The Analysis of the Relationship between Being a Cyberbully and Cybervictim among Adolescents in Terms of Different Variables

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Abstract
The purpose of this study is to analyze the factors that cause high school students to commit cyberbullying acts and become a victim of cyberbullying. The study group consists of 622 high school students in two different cities. Relational survey model, which is one of the quantitative research methods, is used in this study. For the purpose of examining the factors that affect students' cyberbullying behaviors and being a victim, "Cyberbully/Cybervictim Scale" is incorporated. Results indicate that there is no statistically significant difference between being a cyberbully/cybervictim and the variables of gender, technological competence of parents, owning a smartphone and the city in which the student lives. However, a significant difference is found with the some of the variables such as grade level, having a personal computer, having an internet connection at home, places accessed to a computer, places accessed to internet, daily internet use, level of technology use, the skill of technology use, educational level of parents. Furthermore, a moderate positive relationship is found between being cybervictim and exhibiting cyberbullying behaviors.

Keywords: Cybervictim, Cyberbullying, Problematic internet use, Adolescents, High school.

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Introduction

With the rapid development of information and communication technology (ICT) and extensive usage of the internet, ICT has become an indispensable part of our lives. Especially, thanks to the mobile technologies and mobile internet, many facilities and opportunities that make people's lives easier have been available for public use in several areas such as banking, health, communication, trade and telecommunications. Using ICT in the field of education is also getting popular day by day. Numerous projects have been designed and implemented to increase the quality of education and student success both in Turkey and around the globe (Demir and Yildirim, 2015). Furthermore, considerable amount of effort is put to integrate ICT into traditional educational environments for individuals to adopt essential skills that 21st century demands, like creativity, critical thinking, problem solving, media and information literacy (Eryaman, 2007). As many recent study suggests, utilizing ICT in educational environments affects students' academic success positively (Banerjee, Cole, Duflo and Linden, 2007; Song and Kang, 2012; Sevindik, 2006; Speaker, 2004; Yilmaz, 2005). With recent advancements in mobile technologies, mobile devices have been used in activities in educational environments. Students more specifically prefer mobile electronic devices such as smart phones, tablet computers, iPod to store and access information, course materials, e-books, course distribution tables (Sarrab, 2015). In various studies, it has been reported that mobile learning practices and using mobile devices in education increase students' achievement in learning tasks (Al-Emran, Elsherif & Shaalan, 2016; Hwang, Wu, & Ke, 2011; Wu, Hwang, Su, & Huang, 2012; Pfeiffer et al., 2009) and enhance their motivation to learn (Kinash, Brand and Mathew, 2012; Milošević et al., 2015). However, besides their primary function of communication, they also can be used as a practical tool of abusing especially due to the anonymous nature of wireless and mobile internet services. Acts of harassing, disturbing, throwing racial or ethnic slurs, sending provocative insults, threatening, and humiliating can be categorized as acts of cyberbullying (Civilidag and Cooper 2013). Behaviors fitting into this category that aims to give harm to other people are referred as cyberbullying.

The concept of cyberbullying is defined as the hostile behaviors with the intention of harming an individual or a group, personal or legal entity in a technical or relational fashion using ICTs (Aricak, 2011). Abusive use of ICT is one of the major cases that cause problems and inevitable negative incidents for individuals in today's world. In the literature, this concept is also mentioned as techno-bullying, electronic bullying, or online bullying (Akbulut, Şahin & Eristi, 2010). Willard (2005) states that cyberbullying can be practiced in various forms. These are identified as flaming, cyber-stalking, denigration, impersonation, outing, exclusion and harassment. Those who commit acts of cyberbullying typically send provocative messages that include threats and harassment to their victims using e-mails, text messages and online messaging platforms such as WhatsApp, Messenger etc. Moreover, they post pictures, and offensive, humiliating, threatening messages to victims' social media accounts, web pages or blogs. They shot videos and take nude pictures of their victims using cell phone cameras or computer cameras and publish them on their own accounts or in fake accounts opened in behalf of the victims (Topcu, Yildirim and Erdur-Baker, 2013). Cyberbullying affects emotional, social and psychological development of individuals and has an impact on social relations of victims negatively (Ayas, 2014; Grigg, 2010; Şahin, Sari, Ozer & Er, 2010). Ayas and Horzum (2012) state that students who are exposed to cyberbullying experience distress, restlessness, sadness and frustration, whereas the people, who perpetuate cyberbullying acts, experience enjoyment and claims that the victims, who are exposed to their bullying, deserved it. Batmaz and Ayas (2013) state that there is a positive correlation between the level of the sentiments of hostility and anger, and cyberbullying. It is observed that cyberbullying has serious damages on students' school and academic life. These can be listed as decrease in cybervictims' exam scores (Beran and Li, 2005; Arslan et al, 2012), increase in absenteeism (Raskauskas and Stoltz 2007, Ybarra, West and Leaf, 2007), quitting school (Kirby, 2008).

When the studies conducted on the students in Turkey and in the world are examined, it can be easily seen that cyberbullying is a serious common problem that needs to be dealt with immediately. In a study conducted by Eroglu and et al. (2015), the ratio of cyberbully to cybervictim

is 67.5%, the share of cybervictims is 8.7% and the share of cyberbullies is 6.9% in the whole sample. In another study carried out in Turkey, it is reported that the ratio of cyberbully varies between 2% and 35.7%; the ratio of cybervictim is between 5.9% and 36.7%, and the ratio of cyberbully/cybervictim varies in the range of 17.7% and 23.8% (Arslan et al., 2012). In a study conducted on high school students by Ayas (2011), it is shown that 17.4% of students are exposed to cyberbullying and 15.5% of them are cyberbullies. Another study carried out by Depaolis and Williford (2014) on 660 elementary students reveals that 17.7% of students are cybervictims. Considering all of the mentioned studies, it can be inferred that cyberbullying and cybervictimization are not issues to be overlooked. It is concerned that cyberbullying acts will reform and amplify themselves with the advances of new technologies. When the educational dimension of the studies is examined, it is seen that cyberbullying has profound negative impact on students' school and academic lives. Some example impacts can be illustrated as decrease in victim students' exam scores (Beran and Li, 2005; Arslan et al., 2012), increase in absenteeism (Raskauskas and Stoltz, 2007; Ybarra, West and Leaf, 2007) and dropping out from school (Kirby, 2008).

In the existing literature, there are numerous studies involving factors causing cyberbullying actions as gender, age, grade, type of school, use of internet and the place accessed to the technology. When the literature in terms of gender is examined, although there are studies demonstrating that boys suffer more as cybervictims (Akbulut, Şahin and Eristi, 2010; Erdur-Baker and Kavsut, 2007) than girls, there are other works claiming that girls are more subject to cyberbullying (Dilmac, 2009; Kowalski and Limber, 2007).

When the literature is investigated in terms of cyberbullying behaviors, it is claimed that boys are more prone to present cyberbullying behaviors compared to girls (Aricak et al., 2008; Horzum and Ayas, 2014; Pepler et al., 2008; Peker, Eroglu and Ada, 2012; Vandebosch, Van Cleemput,2009; Williams and Guerra, 2007; Wolak, Mitchell and Finkelhor, 2002). However, there exists some other studies showing that girls have more tendency to exhibit cyberbullying behaviors than boys (Ayas and Horzum, 2012; Eroglu et al., 2015; Hinduja, S. and Patchin, 2010; Slonje and Smith, 2008).

When the literature is examined in terms of grade levels, there are studies showing that there are more incidents of cyberbullying behaviors in the higher grades (Ayas and Horzum 2011; Kowalski and Limber, 2007). Furthermore, some studies claim that there is not any significant difference among adolescents in terms of cyberbullying (Ozdemir and Akar, 2011; Pamuk and Bavli 2013, Yaman and Sonmez, 2015).

When the literature is examined in terms of internet use, a conclusion, that cyberbullying/cybervictim and internet use might be related, can be made. Erdur-Baker and Kavsut (2007), points out that there is a positive relationship between online communication resources and cyberbullying behaviors and being cybervictims. In Peker and Eroglu's (2010) study, it is shown that rise in the levels of students' internet addiction can also increase the possibility of being a cyberbully or a cybervictim. Moreover, in other studies, it is also claimed that if the use of internet increases, students' cyberbullying behaviors also increase (Ozdemir and Akar, 2011, Soydas and Ucanok, 2014).

There are different findings in the existing literature about parents' educational level. In Soydas and Ucanok's (2014) study, they find that the daughters of the mothers whose education level is low are more often vulnerable to cyberbullying. In a study of Eroglu et al. (2015), they show that the students whose mothers do not have or drop out high school education have more cyberbullying behaviors compared to the students whose mothers have high school education or completed higher education. In a study carried out by Akbaba and Eroglu (2013), it is shown that having a mother, whose education level is low, increases cyberbullying. On the other hand, some other studies report that having a mother, who has high education level, increases cyberbullying (Laftman, Modin and Ostberg, 2013). In his study, Serin (2012) finds out that students whose mothers have an M.A or a PhD show more cyberbullying behaviors than students whose mothers only have primary education, which is one of the most prominent finding about relationship between parents' educational backgrounds and cyberbullying.

When the literature is examined in terms of students' perception of their parents' digital competence, it is stated that perceiving mother's computer skills as inadequate goes hand in hand with being a cyberbully and being a cybervictim (Eroglu et al., 2015). Soydas and Ucanok claims in their study that lower levels of computer skills of a mother triggers girls' being cybervictim while it affects boys in the opposite direction; namely, being cyberbullies. They point out the necessity of getting input from parents about their information and communication tools they use.

In the light of the information provided above, it is seen that there are many different studies about cyberbullying in the literature. It is crucial to conduct academic studies to examine the predictors of cyberbullying, raise awareness about these acts and avoid the incidents that affect individuals negatively. Therefore, in this study, the factors that turn high school students into cybervictims and cyberbullies, who mostly try to prove themselves and their existence, are examined. Other predictors in addition to the studies about the predictors like gender, grade level, the use of internet, parents' usage patterns of technology and parents' educational background are also examined. To the best of this study's knowledge this is the first work that points out to the relationship between being cybervictim and cyberbullying. In the light of this framing, this study is thought to contribute to the literature and further studies.

Studies reveal that cyber bulling is getting more prevalent. Thus, it is necessary to examine the factors that lead to cyberbullying thoroughly to eliminate the negative consequences of cyberbullying and the action itself. Therefore, in this study, it is aimed to examine the factors that turn high school students into cybervictims and cyberbullies and also the relationship between being cybervictims and cyberbullies of adolescent high school students.

In accordance with the general purpose, the following questions are investigated to be answered.

1. In terms of students' cyberbullying behaviors and their being cybervictims,
    a) Is there a difference in terms of gender?
    b) Is there a difference in terms of grade levels?
    c) Is there a difference in terms of having a computer at home?
    d) Is there a difference in terms of having internet connection at home?
    e) Is there a difference in terms of having a cell phone?
    f) Is there a difference in terms of the place to access the computer?
    g) Is there a difference in terms of the place to access the internet?
    h) Is there a difference in terms of the time spent on the internet?
    i) Is there a difference in terms of level of technology use?
    j) Is there a difference in terms of technology skills?
    k) Is there a difference in terms of parents' educational backgrounds?
    l) Is there a difference in terms of father's perceived competence in using technology?
    m) Is there a difference in terms of mother's perceived competence in using technology?
2. Is there a relationship between students' cyberbullying behaviors and being cybervictims?

Methodology

This study was planned and performed according to relational survey model. Existing situation concerning the issue was described as it was (Balci, 2007). The data needed for relational survey model was obtained from individuals defined as the target population by using measurement tools.

Participants

This study was conducted with 622 high school students from two socio-economically different cities. The 134 (21.5 %) out of 622 students are girls and 488 (78.5 %) of them are boys. The 381 participants are students in a high school in Afyon and 241 participants are students in a high school in Ankara.

Table 1. *Demographic statistics of participants*

	N	%
Gender		
Girls	134	21,5
Boys	488	78,5
Grade Level		
9th Grade	345	55,5
10th Grade	190	30,5
11th Grade	69	11,1
12th Grade	18	2,9
City		
Afyon	381	61,3
Ankara	241	38,7
Having a computer in the home		
Yes	450	72,3
No	172	27,7
Having an internet connection		
Yes	326	52,4
No	296	47,6
Having a cell phone		
Yes	534	85,9
No	88	14,1
The place to access the computer		
Home	353	56,8
School/Work	39	6,3
Internet Café	172	27,7
More than one	58	9,3
The place to access the internet		
Home	277	44,5
School/Work	41	6,6
Internet Café	156	25,1
Smart Phone	43	6,9
More than one	105	16,9
Daily use of the internet		
Less than an hour	345	55,5
Between 1 and 3 hours	209	33,6
Over 4 hours	68	10,9
Technology Use		
Low	36	5,8
Moderate	409	65,8
Advanced	177	28,4
Technology Skills		
Low	21	3,4
Moderate	381	61,2
Advanced	220	35,4
Parents' Educational Level		
Elementary Education I-II	355	57,1

High School	209	33,6
University Graduate	41	6,6
Post Graduate (Master's Degree)	17	2,7
Father's Technology Use		
Low	262	42,1
Moderate	311	50,0
Advanced	49	7,9
Mother's Technology Use		
Low	379	60,9
Moderate	226	36,4
Advanced	17	2,7

Data Collection Tool

Dataset used in this study was obtained from the participants through the *Cyberbullying/Cybervictim Scale* developed by Ayas and Horzum (2010). The Cyberbullying*/Cybervictim Scale* is a Likert Type scale and graded from "Never" (1) to "Always" (5).

During the development of the scale, exploratory and confirmatory factor analyses were conducted in order to determine validation of the scale. Results of confirmatory factor analysis show that both scales consisted of 3 factors with 17 items. Cyberbully and victim scales including 17 items and 3 factors were found valid and reliable. The both scales were tested separately through confirmatory factor analysis. As a result, the factorial structure of the scales were found to be accurate both theoretically and statistically. For the reliability of the scales, their internal consistency reliability coefficients were calculated. Internal consistency coefficient of cyberbullying and cybervictim as the sub-dimensions of the scale was found to be 0.81. These calculated values indicate that psychometric properties of the scales are within acceptable range.

Data Analysis

In this study, the analysis was conducted with SPSS 17.0 program. Since the data were not normally distributed, Mann-Whitney U test was utilized in order to analyze whether or not there was a significant difference in terms of gender, having a computer in the home, having an internet connection at home, owning a cell phone and the city they live in. On the other hand, Kruskal-Wallis H test was used to examine whether there was a significant difference in terms of grade level, places to access computer, places to access the internet, daily internet use, level of technology use and technological skills, parents' literacy level, father and mother's perceived technological competence. In addition, Pearson Product-Moment Correlation was used to calculate whether there was a relationship between cybervictim and cyberbullying.

Findings

Gender

Mann-Whitney U test was used to analyze the distribution of the scores that were obtained from the scales of *Cybervictim* and *Cyberbully* in terms of gender. The results indicate that the scores obtained from the scales of *Cybervictim* and *Cyberbullying* were not statistically significant in terms of gender ($p > .05$). Therefore, it can be said that cyberbullying and being a cybervictim does not differ with respect to gender.

Table 2. *Mann-Whitney U test results with respect to gender*

	N	Sum of Ranks	Mean Rank	U	z
Cybervictim					
Girl	134	41860.50	312.39	32576.50	-.072
Boy	488	151892.50	311.26		
Cyberbullying					
Girl	134	44582.50	332.71	29854.50	-1.857
Boy	488	149170.50	305.68		

*p < .05

Grade level

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from the scales of *Cybervictim* and *Cyberbullying* with respect to grade levels. Based on the results of the analysis, the difference between the average score obtained from *Cybervictim Scale* were statistically significant with respect to grade levels ($\chi^2(3) = 12.447$; $p < .01$). In order to discover which grade levels had a significant difference, Mann-Whitney U test was applied to each group and it was seen that the difference between the 9th and the 10th grades (in favor of the 9th grade) and between the 10th and the 11th grades (in favor of the 11th grade) were statistically significant. In addition, the difference between the average scores obtained from *Cyberbullying Scale* were statistically significant in terms of grade level ($\chi^2(3) = 13.797$; $p < .01$). In order to find out which grade levels had a significant difference, Mann-Whitney U test was applied to each grade level. It was found that the difference only existed between the 9th and the 10th grades (in favor of 9th grade).

Table 3. *Kruskal-Wallis H test results according to grade level*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
9th Grade	345	320.22	3	12.447**
10th Grade	190	284.86		
11th Grade	69	353.75		
12th Grade	18	263.58		
Cyberbullying				
9th Grade	345	327.81	3	13.797**
10th Grade	190	280.14		
11th Grade	69	324.33		
12th Grade	18	280.64		

*p < .05; **p<.01

Having a computer at home

Mann-Whitney U test was used to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying* scales according to having a computer at home. According to the results, there was a significant difference between the average scores of the students who had computers in their homes and the students without computers. The difference between average score obtained from Cybervictim Scale was in favor of the students who did not have a computer in their homes ($z = -3.210$; $p < .01$). on the other hand, there was a significant difference in favor of the students who did not have a computer in their homes with respect to average scores obtained from *Cyberbullying Scale* ($z = -2.161$; $p < .05$).

Table 4. *Mann- Whitney U test results with respect to having computer in the home*

	N	Sum of Ranks	Mean Rank	U	z
Cybervictim					
Yes	450	134384.00	298.63	32909.000	-3.210**
No	172	59369.00	345.17		
Cyberbullying					
Yes	450	136578.50	303.51	35103.500	-2.161*
No	172	57174.50	332.41		

*p<.05 **p<.01

Having internet connection at home

Mann-Whitney U test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of having internet connection at home. According to the results, a significant difference was found between average scores of the students who had internet connection and the students who did not have internet connection. The difference was in favor of those who did not have internet connection ($z = -3.400$; $p < .01$). It can be seen that there was a significant difference in favor of the students who did not have internet connection when the scores obtained from cyberbullying scale were analyzed ($z = -3.134$; $p < .01$).

Table 5. *Mann-Whitney U test results in terms of having internet connection at home*

	N	Sum of Ranks	Mean Rank	U	z
Cybervictim					
Yes	326	94699.50	290.49	41398.500	-3.400**
No	296	99053.50	334.64		
Cyberbullying					
Yes	326	95724.00	293.63	42423.000	-3.134**
No	296	98029.00	331.18		

**p<.01

Having a cell phone

Mann-Whitney U test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of having a cell phone. According to the results, average scores obtained from Cybervictim and Cyberbullying did not have a significant difference in terms of having a cell phone ($p > .05$).

Table 6. *Mann-Whitney U test results in terms of having a cell phone of their own*

	N	Sum of Ranks	Mean Rank	U	z
Cybervictim					
Yes	534	165715.00	310.33	22870.00	-.445
No	88	28038.00	318.61		
Cyberbullying					
Yes	534	165816.00	310.52	22971.00	-.405
No	88	27937.00	317.47		

**p<.01

The place to access computer

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of the place to access computer. Results indicate that difference between the average scores obtained from *Cybervictim Scale* was statistically significant in terms of the place to access computer ($\chi^2(3) = 13.630$; $p < .01$). Mann-Whitney U test was applied to find out which groups had significant difference with respect to average scores. According to the Mann-Whitney U test results, significant differences were found between the ones who accessed computer in school/work and more than one place (in favor of school/work), and also between

internet cafe and more than one place (in favor of internet cafe). In addition there was no significant difference between average scores obtained from *Cyberbullying Scale* ($\chi^2(3) = 6.554$; $p > .05$).

Table 7. *Kruskal-Wallis H test results in terms of the place to access computer*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Home	353	302.95	3	13.630**
School/Work	39	365.99		
Internet Cafe	172	332.99		
More than one place	58	263.17		
Cyberbullying				
Home	353	305.77	3	6.554
School/Work	39	346.85		
Internet Cafe	172	325.39		
More than one place	58	281.43		

**p<.01

The place to access the internet

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of the place to access the internet. According to the results of the analysis, the difference between the average scores of Cybervictim Scale was found to be significant in terms of the place to access the internet ($\chi^2(4)= 19.761$; $p < .01$). Mann-Whitney U test was employed to find out which groups differed from the others. The result of Mann-Whitney U test indicates that the difference between school/work and more than one place (in favor of school/work), internet cafe and more than one place (in favor of internet cafe), cell phone and more than one place (in favor of cell phone) were found to be statistically significant. When it comes to average scores obtained from *Cyberbullying Scale*, it could be seen that there was a significant difference among the groups ($\chi^2(4) = 19.553$; $p < .01$). Mann-Whitney U test was used to find out which groups' differences were statistically significant. According to the results of this test, significant differences were found between the groups who accessed the internet at home and more than one place; also between the groups who accessed the internet at school/work and more than one place (in favor of school/work), internet cafe and more than one place (in favor of internet cafe), cell phone and more than one place (in favor of cell phone) ($\chi^2(4)= 19.553$; $p < .01$).

Table 8. *Kruskal-Wallis H test results in terms of the place to access the internet*

	N	Mean Scores	SD	Chi- Square
Cybervictim				
Home	277	304.42	4	19.761**
School/Work	41	355.74		
Internet Cafe	156	335.75		
Cell Phone	43	350.08		
More than One Place	105	261.07		
Cyberbullying				
Home	277	308.70	4	19.553**
School/Work	41	358.37		
Internet Cafe	156	320.61		
Cell Phone	43	362.80		
More than one place	105	266.04		

**p<.01

Daily internet use

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of daily internet use. According to the results of the analysis, average scores of Cybervictim Scale differed significantly in terms of daily internet use ($\chi^2(2)= 26.209$; $p <.01$). Mann-Whitney U test was used to find out which groups differed significantly. It was found that there was a significant difference between the groups who used the internet less than 1 hour and those who used the internet from 1 to 3 hours (in favor of less than 1 hour). There is also a significant difference between the groups using the internet daily less than 1-hour and over 4 hours (in favor of less than 1 hour). On the other hand, average scores of *Cyberbullying Scale* differed significantly in terms of daily internet use ($\chi^2(2)= 24.002$; $p <.01$). According to Mann-Whitney U Test results, which is done to determine which groups differ, there were significant differences between the groups of less than 1 hour and from 1 to 3 hours (in favor of less than 1 hour). Also, there were significant differences between the groups of less than 1 hour and over 4 hours (in favor of less than 1 hour) and from 1 to 3 hours and over 4 hours (in favor of 1-3 hours).

Table 9. *Kruskal-Wallis H test results in terms of daily internet use*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Less than 1 hour	345	340.31	2	26.209**
From 1 to 3 hours	209	282.68		
Over 4 hours	68	253.90		
Cyberbullying				
Less than 1 hour	345	334.63	2	24.002**
From 1 to 3 hours	209	294.56		
Over 4 hours	68	346.22		

**p<.01

The level of technology use

Table 10. *Kruskal-Wallis H test results in terms of technology use level*

	N	Mean scores	SD	Chi-Square
Cybervictim				
Low	36	389.89	2	13.979**
Moderate	409	316.51		
Advanced	177	283.97		
Cyberbullying				
Low	36	386.85	2	19.932**
Moderate	409	319.81		
Advanced	177	276.96		

**p<.01

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of the level of technology use. According to the results of the test, the differences between average scores obtained from Cybervictim Scale were statistically significant in terms of the level of technology use ($\chi^2(2) = 13.979$; $p <.01$). According to Mann-Whitney U test results, a significant difference was found between low and moderate (in favor of low), and between low and advanced (in favor of low). It could be seen that the scores obtained from *Cyberbullying Scale* also differed in terms of the level of technology use ($\chi^2(2)= 19.932$; $p <.01$). Mann-Whitney U test was used to determine which groups differences were statistically significant. According to Mann-Whitney U test results a significant difference was found between low and moderate (in favor of low), between low and advanced (in favor of low) and finally between moderate and advanced (in favor of moderate).

Technological skills

Kruskal-Wallis H test was applied to analyze the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of technological skills. According to test results, the students' average scores obtained from Cybervictim Scale indicated a significant difference in terms of technological skills ($\chi^2(2)= 12.155$; $p <.01$). According to the results of Man-Whitney U test, it was found that there was a significant difference between the groups of low and moderate (in favor of low, between low and advanced (in favor of low) and also between moderate and advanced (in favor of moderate). In addition, the scores obtained from *Cyberbullying Scale* indicates a significant difference in terms of technological skills ($\chi^2(2)= 15.015$; $p <.01$). According to Mann-Whitney U test results, the difference between the groups of low and advanced (in favor of low), between moderate and advanced (in favor of moderate) were statistically significant.

Table 11. *Kruskal-Wallis H Test results in terms of technological skills*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Low	21	403.45	2	12.155**
Moderate	381	319.64		
Advanced	220	288.62		
Cyberbullying				
Low	21	386.40	2	15.015**
Moderate	381	323.17		
Advanced	220	284.15		

**p<.01

Parents' educational background

Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of educational background of parents. According to the results of the analysis, it can be seen that differences between the the average scores obtained from *Cybervictim Scale* were statistically significant in terms of their parents' education levels ($\chi^2(3)= 11.088$; $p <.05$). Paired comparisons were made using Mann-Whitney U test to determine which groups had significant difference. Accordingly, it was found that there was significant differences between the groups of primary education and postgraduate education (in favor of primary education); between high school education and postgraduate education (in favor of high school education) and between graduate and postgraduate (in favor of graduate).

Table 12. *Kruskal-Wallis H test results in terms of parents' education levels*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Primary Education	355	312.01	3	11.088*
High school	209	320.89		
University(Graduate)	41	311.61		
Postgraduate	17	185.12		
Cyberbullying				
Primary Education	355	313.69	3	19.913**
High School	209	323.07		
University	41	297.62		
Postgraduate	17	157.00		

*p<.05 **p<.01

The results indicates that scores obtained from *Cyberbullying Scale* differed significantly in terms of parents' education levels ($\chi^2(3)= 19.913$; $p <.01$). Paired comparisons were made by using Mann-Whitney U test to determine which groups differed significantly from each other. According to the results of the test, it was discovered that there were significant differences between the groups of

primary education and postgraduate education (in favor of primary education); between high school education and postgraduate education (in favor of high school education) and between graduate and postgraduates (in favor of graduate).

Father's technological competence

As a non-parametric test, Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from Cybervictim and Cyberbullying Scales in terms of perceived technological competence of the father. According to the results of the analysis, average scores obtained from both Cybervictim and Cyberbullying scales did not indicate a significant difference in terms of perceived technological competence of the father ($p > .05$).

Table 13. *Kruskal-Wallis H test results in terms of father's perceived technological competence*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Low	262	309.26	2	.573
Moderate	311	310.77		
Advanced	49	328.11		
Cyberbullying				
Low	262	306.81	2	.950
Moderate	311	312.70		
Advanced	49	328.96		

**p<.01

Mother's technological competence

As a non-parametric test, Kruskal-Wallis H test was applied to analyze the distribution of the scores obtained from *Cybervictim* and *Cyberbullying Scale*s in terms of perceived technological competence of the mother. According to the results of the analysis, average scores obtained from both *Cybervictim* and *Cyberbullying Scale*s do not indicate a significant difference in terms of perceived technological competence of the mother ($p > .05$).

Table 14. *Kruskal-Wallis H test results in terms of the mother's perceived technological competence*

	N	Mean Scores	SD	Chi-Square
Cybervictim				
Low	379	307.44	2	.677
Moderate	226	317.11		
Advanced	17	327.47		
Cyberbullying				
Low	379	303.09	2	5.034
Moderate	226	328.29		
Advanced	17	275.85		

**p<.01

The relationship between Cyberbullying and being Cybervictim

The relationship between the total scores of Cybervictim and Cyberbullying were analyzed through Spearman's Correlation Coefficient (rho) and a moderate positive relationship was found between these two variables ($r = .70$, $p < .01$).

Table 15. Spearman's Correlation Cofficient results about relationship between Cyberbullying and being Cybervictim

		Cybervictim	**Cyberbullying**
Cybervictim	Correlation Coefficient	1 ,000	0,695**
	Sig. (2-tailed)		,000
	N		622
Cyberbullying	Correlation Coefficient	0,695**	1 ,000
	Sig. (2-tailed)	,000	
	N	622	622

**. Correlation is significant at the .01 level (2-tailed).

Conclusions and Discussion

It is suggested in numerous studies that various factors are playing roles in cyberbullying. Since the results of studies regarding gender variable show significant inconsistencies among each other, further effort on investigating that dimension is required. In this study, according to the analysis of the results in terms of gender, a relationship cannot be found between the genders in terms of being a cybervictim and acting cyberbullying behaviors. This finding supports the claim of the studies indicating no difference between girls and boys in terms of being a cybervictim (Peker, Eroglu and Ada, 2012; Topcu, 2008; Raskauskas and Stoltz, 2007; Ybarra and Mitchell 2004). As discussed in introduction section, contrary to the results of this study, there are other studies in the literature reporting a significant relationship between boys and girls in terms of being cybervictims.

In terms of cyberbullying as well, findings of this study contradict with some of the existing studies in the literature. As given examples of in the introduction section, it is reported that boys are more prone to exhibit bullying behaviors than girls in various scientific studies. Nevertheless, there exists other works claiming that girls are more likely to show cyberbullying behaviors. In addition to these issues discussed in the introduction section, it is timely to introduce Horzum's work (2011) to shed light on the reasons of the issue here. In his study conducted on gender variable, Horzum (2011) states that boys in developing countries who do not have internet access at home prefers to go to internet cafes often, while girls do not have the chance as much. He claims that the underlying reason of boys being a cybervictim or a cyberbully more than girls can be the former observation. Previous studies show that male students involve in cyberbullying activities more than girls and girls are exposed to cyberbullying activities more than boys. Back in the day, in the case of boys not having the necessary technologies at home, they can carry on these acts with the help of internet cafes. On the other hand, restricted ability of female students to access those technological tools can be the reason of the mentioned phenomenon. However, in today's world, the reason of not being able to detect a significant difference between genders in cyberbullying activities in this study is considered to be because of the easy access and popular use of smartphone by both girls and boys.

The analysis of the results in terms of grade level of the student imply significant differences in terms of being a cybervictim and showing cyberbullying behaviors. The differences for being a cybervictim are found between the 9^{th} and the 10^{th} grades (in favor of the 9^{th} grade) and between the 10^{th} and the 11^{th} grades (in favor of the 11^{th} grade). In terms of cyberbullying, it is concluded that the difference is between the 9^{th} and the 10^{th} grades (in favor of the 9^{th} grade). In the light of these findings, it is concluded that younger students tend to show more cyberbullying behaviors and they are more prone to being cybervictims than other students. The reason of observing such phenomenon can be the uninformed use of technological devices and unawareness of its possible harmful nature by students.

Some studies supporting the findings of this study claim that the older the student is, the less cyberbullying behavior is performed by (Raskauskas and Stoltz, 2007; Slonje and Smith, 2008; Williams and Guerra, 2007). In one of the contradictory studies with this study, Pepler et al. (2008)

states that bullying tendencies of students are performed mostly in the transition period from primary school to high school. Ayas and Horzum (2011) indicate that students' cyberbullying actions differ according to grade level and this difference increases when the grades get higher. Kowalski and Limber (2007) discovers in their study that the rate of cyberbullying acts increases with the higher grades. Therefore, it can be concluded that with the higher grades and older ages, technological skills of teenagers improve and the chances to reach cyberbullying tools increase accordingly. According to Campbell (2005), acquired technological skills thanks to the experience coming along with older ages is also a variable to be considered for cyberbullying acts.

In this study, a significant difference is detected in favor of those who do not have a computer and an internet connection at home in terms of being cybervictims. Similarly, in terms of cyberbullying, a significant difference is observed in favor of those who do not have a computer and an internet connection at home. This pattern can be explained by the fact that students who do not have access to a computer or an internet connection are likely to have lower levels of skills with technology use and be more vulnerable to cyberbullying acts. It is also shown that the students with lower levels of technological skills have more vulnerability and tendency to show more cyberbullying behaviors. Another significant finding of this study is that a relationship between the frequency of computer and internet access in internet cafes and being cybervictim and cyberbullying behaviors.

There exist numerous studies in the literature supporting findings of this study about computer and internet access patterns of students. In a study, conducted by Eroglu et al.(2015), the frequency of going to an internet cafe is found to be related to being a cybervictim and exhibiting cyberbullying behaviors. In a study carried out by Akbulut et al. (2010), it is shown that there is a significant relationship between the frequency of going to internet cafes and cyberbullying due to the lack of surveillance over online activities in internet cafes. Being self-conscious of that one is surveilled about their online activities may prevent the individuals from involving in cyberbullying actions. It is suggested that lack of surveillance is inviting new cyberbullies to the scene every day.

Findings of this study in terms of having a cell phone does not indicate a significant difference in terms of being a cybervictim and exhibiting cyberbullying behaviors. This may be due to the fact that cyberbullying behaviors are performed not only by cell phones but also through various methods and technological tools, particularly personal computers.

However, findings of this study do not align with existing results by other researchers. It has already become popular opinion both among researchers and everyday citizen that the development of wireless communication network and mobile internet has enabled more people to access the internet through their mobile phones and consequently, cyberbullying acts have increased. Raskauskas and Stoltz (2007) state that peer victimization existing among students has begun to take place in cyber environments such as internet and mobile phones. In another study, it is found that most frequent cyberbullying incidents take place through mobile texting services (NCH, 2005).

The results of this study in terms of the place to access the internet show that students access a computer in an internet cafe are more likely to be cybervictims more than the ones who access to it through school or work environments. However, a significant difference is not detected in terms of cyberbullying. In terms of the place to access the internet, it is found that students access the internet at school/work, in an internet cafe and via cell phones according to being cybervictims and presenting cyberbullying behaviors. These results are aligned with previous findings of this study. It is already shown that those who do not have a computer or an internet at home tend to be cybervictims and exhibit cyberbullying behaviors.

Ybarra et al. (2006) report in their study that state school students, which is known to have lower economic backgrounds, spend more time in internet cafes than private school students do and state school students are more likely to be exposed to more cyberbullying. Topcu et al. (2008) present a link between being cybervictim or cyberbully to students' access types and behaviors to the internet

and shows that internet cafes where there is limited control over students are likely to be the root cause of the pattern.

The results of this study in terms of daily internet use concludes that students who spend less time in internet are less likely to be cybervictims. Likewise, a conclusion is inferred that those who use internet less are likely to present less cyberbullying behaviors.

A common proposition among the studies claiming there is no direct relationship between being a cybervictim and more internet use is that there are other mediator agents in between (Erdur-Baker, 2010). Determining those mediator factors enables to understand the causality relationship better (Eroglu et al., 2015). Topcu et al. (2008) state that frequent use of ICTs is crucial prior of cyberbullying but using the internet frequently do not necessarily make someone cyberbully. However, there are studies in the literature that report different results. Peker and Eroglu (2010) discover that an increase in students' internet addiction also increases the possibility of being a cybervictim or a cyberbully. It further agrees with other studies in the field (Ozdemir and Akar, 2011; Soydas and Ucanok, 2014; Ybarra and Mitchell, 2004; Gardner, 2010). Rather than the variable of time spent on the internet by individuals, the quality and the extent of internet usage may be more definitive for students to be cybervictims or cyberbullies. Regardless of the time spent in the internet, students may show cyberbullying behaviors when they do not have the proper piece of guidance. Furthermore, to explain the mentioned phenomenon it should be taken care into consideration that individuals being exposed to cyberbullying may choose to end their internet subscription which eventually represented as less usage of internet in the analysis of the results.

The results of this study also shows that students having lower levels of technological skills are more likely to be cybervictims and cyberbullies. This agrees with the work of Sezer, Sahin and Akturk (2013) in which the authors reason that lack of technological skills and levels comes with lack of information about cyberbullying behaviors and methods as well, which eventually increases the risk of students to be cybervictims.

According to the results related to parents' educational level, there appear to be a significant difference in terms of being a cybervictim and cyberbullying. Students whose parents have only primary school education are more likely to be a cybervictim, compared to those whose parent have postgraduate education. Same pattern is observed with parents having high school education or university level compared to ones with postgraduate education level. In conclusion less educated the parent is, more vulnerable the student is to be a cybervictim. In addition, it is find out that the case of cyberbully students follow the same pattern. Cyberbully students likely have parents with lower level school diplomas.

The results of this study can be justified by several other studies in the field. Previous researches indicate that parental control in online environments is an effective tool to decrease risky online behaviors among teenagers (Mesch, 2009; Ybarra and Mitchell, 2004). Soydas and Ucanok (2014) reveal that the daughters of mothers with a lower level of education are more exposed to cyberbullying. Eroglu et al. (2015) discover that the students whose mothers have a level of education lower than high school have more cyberbullying behaviors than others. To present a further agreement in the literature, in a study conducted by Akbaba and Eroglu (2013), it is found that having parents with a low level of education increases cyberbullying behaviors. However, there exist some studies reporting that having a mother with a high level of education increases students' chances to be cyberbullies (Laftman, Modin and Ostberg, 2013). As another contradictory work, Serin (2012) reports that the students whose mothers have an education level of M.A and PhD show more cyberbullying behaviors compared to those whose mothers have only primary school education.

According to the results in terms of technological competence of parents, a significant difference cannot be detected in terms of being a cybervictim or cyberbully. Both considering other contradictory works in the field and the imprecise definition of the *technological competence*, it is difficult to draw a conclusion based on results of this study. To illustrate with some other works in the

field, Soydas and Ucanok (2014) state that mother's computer skills have an impact on students to be a cybervictim among girls while it motivates cyberbullying behaviors among boys. In this case, it is necessary to get further detailed information about the ICT tools parents use. Eroglu et al. (2015) shows that mother's internet skills have a great impact on students to be cyberbullies or cybervictims. Akbaba and Eroglu (2013) state that having a higher perception of parents' internet skills by students decreases cyberbullying behaviors in primary school students. Anderson and Sturm (2007) mention that parents have difficulty in dealing with cyberbullying cases of their kids due to the lack of knowledge. It is also stated that raising awareness of parents about technology and its use motivates them to follow and surveil their children's online activities which is a essential to overcome cyberbullying effectively (Franek, 2006; Keith and Martin, 2005).

When the relationship between the total scores of being a cybervictim and cyberbullying behaviors is examined, a moderate positive relationship can be seen. This indicates cyberbullying and being a cybervictim is correlated. It further shows that cybervictims may have tendency for cyberbullying behaviors or those who exhibit cyberbullying behaviors can be cybervictims. One explanation of seeing such a pattern can be summarized as that students exposed to cyberbullying fight back with the intention of revenge. Moreover, those who are cybervictims meet with cyberbullying behaviors, internalize and practice them in other online social settings. To compare in this study's findings with the existing studies, Turan (2013) reveal that since male students are more exposed to cyber peer victimization, they may exhibit more cyber peer bullying. In another study, it is mentioned that most of the male students who are cybervictims tend to fight back and retaliate aggressively in the same fashion with what they are exposed to. Same study also states that most of the female students prefers to ask the cyberbully to stop the action instead of fighting back or retaliate (Akca, Sayimer and Ergul, 2015). To present one contradictory work with findings of this study, Tamer and Vatanartiran (2014) report that cybervictims who are exposed to cyberbullying such as getting sexually abusive phone calls with unknown caller IDs, getting sexually explicit messages and e-mails, getting malicious e-mails, getting threats through online services do not tend to exhibit cyberbullying behaviors.

Suggestions

It is necessary to develop strategies for elimination and intervention of cyberbullying in schools. It is crucial to raise awareness about cyberbullying, especially of educators and students. Psychological counselors should be easily accessible for cybervictims which are eager to talk about their experiences. Furthermore, cybervictims need to be informed about what they can do and where/who they can refer to in case of bullying acts with no hesitation to disclose what they are exposed to. Seminars or courses can be given about the topic to raise awareness of the student body. By having these precautions, undesirable incidents and their damaging results may be prevented.

The findings of this study reveals that there is a relationship between being a cybervictim and cyberbully. To put it into perspective, this result can be framed as cybervictim's fight back with the intention of revenge. It is crucial that instructors of technological sciences must be informative, resourceful and raise awareness about how to use the internet and technological tools for educational purposes. Shifting the focus of the students (Akca, Sayimer and Ergul, 2015) from social media and playing non-educational computer games to educational games and m-learning applications may help not only to decrease both cyberbullying behaviors and cybervictim cases but also to prevent a decrease in academic success.

It must be noted that proper use of internet and technology stands as a critical issue, since uninformed use of them invites cyberbullying acts. Increasing the surveillance of places where students access the internet, such as schools or internet cafes, and utilizing software that prevent and report cyberbullying acts can be helpful in resolving the problem (Cohen et al., 2014). As further security measures, parents being in touch with their kids and gaining knowledge about technology can be taken to motivate students to have more insight and be more aware of their online activities. In this way, it is possible to prevent or decrease problematic internet use (Ang et al., 2011; Huang et al.,

2010; Milani, Osualdella and Di Blasio, 2009). It should be kept in mind that young individuals take adults as role models; therefore, it must be known that adults' attitude is vital in prevention (or prevalence) of cyberbullying (Basturk et al., 2014).

Finally, information about the possible negative implications of social media should be taught to students. More specifically teenagers must be informed that their inappropriate pictures and text messages regardless of their intention (to prove self-identity etc.) to make online social contacts can be abused for the sake of others' bad intentions. Students can easily fall into the traps of cyberbullies presenting fake identities in online settings. Recent studies reveal that the use of online social networks among students has a positive relationship with being cybervictims (Staksrud, O'lafsson and Livingstone 2013; Sampasa-Kanyinga and Hamilton, 2015; Dredge, Gleeson and Garcia, 2014). Moreover, guiding students about how they can make use of ICTs, such as smart phones and the internet, in a reasonable, responsible way while also considering the ethical dimension of it is very crucial for the elimination and prevention of cyberbullying (Peker, Eroglu and Citemel, 2012; Yaman, Eroglu and Peker, 2011).

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