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Development and Validation of Cyber Victimization Scale

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Abstract

Background and objectives. Cyber victimization is one of the current most threatening issues. Ease of access to internet and availability of electronic devices has created a new medium of social interactions. These new ways of communication are not without its misuse and exploitation. The main objective of the present study was to develop an indigenous scale to measure cyber victimization and to determine the reliability validity indices of the measure. Furthermore, gender differences in cyber victimization were also studied.

Methods. The study was conducted to develop Cyber Victimization Scale (CVS). Literature review and focused group discussions were held to generate item pool. Initially 50 items were generated. After subjective evaluation by experts 35 items were identified. Scale items were evaluated empirically for content validation and exploratory factor analysis. Sample was college and university students(N=317) both boys (n=138) and girls (n=179). Furthermore, psychometric properties of the scale were established. Test – test reliability, split half reliability and coefficient alpha was used to establish reliability of the scale. The convergent and discriminant validity was established with the help of Cyber Bully/Victim scale (Horzum, 2010).

Results. Result indicated that cyber-victimization scale (CVS) is an internally consistent scale. Five factors were identified with principal axis factoring. The CVS showed excellent internal consistency (α=.92) with strong coefficient alphas on the factors ranging from .73 to .90. The scale was proved to be valid and reliable measure for future use. Results also showed that gender differences were also found in cyber-victimization.

Conclusion. The results indicate that Cyber Victimization Scale (CVS) is a valid, reliable and a comprehensive instrument to measure cyber victimization in adolescents

Keywords. *Cyber victimization, development, focused group, factor analysis, validation, convergent validity, discriminant validity.*

Introduction

From past few decades there has been an enormous development in the field of internet and communication devices. This rapid growth in technology has changed the ways of connecting and communicating with each other. Easy access towards cyber social networks has facilitated interactions and acquaintances. One of the emerging issues in the realm of technology and communication is cyber bullying giving birth to cyber victimization. Especially in the developing country like Pakistan increase in the usage of social networking sites and mobile phones has become a major precursor in cybervictimization (Saleem, Khan & Zafar, 2021). Though multiple instruments are available to measure cyber victimization, a psycho metrically sound and elaborative one was required within the context of Pakistani culture, markedly different from western cultures. This led to the development of cyber victimization scale.

Cyber Victimization

Cyber victimization typically refers to the implication of anger and offences though electronic tools such as cell phones internet and related soft-wares. Cyber victimization generally involves essentials of intended and recurring harm imposed through technology. It may contain frequent messages or calls with threatening content, sexual images communicated through e-mail, instant message, offensive posts in chat rooms, controversial blogs or any other thing that is inflicting. Such harassment may cause varied levels of physical or emotional problems to the victim (Addington, 2013; Bossler et al., 2012; Del Rey et al., 2012; Greenwood, 2016).

Moreover, cyber victimization involves experience of humiliation, distress, harassment (Grigg, 2010) identity theft and cyber-stalking (Holt & Bossler, 2008). Cyber victimization can be experienced individually or in group form (Dooley et al., 2009). Cyber victimization can take a variety of forms. Nocentini et al. (2010) highlighted four kinds of cyber victimization written and verbal, visual, impersonation and online exclusion.

1. Visual cyber victimization. It includes images, photos or videos generally being taken or forwarded via electronic sources and are usually offensive, injurious, or harmful for the victim (Nocentini, & Menesini, 2015).

Sexual cyber victimization is concerned with the inappropriate demands for sexual nature photos, videos and sharing of explicit sexual content (Wolak & Finkelhor, 2011). Current cyber victimization scale presents combined category of visual and sexual form of cyber victimization. These can be the images victim has shared with third party usually trusted (Drouin et al., 2015; Morelli et al., 2016).

2. Written-Verbal Cyber Victimization. It is the other category that is included in current scale. When the victim is target of annoying, infuriating, offensive or threatening written or verbal comments, messages or calls through mobiles or internet it refers to the written-verbal cybervictimization. Verbal cybervictimization usually happens through voice calls or voice messages. Written cybervictimization occurs through written comments, instant text messages or symbols. This form is more prevalent as it encourages disinhibition and is more robust (Hinduja & Patchin, 2015). In present study attention is given to the relational form of cyber victimization other than before mentioned categories.

3. Catfishing or Impersonation. It involves pretending different, lying about identity, making fun of or getting victim into the trouble. This classification has got relevance in many qualitative and quantitative researches (Nocentini et al., 2010; Palladino et al., 2015).

4. Forgery. It also involves cyber forgery, and blackmailing, in which the individuals who have the pictures can blackmail victim, threaten to disseminate or further share images, especially if the victim denied to go with their wishes (Kopecký, 2017).

5. Exclusion. This is a form of relational victimization involves which online exclusion which suggests being expelled or not being accepted from a group, usually an instant messaging or a social network program. Relational victimization is a construct which is understudied resulting in limited viewpoints. Relational victimization incorporates, giving harm to victim's reputation by spreading rumors and doing gossips about the victim, or humiliating victim in front of others.

It also involves withdrawal of attention and abandonment of friendship. Psychological manipulation and intimidation via internet and social networks can also be considered as victimization (Steinberg, 2008).

Present study is designed to measure cyber victimization keeping in mind the social dynamics of Pakistan. There is a significant increase in cyber victimization in last decade specially in educational settings such as schools, college and universities (Saleem et al., 2021). It is reported that one fourth of adolescence are cyber bullies and half of them are cyber victimized (Raskauskas & Stoltz, 2007). To study cyber victimization effectively an adequate measure was required with rigorous and sound content and psychometric metric properties. Currently many instruments are available to measure the construct (Berne et al., 2013; Gámez-Guadix et al., 2014; Gul &Hanif, 2013). Though all have contributed greatly in the field of cybervictimization but some limitations such as lack of expressive statements in terms of cyber victimization experiences and suggesting limited factors (Shapka & Masoudi, 2017; Topcu & Erdur-Baker, 2010) have suggested us to develop a new scale in order to present a more elaborative view of cyber victimization.

Gender Differences in Cyber-Victimization

Research indicated higher chances for victimization among girls (Görzig & Olafsson, 2013). Barlett and Coyne (2014) found girls more likely to report victimization than boys. Among the Portuguese sample girls were significantly more likely to report victimization than boys regardless of age (Almeida et al. 2012). In present time, the aspect of cybervictimization is very much complex, both in theory and research findings which illustrates the need for more in-depth analyses. The present study investigated the gender difference in cyber victimization among school and college students of Pakistan. Sun and Fan (2016) also conducted a meta-analysis to identify a gender difference in cyber victimization. In which Females are reported to more cyber victimized as compare to males. Kowalski et al., 2012 found same results conducted to explore gender difference in cyber victimization.

Aims and Objectives

Advancement in the field of technology and communication has the led the way for easy and excessive exposure to internet and social networks. In the developing country like Pakistan cyber victimization is growing rapidly. There are various factors making Pakistani youth making them vulnerable to the cyber victimization. As cyber victimization has appeared as a new challenge for the society a great need was felt to identify key markers defining online victimization. Current study is aimed to contribute both theoretical and practical understanding of cyber victimization by developing a new scale.

Most of the previously available scales present a unifactorial model of cyber victimization thus unable to provide complete understanding of the construct (Alvarez et al., 2017; Dey Rey, et.al, 2015; Garaigordobil, 2015; Lam & Li, 2013). Present study is intended to contribute a multifactorial scale to present a more comprehensive and detailed view of cyber victimization.

To construct a cyber victimization scale for Pakistani population is also significant, as existing scales are validated on population with different societal and cultural values. Pakistani population being part of specific geographical region (South Asia) demands relevant indicators to measure cyber victimization. So, the current study is aimed to generate a scale with content appropriately matching their needs. Keeping in view the framework of above-mentioned rationale, the major objectives of the current research are as follow;

- To develop an indigenous scale for measurement of cybervictimization among students.
- To determine reliability and the validity indices of scale to establish psychometric properties of the scale.
- To explore the gender difference in cybervictimization.

Method

To develop the scale methodology given by Boateng, et al. (2018) was used. Procedure was carried out in following steps;

Item Pooling

First step was to generation pool of sample items for each relevant concept of the cyber victimization. To generate items literature review and focused group discussions were conducted.

a. Literature Review. Items for measuring cyber victimization generated from previous literature. Literature review was done with two basic aims; First, the past studies on cyber victimization reviewed to recognize content that previous studies had used to obtain satisfactory level of psychometric properties. Secondly, literature review was done to create items from relevant conceptual definitions. It was done to make sure that all aspects and domains of the construct were covered and reflecting appropriately the particularities of present research.

b. Focused Group Discussions. Focused group discussion was related to the use and prevalence of mobile phone, internet and social networking sites. Semi-structured pattern of questioning was followed. Participants were asked to share their experiences as well as observation related to cyber bullying and cyber victimization. Furthermore, following prompts were given to the participants.

i. How often someone threatened or harassed the participants when online

ii. whether the respondents have ever felt worried or threatened because of someone harassing them online by sending text messages etc

iii. whether the respondents have ever felt embarrassed or threatened because of someone sending messages to see them online

Focused group one was conducted with female students (*N*=10) of intermediate, graduates and post graduates. 17 to 23 years (*M*= 21.34, SD=3.06). Participants were from both government (*n*=5) and private (*n*=5) educational institutes.

Focused group two was done with male students (*N*=08) of intermediate, graduates and post graduates. Age range of participants was from 18 to 24 years (*M*= 22.83, SD=3.24). Participants were from both government (*n*=05) and private (*n*=03) educational institutes.

Focused group three was carried out with the target population i.e. students of intermediate, graduates and post graduates (*N*=12), both boys (*n*=04) and girls (*n*=8). Age range of participants was from 17 to 24 years (*M*= 22.13, *SD*=3.17). Participants were from both government (*n*=10) and private (*n*=2) educational institutes. Participants were from both government (*n*=10) and private (*n*=2) educational institutes.

Focused group four was conducted with the professionals (*n*= 7) i.e. lecturers and assistant professors of psychology (*n*=4) and information technology (*n* = 3).

Item Generation

Total 50 items were generated after evaluation of content obtained in result of literature review and focused group discussions. These items were given to a panel of students, the target population, and were asked to assess item according to the conceptual definitions of the cyber victimization. Panels of students were asked to mark each item on three points scale, as relevant, relevant but not essential or irrelevant. 35 items from initial 50 sample items were selected for the final scale.

Categories Identification

A panel of five experts and five students in the field of psychology as well as information technology were requested to identify categories of cyber-victimization and were requested to sort developed items into these categories. The categories were also labeled considering the literature and language of general population. The items that are most similar in meaning to each other are retained in suggested category. For retention of items it was also considered that they are dissimilar from item from other categories.

Developing Factorial Structure of Cyber Victimization Scale

In order to find out factorial and dimensional structure of items generated exploratory factor analysis (EFA). This procedure also helped to enhance the ultimate selection of items for the scale.

Sample

Target sample was *N*=317 students, boys (*n*=138) and girls (*n*=179). Age range of the participants was between 15 - 25 years (*M*=18.58, *SD*=2.20). Data was collected from different colleges and schools [both private (*n*= 79) and govt. (*n*= 238)] of Islamabad and Rawalpindi. For current study purposive convenient sampling technique was used. Students from intact families either living in joint (*n*= 83) or nuclear (*n*= 201) family system were selected. Time spent on social media range from 1 – 12 hours (*M*=4.02, *SD*=2.51).

Measure

Cyber Victimization Scale. With 35 items was used to collect data. Scale items are representative of the experiences of cyber victims specifically on social networking sites. Scale was constructed by following a rigorous method and based on a model of cyber victimization presented by Nocentini et al. (2010). Response categories used are every time=5, often=4, sometimes=3, once/twice=2 and almost never= 1. Item 5, 12, 14 and 27 have reverse scoring. The greater score on CVS represents higher victimization on cyber space and vice versa.

Results

Preliminary Analysis

Normality Check. Normality in the distribution of the data is a fundamental assumption for the procedure of factor analyses (Tabachnick & Fidell, 2007). Two methods were used to assess normality of the distribution of data: (a) descriptive statistics i.e. kurtosis and skewness of the 35 items were examined, and (b) the variability in the data by examining the standard deviation of 35 items. For the present scale of cyber victimization two items violates this basic assumption of normality i.e. items number 10 (M= 1.68, SD=1.14, Skew=1.14, Kurtosis=2.3) and 29 (M=1.15, SD=.59, Skew=4.78, Kurtosis=24.51). Item number ten was considered as worst offender but included in the initial analysis of dimension reduction while item number 29 was discarded at this stage for not fulfilling the criteria of normality. On variability check all the items were within the suggested range of SD >0.5 and <1.5.

Exploratory Factor Analysis. The factorability of the Cyber Victimization Scale (CVS) was assessed before starting data reduction and measuring potential factor solution. First of all, the correlation matrix was inspected to identify items that yielded a correlation of at least .30 with one or more items (Tabachnick & Fidell, 2007). Examination of the correlation matrix specified that 32 items had a correlation of at least .30 with at least on other item. The item number 16 and 18 do not correlate more than .30 with the any other items. Therefore, they were deleted.

Multicollinearity and singularity were calculated by examining the correlation matrix. None of the item correlate more than 0.9 with other items so, singularity was not detected within the data. Correlation among item 10 and 11 exceeds the upper limit of 0.80.

Therefore, the assumption of collinearity was violated. Multicollinearity was identified within the data. Item number 10 was considered as worst offender on the basis of normality check, further this item creates multicollinearity. Therefore, item number 10 was not included in final data reduction procedure.

Sample Suitability

Results reported a significant Bartlett's test of sphericity (χ^2 (378) = 5611.614, p <.000) suggesting that present sample can be used for factor analysis. The Kaiser-Meyer-Olkin (KMO) test of sample suitability was .837, which is above the suggested cutoff of .50 (Carpenter, 2018). KMO value gives additional indication for the factorability of a correlation matrix.

For the resulting 31 items a principal-axis factoring (PAF) analysis was used for dimension reduction. Eigen values were first inspected to determine the total variance described by the categories of the cyber victimization scale. In the preliminary model there are six factors with eigen values greater than 1.0, and it described 69.22 % of the total variance.

Moreover, a scree plot was examined to evaluate the potential number of factor. The scree plot showed that a more meaningful six factor model is reasonable. The item loadings and cross-loadings on the factors, as well as communality estimates were considered as criterion for item retention and deletion. Pett et al. (2003) suggested that if an item has factor loading less than .40, it should be deleted. All of the 31 items fulfilled this inclusion criterion.

Furthermore, Tabachnick and Fidell (2001) suggested that if an item has cross-loading more that .32 on two or more factors, it should be deleted. Three items were dropped for having cross-loadings above .32. Costello and Osborne (2005) maintained that item communality below .40 is also consider challenging; thus, it should not be retained. All items satisfied this criterion and were retained from further analysis.

Another iteration of principal axis factoring was conducted with the left over 28 items. The eigenvalues proposed a five-factor model which explained 67.93% of the total variance. The final five factors solution, consisted of 28 items in total, and is summarized below:

Factor I. The first factor, labeled as catfishing, comprised of seven items that explained 27.78% of the variance. The example of an item having the highest loading on this factor include; "*I received repeated requests to share my privacy (e.g. via webcam)*".The content of items on this factor suggests the situations in which someone impersonate the victims over the mobile phone or internet to make fun of or get him/her into trouble, or pretended to be someone else and sharing information to damage his/her reputation. Therefore, we labelled this factor as "Catfishing" where a higher score on this subscale indicates greater impersonation of catfishing.

Factor II. Second factor, labeled as visual sexual, comprised of six items that explained 12.90% of the total variance by the scale. The example of an item having the highest loading on this factor include; *"I received calls having obnoxious sexual sounds"*. The items loading onto this scale clustered around the theme of a sexual and visual content, where a higher score on this subscale indicates greater victimization by visual and sexual content and vice versa.

Factor III. The first factor, labeled as forgery, comprised of five items that explained 11.04% of the variance. The example of an item having the highest loading on this factor include; *"Someone has blackmailed me through making my fake or manipulated photos"*.

The content of items on this factor suggests the situations of blackmailing and fraudulent acts. Therefore, we labelled this factor as "Forgery" where a higher score on this subscale indicates greater chances of forgery and vice versa.

Factor IV. The fourth factor, labeled as exclusion, comprised of five items that explained 9.61% of the variance. The example of an item having the highest loading on this factor include; *"Social networking sites were used to defame me"*. The content of items on this factor includes a maliciously leaving a person out of a group online, such as chat time or group. Therefore, we labeled this factor as "Online exclusion" where a higher score on this subscale indicates greater exclusion and vice versa.

Factor V. The fifth factor, labeled as written-verbal, comprised of five items that explained 6.88% of the variance. The example of an item having the highest loading on this factor include; *"I received frequent instant messages on social networking sites"*. The content of items on this factor refers to being target of annoying, threatening or offensive calls, messages or written comments through mobile phone or internet. Therefore, we labeled this factor as "written-verbal" where a higher score on this subscale indicates greater victimization by written-verbal mean and vice versa.

Table 1

Factor loading of Cyber-Victimization Scale

Items	Factor Loadings				
***Factor 1*: Catfishing (α = .90)**	**1**	**2**	**3**	**4**	**5**
1. P4. I received repeated requests to share my privacy (e.g via webcam)	.80				
2. P22.My shared information on social networking sites was made fun of	.79				
3. P23.Someone has written offensive comments about my posts	.74				
4. P6. My social networking profiles were used to make calls to others	.73				
5. P19.Someone has deceived me by lying about his or her gender	.71				
6. P21.I felt betrayed after being cheated by someone on social networking sites	.71				
7. P5. My social networking profiles were used to send messages or emails to others	.64				
***Factor 2:* Visual Sexual cyber victimization (α = .89)**					
8. P27.I received calls having obnoxious sexual sounds		.64			
9. P26.I received messages with sexual symbols		.56			
10. P25.Someone has pressurized me to share my naked photos		.54			
11. P33.Someone has posted sexual images on my profile		.47			
12. P32.Someone has forced me to talk about sexual content		.44			
13. P34.Someone has sent me links which are connected to sexual or porn sites		.43			

Factor 3: Forgery (α = .90)	1	2	3	4	5
14. P31.Someone has blackmailed me through making my fake or manipulated photos			.88		
15. P13.My personal information on social networking profiles was used for fraudulent act			.79		
16. P7. Someone has stolen passwords of my social networking accounts			.78		
17. P30.Someone has blackmailed me through breech of my personal information			.76		
18. P28.Someone has captured my photos while video chatting			.74		
***Factor* 4: Exclusion (α = .73)**					
19. P12.Social networking sites were used to defame me				.81	
20. P17.Someone has designed a webpage / blog against me				.78	
21. P11.Someone has forced me to leave chat rooms				.78	
22. P9. Someone has formed a group against me on social networking sites				.75	
23. P20.I felt hurt as a result of internet friendship				.65	
***Factor* 5: Written Verbal cyber victimization (α = .83)**					
24. P1. I received frequent instant messages on social networking sites					.84
25. P3. I received frequent emails / messages having viruses					.75
26. P2. I received frequent unknown calls on social networking sites					.67
27. P35.I get upset on receiving sexual content through messages					.63
28. P15. I feel fearful on receiving frequent calls by unknown persons					.57

Note. *N*=317t able here shows exploratory factor analysis i.e. factor loadings of Cyber Victimization Scale. Five factors were identified with principal axis factoring. The CVS demonstrated excellent overall internal consistency (α=.92) with strong coefficient alphas on the factors ranging from .73 to .90. Overall, there appears to be good internal consistency based on the reliability estimates.

Determination of Psychometric Properties of Cyber Victimization Scale. After developing factorial structure of cyber-victimization scale psychometric properties i.e. reliability and validity of the scale were measured.

Sample. for the current study sample comprised of *N*= 75 students, boys (*n*= 31) and girls (*n*= 44). Age range of the participants was between 17-25 years (*M*= 21.09, *SD*= 1.83). Sample was selected from educational institutes of Islamabad and Rawalpindi. The demographic information such as age, gender, discipline and time spent on social networking sites was also obtained along with data on study variables.

Measures

Cyber Victimization Scale CVS; (Riaz, Iram & Hassan; 2018). The cyber victimization scale constructed and validated for present study is a self-report Likert-type scale comprised of 28 items. Scale items are representative of the experiences of cyber victims specifically on social networking sites.

Response categories used are every time=5, often=4, sometimes=3, once/twice=2 and almost never= 1. CVS has five subscales i.e. catfishing, visual-sexual, forgery, exclusion and written-verbal.

Cyber Bully/Victim Questionnaire (Horzum, 2010). The cyber bully / victim questionnaire is a self-report Likert-type scale comprised of 15 items. Scale items are representative of the experiences of cyber victims and bully side by side. Response categories used for both bully and victimization are every time=5, often=4, sometimes=3, rarely=2 and almost never=1. Cyber bully/victim questionnaire has two subscales i.e Sexual Cyber bullying in Cyberspace and Embarrassing and Inserting Malicious Content in Cyberspace. Scale has excellent internal consistency (α=.81).

Reliability of Cyber-Victimization Scale. In order to find out consistency of scores from CVS, following methods were used:

Cronbach alpha. CVS has a Cronbach alpha of .82 which showed that test is internally consistency and items are homogeneous measuring single construct i.e. cybervictimization.

Split half reliability. In order to find inter-item consistency of CVS split-half reliability was calculated. Table 2 is showing result of odd even split half reliability.

Table 2

Odd even split half reliability coefficient of CVS

CVS	No. of items		Alpha coefficient		Split half reliability
	Part I	Part - II	Part - I	Part - II	
	14	14	.62	.64	.94

Note. *N*=75 Spearman Brown split half reliability of .94 showed that the scale has inter-item consistency and will give reliable result in future use.

Test – Retest Reliability. To find out temporal stability of CVS test-retest reliability was calculated. Sample. Cyber victimization scale was administered to 35 adolescents meeting inclusionary criteria of the sample (girls *n*=18, boys *n*= 17). There was an interval of nine days between the administration of the test and the retest. Scores on CVS obtained on two administration of the same scale was used to calculate test-retest reliability. The correlation between the test and retest of CVS is .79 and was significant at $p<.01$.

Convergent and Discriminant Validity. Convergent and discriminant validity of scale was determined by identifying correlation between CVS developed in current study and cyber bully/ victim questionnaire (Horzum, 2010).

Table 3

Convergent and discriminant validity of CVS

Scales	I.	II.	III.
CVS	1	-.57**	.68**
Cyber bullying questionnaire		1	-.80**
Cyber victim questionnaire			1

Note. (*N*=75) here table 3 showed a correlation of CVS developed in the current study and cyber bully and victim questionnaire. Results showed that CVS has significant positive correlation with cyber victim questionnaire (r =.68, $p<.001$), this value indicate high convergent validity between the scales. Results also showed that CVS has a significant negative correlation with cyber bully questionnaire ($r = -.57$, $p < .001$), this value indicates high discriminant validity between the scales.

Gender differences in cybervictimization. Present study aimed to find out gender differences in cybervictimization.

Table 4

Gender wise difference in cybervictimization and its subscale

Variables	Male (*n*=152)		Female (*n*=165)			95% CI		Cohen's
	M	*SD*	*M*	*SD*	*t*	LL	UL	D
Cybervictimization	61.64	10.12	71.20	16.34	2.88*	-16.16	-2.95	0.70
Catfishing	15.96	3.74	17.43	5.18	1.34	-3.63	.71	0.32
Visual/Sexual	14.16	3.06	15.06	3.89	1.08	-2.57	.76	0.25
Forgery	9.83	3.00	12.20	3.32	3.15**	-3.85	-.87	0.74
Exclusion	12.09	2.66	13.18	3.77	1.37	-2.65	.48	0.33
Written/Verbal	9.58	2.64	13.31	3.36	5.15**	-5.18	-2.29	1.23

Note. (*n*= 317) Results showed that there was a significant gender difference in cybervictimization and in its subtypes as forgery and written verbal cybervictimization. Results all showed that there was no significant gender difference in catfishing, visual-sexual and exclusion.

Discussion

Cyber victimization is a new kind of social evil which is rapidly prevailing in the society. Current study was conducted to develop an indigenous scale measuring cyber victimization with precision and accuracy. Though, many instruments have been found currently to assess cyber victimization among adolescents, but some culture implications and methodological limitations paved the way to bring a newly developed scale. Core objective of current study was to establish factors, reliability, convergent as well as discriminant validity of the scale with a sample from Pakistani population.

Another difficulty with most of the previously developed scales was the problem of unifactorial nature of the scales. In current study attention was given to the factors that contribute to the cyber victimization. Such as visual-sexual cyber victimization, written verbal cyber victimization, catfishing, forgery and exclusion. Some of the factors were given more importance due to the prevailing culture scenario such as forgery, catfishing and sexual cyber victimization.

Psychometric properties of the scales were tested in the first place. Reliability of the full scales and subscales were satisfactory. Satisfactory results of reliability suggested the consistency of the scale and subscale and implied that instruments can be used for the further studies.

The convergent and discriminant validity of the Cyber victimization scale was determined with an already developed reliable scale of cyber bully/victim scale (Horzum, 2010). The correlation between cyber victimization scale and cyber victim as well as cyber bully part of cyber bully/victim scale (Horzum, 2010) came out to quite satisfactory and assured the convergent and discriminant validity of the scale.

Test retest reliability with an interval of nine days was calculated to establish the temporal stability of the scale. Results showed that findings from cybervictimization was consistent from one time to another. Split half reliability and coefficient alpha was calculated to establish internal consistence of the results showed that cyber victimization scale was an internally consistent measure.

It was assumed that females are more cyber victimized as compare to males. Results indicated significant gender difference in cyber victimization, with females experiencing more cybervictimization than their males. Results also indicated significant gender difference specifically on factors of forgery and written-verbal cyber victimization. Females were found more cyber victimization in terms written-verbal cyber victimization and forgery. These findings were consistent with previous research finding by Barlett and Coyne, (2014) as well as Sun and Fan (2016).

Limitations and Suggestions

Certain limitations were found during present study. For instance;

1. Sample size can be increased so that more generalizable results can be generated.
2. Low response rate was also a problem faced during study.
3. For future use it is also suggested to use adults and uneducated sample can be used and will generate interesting results.
4. Furthermore, data can be collected from diverse geographical area to make findings more generalizable.
5. Also, the cross-sectional data is unable to measure changes over time in cyber victimization, difficulties in emotion regulation and mental health. Longitudinal data can help to overcome this limitation.

Implications

- Current study has contributed in the field of cyber phenomenon. Development of cyber victimization scale study has tried to overcome some limitations represented in previously developed scale. Factors created in current scale are more comprehensive in measuring cyber victimization. In this regard EFA was employed to exclusively measure variety of cyber victimization.
- Specifically, in context of Pakistani scenario it was for the first time that cyber victimization was chosen for scale development keeping in view the resources and context of its population.

- Items of present scale constitute five factors of cyber victimization each measuring fundamental aspect of cyber victimization. It will help to enhance the sensitivity of the scale while measuring types of cyber victimization.

- Current study contributes theoretically by presenting a scale which conceptually supports theories and observations made during its development.

- Current scale is multifactorial tool which can be used by researchers, clinicians, teachers and educational counselors to identify cybervictimization, its prevalence and outcomes.

Declaration

Consent for publication. Consent approved by the authors

Availability of data and materials. Not Applicable

Competing Interests. The authors are well informed and declared no competing interests.

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