



Validity and Reliability of Persian Version of Cyber-Bullying /Victimization Experience Questionnaire (CBVEQ) Among Iranian Adolescents

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Abstract

This study aimed to measure validity and reliability of the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) among Iranian adolescents. This cross-sectional validation study was conducted on Iranian adolescents between January 2022 and September 2022. Online questionnaires were completed by a total of 1439 Iranian high school students, with an age range of 14–18 years ($M = 15.93$ years, $SD = 1.43$). Participants completed Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ), Online Disinhibition, Sensation Seeking, Empathy, and School Connectedness questionnaires. The validity and reliability of the CBVEQ were assessed through measures including Cronbach's alpha, construct validity via Confirmatory Factor Analysis (CFA), and evaluations of divergent and convergent validity. The CFA indicated that a two-factor model provides a good fit for the data: ($\chi^2_{sb} = 3011.31$ ($p < 0.01$); $SRMR = 0.06$; $CFI = 0.96$; $NFI = 0.96$; $IFI = 0.96$; $PNFI = 0.86$; $GFI = 0.83$; $RMSEA = 0.088$). Cronbach's alpha coefficient for the self-escapism was 0.89. There was a significant positive relationship between CBVEQ with online disinhibition ($r = 0.47$; $P < 0.01$) and sensation seeking ($r = 0.44$; $P < 0.01$). The finding showed significant negative relationship between CBVEQ score with school connectedness (SC) ($r = -0.35$; $P < 0.01$), and empathy ($r = -0.42$; $P < 0.01$). In addition, the findings have shown a relationship between CBVEQ and maternal educational status. Iranian researchers and specialists can use this scale for research or assessment purposes in Iranian adolescents to expand the existing knowledge about preventing and reducing cyberbullying.

Keywords Cyber Bullying · Cyber Victimization · Adolescent · Validity · Measurement

Introduction

The increased use of information and communication technology among youth has brought about significant changes in the socialization process of adolescents, yielding both positive and negative effects (Mittmann et al., 2022). One of the potential risks associated with online communication is cyberbullying, where adolescents misuse digital media to harm, annoy, or hurt others. Cyberbullying has emerged as a new form of bullying facilitated by the Internet and other electronic technologies (Strohmeier & Gradinger, 2022). Compared to face-to-face bullying, cyberbullying can be more severe and damaging (García-Fernández et al., 2022).

Cyberbullying involves repeated harassment, mistreatment, or abuse of individuals in cyberspace or through electronic devices, occurring at any time and spreading quickly to a large audience (Kokkinos et al., 2016). The anonymity provided by cyberspace creates an imbalance of power between the student, exposed to bullying and bullied student, intensifying the destructive effects compared to traditional

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school bullying. Various forms of cyberbullying include defamation, annoying comments, hacking, unauthorized disclosure of personal information, harassment, and threatening messages (Sheanoda et al., 2021). The power dynamics between the student, exposed to bullying and bullied student are important considerations in defining bullying, whether in person or online (Law et al., 2012). Cyberbullying is characterized by aggressive and intentional behavior by individuals or groups (Smith et al., 2008). Female students may cyberbully by spreading rumors, attacking personalities, or disclosing secrets. The ability of bullies to hide their identity in cyberspace further exacerbates the traumatic effects on victims (Menesini et al., 2013). Negative behaviors, including cyberbullying, are prevalent in online and virtual spaces, as highlighted by Antoniadou et al. (2019).

In recent years, the increased use of information and communication technology among adolescents has led to significant transformations in their socialization processes, introducing both positive and negative dynamics (Mittmann et al., 2022). Among the potential risks associated with this digital era, cyberbullying has emerged as a pressing concern. Cyberbullying, defined as the misuse of digital platforms to harm, annoy, or inflict distress upon others, has become a prevalent issue in the lives of adolescents worldwide (Strohmeier & Gradinger, 2022). The consequences of cyberbullying, both psychologically and socially, are alarming, with reports of increased feelings of isolation, anxiety, depression, and even suicide among its victims (Jiang et al., 2022). This growing concern prompted the need for reliable measurement tools to assess the extent and impact of cyberbullying effectively. Our study focuses on the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) and aims to rigorously assess its validity and reliability among Iranian adolescents. This research not only contributes to the existing body of knowledge on cyberbullying but also addresses a pressing need within the Iranian context. As a society where technology usage among adolescents is on the rise (Thomas et al., 2015), understanding the phenomenon of cyberbullying is paramount. By establishing the validity and reliability of the CBVEQ in the Iranian context, we aim to provide researchers, educators, and policymakers with a valuable tool to measure and combat cyberbullying effectively. Our study seeks to bridge the gap between research and practice, with the ultimate goal of promoting the mental well-being and growth of Iranian adolescents in an ever-evolving digital landscape.

Cyberbullying can profoundly impact the development of adolescents, resulting in detrimental consequences, resulting in feelings of isolation, loneliness, anxiety, school dropout, depression, and even suicide (Jiang et al., 2022). To further illustrate the severe impact of cyberbullying on adolescents, specific examples and statistics from various studies are crucial. For instance, a study found that adolescents who

experience cyberbullying are more likely to suffer from depression, compared to their non-bullied peers and approximately 16% of girls and 18% of boys engage in cyberbullying behaviors (Hinduja & Patchin, 2008, 2010). Another significant finding by Schneider et al. (2012) revealed that victims of cyberbullying were nearly twice as likely to attempt suicide. According to Waasdorp and Bradshaw (2015), 15% of high school students reported experiencing cyberbullying, which was associated with increased substance use, aggression, and concurrent experiences of other forms of bullying. Cyberbullying leads to a range of negative physical and emotional impacts on its victims, including increased rates of attempted suicide, as well as psychological problems such as worry, fear, depression, terror, and nervousness (Alhujaili et al., 2020). The study also emphasizes the role of cyberbullying as a social vulnerability, leading to the exclusion of individuals from active societal participation and further contributing to psychological issues like depression and lower self-esteem. These statistics and examples highlight the urgency of addressing cyberbullying, underscoring its profound psychological and social consequences on adolescents. This further validates the need for reliable tools such as the Persian version of the CBVEQ to measure and understand the extent of cyberbullying among Iranian adolescents. Research suggests that cyber aggression is associated with lower levels of empathy, self-control deficits, and the emergence of other antisocial behaviors in the real world (Lee et al., 2020), depression (Yang, 2021), and suicide (Gini & Espelage, 2014). Some studies suggest that forms of cyber aggression are part of larger patterns associated with less empathy (Brewer & Kerslake, 2015), self-control deficits (Hoareau et al., 2021), and the emergence of other antisocial behaviors in the real world, including theft (Hemphill et al., 2015) or school aggression (Baldry et al., 2015).

While measures have been implemented in many countries to assess bullying, including cyberbullying, the rapid development of technology has introduced new dimensions and roles, making it challenging to identify and address the various forms of cyberbullying. The prevalence of cyberbullying among students in Iran has been acknowledged as a social problem (Kabiri et al., 2020).

Consequently, education and public awareness are crucial at the community level to identify and address cyberbullying-related issues. In order to effectively address cyberbullying, appropriate measurement tools are needed. One such tool is the Cyber-Bullying/Victimization Experiences Questionnaire (CBVEQ), developed and validated by (Antoniadou et al., 2016a). The CBVEQ is a two-factor scale that assesses cyberbullying experiences and cyber-victimization experiences, consisting of 12 questions for each factor. The scale has demonstrated good validity and reliability, with a Cronbach's alpha coefficient of 0.89 for cyberbullying and 0.79 for cyber-victimization (Antoniadou et al., 2016b).

As cyberspace has become an integral part of adolescents' lives, particularly in Iran where they are active users (Thomas et al., 2015), understanding and measuring cyberbullying in its various dimensions is crucial for identifying its psychological, social, and educational consequences. Currently, there is a research gap regarding measurement tools for epidemiological studies and investigations of factors related to cyberbullying. Therefore, the present study aims to examine the validity of the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) among Iranian adolescents.

By employing a valid and reliable tool to measure cyberbullying, researchers and practitioners can gather data to reduce the psychological effects and legal consequences associated with this phenomenon. Furthermore, bridging the generation gap through effective communication between supervisors, teachers, and adolescents can create a conducive environment for their growth and mental well-being. Thus, investigating and understanding cyberbullying through appropriate measurement tools is essential for addressing this new form of bullying and its consequences in Iranian adolescents.

The Present Study

In this study, our primary research objective is to rigorously assess the validity of the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) among Iranian adolescents. Specifically, we aim to evaluate the scale's construct validity, which involves examining whether the questionnaire measures the concept of cyberbullying as intended. This includes an assessment of the scale's factorial structure through exploratory and confirmatory factor analyses, ensuring that the questionnaire accurately reflects the underlying dimensions of cyberbullying and victimization experiences. Additionally, we aim to assess the scale's convergent validity by correlating the CBVEQ with other established measures of cyberbullying and related constructs. This process will help in determining if the CBVEQ is appropriately related to these similar constructs, as theoretically expected. Ultimately, our goal is to establish the CBVEQ as a reliable and valid tool for measuring the prevalence and impact of cyberbullying among Iranian adolescents, contributing to interventions that are more effective and strategies to combat this growing issue.

Methods

This cross-sectional study was conducted between January 2022 and September 2022.

Participants

The study's methodological rigor was enhanced by adhering to the STROBE checklist for cross-sectional studies (Ni et al., 2019). The statistical population comprised all Iranian adolescents, from which a total of 1439 high school students (age range: 14–18 years, $M = 15.93$ years, $SD = 1.43$) were selected to participate and complete the questionnaires.

In order to be eligible for participation, the participants needed to fulfill the following criteria: (1) be enrolled in high school, aligning with Erik Erikson's psychosocial theory of development (Erikson, 1965), for the age range of approximately 14–18 years; (2) possess fluent proficiency in Persian and hold Iranian citizenship; (3) be free from any mental or cognitive disorders, excluding individuals experiencing mental health issues such as anxiety, stress, or undiagnosed depression; and (4) provide written consent by signing a consent form. It was recommended that participants review their responses before completing the questionnaires. The survey was conducted online, and participants were not required to disclose their names. Participation in the study was entirely voluntary.

To ensure a representative sample of Iranian adolescents, participants for this study were recruited through a stratified random sampling method. High schools across various regions of Iran were classified into strata based on geographical location and socio-economic status. Within each stratum, schools were randomly selected, and from these schools, students who met the eligibility criteria were invited to participate. This approach ensured diversity in the sample, reflecting different socio-economic backgrounds and regional characteristics. The recruitment process involved collaborations with school administrators, who facilitated the distribution of information about the study to students and their parents. Interested students who met the inclusion criteria and provided written consent were then enrolled in the study. This method of recruitment allowed for a comprehensive and unbiased representation of the adolescent population in Iran, strengthening the validity of our findings.

Procedure

The survey was conducted with the consent of participants and their parents or legal guardians, prioritizing informed consent and ensuring strict confidentiality. In this study, a comprehensive and ethically sound consent process was meticulously implemented. Initially, an explanatory statement detailing the study's purpose, procedures, potential risks, and benefits was provided to both the participants and their parents or legal guardians. This statement was crafted to be easily understandable, ensuring that participants and their guardians could make an informed decision about

their involvement. Consent forms, separate for students and guardians, were then distributed and collected before the commencement of the survey. To ensure participants' anonymity, all survey responses were de-identified and stored securely, with access restricted to the research team only. Additionally, participants were informed that they could withdraw from the study at any point without any consequences. The study strictly adhered to the ethical guidelines stipulated by the relevant institutional review board, which included measures to protect the privacy and emotional well-being of the participants throughout the research process. Participation in the survey was voluntary and anonymous, and all data were coded to ensure test-retest reliability. Participants had the option to participate, provide information, or withdraw from the study. The research questionnaires were completed online, following established guidelines and regulations. To translate the CBVEQ into Persian, a back-translation technique was employed. The scale was initially translated into Persian by one team and then translated back into English by a second team. The accuracy of the translation was assessed by comparing the second team's version with the original scale. However, it is important to note that this technique has certain limitations (Hambleton & de Jong, 2003). Translators need to possess proficiency in both languages and be familiar with both cultures. In this

case, three translators were consulted to address these considerations. The translations were evaluated based on the similarity between the translated text and the original text. Ultimately, the authors and translators reached an agreement on the final version, striving to maintain the scale's original length as closely as possible.

In addition to the full version of the scale, the questionnaire included sociodemographic questions regarding age group, gender, father's education, mother's education, and area of residence. The age range of the participants was between 14 to 18 years old ($M = 15.93$ years, $SD = 1.43$). Regarding gender status, 745 (51.8%) of them were boys, 694 (49.2%), and 1211 (84.2%) were in urban areas (Table 1). Cronbach's alpha for total CBVEQ = 0.78, Cyber-Victimization (CV) = 0.91, and Cyber-bullying (CB) = 0.89 was measured.

The reliability, validity, and Confirmatory Factor Analysis (CFA) of the CBVEQ were examined in the subsequent step. In addition to Cronbach's alpha and test-retest reliability, the scale's construct validity was assessed through the examination of convergent and divergent validity (Boateng et al., 2018). Data were collected from a sample of current Iranian adolescents, and the CFA was conducted using a new sample. As Google Forms were used and respondents were required to answer all items, no missing data were present.

Table 1 Association between CBVEQ with the socio-demographic characteristic (N = 1439)

	N	%	M	SD	F	p
<i>Age (years)</i>			15.93	1.43		
<i>Gender</i>					0.087	0.77
Male	745	51.8	92.31	14.93		
Female	694	48.2	92.53	14.27		
<i>Area of Residence</i>					0.008	0.92
Rural	228	15.8	92.50	14.28		
City	1211	84.2	92.40	14.68		
<i>Father's Educational Status</i>					1.16	0.32
Illiterate	109	7.6	92.04	15.73		
Elementary	222	15.4	91.47	15.17		
High School	596	41.4	92.07	13.67		
Diploma	333	23.1	94.06	14.15		
Bachelor's degree	120	8.3	92.11	13.99		
((Master's degree	46	3.2	94.86	17.46		
More than Master's Degree	9	0.6	92.66	24.16		
<i>Mother's Educational Status</i>					3.60	0.002
Illiterate	221	15.4	91.49	13.08		
Elementary	546	37.9	91.69	14.43		
High school	212	14.7	93.72	13.74		
Diploma	335	23.3	93.92	15.59		
Bachelor's degree	96	6.7	91.79	15.48		
Master's degree	24	1.7	91.12	16.65		
More than Master's degree	3	0.2	61.33	23.09		

Bold values indicate the significance at 5% level

Data Analysis

The data analysis approach involved several statistical tests and model development. Bivariate correlation tests were conducted using IBM SPSS Statistics 26.0 to examine the relationship between the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) and variables such as school connectedness, empathy, online disinhibition, and sensation seeking. A CFA model was employed. Internal consistency of the CBVEQ was assessed using Cronbach's alpha. The two-factor structure of the CBVEQ was developed using LISREL 8.8. The analysis used various fit indices to evaluate the model. These included the Root Mean Square Error of Approximation (RMSEA), Parsimony Normed Fit Index (PNFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), Standardized Root Mean Square Residual (SRMR), and Normed Fit Index (NFI). These indices were used to assess the goodness of fit of the CFA model.

By conducting these statistical analyses and evaluating the fit indices, the study aimed to gain insights into the relationships between the CBVEQ and the variables of interest.

Preliminary Analysis

Before conducting the CFA, preliminary tests were performed to assess data loss, discarded data, and the normality of the data. AMOS software was used for these tests. The Mahalanobis distance square method was employed with a significance level of 0.001 to identify any outliers or scrapped data points. Skewness (ranging from 0.154 to 0.181) and kurtosis (ranging from 0.35 to 2.15) were examined to assess the assumption of normality for the data. These tests helped ensure the data met the necessary requirements for conducting the subsequent CFA analysis.

Measures

Cyber-Bullying and Victimization Experiences Questionnaire" (CBVEQ)

It assesses the occurrence of direct (e.g., has anybody sent you a message (via cell phone or the Internet) to mock you or talk badly to you? ") and indirect (e.g., has anyone said terrible things about you on the Internet to make your friends un-friend, block" or dislike you? ") CB/CV behaviors during the last 90 days on a 5-point frequency scale (1=Never, 5=every day) among children and adolescents. The use of the CBVEQ in studies among preadolescent (Antoniadou et al., 2016b; Kokkinos et al., 2016) and adolescent (Kokkinos & Antoniadou, 2013; Kokkinos & Voulgaridou, 2017) participants has shown adequate reliability and has indicated the existence of two distinct but correlated factors (CB and CV). In this study, Cronbach's alpha was 0.89.

Online Disinhibition

Online disinhibition was assessed with 15 items from the Social Confidence and Socially Liberating scales of the Internet Behaviors and Attitudes Questionnaire (Morahan-Martin & Schumacher, 2000), which assesses students' tendency to display disinhibited behavior while connected to the Internet. Participants were asked to indicate on a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree) the extent to which they endorsed the behaviors described. CFA supported the unidimensionality of the 15-item scale (Casale et al., 2015). In the current study, Cronbach's alpha was 0.85.

Sensation Seeking

The 20-item Sensation Seeking Scale for Adolescents (SSS-A) (Hoyle et al., 2002) measured students' sensation seeking. Responses were provided on 5-point scale (1 = strongly disagree to 5 = strongly agree). Cronbach's alpha has been reported to be 0.78 (Kokkinos & Antoniadou, 2013). (Cronbach's alpha = 0.71).

Empathy

The 20-item Basic Empathy Scale (BES) (Jolliffe & Farrington, 2006) assesses cognitive empathy (e.g., BI can understand my friend's happiness when she/he does well at something) (9 items) and affective empathy (e.g., After being with a friend who is sad about something, I usually feel sad) (11 items) on a 5-point scale (1 = strongly disagree to 5 = strongly agree), among preadolescents and adolescents. Factor analysis has shown that items load into the respective factors. The scale's reliability has been reported and confirmed in previous studies (Kokkinos & Kipritsi, 2018). Cronbach's alpha was acceptable in the present study ($\alpha = 0.82$).

School Connectedness

School Connectedness was measured with six items that have been previously shown to have strong validity and high reliability among adolescents (Chung-Do et al., 2015). All items in this measure are on a 5-point scale, from 0 (strongly disagree) to 4 (strongly agree). Previous studies reported Cronbach's alpha of 0.87 (Kim et al., 2019), and we obtained Cronbach's alpha of 0.79 in the present study.

Ethical Consideration

All methods were carried out following relevant guidelines and regulations, and informed consent was obtained from all subjects and/or their legal guardian (s). The ethics committee approved the study procedure of Alzahra University

(IR/12/20/1400), and informed consent was obtained from the participants and their parents/legal guardians. Research involving human subjects was conducted following the ethical values of the National Research Committee, the Helsinki Declaration of 1964, and its modifications. Participants and their parents/legal guardians signed consent forms, and questionnaires were completed anonymously.

Results

Descriptive Statistic

The mean and standard deviation (SD) for CBVEQ was calculated at 92.41 (14.61), and the mean and standard deviation for subscales of CBVEQ was 45.64 (7.64) for Cyber - victimization and 46.77 (8.21) for Cyber-bullying (Tables 1 and 2).

The mean, standard deviation, and frequency distribution for each item of CBVEQ are represented in Table 2. The mean for CBVEQ items ranged from 3.65 (item 9) to 4.05 (item 16). The mean, standard deviation calculated for CBVEQ 92.41 (14.61), Cyber-Victimization 45.64 (7.64) and, Cyber-Bullying 46.77 (8.21).

All factor loadings were higher than 0.50 except for items 12 and 16. Findings demonstrated that the factor loading of items 12 and 16 were 0.44 and 0.34 (under 0.50), so these items could be omitted (or need further investigation). Factor loading for the cyber-victimization items ranged from 0.44 to 0.79, and for cyber-bullying items, from 0.34 to 0.78 (Table 3).

Structure of the CBVEQ

Based on the literature, the two-factor model was tested through CFA, and the model provided a marginal fit to

Table 2 Descriptive statistics and frequency distribution of CBVEQ items (N = 1439)

Items	factor	M	SD	Frequency distribution (%)				
				Never	Once or twice	Sometimes	Many times	Every day
ITEM 1	CV	3.74	.87	15 (1)	98 (6.8)	395 (27.4)	790 (46.2)	264 (18.5)
ITEM 2	CV	3.83	.78	13 (.9)	58 (4)	332 (23.1)	790 (54.9)	246 (17.1)
ITEM 3	CV	3.84	.89	23 (1.6)	79 (5.5)	327 (22.7)	673 (46.8)	337 (23.4)
ITEM 4	CV	3.82	.83	13 (.9)	76 (5.3)	338 (23.5)	733 (50.9)	299 (19.4)
ITEM 5	CV	3.90	.83	7 (.5)	74 (5.1)	313 (21.8)	699 (48.6)	346 (24)
ITEM 6	CV	3.75	.85	19 (1.3)	77 (5.4)	391 (27.2)	698 (48.5)	254 (17.7)
ITEM 7	CV	3.86	.84	14 (1)	67 (4.7)	335 (23.3)	702 (48.8)	321 (22.3)
ITEM 8	CV	3.70	.93	31 (2.2)	96 (6.7)	425 (29.5)	603 (41.9)	284 (19.5)
ITEM 9	CV	3.65	1.00	55 (3.8)	113 (7.9)	391 (27.2)	589 (40.9)	291 (20.2)
ITEM 10	CV	3.77	.90	23 (1.6)	90 (6.3)	376 (26.1)	645 (44.8)	303 (21.2)
ITEM 11	CV	3.79	.87	18 (1.3)	75 (5.2)	393 (27.3)	654 (45.4)	299 (20.8)
ITEM 12	CV	3.93	.96	42 (2.9)	57 (4)	295 (20.5)	609 (42.3)	436 (30.3)
ITEM 13	CB	3.91	.91	27 (1.9)	60 (4.2)	321 (22.3)	633 (44)	398 (27.7)
ITEM 14	CB	3.80	.99	49 (3.4)	82 (5.7)	346 (24)	591 (41.1)	371 (25.8)
ITEM 15	CB	3.80	.94	29 (2)	85 (5.9)	380 (26.4)	584 (40.6)	361 (25.1)
ITEM 16	CB	4.05	1.75	37 (2.6)	51 (3.5)	233 (16.2)	665 (46.2)	451 (41.3)
ITEM 17	CB	4.01	.85	16 (1.1)	49 (3.4)	270 (18.8)	668 (46.4)	436 (30.3)
ITEM 18	CB	3.92	.86	26 (1.8)	50 (3.5)	288 (20)	724 (50.3)	351 (24.4)
ITEM 19	CB	3.88	.86	24 (1.7)	52 (3.6)	333 (23.1)	683 (47.5)	347 (24.1)
ITEM 20	CB	3.89	.87	24 (1.7)	56 (3.9)	321 (22.3)	685 (47.6)	353 (24.5)
ITEM 21	CB	3.85	.94	38 (2.6)	69 (4.8)	331 (23)	631 (43.8)	370 (25.7)
ITEM 22	CB	3.87	.87	24 (1.7)	55 (3.8)	342 (23.8)	678 (47.1)	340 (23.6)
ITEM 23	CB	3.82	.88	26 (1.8)	55 (3.8)	385 (26.8)	653 (45.4)	320 (22.2)
ITEM 24	CB	3.92	.88	24 (1.)	71 (4.9)	258 (17.9)	720 (50)	366 (25.4)
CV	-	45.64	7.64	-	-	-	-	-
CB	-	46.77	8.21	-	-	-	-	-
CBVEQ	-	92.41	14.61	-	-	-	-	-

M mean, *SD* standard deviation, Participants' response across the 5-point Likert scale for each item, *CBVEQ* Cyber-Bullying/Victimization Experience Questionnaire, *CV* Cyber-Victimization, *CB* Cyber-Bullying

Table 3 Descriptive statistics for Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) items (N= 1439)

Item	Factor loading		Item-Total statistics		
	CV	CB	V	I.T.	C.D.
ITEM 1	0.57		200.638	.495	.938
ITEM 2	0.76		198.298	.665	.936
ITEM 3	0.75		196.546	.647	.936
ITEM 4	0.74		198.016	.637	.936
ITEM 5	0.76		197.809	.642	.936
ITEM 6	0.71		198.538	.599	.937
ITEM 7	0.79		196.480	.694	.936
ITEM 8	0.75		195.144	.677	.936
ITEM 9	0.63		195.446	.608	.937
ITEM 10	0.74		194.853	.710	.935
ITEM 11	0.68		196.771	.658	.936
ITEM 12	0.44		199.623	.481	.938
ITEM 13		0.59	196.955	.620	.936
ITEM 14		0.65	193.837	.677	.936
ITEM 15		0.65	195.762	.640	.936
ITEM 16		0.34	195.245	.312	.947
ITEM 17		0.78	196.821	.671	.936
ITEM 18		0.77	196.665	.672	.936
ITEM 19		0.77	196.398	.676	.936
ITEM 20		0.79	196.110	.684	.936
ITEM 21		0.75	194.828	.677	.936
ITEM 22		0.72	197.021	.646	.936
ITEM 23		0.78	196.053	.681	.936
ITEM 24		0.72	197.018	.640	.936

V scale variance if item deleted, *I.T.* corrected item-total correlations, *C.D.* Cronbach’s alpha if item deleted, *CV* Cyber-bullying, *CB* Cyber-victimization

the data. The CFA findings for a two factors structure are illustrated in Table 4. CFA displayed that two factors structure provided an excellent fit to the data: $\chi^2_{sb} = 3011.31$ ($p < 0.01$); SRMR=0.06; CFI=0.96; NFI=0.96; IFI=0.96; PNFI=0.86; GFI=0.83; RMSEA = 0.088. These results demonstrated that all standardized factor loadings for all items were statistically significant ($p < 0.05$), supporting each item as adequately as each component.

Table 4 Model fit indexes

Groups	N	χ^2_{sb}	Df	SRMR	CFI	NFI	IFI	PNFI	GFI	RMSEA
All (AM)	1439	3011.31	248	0.060	0.96	0.96	0.96	0.86	0.83	0.088
All (BM)	1439	4276.02	251	0.061	0.95	0.95	0.95	0.87	0.80	0.106
Female	694	2716.46	251	0.066	0.94	0.94	0.94	0.85	0.75	0.119
Male	745	2481.66	229	0.071	0.94	0.93	0.94	0.84	0.78	0.115
Rural	228	1626.96	251	0.098	0.88	0.86	0.88	0.78	0.61	0.161
City	1211	3752.01	251	0.061	0.96	0.95	0.96	0.87	0.79	0.105

BM Before Modification, AM After Modification

Table 4 and Fig. 1 show that all items of loads show a significant factor and standardized factor loading for all items over 0.40 except item 16 (0.34), so this item can be omitted.

Face Validity

This study evaluated its appropriateness, representativeness, readability, and clarity using face validity. Before collecting data from a large sample, cognitive interviews are helpful for researchers to clarify items, ensure adequate content coverage, and modify the questionnaire if any questions are unclear (Desimone & Le Floch, 2004). Fifteen adolescents (including eight boys and seven girls) participated in interviews to determine item complexity, vagueness, and comprehensibility of interview items. Twenty-four questions were ultimately compiled as a final scale. As a result, no changes had to be made to the final Persian version of CBVEQ, and there were no unclear Persian terms.

Internal Consistency (Reliability)

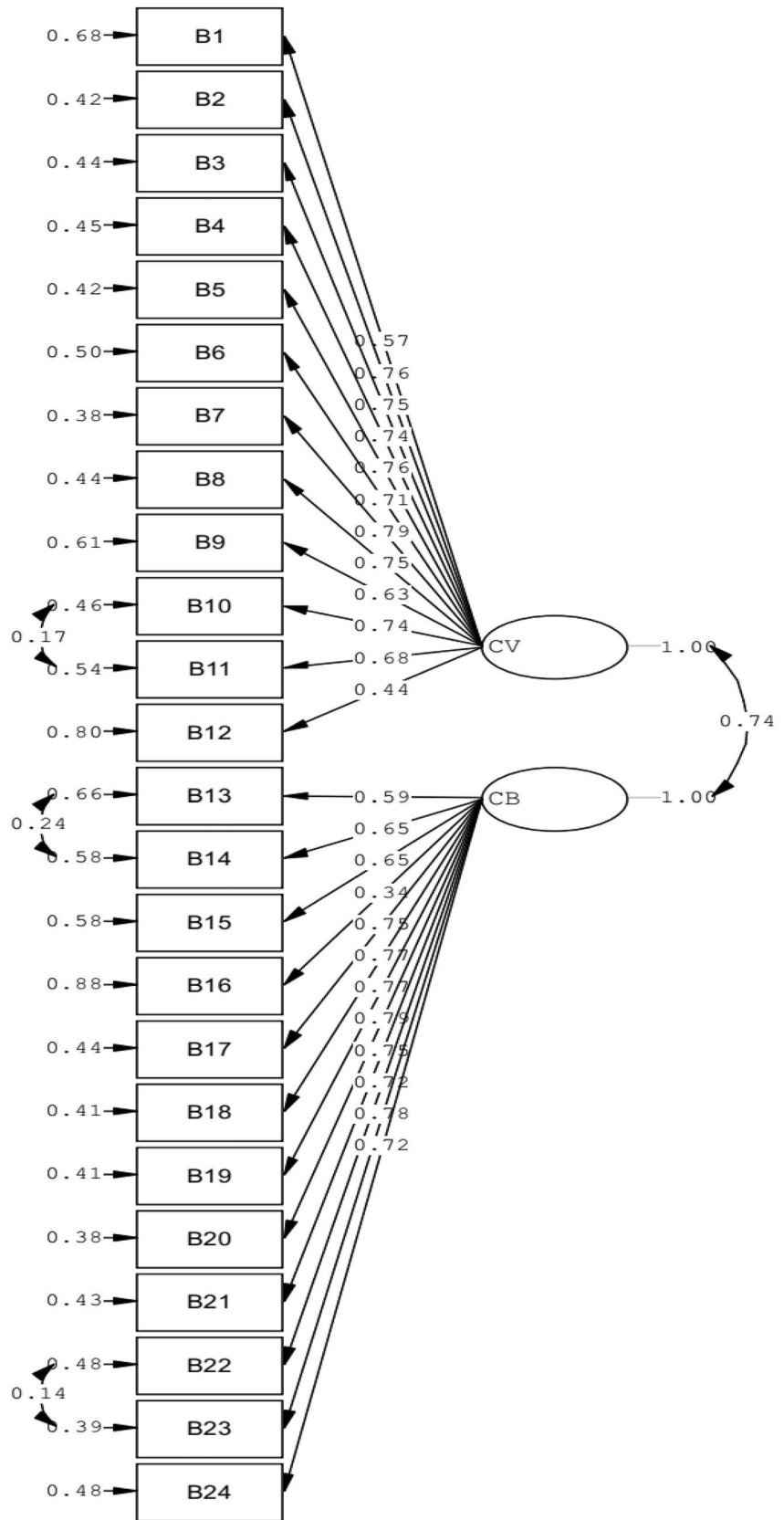
The internal consistency reliability of the Persian Version of CBVEQ was assessed using Cronbach’s alpha for all participants and was 0.78. The internal consistency of the Persian Version of CBVEQ was similar.

Follow-up Study and Test-Retest Reliability

Guttman’s split-half coefficient for the Persian Version of CBVEQ was 0.80. A small subsample of 86 participants in the main study was selected and asked to complete the CBVEQ again after two weeks to examine temporal stability. In the end, the calculated test-retest coefficient was 0.81 after this period (95% CI=0.79–0.83).

Convergent and Divergent Validity

Regarding divergent validity, correlations acquired between the CBVEQ with school connectedness (SC) ($r = -0.35$; $P < 0.01$) and empathy ($r = -0.42$; $P < 0.01$) indicate acceptable divergent validity. There was a significant positive correlation between CBVEQ with online disinhibition



Chi-Square=3011.31, df=248, P-value=0.00000, RMSEA=0.088

Fig. 1 Results of CAF of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) in Iranian Adolescents

($r=0.47$; $P<0.01$) and sensation seeking ($r=0.44$; $P<0.01$). These findings illustrate acceptable divergent and convergent validity (Table 5).

Discussion

The present study aimed to assess the validity and reliability of the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) among Iranian adolescents. The results of the CFA confirmed the two-dimensional structure of the original CBVEQ, with each item demonstrating a suitable factor load and the scale overall showing a good fit. This indicates that the Persian translation of CBVEQ is a valuable tool for assessing cyber-bullying/victimization experiences among Iranian adolescents. Although items 12 and 16 could have been omitted based on the final CFA, the decision was made to retain them for further investigation. Therefore, the Persian version of CBVEQ consists of the same 24 questions as the original version. However, caution should be exercised when interpreting the results associated with these two items. Nonetheless, the overall structure and number of questions in the Persian version remain consistent with the original version, as well as with the findings of (Antoniadou et al., 2016a), who initially developed and validated the scale. They reported the fit indices of CFI and TLI higher than 0.95, and the RMSEA value was lower than 0.05. As expected, moderate to high correlations were found between CBVEQ and online disinhibition and sensation seeking, indicating that CBVEQ has high convergent validity consistent with previous research (Antoniadou et al., 2016b, 2019; Kokkinos et al., 2014) and we had high correlations found between CBVEQ and school connectedness and empathy, suggesting that CBVEQ has high divergent validity consistent with previous research.

This study extends the understanding of cyberbullying in Iranian adolescents, offering unique insights into the societal and familial factors influencing this phenomenon. Particularly, the association of higher incidence of cyberbullying

with higher maternal education levels presents a notable divergence from existing literature. This suggests unique cultural dynamics at play in Iran, where increased maternal education and corresponding workforce participation might inadvertently increase adolescents' exposure to cyberbullying. While our findings align with prior research regarding the correlations between CBVEQ and constructs like online disinhibition, they further illuminate the complex interplay of these factors in a specific cultural context. Such insights are crucial for developing more targeted interventions and policies to address cyberbullying effectively in diverse socio-cultural settings.

One notable demographic factor identified in this study is the educational level of the mother. Surprisingly, the findings indicate that the incidence of bullying is higher among children whose mothers have higher levels of education. In contrast, children of illiterate mothers experience less cyberbullying. This unexpected outcome can be attributed to the societal changes occurring in Iran, where increased maternal education often results in more mothers joining the workforce and spending less time at home with their children. Consequently, children may seek entertainment in the online realm, spending more time on the internet and becoming more prone to engaging in cyberbullying behaviors over time. Conversely, illiterate mothers, despite their limited knowledge of cyberspace, may contribute to a reduction in bullying incidents against their children due to their increased presence and involvement within the household.

Cyberbullying is a phenomenon that emerges with the advent of the Internet and is one of the adolescent problems. Since users' identities could be hidden in cyberspace, anyone can easily trap them (Hoareau et al., 2021). There are various reasons that negative behaviors in cyberspace can easily victimize adolescents. Adolescents like to talk to peers in cyberspace and be acquainted with new people. In addition, as adolescence is characterized by characteristics such as less dependence on adults and becoming independent from parents, the risk of adolescents is more likely to be caught in this phenomenon.

Table 5 Pearson's correlation between CBVEQ with school connectedness, empathy, online disinhibition, and sensation Seeking

	1	2	3	4	5	6	7
1. CBVEQ	1	0.91**	0.93**	-0.35**	-0.42**	0.47**	0.44**
2. CV		1	0.70**	-0.33**	-0.37**	0.43**	0.43**
3. CB			.1	-0.28**	-0.35**	0.41**	0.39**
4. School Connectedness				.1	0.40**	-0.31**	-0.19**
5. Empathy					.1	-0.29**	-0.23**
6. Online Disinhibition						.1	0.38**
7. Sensation Seeking							1

CBVEQ Cyber-Bullying/Victimization Experience Questionnaire, CV Cyber-Victimization, CB Cyber-Bullying

Implications

The findings of this study have significant implications for future researchers in the field of cyberbullying/victimization. Firstly, the validation of the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ) in Iranian adolescents provides researchers with reliable and valid assessment tool for evaluating cyberbullying experiences in this specific population. Utilizing standardized measures like the CBVEQ enables consistent measurement across various studies and facilitates comparisons among different populations.

Comparison with previous studies indicates that the results of this study align with prior research on the CBVEQ and its psychometric properties. For instance, the study confirms the two-dimensional structure of the CBVEQ, consistent with the original scale and other validation studies (Antoniadou et al., 2019). Moreover, the significant correlations discovered between the CBVEQ and online disinhibition, sensation seeking, school connectedness, and empathy are in line with earlier research (Antoniadou et al., 2019; Kokkinos et al., 2014). These findings further support the convergent and divergent validity of the CBVEQ.

The results of this study hold significant practical implications for various stakeholders in Iran, including educators, policymakers, and parents. For educators, the validated Persian version of the CBVEQ can be utilized as a reliable tool for identifying students at risk of cyberbullying, allowing for timely intervention and support. Policymakers can leverage these findings to formulate targeted cyberbullying prevention and intervention strategies, focusing on the specific needs and dynamics of Iranian adolescents. This includes creating awareness campaigns that educate adolescents and their families about the risks and signs of cyberbullying, and implementing policies that encourage safe internet practices. For parents, particularly those with higher education levels, this study highlights the importance of being vigilant and proactive in monitoring their children's online activities and fostering open communication about their online experiences. Understanding the unique cultural context of Iranian society, where increased maternal education correlates with higher cyberbullying incidence, can guide parents in balancing their professional commitments with active involvement in their children's digital lives. By applying these insights, stakeholders can collaboratively work towards creating a safer online environment for adolescents, ultimately contributing to the reduction of cyberbullying incidents in Iran.

Limitations and Future Research Directions

However, it is crucial to acknowledge the Limitations of this study. One limitation pertains to the sample, as the findings may not be generalizable to other age groups or cultures.

Future research should aim to replicate these findings in larger and more diverse samples to ensure the generalizability of the results. The use of self-report measures in this study may be susceptible to impression management and social desirability bias, potentially influencing the validity of the responses. Future studies could consider incorporating objective measures or multiple sources of information, such as parent or teacher reports, to provide a more comprehensive understanding of cyberbullying experiences. While our findings provide valuable insights into the field of cyberbullying among Iranian adolescents and offer a reliable tool for identifying and addressing cyberbullying experiences in this specific population, it is important to acknowledge the scope and limitations of our study. The generalizability of our findings to other age groups and cultures may be a subject of inquiry for future research. Additionally, we recognize the importance of considering contextual factors and target populations when interpreting and applying the results. As with any study, the applicability of our findings may vary in different cultural contexts, and further research is needed to explore the nuances of cyberbullying in diverse settings. Our study serves as a foundation for future investigations into this complex phenomenon, and we encourage researchers to examine its relevance and applicability in broader contexts.

Future researchers could explore the CBVEQ-G or other self-assessment measures of cyberbullying/victimization by integrating additional sources of information and utilizing content analysis. This would enhance the validity and reliability of the measures and offer a more comprehensive assessment of cyberbullying experiences.

Conclusion

This study contributes to the existing literature by validating the Persian version of the CBVEQ among Iranian adolescents. The findings affirm the reliability and validity of the scale, equipping researchers and practitioners with a valuable tool for assessing cyberbullying experiences in this particular population. Future research should continue to investigate the psychometric properties of the CBVEQ and explore its applicability in different cultural contexts and age groups, expanding our understanding of cyberbullying and informing prevention and intervention efforts.

In conclusion, this study makes a significant contribution to the understanding of cyberbullying among Iranian adolescents by validating the Persian version of the Cyber-Bullying/Victimization Experience Questionnaire (CBVEQ). The results of this study provide valuable insights into the field of cyberbullying among Iranian adolescents. The confirmation of the two-dimensional structure of the CBVEQ in the Persian version aligns with the theoretical framework that guided our research. The findings showed that the conceptualization of

cyberbullying as a multifaceted phenomenon, encompassing both victimization and perpetration experiences, holds true in the Iranian context. The key findings confirm the reliability and validity of the CBVEQ in this cultural context, highlighting its utility as a robust tool for assessing cyberbullying experiences. Notably, the study reveals the unique influence of maternal education levels on cyberbullying incidence in Iran, offering insights into the interplay of familial and societal dynamics. These findings have practical implications for educators, policymakers, and parents, guiding the development of targeted interventions and policies to effectively address and mitigate cyberbullying. By providing a clearer understanding of cyberbullying within the Iranian adolescent population, this research paves the way for future studies and contributes to global efforts in combating this pervasive issue. From a practical perspective, these results have significant implications for educators, policymakers, and parents. The validated Persian version of the CBVEQ offers a reliable tool for identifying and addressing cyberbullying among Iranian adolescents. Policymakers can use the findings to design targeted interventions and awareness campaigns that consider the specific challenges faced by Iranian youth. This study bridges the gap between theory and practice by validating the CBVEQ in the Iranian context and shedding light on the cultural nuances of cyberbullying. The results emphasize the importance of considering both theoretical frameworks and cultural factors when addressing this pervasive issue.

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Data Availability Statement Datasets generated and analyzed during this study will be provided upon reasonable request by corresponding author.

Declarations

Conflict of Interests There are no conflicts of interest to declare for this study. All authors have no financial or personal relationships that could influence the research findings or the publication process.

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