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The Revised Cyber Bullying Inventory (RCBI): validity and reliability studies

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Abstract

The aim of this study is to revise Cyber Bullying Inventory (CBI) and to examine its basic psychometric characteristics. There were two independent samples. First sample consisting of 358 participants (178 female, 178 male, 2 unknown) aged 13-21 ($M=16.58$; $SD=1.42$) was used to test preliminary validity and reliability tests. Confirmatory analyses were conducted with the second data set which consisted of 339 participants (220 female, 117 male, 2 unknown) aged 13-21 ($M=17.07$; $SD=1.45$). RCBI appears to be a valid and reliable tool which can be utilized safely among Turkish adolescents to investigate the nature and extent of cyber bullying experience.

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1. Introduction

Cyber bullying is “an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself” (Smith, Mandavi, Carvalho, & Tippett, 2005, p. 6). Victims and perpetrators of cyber bullying suffer from series of psychological problems such as frustration, sadness (Mishna, Mclukie & Saini, 2009), depression, confusion, guilt, shame, self harm, distress (Hinduja & Patchin, 2007; Ybarra, 2004). In order to save youngsters from the aforementioned negative consequences and develop more efficient prevention and intervention programs, researchers have started to conduct studies which determine the occurrence rate of cyber bullying. Until today, different measurement tools have been used for determining the frequency of cyber bullying in previously conducted studies. A group of researchers measured the frequency of cyber bullying experience by asking only two questions which were “Have you ever engage in cyber bullying?” and “Have you ever been cyber bullied?” (Hinduja & Patchin, 2008). However, different ways of engaging in cyber bullying would not be determined by asking the frequency of cyber bullying experience by only two questions. In order to receive more information about different ways of doing cyber bullying, another group of researchers asked the experience of cyber bullying for different tools such as e-mail (Slonje & Smith, 2008), mobile phone (Erdur-Baker & Kavşut, 2007) or chat rooms (Raskauskas & Stoltz, 2007). A third group of researchers assumed a close relationship between traditional and cyber bullying and adapted

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Olweus Bully/Victim Questionnaire style. That is before asking the frequency of different ways of cyber bullying, a definition of cyber bullying was provided (Kowalski & Limber, 2007). Among all the existing scales, Cyber Bullying Inventory (CBI; Erdur-Baker & Kavşut, 2007) was created after a series of face to face interviews and focus groups with teachers and students exploring their experiences and perspectives on cyber bullying and used by different studies. The aim of this study is to provide further evidence for the basic psychometric properties based on two independent samples.

2. Method

2.1 Procedure and Participants

Upon obtaining permission from the Middle East Technical University (METU) Human Subjects Ethics Committee, participants were reached at the schools by convenient sampling method. Data were collected in 50 minutes class hour. The present study had two independent *samples* that were gathered from students in Ankara and Sinop. By utilizing the data gathered from *first sample* preliminary reliability and validity tests were conducted. The confirmatory tests were carried out with the data which was gathered from the *second sample*. *First sample* consisted of 358 participants (178 female, 178 male, 2 unknown) aged between 13 and 21 ($M=16.58$; $SD=1.42$). Similarly, *second sample* consisted 339 participants (220 female, 117 male, 2 unknown) aged between 13 and 21 and mean age was 17.07 ($SD=1.45$). RCBI, Traditional Bullying Questionnaire (TBQ), and *demographic form* (asking the age and gender of the participants) were utilized for data collection.

2.2. Instruments

Cyber Bullying Inventory (CBI) was developed by Erdur-Baker and first used by Erdur-Baker and Kavşut in 2007. The original CBI consisted of two parallel forms; one for cyber bullying and one for cyber victimization. Cyber bully form had 16 questions and cyber victim form had 18 questions. Participants were asked to rate themselves on a 4-point Likert type scale (1 = *It has never happened to me*, 2 = *It happened once or twice*, 3 = *It happened three-five times*, 4 = *It happened more than five times*). The previously reported internal consistency coefficients of CBI cyber bullying form was .92 and cyber victimization form was .80 (Erdur-Baker & Kavşut, 2007). Topcu, Erdur-Baker, and Çapa-Aydın (2008) reported the internal consistency coefficients of CBI for two different samples as .81 and .91 and for the cyber bullying form, and .72 and .88 for the cyber victimization form.

Traditional Bullying Questionnaire (TBQ) was utilized to measure the traditional bullying experience of the participants. TBQ was developed by Topcu (2008). TBQ has also two parallel forms, one for traditional bullying and one for traditional victimization. Each form has 7 items aimed to measure covert type of traditional bullying on a four point Likert scale (1=*never*, 2=*once*, 3=*twice or three times*, 4=*more than three times*). Higher scores indicated more frequent traditional bullying and victimization. Sample item from the scale is “I have spread rumors about someone”. In the present study, one factor structure of TBQ was confirmed and the traditional bully form had an internal consistency coefficient of .73 and the traditional victim form had an internal consistency coefficient of .74.

3. Results

3.1 Revision Procedure of the Scale

As the first step of the revision process of CBI, the literature and the previously used measures of cyber bullying were examined. Afterwards, some new items were generated and some other items of CBI were reworded. The revised CBI consisted of two parallel forms (cyber bullying and cyber victimization) each of them included 34 items at the beginning of the revision procedure. Participants were asked to rate their experience on a four point Likert type scale (1=*never*, 2=*once*, 3=*twice or three times*, 4=*more than three times*) for each item twice; once for cyber bullying and once for cyber victimization. In order to evaluate the RCBI, a focus group of six students (2 females and 4 males aged between 16 and 18) was formed. The participants of the focus group were recruited based on their pre-test scores on a short questionnaire asking the usage frequencies of the Internet, MSN, SMS, forum sites, e-

mail, chat room, SMS, the total amount of time spending using the Internet and the activities performed on the Internet. A total of 79 students (42 females, 37 males) aged between 14 and 18 answered the short questionnaire. Among these participants, two of the females and four of the males were asked to be the part of the focus group, and they all accepted to participate into the focus group.

The items in the questionnaire were reviewed with the students in the focus group in terms of wording, style, and content. Based on the group members' suggestions, some minor changes were done. The final item number added up to 26 rated on a four point Likert scale ($1=never$, $2=once$, $3=twice$ or $three$ times, $4=more$ than three times) for each statement. Each item was asked to be rated in two forms: "It happened to me" for cyber victimization, and "I did it" for cyber bullying. Higher scores indicated more frequent cyber bullying experience. RCBI was given to three experts and according to their recommendations, grammar problems were corrected and foreign words were replaced with their Turkish counterparts. Sample item from the RCBI read as "I have send embarrassing, hurtful, threatening e-mails to someone".

3.2 Validity Studies

For both cyber bully and the cyber victim forms, by utilizing the first data set, exploratory factor analyses were conducted. Then, with the data coming from the second group of sample, confirmatory factor analyses were conducted. The assumptions of the exploratory factor analysis (EFA) were tested before conducting the EFA. Finally, criterion-related validity of the RCBI was tested by examining its relationship to TBQ which also measures bullying in physical settings.

3.2.1 Construct Validity

3.2.1.1 Cyber Bullying Form

Exploratory Factor Analysis (EFA): Results of the maximum likelihood analysis with oblique rotation revealed eight factors explaining 50% of the total variance. However, the items loaded to these 9 factors randomly and did not form a consequential factor structure. Additionally, 12 of the items were eliminated because factor loadings of them were lower than .30. According to Hair, Anderson, Tatham, and Black (1998) items with factor loadings of lower than .30 should be eliminated. In fact, theoretically, the scale was aimed to have one factor. Therefore, the factor number was forced to one and the analysis was repeated with 14 items. The factor loadings of the items ranged from .83 and .28. The item which had a factor loading of .28 was not eliminated because it was very close to .30 and the item was theoretically appropriate.

Confirmatory Factor Analysis (CFA): By utilizing the second sample, CFA was performed on RCBI to examine how well the one factor model fit the present data. As the evaluation criteria, the following fit indices were selected: the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The GFI, AGFI, CFI, NFI statistics range from 0 to 1, and values greater than .90 indicate a good model fit. For RMSEA, a value of .05 or less indicates a good fit, a value of .08 indicates a reasonable fit, and a value of .10 and higher indicates a poor fit (Byrne, 2001). Results indicated an inadequate model fit for one factor model (GFI= .80, AGFI =.72, CFI=.67, NFI=.64, TLI=.61 and RMSEA= .14).

To improve the model, modification indices were examined to determine whether additional paths can be added to the model. As a result of modification indices check, it was seen that adding correlation between error terms of items 1-26, 6-14, 6-22, 8-9, 12-21, 13-14, 13-22, 20-26, 21-22 would increase the model fit. Actually, items of these pairs are similar in content. Thus, there is theoretical justification for these statistical findings. After the addition of these correlation terms, results showed an acceptable fit (GFI =.93, AGFI =.89, CFI=.93, NFI=.89, TLI=.90 and RMSEA = .06). All of the factor pattern coefficients were significant and ranged from .70 to .18. Therefore, the results suggested that the modified one factor model was confirmed with the present data for the cyber bullying form.

3.2.1.2 Cyber Victimization Form

Exploratory Factor Analysis (EFA): Similar to the cyber bullying form, the results of the maximum likelihood analysis with oblique rotation did not reveal a consequential factor structure at the first trial. A total of 10 factors which was explaining 50% of the total variance were obtained. Cyber victimization form was also aimed to have

one factor theoretically. Therefore, the factor number was forced to one, and the analysis was repeated by eliminating the 12 items which were removed from the cyber bullying form due to lower factor loadings. The factor loadings of the items ranged from .78 and .21. Three items had factor loadings which were lower than .30 (.24, .23 and .21). As mentioned earlier, according to Hair et al. (1998) items with factor loadings of lower than .30 should be eliminated. However, these three items were kept in the form because they were closer to .30 and they were theoretically appropriate.

Confirmatory Factor Analysis (CFA): By utilizing the second sample, confirmatory factor analysis was performed on RCBI cyber victimization form to examine how well the one factor model fit the present data. As in the cyber bullying form, the evaluation criteria, were the following fit indices: the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Initially results indicated an inadequate model fit for one factor model (GFI= .82, AGFI =.76, CFI=.58, NFI=.54, TLI=.50 and RMSEA= .13). To improve the model, modification indices were examined to determine whether additional paths to the error terms of the items can be added to the model for improving it. As a result of modification indices check, adding correlation between error terms of items 1-6, 6-13, 8-9, 8-13, 12-20, 16-19, 20-22, 21-22, 22-23 was decided. Actually, items of these pairs were similar in content that provided theoretical justification for the statistical findings. After the addition of these correlation terms, results showed an acceptable fit (GFI =.93, AGFI =.90, CFI=.89, NFI=.84, TLI=.86, and RMSEA = .06). All of the factor pattern coefficients were significant and ranged from .56 to .21. Therefore, for the cyber victimization form, results suggested that the modified one factor model was confirmed with the present data.

3.2.2 Criterion-Related Validity of the Cyber Bullying and Cyber Victimization Form

In order to investigate the criterion-related validity of RCBI cyber bullying form, its relationship to Traditional Bullying Questionnaire (TBQ) traditional bullying form was investigated. The phi coefficient was calculated for investigating the relationship between those who reported to engage in cyber bullying and traditional bullying and a positive and significant relationship was found ($\phi = .45, p < .001$). Similar to the cyber bullying form, the criterion-related validity of RCBI cyber victimization form was tested by examining its relationship to Traditional Bullying Questionnaire (TBQ) traditional victimization form. The phi coefficient was found as significant and positive ($\phi = .36, p < .001$).

3.2.3 The Relationship between Cyber Bullying Form and Cyber Victimization Form

The relationship between cyber bullying and cyber victimization forms was examined by calculating the phi coefficient. The obtained phi coefficient was positive and significant ($\phi = .36, p < .001$).

3.3 Internal Reliabilities of Cyber Bullying Form and Cyber Victimization Form

The internal consistency of the items was tested by Cronbach alpha coefficient, and the alpha coefficient of the cyber bullying form was found as .82 in this study. In order to test the internal consistency of cyber victimization form, the Cronbach alpha coefficient was found as .75.

4. Discussion

Results of this preliminary study indicate that Revised Cyber Bullying Inventory is a psychometrically sound instrument for assessing the cyber bullying experiences of Turkish adolescents. Both of the forms had one factor structure which was confirmed by CFA. The convergent validity of the RCBI was conducted by examining its relation to TBQ which measured bullying in physical settings. Since the relationship of RCBI to TBQ was positive and significant, it can be concluded that considerable number of adolescents engage in bullying in both cyber and physical settings. For testing the reliability, internal consistency coefficients were calculated and both of the forms were found as reliable. Yet, these findings need to be cross validated with different samples in further studies.

This scale will help researchers and practitioners determine the frequency of cyber bullying experience. Researchers who aim to develop prevention and intervention programs against cyber bullying can learn how frequently adolescents engage in cyber bullying and which acts of cyber bullying are popular among youngsters. As well as strengths of this study, there are some limitations; the first limitation of this study is caused by the topic

which is renewing itself every day. Measuring the cyber bullying acts which are carried out by using the Internet cannot be possible most of the time because applications in the Internet are changing very fast. For example, when the original CBI was developed, the social networking sites were not popular. When the CBI was revised and items of RCBI were generated, acts of cyber bullying in new applications such as “Facebook” were added to the forms of RCBI. These fast developments create two difficulties. First, these applications disappear as fast as they appear. Therefore, participants’ age become important, they may not know about an application which was popular a few years ago. For example, chat rooms were very popular about 10 years ago and still some people use them to socialize, but, a 15-year old adolescence may not even hear about chat room. On the other hand, while the RCBI was generated, sites such as “Twitter” were not available and popular. Hence, adding each application would not be practical. The second difficulty is that using these sites or applications names in the items specifically may create problems while the participants filling out the forms. Regardless of the age of the participants or popularity of the applications, sometimes people may not know the application. These difficulties may create problems related to the validity of the scale. In this study, those items were eliminated after conducted the EFA because their factor loadings were not enough to continue, and they did not correlate with other items. To sum up, rather than using the application name, referring them in general such as Internet-mediated communication tools or information and communication technologies would be better.

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