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New Media Society 2010 12: 109 originally published online 24 November 2009

DOI: 10.1177/1461444809341260

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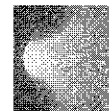
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new media & society

12(1) 109–125

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DOI: 10.1177/1461444809341260

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Abstract

This study examined the relationships between cyber and traditional bullying experiences regarding gender differences. Also, the contributions of frequent and risky usage of internet to cyberbullying experiences were examined. The participants were 276 adolescents (123 females, 151 males and 2 unknown) ranging in age from 14 to 18 years. The results revealed that 32 percent of the students were victims of both cyber and traditional bullying, while 26 percent of the students bullied others in both cyber and physical environments. Compared to female students, male students were more likely to be bullies and victims in both physical and cyber-environments. The multivariate statistical analysis indicated that cyber and traditional bullying were related for male students but not for female students. Moreover, the multiple regression analysis revealed that both frequent and risky usage of internet account for a significant variance of cyberbullying but their contributions differ based on genders.

Key words

adolescents, cyberbullying, cyber-victimization

Bullying, defined as a deliberate and repeated aggression among peers (Olweus, 1993), is now changing its form as information and communication technologies (ICT) progress. Aggression using ICT is referred to as cyberbullying (also called electronic bullying or online bullying) when it is identified as intentional and repeated aggression. More specifically, cyberbullying is defined as hurtful and intended communication activity

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using any form of technological device such as the internet or mobile phones (e.g. Belsey, 2006; Patchin and Hinduja, 2006).

Due to their unique characteristics, online environments might be perceived by youngsters as a very liberating platform on which to express themselves. As several researchers have identified, such platforms result in positive consequences such as establishing social ties (Henderson and Gilding, 2004; Mesch and Talmud, 2006), which are perhaps more difficult for some adolescents to have offline (Amichai-Hamburger and Ben-Artzi, 2003). At the same time, online environments are a place where children and adolescents are less likely to inhibit their emotions, including negative ones such as anger (Erdur-Baker and Yurdugül, under review). As Ybarra and Mitchell (2004) point out, the anonymity of the internet allows children and adolescents to adopt a more aggressive persona than they may express in real life. Also, since people can hide behind fake screen names and/or use someone else's screen name, the cyber-environment might be a more appealing environment for bullies (Kowalski and Limber, 2007) and a safer environment for victims of traditional bullying to seek revenge (King et al., 2007). Therefore, peer bullying now goes beyond school borders to become a larger concern that must be dealt with not only by school and mental health professionals, but also by parents, policymakers, professionals working in the area of new media and the community at large.

Several survey results provide evidence for concern. For example, a nationwide random sample survey (Ybarra et al., 2007b) with 1500 participants (aged 10–17) reported that 9 percent of internet users have encountered online harassment. Patchin and Hinduja (2006) reached a convenience sample of 384 respondents who were younger than 18 with an online survey. The results of this study revealed that about 11 percent of respondents reported being bullies online, 29 percent of respondents reported being victims online and 47 percent have witnessed online bullying. Moreover, the most often reported forms of cyberbullying were being ignored (60.4%), disrespected (50%), called names (29.9%), threatened (21.4%), picked on (19.8%), made fun of (19.3%) and having bad rumors spread about them (18.8%). A study from Canada (Beran and Li, 2005) also reports similar findings. According to the study, about 2 percent of 432 students (grades 7–9) from randomly chosen schools experienced repeated cyberbullying and had to deal with negative emotions such as anger and sadness.

Although such studies from different countries draw attention to the extent of cyberbullying and show that it is an emerging universal issue (e.g. Kowalski and Limber, 2007; Slonje and Smith, 2007; Syts, 2004), the literature lacks a sufficient amount of research to bring a deeper understanding to cyberbullying experiences. Given that cyberbullying is a relatively new issue, the literature on the traditional form of bullying is typically taken as a framework to elucidate the nature of cyberbullying in terms of its specific characteristics and contributing factors. However, despite some efforts, the relationship between traditional bullying and cyberbullying has not yet been substantiated.

The common finding of several correlational research studies (e.g. Li, 2005, 2006; Raskauskas and Stoltz, 2007) suggests that cyberbullying is an extension of traditional bullying. Li (2005) asserts that cyberbullying should not be differentiated from traditional bullying because it was significantly correlated (about 30% of traditional bullies were also cyberbullies and one in three traditional bully victims were also cyberbully

victims). Ybarra et al. (2007a) also reported some overlap between cyber and traditional bullying, yet they rightfully warn that this overlap is rather small and cyberbullying carries some unique features.

In fact, several researchers discuss some fundamental differences between cyber and traditional bullying. For example, Greene (2006) postulates that cyberbullying differs from traditional forms of bullying by violating three implicit assumptions of traditional bullying:

- 1 the victims know who their bully is;
- 2 there is a power imbalance between the victim and the bully; and
- 3 bullying occurs on and around school grounds.

In the case of cyberbullying, the identity of the cyberbully is often unknown (Greene, 2006; Ybarra et al., 2007b). Anonymity has been suggested as a factor that makes cyberbullying a 'unique phenomenon' resulting in different challenges to traditional bullying (Kowalski et al., 2008). Specifically, anonymity can provide a feeling of safety for impersonators and decreases the fear of being caught. As with traditional bullying, for cyberbullying a power differentiation is postulated to exist between perpetrators and victims. Yet, while in traditional bullying power is associated with physical or social characteristics such as popularity, in cyberbullying power is associated with computer literacy (Patchin and Hinduja, 2006). This power is exerted in multiple ways such as controlling topics for discussions, flaming, posting inflammatory messages and kicking someone out of a bulletin board (Shariff and Gouin, 2006).

Gender seems to be an important factor in understanding the experiences of both cyber and traditional bullying. Previous studies report inconsistent results regarding gender differences. Several authors claim that girls are more likely to engage in cyberbullying due to the fact that it is a form of relational or verbal aggression (Keith and Martin, 2005; Nelson, 2003). However, other research has failed to find gender differences (e.g. Patchin and Hinduja, 2006). Finally, Li (2006) reports that no gender difference was observed for being a victim of either traditional or cyberbullying; however, more male students report being a traditional bully and cyberbully. Therefore, the main goal of the present study is to explore adolescents' cyberbullying experiences by clarifying their links to traditional bullying with respect to gender.

Risky internet use has been considered to be an important factor not only for cyberbullying but also cyberstalking and pedophile contact (e.g. Valkenburg and Soeters, 2001). Schrock and boyd (2008) suggest that adolescents tend to employ 'more complex and interactive internet use', which may make them more vulnerable and more likely to be targeted by people with bad intentions. Previous studies report that young people are likely to make very personal information public (e.g. Hinduja and Patchin, 2008) and to meet people whom they have met online without their parents' knowledge (e.g. Liau et al., 2005). An online survey by Berson et al. (2002) reached 10,800 adolescents girls (aged 12–18) in the USA and concluded that a significant number of them were engaging in risky activity such as giving away their personal information, sending their pictures to someone they have met online or agreeing to meet in person someone whom they have met online. Also, a relatively smaller number of the participants reported that they

exchanged suggestive or threatening messages. Another similar study (Liau et al., 2005) based on a national survey of 1124 adolescents aged 12–17 in Singapore reported that 16 percent of participants have met in person someone whom they first met online.

Ybarra et al. (2007b) examined the relations of risky internet use to online harassment (being bothered, harassed, threatened or embarrassed) and unwanted sexual solicitation. The results of this study revealed that risky online behaviors (e.g. posting personal information, engaging with unknown people) were related to unwanted online harassment and sexual solicitation. The authors specified that under some conditions, engaging strangers is riskier than posting personal information. As relatively few studies have examined the relationships of risky internet use to cyberbullying, this presenting study aimed to explore whether or not such risky activities might be related to cyberbullying.

Only a few studies have examined the role of ICT on peer bullying in Turkey. The results of these studies show that Turkish students' experiences of cyberbullying were similar to the related international literature. One of the studies based on the analysis of printed news media over a six-year period emphasized that the fights or discussions that started in a chatroom or using instant messenger (IM) often spilled over into the physical world, and sometimes ended with students being injured or even killed (Erdur-Baker et al., 2006). The study by Erdur-Baker and Kavşut (2007) reported that 'flaming', stealing passwords, sharing private internet communication with other people and barring or removing someone from a chatroom were common forms of cyberbullying. Moreover, relative to female students, male students were more likely to report being cyberbullies and victims. The usage frequency of the internet, Windows Live Messenger (MSN), Short Message Service (SMS, 'texting'), cellphones, forum sites and chatrooms were found to be positively correlated to being a cyberbully as well as to being a cybervictim. However, family income level, grades and age were not found to be related to being a cyberbully or cybervictim. Finally, Topçu et al. (2008) compared private school students with high socio-economic status to state school students in terms of their cyberbullying experiences. The results indicated that state school students were more likely to report being cyberbullies and cybervictims than private school students, despite the fact that private school students were more likely to report frequent usage of ICT than state school students. The usage frequency of ICT was a significant predictor of cyberbullying or victimization for state school students but not for private school students.

In sum, there has been growing concern regarding the cyberbullying experiences of children and adolescents (Strom and Strom, 2004; Ybarra et al., 2007b). Survey results regarding the prevalence of cyberbullying provide support for this concern. Given the fact that ICT tools are a vital part of youngsters' lives, youths may be having negative online experiences in increasing numbers. Since cyberbullying is a relatively new issue, the literature on the traditional form of bullying is often taken as a framework to understand and deal with the issue. However, the relationship between traditional bullying and cyberbullying has not been fully substantiated yet. As a result, the related literature lacks conceptual clarity (Schrock and boyd, 2008). Therefore, the main goal of the study is to shed light on whether cyberbullying is indeed associated with traditional bullying, and on what role gender plays in the relationship between traditional and cyberbullying. In addition, this study aims to elucidate the contributions of risky internet usage and usage frequency of ICT to cyberbullying and cyber-victimization.

Method

Data collection

The data collection took place in the north-west part of Turkey. This area is one of the most industrialized and populated areas and has attracted migrants from all parts of Turkey. The participants were recruited from three high schools through a sampling of convenience procedure. After obtaining the necessary permissions and consents for data collection (the data collection protocol adhered to the ethical code of the Declaration of Helsinki), a research assistant visited the schools which had agreed to participate in the study. In the presence of school counselors, questionnaires were distributed to classes that the school administration had suggested, based on availability. Approximately 290 questionnaires were given to the students. No students declined to participate in the study. However, a total of 14 questionnaires were excluded from the analyses due to too many unanswered questions (six questionnaires) or the same answer for more than one page (four questionnaires) and four outliers in terms of age (older than 18).

Participants

The participants were 276 adolescents (123 females, 151 males and 2 unknown) ranging in age from 14 to 18. Of the participants, 14 (5.1%) were 14 years old, 91 (33%) were 15, 114 (41.3%) were 16, 49 (17.8%) were 17 and 7 (2.6%) were 18 (one participant's age is unknown). The participants were students in the 9th (70.7%), 10th (15.2%) and 11th (14.1%) grades. There was found to be no statistical differences among the grades or schools in terms of their bullying and cyberbullying scores, and therefore data from different grades and schools were collapsed. According to descriptive analyses of the family incomes, most of the participants (51.9%) came from families with low to medium income levels.

Measures

Traditional form of bullying

This was measured by the Turkish version of Olweus's bullying questionnaire, translated by Dölek (2002). The Turkish form of this well-known questionnaire has 49 items measuring several aspects of bullying. For the purpose of this study, only the part that measured victimization (six items) and bullying (six items) was used. This part consists of five-point Likert-type items providing scores for being a bully and a victim in a given semester. The inter-item reliability coefficients for the present study were found to be .72 for victimization and .71 for bullying items.

For this study, different types of traditional bullying scores were obtained for the multiple analysis of variance (MANOVA) and multiple regression analyses. For the MANOVA analysis, participants were divided into four groups based on their traditional bullying experiences: bully (44 students), victim (66 students), bully and victim (59 students) and not involved (99 students). Those students who bullied others and/or were

victimized at least two to three times per month were considered as a 'bully', 'victim' or 'bully and victim' accordingly. The 'not involved' group answered all the questions as 'never happened' in this semester. For the multiple regression analysis, participants were grouped as having experiences of traditional bullying and traditional victimization. These scores were added to regression equations as control variables.

Cyberbullying scale

This was constructed for a previous study by Erdur-Baker and Kavşut (2007) to measure the nature and severity of cyberbullying among Turkish adolescents. The scale has two very similar parallel forms: one form measures cyber-victimization and the other measures cyberbullying. Factor analysis of the two forms revealed a single factor structure and inter-item alphas of .92 for bullying and .80 for victimization forms (Erdur-Baker and Kavşut, 2007). Analysis of the present data yielded an internal consistency of the cyberbully form of .86 and the cybervictim form of .82. Sample items from the cyberbully form were 'I have insulted people in the chatroom', and from the cybervictim form, 'I have been slandered by fake photos of me on the internet'. The participants were asked to report their experiences on four-point Likert type items providing scores for being a bully and victim for the past semester (where 1 = 'it has never happened to me', 2 = 'it happened once or twice', 3 = 'it happened three to five times', and 4 = 'it happened more than five times').

Additionally, the participants' usage frequency of the internet, SMS, MSN, forums and chatrooms were asked by a question for each one. Note that for the purposes of this study, internet usage is defined as all internet activities except MSN, forums and chatrooms and includes activities such as blogging, emailing, reading or creating webpages, surfing, downloading music or videos, etc.

Risky usage of internet-mediated communication tools were measured by three common questions utilized by previous studies (e.g. Liau et al., 2005; Ybarra et al., 2007b): (1) Have you ever asked someone you met on the internet to meet face to face? ('Inviting to meet in person'); (2) Have you ever disclosed your personal information to unknown people over the internet, including password and username? ('Sharing personal information'); and (3) have you ever accepted an invitation to meet in person someone you met over the internet? ('Accepting to meet in person'). Participants were asked to respond to these questions for the past semester on four-point Likert-type items (ranging from 'never' to 'several times'). These three questions were found to be significantly correlated to each other (r_s were between .15 and .47). For the multiple regression analyses, a total score of risky usage was created by summing up the scores of the three questions.

Results

Data analysis

Usage frequency of internet-mediated communication tools The participants' usage frequency here is presented in Table 1.

Table 1 Usage frequency of the internet, SMS, MSN, forum and chat rooms

	Frequency of usage % (N)			
	Everyday	2 days or more in a week	1–2 times in a month	Never
Internet	23.9 (66)	33.7 (93)	33.7 (93)	6.9 (19)
SMS	47.1 (130)	21.4 (59)	16.3 (45)	10.9 (30)
MSN	22.5 (62)	37.7 (104)	15.6 (43)	22.1 (61)
Forum	10.1 (28)	17.0 (47)	29.0 (80)	34.4 (95)
Chatroom	6.9 (19)	22.1 (61)	19.9 (55)	47.8 (132)

Ns vary (minimum = 250, maximum = 271).

As can be seen from Table 1, the participants use internet-mediated communication tools quite frequently. Only 7 percent of the participants reported that they never use the internet, while 24 percent indicated that they use the internet everyday. Chatrooms seemed to be the least used whereas MSN was the most frequently used communication tool. Mobile phone text messaging was also reported to be used by 84.8 percent of the participants at least one to two times a month.

Descriptive analyses of cyberbullying experiences regarding gender and traditional bullying experiences This factor was examined (see Table 2).

Zero order correlation coefficients among the variables were also examined and are presented in Table 3. Overall, male students with traditional bullying experiences scored relatively higher than female students (see Table 2). Correlation coefficients displayed that cyber-victimization and cyberbullying were significantly correlated. Also, being a bully in cyber and physical environments was correlated for both male and female students, but not for being a victim (see Table 3).

Examination of how much overlap existed between cyber and traditional bullying showed that 32 percent (89) of the students reported being victims of both traditional and cyberbullying, and 26 percent (73) of the students reported being bullies in both the physical and cyber-environments.

Relationships of gender and traditional bullying to cyberbullying A two-way multivariate analysis of variance was conducted to examine the effect of the four levels of traditional bullying experiences (bully, victim, bully and victim and no bullying experiences) and gender on two dependent variables (cyberbullying and cyber-victimization). Pillai's trace was selected for interpretation of multivariate results because homogeneity of covariance matrix assumption was violated, as indicated by significant Box's M test. MANOVA revealed a significant main effect for gender (Pillai's trace = .068, $F(2, 228) = 8.285, p = .000, \eta^2 = .068$), a significant main effect for traditional bullying experiences (Pillai's trace = .151, $F(6, 458) = 6.235, p = .000, \eta^2 = .076$) and a significant interaction between gender and traditional bullying experiences (Pillai's trace = .099, $F(6, 458) = 3.994, p = .001, \eta^2 = .050$). Partial Eta Square Effect sizes (ranging from .05 to .08) were

Table 2 Means and Standard Deviations of cyber-victimization and cyberbullying scales scores across gender

Traditional bullying	Gender	Cybervictim			Cyberbully		
		M	SD	N	M	SD	N
Bully	Female	19.00	1.41	16	17.31	2.33	16
	Male	23.26	4.30	19	23.74	8.28	19
	Total	21.31	3.91	35	20.80	7.02	35
Victim	Female	20.92	2.68	26	17.27	1.93	26
	Male	24.04	8.14	28	18.54	3.62	28
	Total	22.54	6.29	54	17.93	2.98	54
Bully and victim	Female	22.04	3.53	24	19.04	3.37	24
	Male	21.18	4.09	34	20.09	7.04	34
	Total	21.54	3.86	58	19.66	5.79	58
Not involved	Female	19.41	2.07	41	17.32	2.18	41
	Male	20.45	3.18	49	17.23	2.02	49
	Total	19.98	2.76	90	17.27	2.08	90
Total	Female	20.31	2.76	107	17.69	2.54	107
	Male	21.82	5.16	130	19.21	5.59	130
	Total	21.14	4.31	237	18.52	4.54	237

moderate, indicating the amount of variation explained in the set of dependent variables (Green et al., 2000). Due to the fact that the interaction effect was found to be significant, the analyses of simple main effects for each dependent variable (cyberbullying and cyber-victimization) were executed as follow-up tests. In order to control Type-I error, Bonferroni adjustment for multiple comparisons of simple main effects was utilized. Table 4 presents the results of multiple comparisons of simple main effects by experience of traditional bullying and gender.

Analysis of the simple main effects revealed significant interaction effects on the cyberbully ($F(3, 244) = 7.10, p = .000, \eta^2 = .080$) and on the cyber-victimization scores ($F(3, 240) = 3.73, p = .012, \eta^2 = .045$). The nature of the interactions can be seen in Figure 1.

Multiple comparisons results revealed that differences in cyberbullying experiences among the four groups of students with traditional bullying experiences are not consistent between male and female students (see Table 4). Female students' scores on cyberbullying and cyber-victimization were not found to be different across the levels of traditional bullying experiences (all $p > .05$). However, male students' cyberbullying and cyber-victimization scores were found to vary based on their four levels of traditional bullying experiences. In terms of cyberbullying, male students who reported being a traditional bully scored significantly higher than students who reported being a traditional victim, bully and victim and not involved. Also, male students who reported being a traditional bully and victim scored significantly higher on cyberbullying than male students who reported not being involved in traditional bullying. Coming to cyber-victimization among male students, as can be seen in Table 4, male students who reported being a

Table 3 Correlation coefficients among outcome and predictor variables

	Cyberbullying	Traditional victimization	Traditional bullying	Frequent use	Risky use
Females					
Cyber victimization	.49**	.18	.22*	.36**	.19*
Cyberbullying		.06	.45**	.49**	.22*
Traditional victimization			.30**	-.14	.13
Traditional bullying				.10	.07
Frequent use					.46**
Males					
Cyber-victimization	.52**	.17*	.10	.21*	.46**
Cyberbullying		-.11	.40**	.29**	.38**
Traditional victimization			.17	-.06	.03
Traditional bullying				.19*	.17
Frequent use					.38**

Ns vary (minimum = 93, maximum = 139).

* $p < 0.05$; ** $p < 0.01$

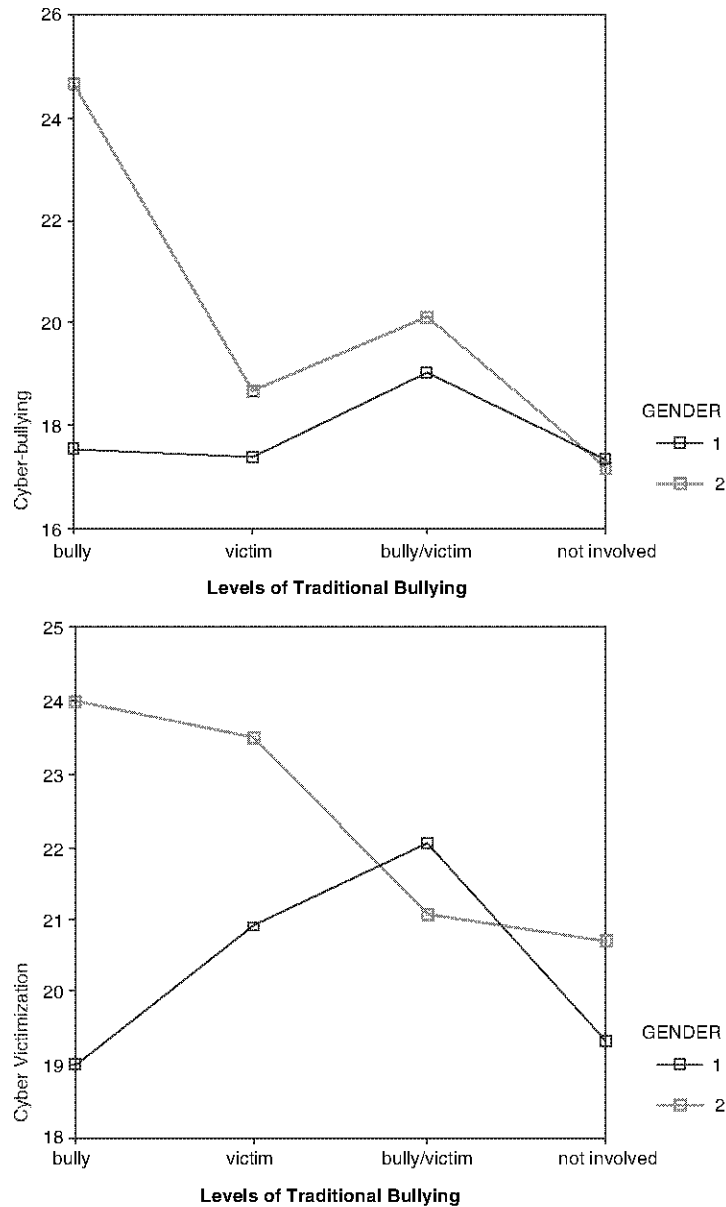


Figure 1 Gender by traditional bullying interactions for cyberbullying and cyber-victimization (1 = female; 2 = male)

traditional bully and traditional victim scored significantly higher on the cyber-victimization scale than students who reported not being involved in traditional bullying.

Moreover, the results of the comparisons by gender across levels of traditional bullying (see Table 4) show that within some levels of traditional bullying experiences there

Table 4 Multiple comparisons of cyberbullying and cyber-victimization: by traditional bullying experiences across categories of gender and by gender across levels of traditional bullying

Comparison (CB)	Cyber bullying			Cyber victimization		
	Mean difference	s.e.	95% CI	Mean difference	s.e.	95% CI
Female students						
Bully vs. victim	0.147	1.26	-3.212, 3.506	-1.92	1.38	-5.60, 1.76
Bully vs. bully/victim	-1.52	1.31	-5.010, 1.979	-3.04	1.41	-6.78, 0.69
Bully vs. not involved	0.217	1.18	-2.92, 3.36	-0.332	1.27	-3.69, 3.06
Bully/victim vs. victim	1.66	1.18	-1.48, 4.80	-1.12	1.23	-4.39, 2.16
Victim vs. not involved	0.7	1.03	-2.68, 2.82	1.61	1.07	-1.26, 4.46
Bully/victim vs. not involved	1.73	0.69	-1.18, 4.64	2.72	1.11	-2.2, 5.67
Male students						
Bully vs. victim	6.04*	1.19	2.86, 9.21	0.52	1.23	-2.76, 3.79
Bully vs. bully/victim	4.59*	1.17	1.48, 7.71	2.91	1.2	-0.28, 6.11
Bully vs. not involved	7.51*	1.09	4.60, 10.41	3.31*	1.13	0.31, 6.32
Bully/victim vs. victim	1.44	1.01	-1.38, 4.27	2.4	1.07	-4.46, 5.25
Victim vs. not involved	1.47	0.97	-1.12, 4.06	2.80*	0.99	0.16, 5.44
Bully/victim vs. not involved	2.91*	0.95	0.39, 5.43	0.39	0.96	-2.14, 2.94
Bully						
Female vs. Male	-7.16*	1.34	-9.80, -4.52	-5.0*	1.45	-7.85, -2.15
Victim						
Female vs. Male	-1.27	1.11	-3.44, 9.11	-2.56*	1.16	-4.84, -0.28
Bully/victim						
Female vs. Male	-1.05	1.14	-3.30, 1.20	0.96	1.15	-1.32, 3.23
Not involved						
Female vs. Male	0.13	0.89	-1.62, 1.89	-1.37	0.89	-3.13, 0.39

* $p < .05$, where p -values are adjusted using the Bonferroni method

were statistically significant gender differences in being a cybervictim and cyberbully. For cyber-victimization, these significant gender differences were found in the levels of being a traditional bully and being a traditional victim. For cyberbullying, the only significant gender difference was found in the level of being a traditional bully. Male students demonstrated higher levels of cyber-victimization and cyberbullying than female students.

The relationships of cyberbullying experiences to risky internet use and usage frequency of internet-mediated communication tools Finally, in order to examine this factor, two hierarchical regression analyses (one for victimization and one for being a bully) were executed for each gender. Due to the skewness of the cyberbullying and cyber-victim scores, squared-root transformation was applied and multiple regression analysis was repeated with and without transformation and the same results were obtained. Therefore, the results without transformations are reported here.

In the first multiple regression model, the cyberbullying victimization scores were the criterion variable. Victimization of traditional bullying was entered in the first block as a control variable. The total scores for risky internet use and usage frequency of computer-mediated communication tools were added in the second block. The regression equation with victimization of traditional bullying was significant for both female ($R^2 = .054$, adjusted $R^2 = .043$, $F(1, 85) = 4.82$, $p = .031$) and male students ($R^2 = .053$, adjusted $R^2 = .044$, $F(1, 110) = 6.11$, $p = .015$). The risky internet use and usage frequency predicted cyberbullying victimization significantly over and above traditional victimization for both female ($\Delta R^2 = .133$, $F(2, 83) = 6.78$, $p = .002$) and male students ($\Delta R^2 = .216$, $F(2, 108) = 15.98$, $p = .000$). Based on these results, the contribution of frequent use of communication tools to cyber-victimize was significant for female students ($\beta = .38$; $p = .001$) but not for male students ($\beta = .071$; $p = .431$). However, the contribution of risky internet use to cyber-victimization was not significant for female students ($\beta = -.041$; $p = .721$) but was significant for male students ($\beta = .434$; $p = .000$).

In the second multiple regression model, the cyberbullying scores constituted the criterion variable. Traditional bullying was entered in the first block as a control variable. The total scores for risky internet use and usage frequency of computer-mediated communication tools were added in the second block. The regression equation with traditional bullying was significant for both female ($R^2 = .225$, adjusted $R^2 = .217$, $F(1, 91) = 26.45$, $p = .000$) and male students ($R^2 = .232$, adjusted $R^2 = .225$, $F(1, 116) = 34.99$, $p = .000$). Risky internet use and usage frequency predicted cyberbullying significantly over and above traditional bullying experiences for both female ($\Delta R^2 = .201$, $F(2, 89) = 15.54$, $p = .000$) and male students ($\Delta R^2 = .099$, $F(2, 114) = 8.39$, $p = .000$). Moreover, the contribution of frequent use of communication tools to cyberbully was significant for female students ($\beta = .47$; $p = .000$) but not for male students ($\beta = .14$; $p = .089$). However, the contribution of risky internet use to cyberbullying was not significant for female students ($\beta = -.038$; $p = .672$) but was significant for male students ($\beta = .238$; $p = .005$).

Discussion and Conclusion

This study investigated whether traditional and cyberbullying experiences indeed overlap and whether the usage frequency and risky use of internet-based communication tools

contributes to the cyberbullying experiences of Turkish students. Before discussing the results of the relationship between cyber and traditional bullying, the relation of cyber-victimization to cyberbullying should be noted. Regardless of gender differences, the relationships between being a cybervictim and cyberbully are significant and much stronger than the relationships between cyber and traditional bullying. This result suggests that the same adolescents who are victims are also bullies in cyber-environments, and is consistent with previous studies (e.g. Kowalski and Limber, 2007; Ybarra and Mitchell, 2004). This is an important result due to its implications for targeting youngsters at risk and planning for prevention and intervention programs (Schrock and boyd, 2008).

The results of this study provide some support for previous studies that have pointed out the relationship between cyber and traditional forms of bullying (e.g. Li, 2005, 2006; Raskauskas and Stoltz, 2007; Ybarra et al., 2007a). However, it should be noted that, as Ybarra et al. (2007a) conclude, the amount of the overlap between traditional and cyberbullying (32% of overlap for cyber and traditional bullying victimization, and 26% of overlap for bullying) is not too large. The conclusion may be drawn from this result is that although cyber and traditional bullying share some common ground, cyberbullying seems to be composed of its own unique characteristics. According to previous studies, anonymity (Greene, 2006; Ybarra et al., 2007b), impersonation, decreased fear of being caught (Kowalski et al., 2008) and being more aggressive than they are offline are the most essential factors that distinguish cyberbullies from traditional bullies. Thus, despite the fact that the literature on traditional bullying is helpful to understand cyberbullying, the results of this study suggest a need for more research to establish the theoretical background required to shed light on cyberbullying.

A further contribution of this study is the finding that the nature of the relationship between cyber and traditional bullying may differ for male and female adolescents. For both male and female students the results showed that being a bully in cyber and physical environments were correlated, but being a victim in cyber and traditional environments were not (see Table 3). As can be seen in Figure 1, male students demonstrated higher levels of cyber-victimization and cyberbullying experiences across all levels of traditional bullying except one. The exception is for the case of being a traditional bully and victim, in which male students scored lower than female students in the level of cyber-victimization, but this gender difference was not significant. The largest gender differences for both cyber-victimization and cyberbullying were found for traditional bullies. For female students, there are no significant differences in cyberbullying or victimization among the four levels of traditional bullying. However, male students who reported being a traditional bully are more likely to report experiences of cyberbullying. Thus, the gender of students should be considered when examining the relationship between traditional bullying and cyberbullying. Future studies are warranted to identify factors that explain such gender differences, for example gender role socialization.

As summarized earlier, previous studies have reported inconsistent results about gender differences in both traditional and cyberbullying. The result of this study on gender differences is parallel to previous studies conducted in Turkey: as compared to boys, girls are less likely to engage in cyberbullying either as a cybervictim or bully (Erdur-Baker and Kavşut, 2007; Topçu et al., 2008). Altogether, such results reported by this and previous Turkish studies challenge the claim that girls are more likely to engage in

cyberbullying because cyberbullying is a form of relational or verbal aggression (Keith and Martin, 2005; Nelson, 2003).

According to the results of the regression analyses, the usage frequency of internet-based communication tools was found to be related to both cyber-victimization and cyberbullying, even after controlling for the effects of traditional bullying experiences for both male and female students. Although the literature lacks a study establishing cause-effect relationships, this and previous studies reveal that adolescents who engage in frequent and risky internet use are also more likely to experience cyber-victimization (e.g. Li, 2006; Wolak et al., 2007; Ybarra and Mitchell, 2004). With respect to gender differences, the findings of the present study suggest that the strength of the relationships of frequent and risky usage to cyberbullying reveals different patterns. That is, the better predictor of both cyberbullying and victimization for female students is frequent usage, but for male students is risky internet use. A closer look at the data of the study reveals that girls engage in less risky internet use than boys. These results imply that girls and boys have different perceptions of risky internet usage and perhaps that girls are more cautious internet users. Unfortunately, this study lacks data to explain why such gender differences exist and thus future studies are warranted. However, in the context of gender roles in the Turkish culture, some speculations can be made. Girls in Turkey are raised under closer supervision and taught to be more self-conscious. Also, aggressive behaviors by boys are more likely to be tolerated. Furthermore, it is possible that the different genders may disclose different types of personal information to varying degrees (Kowalski et al., 2008; Schrock and Boyd, 2008).

These results may suggest that less frequent usage is one way to prevent cyberbullying. However, this is not likely to be a logical or feasible solution because the internet provides many opportunities and benefits for people's lives, especially for education. Supervision and educating students on the ethical and responsible use of internet-based communication tools, how they can protect themselves in the cyber-environment and parents taking preventive measures might protect youngsters from the dangers of the cyber-environment without restricting internet access. Also, this study provides further evidence that cyberbullying is indeed a universal problem, as studies from different countries report results about the nature and extent of the issue similar to those found in Turkey. It is unfortunate that young people around the world have to face and cope with problems related to ICTs. Given the fact that internet-mediated information and communication tools will be embedded increasingly in the life of the younger generations, preventative measures are needed. Moreover, such preventative measures need to be enforced internationally, as internet technology removes the physical barriers between countries and brings opportunities to communicate without the worries of time and place.

Limitations of the study

Finally, this study has a number of limitations. First, it may not be possible to generalize the results of the study due to the sampling procedure. Also, most of the participants of the study came from low to middle-income families; therefore, the findings need to be cross-validated with students from high-income families. This study suffers the same limitations as any other study in which only self-report measures are used. Moreover, the correlational

nature of the study does not allow a cause–effect relationship to be established. Therefore, future studies will be crucial to extend these findings to a larger number of Turkish adolescents and to understand the nature of the relationships between cyberbullying and other related variables. For example, frequent and risky use of the internet was found to be related to cyberbullying, but this relationship differs based on gender. Perhaps this relationship can be mediated by gender role socialization, supervision and/or educating youngsters about ethical usage of internet-based communication tools. Future studies should also examine the motivation behind cyberbullying acts. It should be interesting to examine whether youngsters see acts such as impersonation as a fun game, and therefore why they do not take responsibility for any negative consequences.

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