The Validity and the Reliability Study of A Cyber Victimization/Bullying Scale For University Students*

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Abstract

The main purpose of this study was to develop a cyber victimization/bullying scale for university students and to test the validity and reliability of the scale. In the first step of this study, the validity and reliability of the cyber victimization scale were tested. The first study sample consisted of 486 university students, 320 (65.8%) female, and 166 (34.2%) male. As a result of the exploratory factor analysis, a 6-factor structure was obtained. The identified subscales for the victimization form were "substitution, verbal teasing, social exclusion, disclosure, cyber victimization with sexual content, anonymous cyber victimization," The total Cronbach's alpha for the victimization form was .81. In the second step, a parallel bully form was created with the same items. The second study sample consisted of 208 university students, 130 (62.5%) female, and 78 (37.5%) male. As a result of the exploratory factor analysis, a similar 6-factor structure was obtained. The identified subscales for the bullying form were "substitution, verbal teasing, social excluding, disclosure, cyberbullying with sexual content, and anonymous cyberbullying." The total Cronbach's alpha for the bullying form was .93. The results of exploratory factor analysis and reliability analysis indicated that the cyber victimization/bullying scale was a qualified scale that could be preferred in scientific studies conducted with university students.

Key Words

Cyber victimization • Cyber bullying • The validity and the reliability

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Introduction

Bullying remains to be a big problem that many people are exposed to today and has serious consequences. This problem can be observed in every environment and all ages. Bullying occurs not only in middle and high schools but also in universities and even in the work life of adults. Olweus (1999) defined bullying as the continuous negative actions of one or more individuals towards another individual. There is a consensus in the literature on the definition of bullying. According to the general definition, the fact that the bully's actions are repetitive, the bully is stronger than the victim, and the bully intentionally harms the victim psychologically and physically constitutes a commonly observed bully profile (Baldry et al., 1998; Salmivalli 2002; Olweus, 1993).

With the rapid development of communication technologies and it's becoming an indispensable part of life, cyberbullying has emerged as a type of bullying (Campell, 2005). Bullying, which has been a serious problem in schools for many years, continues to exist by changing its shape. For example, individuals with a bullying profile continue to increase their bullying behaviors in the virtual environment or victims prefer the virtual environment to take revenge on their bullies (Raskauskas & Stoltz, 2007). In addition, loneliness (Bilgiz & Peker, 2020), desire for affection and attention (Dilmaç, 2009), low self-esteem and low social acceptance (Schoffstall & Cohen, 2011), hostile feelings and psychotic symptoms (Arıcak, 2009) also predict these bullying behaviors.

Security issues such as identity concealment in the virtual world (Slonje et al., 2013), privacy loss, and inadequate control (Erdur-Baker & Kavşut, 2007) allow cyber bullying to increase. According to Willard (2005), cyberbullying is defined as the complete set of actions of bullies who select their victims in the virtual environment and use digital tools to cause harm. Hinduja & Patchin (2005) define cyberbullying as the intentional and repetitive behavior of causing harm to victims using digital tools.

Examples of cyberbullying behavior include kicking someone out of a chat room for no reason, secretly taking and uploading embarrassing photos or videos of someone using a mobile device, creating web pages that demean someone, adding humiliating and threatening messages or images to the victim's web page, and spreading unfounded rumors about the victim (Erdur-Baker et al., 2008; Hinduja & Patchin, 2010).

Bullying and cyberbullying are complementary behaviors, but they differ in some aspects (Jose et al., 2012). First, individuals who engage in cyberbullying can do so while hiding their identities. Second, while traditional bullying occurs only in the physical location where it takes place, cyberbullying can be witnessed by people who are not present in the same location, due to the use of technology. Third, due to the anonymity of the online environment, sexual bullying is more common and easily carried out. Finally, while a victim of traditional bullying can escape the situation by leaving the physical environment, there is no safe space in the online world where a cyberbullying victim can escape (Ayas & Horzum, 2011).

Cyberbullies develop the types of bullying they choose to target individuals to humiliate, scare or exclude. The most common types of attacks include online harassment, peer cyberstalking, dissing, flaming, impersonation, creating fake profiles, outings, trickery, and exclusion (Willard, 2007).

Bullying can have a mild or severe impact on individuals, but the period during which it has the greatest effect is when the individual's personality is not fully developed (Dilmaç, 2014). Individuals who are subjected to cyberbullying may experience psychological issues such as difficulty in social communication, friendship problems, decreased self-esteem and self-concept, exclusion, helplessness, and fear (Hinduja & Patchin, 2005). Additionally, behaviors such as failure, loneliness, depression, and paranoid thoughts may arise (Aktepe, 2013). Most cyberbullying victims are unable to talk about their experiences with their social circles and tend to withdraw further into themselves (Aktepe, 2013). Mishna et al. (2009) investigated the reasons that prevent children and young people from telling their families about cyberbullying and found that the most important reason is the fear that parents will not allow children to use the internet or phone again to protect children.

Cyber victimization is the situation where individuals or groups are exposed to harmful behaviors technically or relationally, causing material or spiritual damage as a result of these behaviors (Tuğ-Karoğlu & Çılğın, 2020). Arıcak et al. (2012) define this situation as "the exposure of an individual or entity, whether physical or legal, to harmful technical or relational behaviors through the use of information and communication technologies, resulting in material or spiritual victimization." Technology is intended to create rich learning environments and introduce children to new ideas, develop new skills, and expand their perspectives (Bailey & Cotlar, 1994).

It is known that as individuals internet usage increases, so does the rate of cyberbullying and victimization (Hinduja & Patchin, 2018; Kowalski & Limber, 2013). The restrictive environment brought about by the pandemic, which emerged especially in late 2019 and became a current outbreak, has increased people's interest in the virtual world and made internet use compulsory. According to a study conducted by Statista on a global scale, there has been a 36% increase in online gaming, a 45% increase in instant messaging app usage, and a 44% increase in social media usage during the pandemic. According to a post-pandemic survey by Microsoft, one in every three people in Turkey engages in cyberbullying, and one in every five is a cyberbullying victim (Microsoft, 2021).

Purpose of the Study

Especially in Turkey, young people aged 16-24 spend the most time on social media (Turkish Statistical Institute [TSI], 2021), which makes them more likely to experience bullying and victimization in the cyber environment. The scales used in studies on cyberbullying were generally developed before the pandemic period and for adolescent samples (Ayas et al., 2015; Çapan et al., 2020; Satan 2006; Kutlu, 2005) with different sub-dimensions and question stems (Arıcak et al., 2012; Dölek, 2002; Karabatak & Alanoğlu, 2020; Peker et al., 2015). However, as mentioned above, especially during and after the pandemic period, with the transition of universities to online education; the rates, frequencies, and durations of computer, tablet, and mobile phone use have increased significantly among university students. This situation increased the potential of university students to be both cyber victims and cyber bullies. Because all the relationships that university students established in the physical environment in the past years have now moved to the cyber environment. Developing a new cyberbullying/victimization scale for university students would contribute to understanding the changing face of cyberbullying after the pandemic. For these reasons, the main purpose of this study is to develop a cyberbullying/victimization scale for university students and to test the validity and reliability of the scale.

In this study, a scale development process was conducted. A series of steps were followed to create a scale item pool. First, a literature review was conducted to examine existing scales and scale items related to the cyberbullying. Then, 86 university students were asked about their previous cyberbullying experiences through an open-ended question. Based on both the responses from the students and the relevant literature, 37 items were created. Then, expert opinions were consulted to determine the scale items according to their areas of expertise. Then, the pilot study was conducted to assess the comprehensibility, consistency and validity of the scale items. Feedback from the pilot study guided the revision of the scale items and resulted in the creation of the final scale item pool

Method

Sample and Procedures

This study consists of two separate studies conducted at different times. The first study was the validity and reliability study of a new cyber victimization scale developed for university students. After the results indicated that the validity and the reliability level of the scale were within acceptable limits, the bully form of this scale was created in a second study. The bully form was also tested again on a new sample.

After institutional ethical committee approval from Necmettin Erbakan University (Number: 10.03.2023.100) data were collected from students from different universities. Informed consent was obtained from all participants included in the study. The first study sample consisted of 486 university students, 320 (65.8%) female, and 166 (34.2%) male. The mean age of the participants was 19.61±4.45. The second study sample consisted of 208 university students, 130 (62.5%) female, and 78 (37.5%) male. The average age of the participants was 21.71±3.33.

Results

To test the construct validity of the Cyber Victimization Scale for University Students, the principal component analysis method used promax rotation to conduct exploratory factor analysis. The results of Barlett's test of sphericity indicated that the data met the assumption of sphericity ($\chi^2(378)= 5973.68$, $p < .001$). As a result of the analysis, a 6-factor structure with a KMO value of .88, explaining 61.27% of the total variance and having an eigenvalue above 1 was obtained.

Cronbach's alpha internal consistency coefficient was calculated to test the reliability of the scale. Cronbach's alpha internal consistency coefficient was .77 for substitution, .76 for verbal teasing, .82 for social exclusion, .79 for disclosure, .86 for cyber victimization with sexual content, and .73 for anonymous cyber victimization. The Cronbach Alpha internal consistency coefficient for the whole scale was .81. Results of the study indicated that the validity and reliability level of the scale was within acceptable limits. The findings are presented in Table 1.

Table 1

Factor Structure of the Cyber Victimization Scale for University Students

Items	F1	F2	F3	F4	F5	F6
S1	.736					
S2	.720					
S3	.700					
S4	.655					
S5	.622					
S6	.567					
VT1		.728				
VT2		.702				
VT3		.701				
VT4		.608				
VT5		.591				
VT6		.527				
SE1			.766			
SE2			.650			
SE3			.594			
SE4			.529			
D1				.799		
D2				.750		
D3				.616		
D4				.510		
SC1					.770	
SC2					.707	
SC3					.614	
SC4					.520	
A1						.698
A2						.680
A3						.653
A4						.620
Explained Variance	32.189	41.068	47.557	52.617	57.592	61.271
Eigenvalues	9.013	2.486	1.817	1.417	1.225	1.106
Cronbach Alpha	.772	.765	.817	.794	.859	.732

F1: Substitution, F2: Verbal Teasing, F3: Social Exclusion, F4: Disclosure, F5: Cyber Victimization with Sexual Content, F6: Anonymous Cyber Victimization

The correlations between the total score and sub-dimensions of the Cyber Victimization Scale for University Students were examined. The results indicated that there were high and positive correlations between the total score and all sub-scales ($p < .001$). In addition, all sub-dimensions are positively and significantly correlated to each other ($p < .001$). The findings are presented in Table 2.

Table 2

Correlations Between the Subscales of the Cyber Victimization Scale for University Students

Factors	1	2	3	4	5	6	$\bar{x} \pm sd$
1. Substitution	1						1,17±,32
2. Verbal Teasing	,571***	1					1,20±,36
3. Social Exclusion	,514***	,600***	1				1,23±,42
4. Disclosure	,388***	,520***	,475***	1			1,39±,50
5. Cyber Victimization with Sexual Content	,480***	,642***	,595***	,458***	1		1,18±,39
6. Anonymous Cyber Victimization	,507***	,657***	,668***	,544***	,609***	1	1,23±,43
Total	,702***	,831***	,814***	,745***	,792***	,847***	1,23±,32

*** $p < .001$.

To test the construct validity of the Cyber Bullying Scale for University Students, exploratory factor analysis was conducted by principal component analysis method using promax rotation. The results of Barlett's test of sphericity showed that the data met the assumption of sphericity ($\chi^2(378)= 6030.595$, $p < .001$). As a result of the analysis, a 6-factor structure with a KMO value of .87, explaining 74.087% of the total variance, and an eigenvalue above 1 was obtained.

Cronbach's alpha internal consistency coefficient was calculated to test the reliability of the scale. Cronbach's alpha internal consistency coefficient was .95 for substitution, .90 for verbal teasing, .79 for social excluding, .74 for disclosure, .83 for cyberbullying with sexual content, and .78 for anonymous cyberbullying. The Cronbach Alpha internal consistency coefficient for the whole scale was .93. Results of the study indicated that the validity and reliability level of the scale was within acceptable limits. The findings are presented in Table 3.

Table 3

Factor Structure of the Cyber Bullying Scale for University Students

Items	F1	F2	F3	F4	F5	F6
S1	.898					
S2	.888					
S3	.811					
S4	.779					
S5	.767					
S6	.707					
VT1		.782				
VT2		.760				
VT3		.759				
VT4		.730				
VT5		.660				
VT6		.626				
SE1			.760			
SE2			.691			
SE3			.649			
SE4			.543			
D1				.848		
D2				.682		
D3				.622		
D4				.613		
SC1					.864	
SC2					.864	
SC3					.812	
SC4					.585	
A1						.688
A2						.621
A3						.589
A4						.453
Explained Variance	44.595	9.086	7.141	4.882	4.496	3.888
Eigenvalues	12.487	2.544	2.000	1.367	1.259	1.089
Cronbach Alpha	.950	.897	.793	.737	.832	.784

F1: Substitution, F2: Verbal Teasing, F3: Social Excluding, F4: Disclosure, F5: Cyberbullying with Sexual Content, F6: Anonymous Cyberbullying

   The correlations between the total score and sub-dimensions of the Cyberbullying Scale for University Students were analyzed. The results indicated that there were high and positive correlations between the total score and all sub-scales ($p < .001$). In addition, all scale sub-dimensions were positively and significantly correlated with each other $p < .001$). The findings are presented in Table 4.

Table 4

Correlations between the Subscales of the Cyber Bullying Scale for University Students

Factors	1	2	3	4	5	6	$\overline{x} \pm$ sd
1. Substitution	1						1,06±,29
2. Verbal Teasing	,692***	1					1,21±,38
3. Social Excluding	,641***	,642***	1				1,23±,49
4. Disclosure	,822***	,716***	,580***	1			1,05±.24
5. Cyber Bullying with Sexual Content	,502***	,537***	,390***	,551***	1		1,07±.28
6. Anonymous Cyber Bullying	,680***	,585***	,495***	,607***	,333***	1	1,13±.31
Total	,879***	,869***	,820***	,856***	,656***	,753***	1,12±.27

****$p < .001$.

Discussion

With the developments in communication technologies, cyberbullying is also diversifying and increasing. The literature shows that the rates of being exposed to cyberbullying have increased due to the widespread use of communication technologies, especially among university students (Beran et al., 2012; Faucher et al., 2014). Especially with the new type of coronavirus (COVID-19), which emerged in 2019 and is still a current epidemic, the restricted environment brought by the pandemic process has made it necessary for university students to move many activities that started face-to-face such as education and entertainment to the virtual environment. This may have increased the potential for the emergence of different types of cyberbullying. Therefore, the scales developed to identify and solve problems related to cyberbullying should better reflect the problems experienced by individuals in this transition period. However, although there are many studies on cyberbullying and victimization in the literature (Arıcak et al, 2012; Arslan et al., 2020; Beran & Li, 2007; Çetin et al., 2011; Hinduja & Patchin, 2008; Karabatak & Alaoğlu, 2020; Kayman, 2017; Küçük, 2016; Kowalski & Limber, 2007; Özbey, 2019; Topcu & Erdur-Baker, 2010; Ybarra & Mitchell, 2004), the number of scales developed to examine cyberbullying and victimization experiences of university students is much smaller (Hinduja & Patchin, 2015). Therefore, this study aimed to develop a new cyberbullying/victimization scale for university students and to test the validity and reliability of the scale.

In the first step of this study, a cyber victimization form was developed. The results of the factor analysis identified six subscales for the cyber victimization form as "substitution, verbal teasing, social exclusion, disclosure, cyber victimization with sexual content, and anonymous cyber victimization." Since the validity and reliability results of the scale indicated that the scale met the criteria for scientific studies, the factor structure of the bully form of the scale was examined in a different sample as a second step. Similarly, the subscales identified for the

cyberbullying form were "substitution, verbal teasing, social exclusion, disclosure, cyberbullying with sexual content, and anonymous cyberbullying.

The description of the dimensions was as follows: *substitution* refers to the use of methods such as fake emails or websites to steal or impersonate internet users' accounts or to be exposed to such methods. *Verbal teasing* refers to verbal harassment or attacks aimed at disturbing or targeting another person in communication environments on the internet. *Social exclusion* refers to the conscious exclusion or isolation of a person through groups or platforms on the internet. *Disclosure* refers to the unauthorized and malicious sharing or publication of personal or private information about a person on the Internet. *Cyber victimization with sexual content* refers to the situation where a person is exposed to sexual harassment or attacks on the internet and *anonymous cyber victimization* refers to the situation where a person is exposed to anonymous harassment, threats, or attacks on the internet while their identity is kept hidden.

The adequacy of the sample is determined by the Kaiser-Meyer-Olkin (KMO) coefficient. The KMO coefficient should be at least 0.50 (Field, 2009). In this study, KMO values were found to be .88 and .87, respectively. This result showed that both samples were adequate for exploratory factor analysis. Bartlett's Test of Sphericity (BTS) is used for the significance of correlation coefficients between variables. BTS should be $p < 0.05$ (Alpar, 2018; Çapık, 2014; Çelik, & Yılmaz, 2016; DeVellis, 2017; Garson, 2013; Heale & Twycross, 2015; Özdamar, 2017). In this study, BTS was $p < 0.001$ for both forms. The results indicated that this criterion was met for both forms.

The cyber-victimization scale had a six-factor structure explaining 61.27 % of the total variance. The factor loadings of the items ranged between .51 and .79. Cyberbullying scale also had a six-factor structure explaining 74.08 % of the total variance. The factor loadings of the items ranged between .45 and .89. A total variance explained between 40-60 % is sufficient for general acceptance, and factor loadings above 50% and factor loadings above .30 indicate a strong construct validity (DeVellis, 2017). In addition, a high variance explained is an indication that the related concept or construct is measured well (Büyüköztürk, 2007). The results of the study indicated that both the victimization form and the bullying form of the scale met the validity criteria.

Cronbach's alpha coefficient is a reliability value that shows whether the scale items are related to the characteristic to be measured. A value between 0.60-0.80 indicates that the scale is highly reliable, and a value between 0.80-1.00 indicates that the scale is highly reliable (Alpar, 2018; Çakmur, 2012; Çapık, 2014; Çelik & Yılmaz, 2016; Field, 2009; Heale & Twycross, 2015; Özdamar, 2017; Tavşancıl, 2010). In this study, the Cronbach alpha values of the sub-dimensions of the cyber victimization form were between .73 and .86, and the Cronbach alpha values of the sub-dimensions of the cyberbullying form were between .74 and .95. In addition, the Cronbach alpha value of cyber victimization and cyberbullying was .81, and .93 respectively. These results indicated that the reliability of both forms was at an acceptable level.

The results indicated that there were high and positive correlations between the total score of cyber victimization and all subscales. Moreover, all subscales of cyber victimization were positively and significantly correlated with each other. In parallel with these findings, the results also indicated that there were high and positive correlations between cyberbullying total score and all subscales. Moreover, all subscales of cyberbullying were positively and

significantly correlated with each other. Both the high correlations between total scores and sub-dimensions and the parallel results for both forms indicated the consistency of the scales. In addition, the results indicated that the scales could be used with sub-dimensions as well as only total scores.

As a result, findings of both exploratory factor analysis, reliability analysis, and Pearson correlation analysis indicated that the Cyber Victimization and Cyber Bullying scales are valid and reliable measurement tools that can be used to determine the cyberbullying and victimization levels of university students.

Based on the results of this study, we suggest that the cyberbullying and cyber victimization scale can be used in adult samples. Furthermore, it is important to examine the variables that may be related to bullying and victimization (level of self-confidence, perception of social support, emotional intelligence, and organizational justice) in relation to the scale. This will help us better understand the prevalence and impact of cyberbullying and cyber victimization among adults.

Ethic

This study was conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments.

Author Contributions

All of the authors contributed equally in the article.

Conflict of Interest

The authors declare no conflict of interest in the research.

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