' lack of confidence in teachers' sensitivity or ability to notice cyberbullying.

4.5. The need for action in teachers' cyberbullying-related concern and current practices

Regarding the fourth research question of this study, it is found that the more than 70% of participating teachers considered cyberbullying to have negative impact (see Table 3). When responding to items about their willingness to intervene in or prevent cyberbullying, 87.9% of the teachers agreed that they would immediately take action, as long as they noticed cyberbullying. However, these teachers stated

that the cyberbullying must manifest itself as a well-noted incident. Our study's findings suggest that, in Taiwan, there is an apparent contradiction between current teachers' concerns about cyberbullying and their anti-cyberbullying practices: it would appear that although many teachers are indeed concerned about cyberbullying and its negative consequences, much fewer teachers actually implement anti-cyberbullying strategies.

Our findings indicated that the participating teachers' *actions against* cyberbullying were much less prominent than these teachers' *concerns about* cyberbullying. Only a small percentage of the responding teachers (12.6%) had provided anti-cyberbullying instruction and guidance before or after cyberbullying happens to curtail future acts of cyberbullying. This discrepancy might be resulted from the teachers' lack of ability and lack of knowledge regarding how to deal with or, for that matter, how to notice cyberbullying. In other words, they may have heard of and concerned about cyberbullying, but they may not exactly know how prevent it. On the other hand, current teacher might also face practical difficulties in regarding of cyberbullying prevention, such as limited school time, limited administrative support, and lack of teaching resources. Teachers' inaction might be a result of a perceived or an actual lack of related resources, including support, from schools and parents. Without holistic collaboration in efforts to fight cyberbullying, individual teachers can hardly effectively prevent its repeated occurrence. Cyberbullying prevention, with its complicated and problematic nature, would require school-wide collaboration and parental support, as traditional school bullying prevention does (Olweus, 1993). Without a common consensus among all stakeholders, school teachers working alone on this matter may find it difficult to prevent and intervene effectively and efficiently.

4.6. Influence of teachers' backgrounds on the teachers' cyberbullying-related perceptions and practices

Concerning the fifth research question about influence of teacher backgrounds on their cyberbullying-related perception and current practice, we surveyed teachers' gender, job titles and school level as three possible factors causing differences. According to the findings (see Table 4), gender did not seem to be significantly associated with teachers' perceptions of cyberbullying, and this lack of significance contradicts previous studies' findings that female teachers are more likely to work with the bully and to seek help from other adults when needed (e.g., Bauman et al., 2008). In the case of cyberbullying, the technology issue might render this gender difference a moot point. While female teachers may be usually more considerate and sensitive in daily face-to-face contexts, male teachers may be more computer literate and could be more aware of online occurrences. The findings of this study indicated that teachers, regardless of their gender, are both aware of and concerned about the cyberbullying. The findings further suggest that as long as teachers are more familiar with digital tools for communication, including IMs, chat rooms, and social-networking websites, they would likely be better equipped to sense cyberbullying and to respond to it when it happens, even if they are not present at the moment. In short, when determining whether a given teacher is likely or unlikely to intervene effectively in combating aggressive behavior online, the knowledge and skills of teachers may constitute a more critical factor than gender.

When not weighed down with administrative responsibilities, teachers were, in our study, better able to perceive both cyberbullying types and cyberbullying tools. Teachers who are assigned administrative responsibilities of significance in addition to normal academic-subject teaching hours would not be able to serve as class (i.e., homeroom) teachers. The presence of administrative responsibilities alongside teaching responsibilities seems to significantly reduce the quantity and the quality of opportunities to interact with students and might decrease their sensitivity to notice cyberbullying. On the other hand, administrative duties were associated neither with teachers' perceptions of students' responses to cyberbullying nor with teachers' anti-cyberbullying practices. This result showed that teachers perceived students' response and handled cyberbullying incidents similarly, no matter being assigned administrative duties or not. This result might suggest that the less contact these teachers have had with students in classrooms would have been offset by their counseling training, skills, and experience in dealing with cyberbullying incidents.

The last finding indicates that school level (elementary, junior high, and senior high) was associated with variations in teachers' anti-cyberbullying practices and teachers' perceptions of both the different cyberbullying types and the different cyberbullying tools (Table 4). It could be inferred from our findings that cyberbullying is most likely to happen in a certain age period (junior high school), and previous studies on related student perceptions suggest that age is indeed a possible predicator of peer victimization (Kowalski, 2008). However, it would be too assertive to conclude that cyberbullying increases or decreases with age in general. More reasonably, it could be assumed that teachers' school level (i.e., the age of teachers' students) would be associated with differences in teachers' responses to cyberbullying. According to our findings, junior high school (grades 7–9) teachers perceived significantly more frequent cyberbullying incidents in terms of all four types and six tools surveyed than teachers in elementary schools or senior high schools. Huang and Chou (2010) surveyed the topic of cyberbullying prevalence in junior high schools on the basis of students self-reports, but now we have verified the evident cyberbullying phenomenon in the same age group on the basis of teachers. Nevertheless, all participating teachers perceived student responses in a similar fashion disregarding of their school levels.

5. Conclusion and implications for anti-cyberbullying training in teacher education

The present study has made three major findings of teachers' perception: (1) among 4th to 12th graders in Taiwan, IM is the dominant cyberbullying tool, and that the circulation of embarrassing content online is the most prevalent type of cyberbullying, (2) a significant gap exists between teachers' perceptions and students' perceptions of both the anonymity of cyberbullies and students' responses to cyberbullying, and (3) both the administrative duties and the school level of current teachers are significantly associated with the teachers' perceptions of cyberbullying types and tools. The aforementioned findings, obtained from a large stratified sample (2821 Taiwanese teachers) of various school levels and geographic regions, are not limited to a certain single school context and highly generalizable. Furthermore, this study is by no means a technical report but seeks to deal with a broader school context with the perspectives of Taiwanese teachers from the interpretation of the results. Thus, the study provides implications for future teacher education, and can help us take further steps toward recognizing the connection between anti-cyberbullying and teacher education.

The findings of this study reveal some significant difficulties that current teachers encounter when handling cyberbullying. For starters, when students do not reveal their victimization themselves, the given teacher must be able to notice the problem; and teachers, as found in the present study, are likely to overestimate students' willingness to report cyberbullying. The gaps between teachers' and students'

perception of students' response and anonymity of cyberbullying seems to be the great challenge of cyberbullying prevention and should be a focus of relevant teacher training. School teachers need an acute sensibility and awareness to notice aggressive behaviors in cyberspace and to identify offending parties.

From this study, the findings also suggest that many Taiwanese teachers, while generally voicing a willingness to deal with cyberbullying, do not actually take action to prevent cyberbullying. Furthermore, many of these teachers might be able to stop a face-to-face fight or quarrel, but may have little or no knowledge of how to stop a rapidly circulating rumor in cyberspace. Teachers might also need to update their literacy in technology-related matters and strengthen their understanding of the complex nature of cyberspace-facilitated school bullying. While gender and job title did not have an influence on teachers' response to and practice of cyberbullying prevention, the analyses of school level shows junior high school teachers were most likely to encounter cyberbullying. In this regard, anti-cyberbullying training might be the most urgent for teachers of this level.

We suggest that the keys to successful cyberbullying intervention and prevention lie in the teacher education provided to pre-service and in-service teachers. The positive and engaging attitude teachers revealing and that perceived by students can be effective for bullying prevention and it shall be able to work as well in cyberspace where less teacher surveillance could be done. Teachers can be a powerful resource in efforts to intervene in and to prevent cyberbullying (Chen & Wei, 2010). Even though teachers can neither continuously nor comprehensively monitor cyberspace, they surely can create within the school environment a sense of community and belonging that helps reduce the incidence of bullying behaviors (Battistich et al., 1995). The principles of classroom management should require school teachers to create and to maintain a positive, educative, and effective environment that encourages students to speak up for themselves and others (e.g., Roland & Galloway, 2002), which are helpful for prevention of all types of school bullying.

We also suggest that all school teachers, staffs, and computer-lab technicians particularly, get involved in anti-cyberbullying activities (Olweus, 1993), which is an idea similar to the "tech team" proposed in Cyber Savvy School (CSRIU, 2010). Technology experts can help monitor students' malicious use of computers in school and furnish other staff and teachers with advanced cyberbullying-related computer skills and knowledge. Since cyberbullying not only possesses features of traditional bullying but performs and impact students' life in a different way, anti-cyberbullying training and knowledge should receive considerable emphasis on top of original teacher preparation for future teachers. Current and future teachers would be more capable and confident in dealing with the emerging cyberbullying in school if they are properly trained and taught how modern communication technology works in students' everyday life and what possible threat it could bring to the young people.

Last, it is critical to note that cyberbullying might be highly context-dependent and influenced by a particular community's education system, school climate, and cultural norms. Therefore, one should not interpret cyberbullying in Taiwan without first taking into consideration the influence of Chinese values and Taiwanese teenagers' specific and sometimes uniquely specific use of certain technologies. Taiwanese highly value such Confucianism-derived goals as academic achievement, community-based social harmony, and respect for teachers. In line with Chinese culture, many Taiwanese people consider it culturally acceptable for teachers to practice hierarchical, authoritative, disciplinary methods in classrooms (Chao, 1994). Because this acceptance is not typical of all cultures, the current study's findings and implications are not necessarily generalizable to other cultural contexts. Given the exploratory nature of this study, any further implications based on these preliminary findings should be treated with caution, and we strongly hope that educators in Taiwan and elsewhere develop better research-based school policy and anti-cyberbullying programs.

6. Limitations and suggestions

It is important to acknowledge the limitations of this study. First, it is noted that cyberbullying involves other broader issues at stake yet this single study cannot fully explore and address them. Further longitudinal research is needed to probe into the mechanism underlying the technology-based behavior of cyberbullying. Second, qualitative approaches to this topic would help the research community clarify the logic at the heart of teachers' and students', as examined in previous studies on traditional school bullying (Marshall, Varjas, Meyers, Graybill, & Skoczylas, 2009; Sahin, 2010). For instance, teachers' practical reports, showing real cases in details, might reveal more in-depth perspectives than general survey results. Third, in terms of the questionnaire design, no time period was given in the survey which might affect the information participating teachers would provide, and we unfortunately did not collect test-retest reliability for the attitude section. These two limitations of measurements should both be addressed in future studies to gain more grounded data and better insight regarding this emerging issue. Last, future studies should obtain information from multiple sources (e.g., teachers, students, other school personnel, and parents) to clarify the complex dynamics of cyberbullying and the interwoven relationships among various obvious and obscure factors.

Acknowledgement

Appendix. Survey on teachers' perceptions of cyberbullying

Part II.

Respondents were asked to identify the frequency of each statement's scenario by selecting the most accurate response: usually (4), sometimes (3), seldom (2), and never (1).

1. Students verbally or physically threaten, harass, or hurt others in face-to-face contexts.
2. Students threaten, harass, or psychologically hurt others by using the Internet or other electronic communication devices.
3. Students make fun of or humiliate others by using the Internet or other electronic communication devices.
4. Students use the Internet or other electronic communication devices to spread rumors that cause others emotional harm.
5. Students spread embarrassing pictures and videos of others by using the Internet or other electronic communication devices.

6. Students threaten, harass, or hurt others by using <u>instant messaging</u> (e.g., MSN)?
7. Students threaten, harass, or hurt others by using <u>online chat rooms</u>?
8. Students threaten, harass, or hurt others by using <u>social-networking sites</u> (e.g., Facebook)?
9. Students threaten, harass, or hurt others by using <u>public Websites or BBSs</u>?
10. Students threaten, harass, or hurt others by using <u>e-mails</u>?
11. Students threaten, harass, or hurt others by using <u>cell phones</u>?

Part III.

Respondents were asked to identify the extent of their agreement with the following statements by selecting the most accurate response: strongly agree (4), agree (3), disagree, (2) strongly disagree (1).

1. <u>Male</u> students are more likely to experience cyberbullying.
2. <u>High academic achievers</u> are more likely to experience cyberbullying.
3. Students actively seek help when being bullied online.
4. Students deliberately conceal the fact of their being bullied online.
5. Students usually report cyberbullying incidents to me when they happen.
6. Students hide their identities when bullying others in cyberspace.
7. I am able to identify the students who bully others in cyberspace.
8. I am concerned that cyberbullying might mar students' frequent Internet use.
9. I am concerned about the negative impact of cyberbullying on students.
10. I think it is imperative to deliver anti-cyberbullying guidance to students.
11. I have provided students with relevant instructions or guidance on anti-cyberbullying.
12. I would intervene immediately were cyberbullying to occur among my students.

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