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Adapting the Child Version of Obsessive-Compulsive Inventory into Turkish: The Study of Reliability and Validity

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Abstract

The purpose of this study is to adapt Child Version of obsessive compulsive inventory developed by Foa, Coles, Huppert, Franklin and March (2010) into Turkish culture. The work group of the study is formed of 1187 secondary and high school students, 633 boys and 604 girls, who get educated in Erzurum city center and were selected with appropriate sampling method. Experts' opinions were asked for language validity of the scale in adaptation process and after the language validity had been granted, Confirmatory Factor Analysis was used to determine the scale's adaptation level to Turkish culture, and it was found that the model fit indices of the six-factor structure of the scale are at good level. The model fit of this six-factor structure of the scale was tested with Confirmatory Factor Analysis and model fit indices were found to be in good level. The internal consistency coefficient was found as .86 for the total scale and .73, .76, .81, .78, .79 and .78, respectively for the sub-dimensions. According to the evidence obtained through the study, the child form of obsessive compulsive symptoms scale is a valid and reliable assessment tool to use in the analysis of factors related obsessive compulsive disorder.

Keywords

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Introduction

Obsessive compulsive disorder (OCD) is broadly known as a disorder specific to adulthood, but first symptoms of one third and almost half of OCD experienced in adulthood can begin before the age fifteen. Besides, OCD is defined as a psychological disorder which can be seen in one child or adolescent out of every hundred (Douglass, Moffitt, Dar, Mcgree and Silva, 1995; Flament, Whitaker, Rapoport and Davies, 1988; Heyman, Fonbonnr, Simmons, Ford and Goodman, 2003 and Pauls, Alsobrook, Goodman, Rasmussen and Leckman, 1995) and which can leave serious negative effects in academic, social and family life of an individual (Piacentini, Bergman, Keller, ve McCracken, 2003).

American Psychiatric Association-APA (1994) defines OCD as a psychiatric disorder which causes corruption in individual's social life and professional functions, disrupter, ego dystonic, repetitive and depressing and the repetitive behavior to get rid of this depressing thoughts or mental actions. Gökçakan (2005) defined OCD as a continuous and stubborn disorder which limits the life of the individual, affecting psychological adaptation and socialization, decreasing his productivity and preventing him to establish healthy relationships in his environment. Öner and Aysev (2001) defined OCD as a psychiatric disorder which can start during childhood and processes seriously, and stated

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that the most visible obsession symptoms are cleanliness, controlling, repeating and stowing, the most visible compulsive symptoms are the fear of infection and therefore compulsive hand wash and avoidance behaviors. While many symptoms required for OCD diagnosis are seen in people not diagnosed with OCD, Insel (1990) suggested that people not diagnosed with OCD are short-dated compared to the ones diagnosed with OCD and these symptoms do not cause a decrease in his social and professional life. It is also stated that these symptoms do not cause to be ego dystonic and they can easily be removed from the mind.

Geller, Biederman, Jones, Park and Shapiro (1988) and Leonard, Lenane, Swedo, Rettew and Gershon (1992) determined that the frequency of OCD is higher in boys in prepuberty and it is higher in girls in post-puberty, in spite of that, they determined that there is not a differentiation in terms of gender during puberty. Flament (1990) determined that the prevalence of OCD in adolescents is 2 %, and Zohar (1999) determined that this rate is 4 %. However, there is a number of research evidence showing that the symptoms of OCD started in childhood can also be seen in adulthood. Stewart, Geller, Jenike, Pauls, Shaw and Mullin (2004) found out that 41 % of those who were diagnosed with OCD during childhood have been diagnosed with OCD in their adulthood, Karno, Golding, Sorenson, Burnam (1988) found out this rate to be % 50. In Turkey, Türkbay, Doruk, Erman and Söhmen (2008) suggested that OCD symptoms (such as cleanliness and asking questions frequently) can be seen even in 3 year-old children in their study comparing children, adolescents and adults; OCD is a common problem among children and adolescents but it is lesser compared to adults in terms of stated level, and this can be deceptive. They stated that as they tried to hide the symptoms because of the fear and shame that the children and adolescents feel about OCD symptoms and thus few of them get professional treatment. Abay, Pulular, Memiş and Süt (2010) determined that the extensity of OCD among adolescents is 1,4 % and the most common compulsions among adolescents are contamination, doubt and symmetry. Irak and Flament (2007) determined that the visual spatial memory performance of the children with OCD is better than the those without OCD. Toros et al. (2002) stated that the psychological disorders accompanying with OCD are tic disorder, attention deficit, hyperactivity and major depression. Türkbay et al. (2000) stated that children and adolescents having low level symptoms of OCD can be deceptive.

It can be seen that the number of researches related to OCD in children has been increased recently (Barrett, Healy-Farrell, ve March, 2004; Foa, Kozak, Salkovskis, Coles and Amir, 1998; Foa et al. 2010; Storch et al. (2007). In spite of that, it is obvious that the number of instruments that would diagnose and identify OCD in children and adolescents is still quite limited in Turkey and international literature. The most common scale used in the related literature is Children's Yale-Brown OC Scale. (Scahill, Riddle, McSwiggin-Hardin, 1997). But, Children's Yale-Brown Obsessive Compulsive Scale is a semi-structured instrument, and it requires interviews in practice and is used mainly in diagnosing and for clinic purposes. So, it can be said that it is not handy for field researches. Another instrument is Maudsley Obsessive-Compulsive Inventory. It is thought that because no new study about the reliability and validity of Maudsley Obsessive-Compulsive Inventory developed by Rachman and Hodgson (1980) and adapted into Turkish by Erol and Savaşır (1988) have been done for a very long time, it would be a big problem for the science. Also, it is determined that there are different applications related to the intended population on which the scale would be conducted. Although Toros, Tot and Avcı (2002) stated that the age group that the scale would be conducted on should be between 9-20, there are evidence in many researches that the scale was conducted on university students and adults (Thomas, Turkheimer, Oltmanns, 2000; Tosun and Irak, 2008; Youlmaz et. al., 2007). These uncertainties related to the reliability and validity of Maudsley Obsessive-Compulsive Inventory can be considered as a big problem as using the scale on children and adolescents. In this direction, it is suggested that the reliability and validity studies of Maudsley Obsessive-Compulsive Inventory is needed to be done once again and the age group of the sample on which the scale would be conducted on is needed to be clearly determined. In this sense, it became a source of motivation to adapt Child Version of Obsessive Compulsive Inventory developed by Foa et al (2000) into Turkish as the researcher did not reach any instrument whose reliability and validity have been proven to be used in field researches in Turkey.

With the adaptation of the Child Version of Obsessive Compulsive Inventory into Turkish, a valid and reliable assessment tool will be brought into the literature to be used in the analysis of OCD in children and adolescents and the factors related to OCD in Turkey. For this purpose, it is intended to test the validity and reliability of the 21-item original form of the Child Version of Obsessive-Compulsive Inventory.

Method

Participants

As this is a scale-adapting study, in each phase of the study different groups have been created from the participants selected with appropriate sampling among the students being educated in secondary and high schools in Erzurum city center. In appropriate sampling, the researcher starts creating the group from the most available responders until he/she reaches the group as big as he/she needs or works on the most available case or sample that makes maximum saving (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel, 2013). In this direction, working groups consisting of 584 girls and 603 boys were created in the adaptation process of the scale. Among the students there are 585 secondary school students (275 girls and 310 boys) and 602 high school students (310 girls and 292 boys. The age range of the students forming the working groups vary between 13 and 18. Confirmatory factor analysis was done on the data collected from 570 students, 354 girls and 260 boys, to analyze the model fit of the scale. a group of 319 students, 154 girls and 165 boys for confirmatory factor analysis, a group of 147 students, 75 girls and 72 boys for criterion-related validity, a group of 275 students, 130 girls and 145 boys for internal consistency and split-half reliability, and a group of 51 students, 25 girls and 26 boys for test-retest were created. Bryman and Cramer (2001) suggested that the value which is obtained by multiplying the number of the items in the scale with 5 or 10 should be taken as a criterion in determining the number of the participants in factor analysis. Kline (1994) stated that a sample of 200 people is generally enough but this can be reduced until 100. Considering the working groups of the study, it can be said that the working groups are big enough for both validity and reliability analyses.

Instruments

Within this study, State-Trial Anxiety Inventory, Anxiety Sensitivity Index for Children and Children's Depression Inventory were used to analyze the criterion dependent validity of Child Version of OCI as significant relations between anxiety sensitivity (Calamari, Rector, Woodard, Cohen and Chick, 2008; Tolin, Woods and Abramowitz, 2006) and depression symptoms (Grant, Beck and Davila, 2007; Wheaton, Deacon, McGrath, Berman and Abramowitz, 2012) during the both development process (Foa et al. (2010) and in the researches about Child Version of OCI.

The Child Version of Obsessive-Compulsive Inventory*:* The scale is a likert scale developed by Foa et al. (2000) to determine the symptoms of obsessive compulsive disorders in children and adolescents by self-report. A 42-item pool was created by the researchers during scale development and a 21-item and six-dimension scale explaining 49,95 % of total variance was obtained after validity and reliability studies had been done. The total internal consistency coefficient of the scale is .85 and the internal consistency coefficients for the sub-dimensions are as follow; .82 for *doubting checking*, .83 for *obsession*, .88 for *hoarding*, .83 for *washing*, .83 for *ordering* and .81 for *mental neutralizing*. The choices for the participants were determined as *never, rarely, often, usually, always.* The scale is a 5 likert-type scale graded between 0-4. The highness of the scores from the scale and its sub-dimensions indicated the highness of the obsessive compulsive symptoms. The internal consistency coefficient of the scale was found as .79. It was determined that the scale has significant correlation with multi-dimensional anxiety, NIHM Global Obsessive Compulsive Scale and childhood depression inventory.

State-Trial Anxiety Inventory: A likert scale developed by Spielberger (1983) and adapted into Turkish by Özusta (1993) to determine the state-trial anxiety levels of children and adolescents between the ages of 9 and 16 by self-report. The scale has 40 items at total. The first 20 items determine state anxiety level, and the last 20 items determine trial anxiety. The highness of the scores from both sub-

dimensions indicates the highness of state and trial anxiety levels. The internal consistency of the scale was found as .81, test-retest reliability was found as .65.

Within this study, the factor structure of the scale was reviewed and it was found that the two factor structure explains 51.35 % of the variance and model fit indices related to two factor structure found as REMSEA: .057, RMR: .061, SRMR= .62, CFI: .92, $\chi 2/df$= 2.25., the internal consistency of the scale was found as .79 and half split reliability was found as .77.

Children's Depression Inventory: Developed by Kovacs (1985) and adapted into Turkish by Öy (1991) to determine the depression symptoms of children and adolescents. The scale can be used on children and adolescents between the ages of 6-17. The scale has 27 items and one factor. Each item has three answer choices and each item requires the individual to answer the questions by considering his own situation for the last two weeks. Each item is graded between 0-2. The lowest score from the scale is 0 and the highest score is 54. The break point of the scale was determined as 19. The highness of the scores from the scale indicates the highness of the depressive symptoms.

The factor structure of the scale was reviewed within this study and it was found that the scale explains 42.13 % of the variance at one factor and the model fit indices related to the one factor structure was found as REMSEA: .069, RMR: .074, SRMR= .072, CFI: .91, $\chi 2/df$= 1.83. The internal consistency of the scale was found as .75 and it was found that for the reliability values internal consistency is .75 half split reliability is .72.

Anxiety Sensitivity Index for Children: A likert scale developed by Silverman et al. (1991) and adapted into Turkish by Seçer and Gülbahçe (2013) to determine the social and psychological anxiety sensitivity levels of children and adolescents by self-report. In adaptation process of the scale, exploratory and confirmatory factor analyses were done. As a result of EFA, it was determined that the scale has a three factor structure, and it was determined that the model fit of this three factor structure of the scale is at convenient level as a result of CFA (RMSEA=.023, SRMR: .030, RMR= .05, CFI=.99, $\chi 2/df$= 1.06). The internal consistency coefficient of the scale was found as .87, half split reliability coefficient as .83 and test-retest reliability as .86.

As part of this study, the factor structure of Anxiety Sensitivity Index for Children was reviewed and it was found that the three factor structure explains 56.44 % of the variance and the model fit indices related to the two factor structure were found as REMSEA: .034, RMR: .037, CFI: .94, SRMR: .036, $\chi 2/df$= 2.01. Besides, in terms of reliability values the internal consistency was found as .89 and half split reliability was found as .88.

Data Analysis and Procedure

The Turkish adaptation of child version of obsessive compulsive inventory was done after necessary permissions from Foa and his colleagues who developed the scale had been granted through e-mail. After granting the necessary permissions the adaptation process of the scale was stated. The first step in the adaptation process is to provide the language validity of the scale. To determine the language validity of the scale, the scale was translated into Turkish from its original form by two interpreters, one from the department of English Language and Literature and one from the department of English Language Education, independently. In addition to those experts, another expert from the department of English Language and Literature and a researcher came together and compared the translations and then the translations that correspond the best to the original items were determined and the first form of the scale was created. The first form of the scale was sent to 3 different academicians from the department of Guidance and Psychological Counseling and from the department of Psychology to evaluate and determine whether the translated items correspond the original items, and they suggested that using the synonyms of some of the words would be better, and necessary changes according to the experts' opinions were done. After that, the scale was sent to two other experts, one from the department of Turkish Language and Literature and the other is an expert on Turkish language, to evaluate the scale in terms of grammar and intelligibility. After necessary changes had been done, the scale was translated into in its original language by two language experts. The original form and re-translated form of the

scale were compared by the researcher and a different expert from the department of English Language and Literature and it was determined that the similarity level is high. After all these processes, the adaptation of the scale was completed, and the validity and reliability studies of the scale were done and pilot scheme was applied on 123 people (55 girls and 68 boys). In the pilot scheme, Cronbach Alpha value and item-total correlation values were analyzed. The obtained data showed that the item-total correlation value of each item was .30 and higher and the coefficient of internal consistency was .92. After pilot scheme, the main application phase started. In the process of the application of the scale, the gathered data was transferred into the computer and then missing data, extreme value, normality, linearity and multicollinearity analysis were done. In this direction, missing point until maximum 2 items were filled with arithmetic means (n=21, % 1,76). There are remarks that if the missing points in the data set it up to from 10 % (Bell, Kromrey and Ferron, 2009) to 20 % (Foa et. al, 2010; Kalton and Kaspyzyk, 1986), they can be filled with arithmetic means. However, 12 people in CFA, 3 people in criterion related validity and 6 people in reliability analyses were excluded as they had extreme values that would affect the normality. The model fit of the scale in Turkish culture was analyzed with CFA. Multiple fit indices (RMR, REMSEA, SRMR, CFI) were used in CFA. In CFA, >.90 was accepted as the acceptable limit for and >.95 was accepted as the perfect fit limit for CFI. <.08 was accepted as acceptable limit and <.50 was accepted as perfect fit limit for RMSEA, SRMR and RMR (Cole, 1987, Hu and Bentler, 1999; Marcoulides and Schumacher, 2001). It is also suggested that Chi Square value should be below 3 (Marcoulides ve Schumacher, 2001; Schumacher ve Lomax, 2004; ve Kline, 2005).

CFA is an analysis method which is often used in analyzing the model fit of a latent structure obtained through exploratory factor analysis and in the adaptation of scales developed in different cultures and samples (Sümer, 2000). Meydan and Şeşen (2011) defined CFA as a method which enables the researcher to test whether the data that the researcher has fits with the original structure explored before. The correlations between State-Trial Anxiety Scale, Children's Depression Inventory and Anxiety Sensitivity Index were analyzed to determine the criterion dependent validity of Child Version of OCI. Internal consistency, split half reliability and a month hence test-retest reliability coefficient were analyzed to test the reliability of the scale.

Findings

Construct Validity

Confirmatory Factor Analysis

The model fit of the child version of OCI in Turkish culture was analyzed with simple CFA. Model fit indices were used to evaluate the results of CFA. As a result of CFA, it was found out that chi square value of goodness of fit of the factor structure consisting of 21 items and six sub-dimensions is significant (χ^2=503.27, Sd=171, p=.00) and the χ^2/df values related to model fit are 2.94. Fit indices were found as REMSEA: .067, RMR: .011, SRMR: .065, CFI: .96, Findings related to the simple confirmatory factor analysis done to analyze the model fit of the six-factor structure of the child form of OCD Symptoms Inventory are indicated in Table 1.

Table 1. Findings Related to the Simple Confirmatory Factor Analysis

Index	Perfect Fit Criteria	Acceptable Fit Criteria	Research Finding	Result
χ^2/df	**0-2**	**2-3**	**2.94**	Acceptable fit
RMSEA	**≤ .05**	**≤ .08**	**.067**	Acceptable fit
RMR	**≤ .05**	**≤ .08**	**.011**	Perfect fit
SRMR	**≤ .05**	**≤ .08**	**.065**	Acceptable fit
CFI	**≥ .95**	**≥ .90**	**.96**	Perfect fit
NNFI	**≥ .95**	**≥ .90**	**.96**	Perfect fit
NFI	**≥ .95**	**≥ .90**	**.95**	Perfect fit
IFI	**≥ .95**	**≥ .90**	**.96**	Perfect fit
RFI	**≥ .95**	**≥ .90**	**.95**	Perfect fit
GFI	**≥ .90**	**≥.85**	**.92**	Perfect fit
AGFI	**≥ .90**	**≥.85**	**.91**	Perfect fit

Considering the values of fit indices indicated in Table 1, it can be said that X/df, REMSEA and SRMR values have acceptable fit and RMR, CFI, model fit indices are at perfect fit level. The path diagram about the simple CFA related to child form of OCI is indicated as in Figure 1.

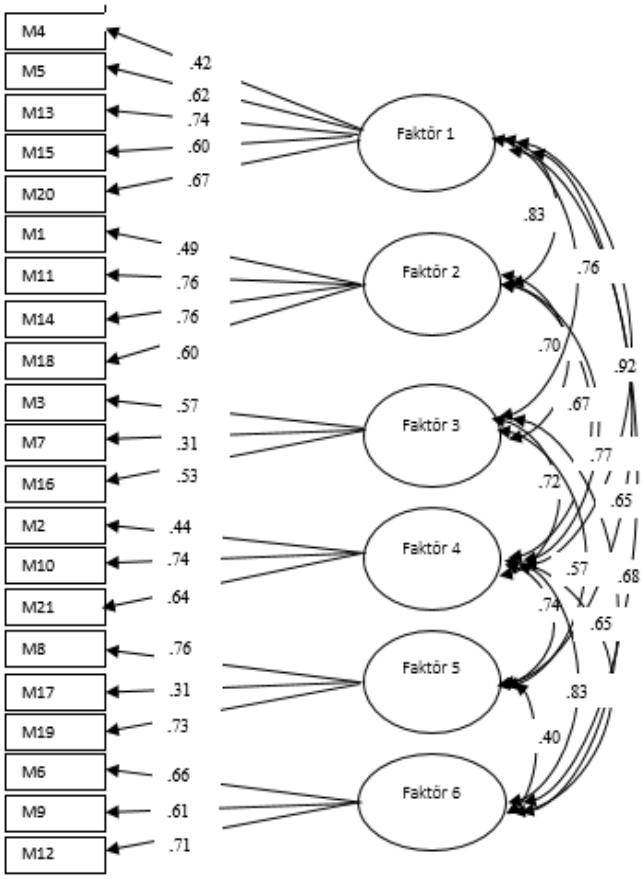

Figure 1. The Results of Path Analysis of OKB Child Version

To analyze item discrimination of the child form of OCI, item analysis was done and it was found that item total correlations ranged between .31 and .65. In scale development and adaptation process, it is expected that the item total correlation values should be at least .30 to discriminate the features that are going to be determined (Büyüköztürk, 2007). In this direction, it can be said that the item total correlation values of the items in the scale are adequate.

Criterion-related Validity

Correlations between State-Trait Anxiety Scale, Children's Depression Inventory and Anxiety Sensitivity Index for Children were calculated and the obtained findings are related in Table 2.

Table 2. Finding Related to Criterion Validity of the Child Form of OCI

	State anxiety	Trait anxiety	Childhood depression	Anxiety sensitivity
Doubting-checking	.688**	.742**	.445**	.741**
Obsessing	.674**	.852**	.684**	.865**
Hoarding	.345**	.548**	.295**	.423**
Washing	.585**	.695**	.457**	.710**
Ordering	.472**	.385**	.362**	.745**
Mental neutralizing	.345**	.587**	.565**	.650**

*p<.05, **p<.01, ***p<.001

In the direction of significant and positive relations between the Child Version of OCI, Children's Depression Inventory, State-Trait Anxiety Scale and Anxiety Sensitivity Index for Children, it can be said that the child version of OCI has criterion-related validity.

Reliability

To determine the reliability of the Child Version of OCI, internal consistency, half split reliability analysis and test-retest analysis were done and the obtained results are indicated in Table 3.

Table 3. Finding Related to reliability of OCD child form

Dimesion	Internal Consistency	Two Half Reliability	Test-retest
Doubting-checking	.73	.72	.80
Obsessing	.76	.78	.82
Hoarding	.81	.76	.82
Washing	.78	.76	.81
Ordering	.79	.78	.84
Mental neutralizing	.78	.77	.80
Total scale	.86	.82	.88

Internal consistency of the child version of OCI was found as .86, half split reliability as .82. The internal consistency coefficients in the sub-dimensions of the scale were found as 73, .76, .81, .78, .79, and .78, respectively. Half split reliability for the sub-dimensions were found as .72, .78, .76, .76, .78, and .77, respectively. Test-retest reliability for the total scale was found as .88, for the sub-dimensions as .80, .82, .82, .81, .84 and .80, respectively.

Discussion and Results

It is suggested that in almost half of the individuals diagnosed with OCD, the first symptoms of OCD go back to the childhood and adolescence (Foa et al, 2011; Pauls et al., 1995) and as the OCD symptoms can leave severe effects in the individual's academic and social life, it can affect the adaptation process of the individual (Valderhaug ve Ivarsson, 2005). Measuring instruments have an important function in the early diagnosis of OCD symptoms in children and adolescents. Yet, a scale which is reliable and valid and to be used in the studies related to OCD in children and adolescents was not found in Turkey. Thus, it was aimed to adapt the child version of OCI developed by Foa et al. (2011) into Turkish and to present a scale to be used in field researches in Turkey.

During the adaptation of the scale into Turkish, language validity was firstly tried to be provided and for this purpose experts' opinions were asked. After the linguistic equivalence of the scale had been provided, the final form of the scale put into practice with pilot scheme and item total correlation values and Cronbach Alpha values that indicate the internal consistency of the scale were analyzed. In the reliability analysis, the item total values of all the 21 items in the scale were found as .30 and higher, and the internal consistency value was found as Cronbach alpha =.92. This obtained value was considered that the two forms of the scale has adequate internal consistency (Landis ve Koch, 1977; Robinson, Shaver, ve Wrightsman, 1991).

The six-factor structure of the scale was tested with simple CFA. As a result of the simple CFA, it was found out that the model fit indices of the six-factor structure of the child version of OCI are at adequate level (REMSEA: .067, RMR: .011, SRMR: .065, CFI: .96,) and it was considered that the scale has model fit (Cole, 1987, Hu and Bentler, 1999; Kline, 2011; Marcoulides and Schumacher, 2001). Besides, it was also found out that the factor load values of Child Version of OCI vary between .42 and .67 in *doubting checking* sub-dimension, .49 and .76 in *obsession* sub-dimension, .31 and .57 in *hoarding* sub-dimension, .44 and .74 in *washing* sub-dimension, .31 and .76 in *ordering* sub-dimension, and .61 and .71 in *neutralizing* sub-dimension. It can be said that he obtained factor load values are adequate enough and the six-factor structure that the scale has in its original form has not changed in the Turkish sample.

To analyze the criterion-related validity of the child version of OCI, the correlations between Children's Depression Inventory, State-Trait Anxiety Scale and Anxiety Sensitivity Index for Children were analyzed. The findings related to criterion related validity are remarkable. Hereunder, it is understood that all the sub-dimensions of the child version of OCI have a medium and high relation

with state-trial anxiety, a medium relation with children's depression, and a high relation with anxiety sensitivity. It is thought that considering these obtained findings through this study would be useful in the future studies on OCD.

To determine the reliability of the child version of OCI, internal consistency, split half reliability and test-retest reliability methods were used. As a result of the analyses, it was determined that the scale has internal consistency, split half reliability and test-retest reliability in terms of both all of the sub-dimensions and total score. In scale development and adaptation studies, the scales are expected to have a reliability value of .70 and higher to be accepted as reliable (Fraenkel, Wallend and Hyun, 2012; Landis and Koch, 1977; Nunnaly and Bernstein, 1994; Robinson, Shaver and Wrightsman, 1991). In the direction of the obtained findings, it can be said that the child form of OCI has internal consistency, split half reliability and test-retest reliability.

The child form of OCI, consists of six-dimensions, *doubting-checking*, *obsessing*, *hoarding*, *washing*, *ordering* and *mental neutralizing*. Each dimension in the scale is graded and evaluated separately. It is accepted that the OCD symptoms increase as the scores from the scale are increased. As a result, it can be said that the Child Version of Obsessive Compulsive Inventory is a valid and reliable scale and can be used to determine the obsessive compulsive symptoms and factors that are thought to be related in children and adolescents.

In this research, the validity and reliability studies of Child Version of Obsessive Compulsive Inventory was done on a normal sample but these studies could not be done on a clinic sample. This can be considered as the limitedness of the research. Accordingly, it can be suggested that in the further studies the validity and reliability studies of the scale can be done on the children and adolescents who are diagnosed with OCD. It can also be suggested that considering that the reliability and validity studies of the original form of the scale was between the age range of 7-17, the reliability and validity studies of the scale can be done on the children under the age of 13-18- which is the intended population of this study. Additionally, it is thought that using this scale in the analysis of the relations between the variables which are thought to be related to OCD can support the evidence related to the validity and reliability of this scale. As it was determined that there are positive and significant relations between OCD symptoms and anxiety sensitivity, children's depression and state-trial anxiety in the analyses done for the criterion related validity studies, it can be suggested that the possible effects of these variables can be investigated.

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