Original Paper

DOI: 10.5455/bcp.20151203125902

Psychometric Properties of Turkish versions of the Leyton Obsessional Inventory-Child Version (LOI-CV) and Obsessive Beliefs Questionnaire-Child Version (OBQ-CV)

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ABSTRACT:

Psychometric properties of Turkish versions of the Leyton Obsessional Inventory-Child Version (LOI-CV) and Obsessive Beliefs Questionnaire-Child Version (OBQ-CV)

Objective: Juvenile obsessive-compulsive disorder has been increasingly recognized in the literature. However, the developmentally sensitive screening tools for obsessive-compulsive disorder (OCD) in children and adolescents still lag behind psychometric tools developed for adult OCD. The Leyton Obsessional Inventory-Child Version is the most widely utilized screening tool for juvenile OCD assessment. Our aim was to assess psychometric properties of the Leyton Obsessional Inventory-Child Version (LOI-CV) and Obsessive Beliefs Questionnaire-Child Version (OBQ-CV).

Method: The sample consisted of 805 children and adolescents, aged from 11 to 17 years. Mean age of the sample was 13.85 (SD±1.40) years. The LOI-CV, OBQ-CV, Obsessive Compulsive Inventory-Revised (OCI-R), State Trait Anxiety Inventory for Children (STAI-C) and Meta-Cognitions Questionnaire for Children (MCQ-C) were completed by respondents. The data were subjected to explanatory and confirmatory factor analyses. Internal consistency and two-week temporal stability of scale scores were computed.

Results: Explanatory and confirmatory factor analyses yielded a three-factor solution for the LOI-CV: Compulsions, Obsessions and Mental Neutralizing. Internal reliability was high for the overall scale (α=0.86) and sub-scales (Cronbach alphas= 0.76, 0.75, and 0.70, respectively). Factor analyses suggested a new three factor solution for the OBQ-CV: Responsibility/ Threat Estimation, Certainty/Control of Thoughts and Perfectionism. Internal consistency was excellent for the total measure (α=0.90) and the subscales (α=0.84, 0.82 ve 0.71, respectively). Retest reliability was high for the both LOI-CV (r=0.83) and OBQ-CV (r=0.78). Both of the measures revealed good convergent validity with the OCI-R, STAI-C, and MCQ-C.

Conclusion: The LOI-CV and OBQ-CV had promising psychometric properties in a community sample of Turkish children and adolescents.

Keywords: Obsessive-compulsive disorder (OCD), pediatric OCD, meta-cognitions, anxiety, reliability, validity

Klinik Psikofarmakoloji Bulteni - Bulletin of Clinical Psychopharmacology 2016;26(4):382-96

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Date of submission:
August 25, 2015

Date of acceptance:
December 03, 2015

Declaration of interest:
M.B., M.T.K., M.C.T., Z.S.S., O.F.D.: The authors reported no conflict of interest related to this article.

INTRODUCTION

Obsessive-compulsive disorder (OCD) is a debilitating neuropsychiatric disorder affecting 2-4% of the population over lifetime[1-3] and 1% over an twelve-month time[4], which is in the top 20 causes of disability in the worl at 15-44 year-old range[5]. OCD has once been perceived as an adult disorder and rare in childhood, recent advances in assessment and treatment have led to a much more better recognition of the disorder during childhood[6]. Providing the first large-scale information, the Epidemiological Catchment Area over 18,500 individuals demonstrated half of the

sample reported developing symptoms in childhood and adolescence[7]. Providing further support in agreement with this preliminary finding, a more recent epidemiological study of DSM-IV disorders found median age-of-onset of OCD was 19 years[8]. Research specifically focused on OCD in children and adolescents detected lifetime prevalence rates of OCD as ranging between 0.7 to 2.9%, in which, bearing in mind, these rates are likely to subject to assessment method[3,9]. Geller et al.[10] suggests a distinction between pediatric and adult OCD because it is assumed a discontinuity that pediatric OCD presumably follows a distinct pathway in the course compared to adult onset OCD. Across lifespan there appears to be two time periods that the risk of incidence for OCD increases: the former is Pre-adolescence and the latter is early adulthood[11]. Data from clinical and community samples pointed out that the mean age of onset for pediatric OCD may range from 6 to 11 years[9,12].

Pediatric OCD is tied to significant impairment in family relationships[13,14], severe decline in school performance[15], and interpersonal problems with peers[16]. Hollander et al.[17] reported a delay of treatment up to 17 years of first onset of OCD that more severe disruption in social and emotional functioning set in motion to the extent to which the treatment delays and individual face with a greater risk for extending the disorder into adulthood[15,18,19]. As the OCD are found to be nonsense, children prefer not to disclose symptomatic experiences. On the other hand, only 0.3% of parents were aware of their children's symptoms while 2.5% of cases identified through self-reports of children[9]. Secretive nature of the disorder, poor insight, and high comorbidity rates associated with OCD is suggested to lead to the misdiagnosis or absence of diagnosis of early onset OCD.

Pediatric OCD is a highly comorbid condition that up to 80% of the cases met criteria for one comorbid psychiatric disorder based on DSM-IV and up to 50% of cases met criteria for more than one psychiatric disorder, most commonly implicating other anxiety disorders (26-75%), depressive disorders (25-62%), behavioral disorders (18-33%), and tic disorders (20-30%)[3,9].

In this respect, utilizing from readily used assessment tools has vital importance especially in educational and clinical settings to increase the early detection of OCD. The Leyton Obsessional Inventory-Child Version (LOI-CV) is one of the most widely used self-report measures in pediatric OCD for use up to 18 years of age. The original version of the Leyton Obsessional Inventory was a card sorting procedure measure with 69 questions devised by Cooper[20] in an attempt to develop a psychometric tool to differentiate between obsessive-compulsive personality traits and obsessive compulsive symptoms. Cooper and Kelleher[21] first suggested a three factor structure of 'clean and tidy', incompleteness' and 'checking', extracted with principal components analysis for this measure is a sample of 302 normal subjects. The factor structure of a paper-pencil modified version administered in college students suggested a five-factor structure: 'Clean and tidy', 'Indecision', 'Checking', 'Orderliness', and 'Sensitization'[22]. Using a 30-item short version of the Leyton Obsessional Inventory, one of the few studies examining the obsessive-compulsive factor structure in young individuals was carried out by Mathews et al.[23] and obtained four dimensions: 'Contamination', 'Repeating/ doubts', 'Checking/ detail', and 'Worries/ just right'.

The LOI-CV is an adaptation exclusive to children and adolescents derived from Leyton Obsessional Inventory[20] consists of 20 items. Studies addressing psychometric properties of the scale have generally reported good reliability[24,25]. King et al.[26] provided higher test-restest coefficients at two week interval for the scale directly proportional to age which can be interpreted as the stability of obsessive-compulsive symptoms in youths seem to be a function of age. Findings across studies of the factor structure of the LOI-CV are not conclusive. Adhering to an explanatory factor analytic approach, Berg et al.[24] proposed a four-factor structure as general obsessive, dirt-contamination, numbers-luck and school. Likewise, Bamber et al.[27] found a three-factor

structure almost isomorphic by virtue of symptom content to Berg et al.[24] as obsessions/ incompleteness, cleanliness and compulsions. A further support for the three factor-structure of LOI-CV came from Moore et al.[28] who conducted a study among a community sample of 517 young adolescent twins. Contrarily, in an explanatory factor analytic study conducted by Rueda-Jaimes et al.[29], a one-factor solution accounting for 75% of the total variance was observed in 581 Columbian youths.

Cognitive models of OCD view specific beliefs are central to the etiology and maintenance of the disorder. Cognitive factors that has been tied to OCD affected individuals encompass exaggerated risk expectations, inflated responsibility, thought action fusion, probabilistic thinking and pathological self-doubt[30-33]. These models have generally come about from adult clinical and non-clinical populations and may not be fully adaptable to juvenile OCD due to children's relatively more limited cognitive development[34]. Despite the paucity of research, one study reported a similar cognitive pattern in inflicted children as in adults[35]. Coles et al.[36] recently modified the Obsessive Beliefs Questionnaire and developed a standardized measure of beliefs peculiar to children with OCD. In this downward extension, statements were simplified and item measures reduced from seven to five. Strong connections between OCD-related beliefs and obsessive compulsive symptoms were found in two small clinical samples (USA n=29; Netherlands n=48). The OBQ-CV revealed good internal consistency, test-retest reliability, convergent validity and created opportunities to more profound understanding of the role of maladaptive beliefs in younger samples; whilst factor structure of the measure was accepted as the same with adult sample and not examined in the initial development study[36]. Further compelling evidence for the promising psychometric properties of the OBQ-CV came from a representative community sample of 547 Dutch children (aged 8-18 years) and a clinical sample of 67 children and adolescents with OCD[37]. In the confirmatory analyses, authors reported a good model fit for the four factor model proposed by Myers et al.[38].

Even though, in general, there has been a paucity of measures of OCD for children and adolescents, there are lack of studies in Turkish sample examining the psychometric properties of a self assessment tool utilized in pediatric OCD. Lacking of validated measures of pediatric OCD can account for scarcity of research conducted in Turkish children and adolescents. In the current study, we aimed to examine psychometric properties of the LOI-CV[24] and OBQ-CV[36] in a relatively representative community sample of Turkish youths.

METHOD

Participants and Procedure

We collected the data from secondary and high schools in Istanbul, Turkey. Overall, the sample comprised 805 children and adolescents aged 11 to 17 years (413 male, 392 female). Mean age of the sample was 13.85 (SD±1.40) years. Written informed consent was obtained from parents and respondents. The LOI-CV and OBQ-CV were translated by five academicians into Turkish. All surveys were conducted among secondary and high schools students in grades 5 to 11, who were asked to fill out the survey in their classroom. The study procedure received the approval of the Yuzuncu Yil University Ethical Committee.

Measures

Leyton Obsessive Compulsive Inventory-Child Version (LOI-CV)[24]. The LOI-CV is a 20-item self-administered measure designed to assess severity of current obsessive-obsessive symptoms present over the past two weeks. Items are rated on a 4-point measure of symptoms frequency (0=never, 1=sometimes, 2=mostly, 3= always) and the scale yields a total score ranging from 0 to 60. It is reported high internal reliability of α=0.81; good specificity (77-84%) and sensitivity (75-88%)[24,25].

Obsessive Beliefs Questionnaire-Child Version (OBQ-CV)[36]. The OBQ-CV is a self-report measure consisting of 44 items developed to assess maladaptive beliefs central to OCD. Items of the adult version of the OBQ[39] were modified by Coles et al. [36] to adapt the psychometric tool for a more reliable use in children and adolescents. Distinct from adult version, items of OBQ-CV are rated on a five-point measure raging from 1 to 5.

Obsessive Compulsive Inventory-Revised (OCI-R)[40]. The OCI-R is an 18-item self-report questionnaire shortened from the 84-item long version to have a more readily assessment tool[40]. Each item assesses the degree to which the respondents are bothered or distressed by OCD symptoms over the past month on a 5-point scale from 0 (not at all) to 4 (extremely). The OCI-R yields scores across six factors: 1) washing 2) checking 3) obsessions 4) mental neutralizing 5) ordering and 6) hoarding. The Turkish version of the scale have demonstrated to have good reliability and validity[41].

State Trait Anxiety Inventory for Children (STAI-C)[42]. The STAI-C is a self-report measure that has been widely used to assess state and trait anxiety in children and adolescents. The STAI-C items are rated on a 3-point rating scale ranging from 1 to 3 (3-often, 2-sometimes and 1-hardly ever). Each scale yields a score from a minimum of 20 to a maximum of 60. The validation study of the Turkish version was conducted in a school community sample by Ozusta[43]. The test-retest reliability of state anxiety subscale was 0.60 and that of the trait anxiety subscale was 0.65. The internal consistency was respectively α=0.82 and α=0.81. The Turkish version was reported to having high discriminant validity in distinguishing afflicted children from children without any disorder.

Meta-Cognitions Questionnaire for Children (MCQ-C)[44]. The MCQ-C is a 24 item shortened and modified version of the Meta-Cognitions Questionnaire for Adolescents[44,45]. Items are rated on a four point measure ranging from 1 (do not agree) to 4 (agree very much). The Turkish version of the MCQ was statistically significantly associated with the measures of anxiety and obsessive-compulsive symptoms. Internal reliability coefficient was 0.73 and test-retest reliability correlation was 0.82[46].

Statistical Analysis

Initially, we computed descriptive statistics for the sample. Corrected item-total correlation coefficients and inter-item correlations for the both LOI-CV and OBQ-CV were calculated. Adhering to explanatory and confirmatory factor analytic approach, we examined the factor structures of obsessive-compulsive symptoms and obsessive beliefs in children and adolescents. Internal consistencies of the total scales and subscales of the LOI-CV and OBQ-CV were calculated with Cronbach's alpha. Temporal reliability of measures of OCD was examined through intra-class correlation coefficients. Convergent validity was examined correlating the LOI-CV and OBQ-CV total and subscale scores with each other. Then, we correlated the total and subscale scores of the LOI-CV and OBQ-CV with the measures of obsessive-compulsive symptoms, anxiety, and meta-cognitive beliefs (OCI-R, STAI-C, and MCQ-C).

RESULTS

Factor Analysis of the LOI-CV Items

We obtained a three-factor EFA solution through varimax rotated principal components analysis on scores from 805 community subjects. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.894. The Barlett's test of sphericity yielded an approximate chi-square of 2892.45 $p<0.01$. These three factors were labeled as "Compulsions", "Obsessions", and "Mental Neutralizing". These subscales accounted for 16.1%, 14.6%, and 11.4% of the total variance, respectively, and 42.1% in total. The three-factor structure of the LOI-CV was

confirmed in the sample, using criteria proposed by Hu and Bentler[47]. The model had a significant scaled chi square of S-B $\chi^2(164)=697.77$ $p<0.01$, a comparative fit index of 0.95, an incremental fit index of 0.95, a root mean square residual of 0.062, and a root mean square error of approximation of 0.055. All these goodness of fit measures suggest an excellent fit for the model. Standardized maximum likelihood factor loadings exceeded ≥0.45 for all items of the LOI-CV. Significant inter-subscale correlations were from a low of r=0.37 to a high of r=0.55. Corrected item-total correlations were high (r=0.36 to 0.52), indicative of that all items represent the identical construct; contrarily, inter-item correlation coefficients were ranging from r=0.07 to 0.49, suggesting that obsessional symptoms are multidimensional in youths. Maximum likelihood estimations for items are presented in Table 1.

Additional confirmatory factor analyses were performed to make comparison of the three-factor model fit of Turkish sample with other models

Table 1: Maximum likelihood estimations for the LOI-CV items (n=805)

Items	Factor I: Compulsions	Factor II: Obsessions	Factor III: Mental Neutralizing
1. I felt I had to do certain things even though I knew I didn't really have to (like always having to count the steps as I went up them). I felt something bad would happen if I didn't.		0.61	
2. Thoughts or words kept going over and over in my mind even though I didn't want them to.		0.56	
3. I had to check things several times (e.g., that switches were turned off or windows closed).	0.58		
4. I hated dirt and dirty things.	0.46		
5. I felt that if someone used or touched something it was spoilt for me.	0.49		
6. It was hard for me to make up my mind.		0.49	
7. I worried about being clean enough.		0.53	
8. I was fussy about keeping my hands clean.	0.56		
9. When I put things away at night they had to be put away just right (i.e., in a special order or a special way).	0.61		
10. I got angry if other people messed up my things at school.	0.45		
11. I spent a lot of extra time checking my homework to make sure it was just right.	0.57		
12. I had to do things over and over again before they seemed quite right.	0.57		
13. I had to count in a special way several times or go through numbers in my mind.			0.63
14. I had trouble finishing my schoolwork or other jobs because I had to do something over and over again.			0.57
15. I had a special number that I liked to count up to or I had to do things just that number of times.			0.60
16. I often felt guilty because I had done something even though no one else thought it was bad.		0.60	
17. I worried a lot if I did something not exactly the way I liked.		0.60	
18. I kept on thinking about things that I had done because I wasn't sure that they were the right things to do.		0.57	
19. I moved or talked in a special way to avoid bad luck.	0.53		
20. I had special numbers or words that I said because I hoped they kept bad luck or bad things away.			0.65
Cronbach's alphas (α=0.86 for the overall scale)	0.76	0.75	0.70
% of explained variance (47.6% for the overall scale)	16.1%	14.6%	11.4%

Table 2: Model fit indices from confirmatory factor analysis of the LOI-CV

	Factors	df	S-B χ^2	RMSEA	CFI	IFI	SRMR
Present study	3	167	679.77	0.062	0.95	0.95	0.055
Berg et al. 1988	4	164	966.06	0.078	0.91	0.91	0.064
Rueda-Jaimes et al. 2007	1	170	1076.10	0.081	0.90	0.90	0.064
Sans et al. 2011	3	167	873.16	0.073	0.92	0.92	0.062
Sun et al. 2014	4	164	884.38	0.074	0.92	0.92	0.063

df=degrees of freedom, S-B χ^2=Satorra-Bentler Scaled χ^2, RMSEA=Root mean square of approximation, TLI=Tucker-Lewis Index, CFI=Comparative Fit Index, IFI=Incremental Fit Index, SRMR=Standardized Root Mean Residuals

previously proposed in non-Turkish speaking samples. It was found that the current factorial solution demonstrated a superior fit to the four other previously reported factor structures[24,29,48,49]. The model fit indices for confirmatory factor analysis of the LOI-CV are detailed in Table 2.

Factor analysis of the OBQ-CV items

We started analyzing initial factor structure of the OBQ-CV proposed by Coles et al.[36] through confirmatory factor analytic approach. We found a significant scaled chi square of S-B $\chi2(899)=5200.96$ $p<0.01$, a comparative fit index of 0.83, a Tucker-Lewis fit index of 0.82, a root mean square error of approximation of 0.077, and a root mean square residual of 0.075. Goodness of fit measures of the model were lower than acceptable threshold. Then we examined a one-factor model of Faull et al.[50] and found a significant scaled chi square of S-B $\chi^2(902)=5756.65$ $p<0.01$, a comparative fit index of 0.81, a Tucker-Lewis index of 0.80, a root mean square error of approximation of 0.082, and a root mean square residual of 0.075. Finally, we tested four factors suggested by Myers et al.[38] in an adult sample and replicated in Wolters et al.[37] study. The four-factor measurement model had a significant scaled chi square of S-B $\chi^2(896)=4538.55$ $p<0.01$, a comparative fit index of 0.86, a Tucker-Lewis index of 0.85, a root mean square error of approximation of 0.072, and a root mean square residual of 0.075. Model goodness of fit indices were also lower than acceptable threshold for both one-factor and four-factor solution.

Therefore, we performed explanatory factor analysis on scores from 805 community subjects. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.890. The Barlett's test of sphericity yielded an approximate chi-square of 6580.732 $p<0.01$. Consistent with the adult version of the OBQ, a three-factor structure was derived. Contrarily, item distribution across sub-scales differed relative to Coles et al.[36] isomorphic to adult version and by implication factor labels were changed. The three new labels were 'Responsibility/ Estimation of Threat', 'Certainty/ Control of Thoughts', and 'Perfectionism'. These three sub-scales accounted for 12.1%, 10.9% and 7.6% of the total variance, respectively, and 30.7% in total. To confirm the newly derived factor structure, we performed confirmatory factor analysis. The model had a scaled chi square of S-B $\chi^2(899)=3213.26$ $p<0.01$, a comparative fit index of 0.91, a Tucker-Lewis index of 0.90, a root mean square error of approximation of 0.057, and a root mean square residual of 0.066. All these goodness of fit measures suggested an excellent fit for the model and the newly extracted three-factor structure of the OBQ-CV was confirmed in the sample. Significant inter-subscale correlations were from a low of r=0.42 to a high of r=0.51. Corrected item-total correlations were acceptable to high (r=0.22 to 0.54). Inter-item correlation coefficients were ranging from r=-0.06 to 0.48, suggesting that obsessive beliefs for children are multifaceted. Maximum likelihood estimations of confirmatory factory analysis are presented in Table 3.

Pearson's product moment correlation coefficients

We computed a series of correlation coefficients to investigate construct validity of the both LOI-CV

Table 3: Maximum likelihood estimations for the OBQ-CV items (n=805)

Items	Factor I: Responsibility/ Estimation of Threat	Factor II: Certainty/ Control of Thoughts	Factor III: Perfectionism
1. I think things around me are unsafe.	0.27		
2. If I'm not totally sure of something, I'll probably make a mistake	0.29		
3. I really want things to be perfect all the time.			0.40
4. To be a good person, I must be perfect at everything I do.			0.57
5. I have to stop bad things from happening all the time.	0.52		
6. I should try to prevent harmful things no matter what.	0.58		
7. If I think about doing a bad thing, that's as bad as really doing it.	0.44		
8. It's my fault if I see danger and don't do something about it.	0.41		
9. If I can't do something perfectly, I shouldn't do it at all.			0.41
10. I must try to do my absolute best at all times.			0.49
11. When I do something, I think about everything that could go wrong.	0.38		
12. A job is not done if there are even little mistakes.			0.42
13. If a thought pops into my mind about hurting people in my family, it means I really do want to do it.		0.27	
14. I can't choose unless I'm absolutely sure.	0.34		
15. Not stopping harm is just as bad as causing it.	0.34		
16. I always have to work hard to make sure bad things (like accidents or diseases) don't happen.	0.53		
17. For me, not preventing harm is as bad as causing harm.	0.46		
18. I should be upset if I make a mistake.	0.47		
19. I have to make sure others don't get into serious trouble because of things I do.	0.47		
20. I think things are not right if they are not perfect.			0.61
21. I am a terrible person if I have nasty thoughts.		0.35	
22. If I'm not super careful, I will have a bad accident or cause a bad accident.	0.57		
23. To feel safe, I must be ready for anything that could go wrong.	0.55		
24. I should not have weird or gross thoughts.	0.42		
25. If I make a small mistake, it's like a total failure.		0.51	
26. I need to understand everything perfectly – even stuff that isn't really a big deal			0.57
27. Just thinking about swearing at God is as bad as actually doing it.	0.42		
28. I should be able to get thoughts I don't like out of my mind.	0.56		
29. I think I could harm other people by mistake.	0.38		
30. Having bad thoughts means I am weird.		0.54	
31. I must be the best at everything I like to do.			0.54
32. If I have an evil idea, that means I really want to do it.		0.47	
33. If I caused even a little problem, it would be terrible and my fault.		0.50	
34. Even when I am careful, I often think that bad things will happen.		0.48	
35. When I have bad thoughts, that means I am out of control.		0.59	
36. Bad things will happen if I am not very careful.		0.60	
37. I must keep working at something until it's done exactly right.	0.48		
38. Having violent thoughts means I will lose control and become violent.		0.45	
39. It's my fault if I don't stop a really bad thing from happening.	0.47		
40. People won't like me if I don't do a job perfectly.		0.60	
41. Everything is dangerous.		0.42	
42. Having an evil thought is just like doing it.		0.56	
43. No matter what I do, it won't be good enough.		0.51	
44. If I don't control my thoughts, I'll be punished		0.54	
Cronbach's alphas (α=0.90 for the overall scale)	0.84	0.82	0.71
% of explained variance (30.7% for the overall scale)	12.1%	10.9%	7.6%

Table 4: Pearson's product moment correlation coefficients between the LOI-CV and OBQ-44

	Obsessive Beliefs Questionnaire	Responsibility/ Threat Estimation	Certainty/ Control of Thoughts	Perfectionism
Leyton Obsessional Inventory	0.51**	0.35**	0.49**	0.39**
Compulsions	0.48**	0.38**	0.39**	0.40**
Obsessions	0.41**	0.28**	0.42**	0.28**
Mental Neutralizing	0.34**	0.14**	0.43**	0.26**

**:p<0.01

Table 5: Pearson's correlation coefficients of the LOI-CV and OBQ-CV with the OCI-R, STAI-C and MCQ-CV

	Leyton Obsessional Inventory Child Version				Obsessive Beliefs Questionnaire Child Version			
	Global Score	Compulsions	Obsessions	Mental Neutralizing	Global Score	Responsibility/ Threat Estimation	Certainty/ Control of Thoughts	Perfectionism
Obsessive Compulsive Inventory - Revised	0.82**	0.68**	0.70**	0.64**	0.42**	0.27**	0.44**	0.31**
Washing	0.65**	0.61**	0.50**	0.50**	0.35**	0.23**	0.33**	0.29**
Obsessing	0.57**	0.37**	0.61**	0.44**	0.28**	0.15**	0.36**	0.15**
Hoarding	0.49**	0.33**	0.53**	0.37**	0.18**	0.09*	0.22**	0.11**
Ordering	0.62**	0.62**	0.48**	0.39**	0.35**	0.28**	0.28**	0.31**
Checking	0.63**	0.62**	0.46**	0.48**	0.39**	0.28**	0.36**	0.32**
Neutralizing	0.61**	0.42**	0.50**	0.66**	0.27**	0.13**	0.35**	0.17**
Steinberg State Trait Anxiety Inventory for Children								
Trait Anxiety	0.40**	0.21**	0.51**	0.28**	0.19**	0.13**	0.23**	0.07
State Anxiety	0.18**	-0.01	0.34**	0.16**	0.01	-0.07	0.11**	-0.06
Meta-Cognitions Questionnaire								
Child Version	0.59**	0.42**	0.60**	0.46**	0.43**	0.31**	0.42**	0.27**
Positive worry	0.39**	0.27**	0.36**	0.38**	0.33**	0.19**	0.36**	0.27**
Negative worry	0.47**	0.28**	0.55**	0.35**	0.29**	0.22**	0.31**	0.15**
Magical thinking	0.45**	0.31**	0.46**	0.35**	0.35**	0.27**	0.35**	0.18**
Self-Monitoring	0.45**	0.39**	0.42**	0.28**	0.30**	0.27**	0.25**	0.20**

*:p<0.05, **:p<0.01

and OBQ-CV. We began computing Pearson's product moment correlation coefficients between the LOI-CV and OBQ-44 sub-scales. As can be seen in Table 4, significant correlation coefficients between sub-scales of the two psychometric tools were generally in the mids.

In the further analyses, we performed Pearson's product moment correlation coefficients of the LOI-CV and OBQ-44 sub-scales with the OCI-R, STAI-C and MCQ-C sub-scale scores. We found strong connections between the LOI-CV and OCI-R subscales. In comparison to generally mild linear associations of LOI-CV sub-scales with state anxiety scale, trait anxiety was significant correlate of LOI-CV dimensions ranging from mild to mediocre. We observed significant moderate linear associations between obsessive-compulsive symptoms and meta-cognitions in children and adolescents. Findings are presented in Table 5.

The OBQ-CV sub-scales correlated statistically significantly with OCI-R subscales. Connections of the measure with trait anxiety were significant but correlation coefficients were weak. In contrast, linear associations of state anxiety with OBQ-CV subscales were not substantial. We found mild to moderate linear associations between obsessive beliefs and meta-cognitions (Table 5).

Reliability of the LOI-CV and OBQ-CV

For the 20 item LOI-CV internal consistency was α=0.86. Cronbach's alphas were 0.76, 0.75, and 0.70 for Compulsions, Obsessions, and neutralizing subscales, respectively. For test-retest reliability of

Table 6: Reliability of the LOI-CV and OBQ-CV

	Intra-class Correlation Coefficients‡	Cronbach's Alphas
Leyton Obsessional Inventory - Child Version	0.83**	0.86
Compulsions	0.80**	0.76
Obsessions	0.75**	0.75
Mental Neutralizing	0.61**	0.70
Obsessive Beliefs Questionnaire - Child Version	0.78**	0.90
Responsibility/ Threat Estimation	0.77**	0.84
Certainty/ Control of Thoughts	0.60**	0.82
Perfectionism	0.77**	0.71

**:p<0.01, ‡Retest intraclass -correlation coefficients were computed between two applications over 15-day interval among 55 youths.

Compulsions and Obsessions subscales, and the total scale intra-class correlation coefficients were excellent, with intraclass correlation values of 0.80, 0.75 and 0.83, respectively. But two-week temporal reliability was relatively low for the Neutralizing subscale (r=0.61).

We obtained an internal consistency coefficient of α=0.90 for the 44-item modified child version of the OBQ. Responsibility/threat estimation, certainty/control of thoughts and perfectionism subscales of the OBQ-CV revealed high internal consistency, with values of 0.84, 0.82 and 0.71, respectively. Intraclass correlation coefficients between two application over two-week interval were high for Responsibility/threat estimation and perfectionism (r=0.77 for both subscales) and fairly low for certainty/control of thoughts, with a value of r=0.60. Temporal and internal reliability of the LOI-CV and OBQ-CV are presented in Table 6.

DISCUSSION

This study aimed to validate the Turkish versions of the Leyton Obsessional Inventory- Child Version and Obsessive Beliefs Questionnaire-Child Version in a Turkish sample. For the 20-item LOI-CV, three factors were extracted from PCA in the current study. Although the factors were highly correlated, these correlations were at a level of that the factors may represent different symptom dimensions. Items statics by virtue of corrected item-total correlations and inter-item correction coefficients provided further compelling evidence for multidimensionality. Compulsions which refers to the compulsive thoughts and behaviors was the first factor accounting for the most variance. Our finding was in accordance with the previous studies that compulsions have been observed to be the most important symptom cluster explaining OCD in children and adolescents[24,27,49]. The second factor was obsession symptoms explaining 14.6% of the variance. In the present study, mental neutralizing symptoms were separated and formed the third dimension. The mental neutralizing subscale of the LOI-CV has long been defined as an integral part of OCD symptoms. This factor was mostly akin to counting symptom cluster assessed by the interviewer-rated Y-BOCS-SC and marked by having reactive obsessional and reactive compulsive characteristics based on a taxonomic approach of latent class analysis in a clinical sample[51]. In psychometric examinations of Obsessive Compulsive Inventory, researchers have consistently found this dimension in clinical and non-clinical samples[40,41,52]. Analogous to Chinese sample[49], the third dimension of neutralizing symptoms were not incorporated into compulsions symptom cluster in Turkish sample, a finding that differed from American[27] and Spanish samples[48].

A unidimensional model suggested by Rueda-Jaimes et al.[29] in Colombian youths, three-factor structure of the Spain version[48], four-factor structures obtained in either Chinese or American children and adolescents[24,49] were reported children and adolescents from other versions of the instrument. In comparison to factor structures obtained in American, Colombian, and Chinese samples, a three-factor structure model best fit to the data. Our findings with respect to the factor structure were replicative of Spanish study of the

LOI-CV. An account for this may be that as with the Turkish sample, the data was collected in a community population rather than a clinical sample. Also cultural factors may play role that these two mediterranean youth sample from Spain and Turkey may have a great deal of commonalities despite susceptibility and experiencing obsessionality.

The internal consistency for the total and three subscales of the LOI-CV were in the acceptable range (Alphas=0.86-0.70). For the temporal reliability, while Neutralizing subscale (r=0.61) revealed somewhat low stability over a two-week time, compulsions and obsessions symptom dimensions had high stability in the same time period (rs were 0.80 and 0.75, respectively). Neutralizing symptom cluster was also detected in studies using OCI-R[40,41]. Aydin et al.[41] reported that, consistent with the current findings, test-retest and internal consistency of neutralizing subscale of OCI-R were fairly low in Turkish adult clinical and non-clinical samples. Even though neutralizing symptoms are detectable through explanatory and confirmatory factor analyses, these symptoms seem to be not salient and have low temporal stability in Turkish population. This may be due to the number of items which was relatively small. A systematic meta-analysis of long-term outcomes of pediatric OCD underlined that persistence of OCD symptoms appeared to be relatively lower than believed even in full or subthreshold OCD[53]. In our community sample of children and adolescents, even though obsessions and compulsions had greater stability, mental neutralizing symptoms less likely persisted.

We examined model fit of several factor structures for the OBQ previously suggested for adult samples of OCD and community samples of children and adolescent. In the present study, we extracted a new three-factor structure for the data collected from a community sample of Turkish children and adolescents, a finding that was inconsistent with two preliminary studies[36,37]. Coles et al.[36] did not report a factor analytical examination of the data from two clinical groups and primarily relied on three dimensions of the OBQ generated for adult OCD samples[39]. The only examination of the factor structure of the OBQ-CV was came from Wolters et al.[37] that a four-factor solution of Myers et al.[38] which was earlier proposed in an adult sample and consisted of perfectionism and intolerance of uncertainty, importance and control of thoughts, responsibility, and overestimation of threat fitted best to the Dutch data. In this study, a unidimensional factor structure of Faull et al.[50] and the three-factor model of adult version of the OBQ[39] also showed good model fit according to fit indices. In comparison to three-factor solution, the four-factor solution slightly fitted better to the data from clinical and community Dutch samples[37]. In contrast, in the Turkish community sample of youths, a one-factor, three-factor, and a four-factor solutions did not show adequate model fit based on the goodness of fit indices suggested by Hu and Bentler[47]. The labels of these three new factors are Responsibility/ Threat Estimation, Certainty/ Control of Thoughts, and Perfectionism. The OBQ-CV showed excellent internal consistency and adequate to good retest reliability.

In examining construct validity of the LOI-CV and OBQ-CV; total scores of the both measures of OCD were, in turn, moderately correlated with each others' subscale scores. Significant linear associations of the subscale and total scores of the LOI-CV with the OBQ-CV subscale scores were mediocre. On the other hand, Obsessions and Neutralizing subscales revealed mild to moderate connections with the OBQ-CV subscale scores. These results were in accordance with Coles and Wolters. As can be expected, the LOI-CV total and subscale scores were strongly associated with total and subscale scores of the OCI-R. The connections of the OBQ-CV subscales with total and subscale scores of the OCI-R were significant, but relatively lower as compared to the linear associations of the LOI-CV. Trait and state anxiety both had mild to moderately correlation with the LOI-CV subscales, whilst only compulsions subscale showed an unsubstantial linear association with state anxiety. We observed weak linear associations between trait anxiety and OBQ-CV subscale scores. Significant linear associations of the MCQ-C

subscale scores with LOI-CV and OBQ-CV subscales were moderate to strong. These findings evidenced for construct validity of the obsessive compulsive symptoms measured by the LOI-CV and obsessive beliefs measured by the OBQ-CV in current Turkish children and adolescent sample. Results were also suggestive of that obsessive-compulsive symptoms and obsessive beliefs are not rare in community population of children and adolescents.

The present study has several limitations. First, the LOI-CV is designed to make assessment in a large age range of children and adolescents from 8 to 18 years. However, our sample comprised volunteers aged between 11-18 years which is suggestive of that the study was carried out predominantly relying on data from adolescents. This caveat should be obviated in additional studies and assessment outcomes in children with a younger age less than 11 years old should be interpreted with caution. Second, absence of a clinical sample of children and adolescents confined the generalizability of our findings. Concurrent validity of the LOI-CV and OBQ-CV should be warranted in further studies with large clinical groups. Additionally, current promising results for both OCD scales should be replicated in clinical samples consisting of youths with OCD and major depression.

In conclusion, results of the present study demonstrated that the Turkish versions of the LOI-CV and OBQ-CV are valid and reliable instruments to examine obsessive-compulsive symptoms and obsessive beliefs in children and adolescents. These findings also showed that obsessive beliefs seem to have a different construct in youths as compared to adult version of the OBQ. There has been a lack of psychometric measures to assess OCD in children and adolescents and validation of these two scales creates the advantage of examining OCD symptoms and beliefs in a standardized way.

Disclosure statement: All authors of the manuscript declare no financial disclosure/ conflicts of interest.

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Obsesif İnanışlar Ölçeği-Çocuk Formu (OBQ-CV)

İnsanlar pek çok farklı düşünceye sahiptir. Burada insanların sahip olabilecekleri farklı düşünceler ve inanışlar sıralanmıştır. Her bir ifadeyi dikkatli bir şekilde okuduktan sonra ne ölçüde katılıp katılmadığınıza karar veriniz.
Her bir ifade için sizi en iyi anlatan puanı seçiniz. Soruların doğru veya yanlış cevabı yoktur. Çoğu zaman ne düşündüğünüzü veya genelde neye inandığınızı aklınızda tutarak cevaplayınız.

Cevaplarken aşağıdaki ölçeği kullanınız:

(1) Kesinlikle katılmıyorum	(2) Pek katılmıyorum	(3) Ne katılıyorum ne de katılmıyorum	(4) Biraz katılıyorum	(5) Çok Fazla katılıyorum

1.	Çevremdeki şeylerin güvenli olmadığını düşünürüm.	1	2	3	4	5
2.	Bir şeylerden tam olarak emin değilsem, büyük olasılıkla hata yaparım.	1	2	3	4	5
3.	Bir şeylerin her zaman mükemmel olmasını isterim.	1	2	3	4	5
4.	İyi bir insan olabilmem için yaptığım her şeyde mükemmel olmak zorundayım.	1	2	3	4	5
5.	Kötü şeylerin olmasını her zaman engellemek zorundayım.	1	2	3	4	5
6.	Ne olursa olsun zarara yol açabilecek şeyleri engellemeye çalışmam gerekir.	1	2	3	4	5
7.	Kötü bir şey yapmayı düşünmüşsem, bu onu gerçekten yapmak kadar kötüdür.	1	2	3	4	5
8.	Tehlikeyi görmüş ve bir şeyler yapmamışsam bu benim hatamdır.	1	2	3	4	5
9.	Bir şeyleri mükemmel bir şekilde yapamamışsam, o şeyi hiçbir şekilde yapmamalıyım.	1	2	3	4	5
10.	Her zaman yapabileceğimin en iyisini yapmak zorundayım.	1	2	3	4	5
11.	Bir şeyler yaptığımda, yanlış gidebilecek her şeyi düşünürüm.	1	2	3	4	5
12.	Bir işin çok küçük hataları bile olsa, o iş yapılmamış demektir.	1	2	3	4	5
13.	Ailemdeki insanlara zarar vermeyle ilişkili düşünceler aklıma gelecek olursa, bu onlara gerçekten zarar vermek istediğim anlamına gelir.	1	2	3	4	5
14.	Tümüyle emin olmadığım sürece, bir tercihte bulunamam.	1	2	3	4	5
15.	Zarara yol açacak bir şeyi durdurmamak, ona neden olmak kadar kötüdür.	1	2	3	4	5
16.	Kötü şeyler (kazalar veya hastalıklar gibi) olmayacağından emin olabilmek için her zaman çok çaba sarf etmem gerekir.	1	2	3	4	5
17.	Bana göre bir zarara engel olmamak, ona neden olmak kadar kötüdür.	1	2	3	4	5
18.	Bir hata yaparsam bunun için üzüntü duymam gerekir.	1	2	3	4	5
19.	Yaptığım şeylerden dolayı başkalarının ciddi bir sorunla karşılaşmadığından emin olmak zorundayım.	1	2	3	4	5
20.	Eğer bir şeyler mükemmel değilse, doğru değildir diye düşünürüm.	1	2	3	4	5
21.	Müstehcen düşüncelere sahip olmak korkunç bir insan olduğum anlamına gelir.	1	2	3	4	5
22.	Çok dikkatli olmazsam, ciddi bir kaza geçirebilirim veya ciddi bir kazaya neden olabilirim.	1	2	3	4	5
23.	Kendimi güvende hissedebilmek için ters gidebilecek herhangi bir şeye hazırlıklı olmam gerekir.	1	2	3	4	5
24.	Tuhaf veya tiksinti uyandıran düşüncelerim olmamalıdır.	1	2	3	4	5
25.	Küçük bir hata yapsam bile, bu tümüyle hatalı olmak kadar kötüdür.	1	2	3	4	5
26.	Her şeyi mükemmel bir şekilde anlamak zorundayım – önemsiz sıradan bir şey olsa bile.	1	2	3	4	5
27.	Dinle ilişkili olumsuz bir şey düşünmek, onu gerçekten yapmak kadar kötüdür.	1	2	3	4	5
28.	Hoşuma gitmeyen düşünceleri kafamdan uzaklaştırmayı başarmak zorundayım.	1	2	3	4	5
29.	Başka insanlara yanlışlıkla zarar verebileceğimi düşünürüm.	1	2	3	4	5
30.	Kötü düşüncelere sahip olmak, benim tuhaf biri olduğum anlamına gelir.	1	2	3	4	5
31.	Yapmayı sevdiğim her şeyde en iyi olmak zorundayım.	1	2	3	4	5
32.	Kötü bir düşünceye sahip olmam, onu gerçekten yapmak istediğim anlamına gelir.	1	2	3	4	5
33.	Küçük bir soruna bile neden olsam, bu korkunç bir şeydir ve benim hatamdır.	1	2	3	4	5
34.	Dikkatli olduğum zamanlarda bile genellikle kötü şeylerin olacağı düşüncesine kapılırım.	1	2	3	4	5
35.	Kötü düşüncelerimin olması, kontrolden çıktığım anlamına gelir.	1	2	3	4	5
36.	Çok dikkatli olmazsam, kötü şeyler olur.	1	2	3	4	5
37.	Bir şeyler tam olarak doğru yapılana kadar üzerinde çalışmam gerekir.	1	2	3	4	5
38.	Saldırganca düşüncelere sahip olmak, kontrolü kaybedeceğim ve saldırganlaşacağım anlamına gelir.	1	2	3	4	5
39.	Gerçekten kötü bir şeyin olmasını engellemezsem, bu benim hatamdır.	1	2	3	4	5
40.	Bir işi mükemmel şekilde yapmazsam, insanlar benden hoşlanmaz.	1	2	3	4	5
41.	Her şey tehlikelidir.	1	2	3	4	5
42.	Kötü bir düşünceye sahip olmak, düşündüğün şeyi yapmakla aynı şeydir.	1	2	3	4	5
43.	Ne yaparsam yapayım, yeterince iyi olmayacak.	1	2	3	4	5
44.	Düşüncelerimi kontrol etmezsem cezalandırılacağım.	1	2	3	4	5

Leyton Obsesyon Ölçeği Ergen Çocuk ve Ergen Versiyonu

Bu formda yer alan maddeler son zamanlarda hissettikleriniz veya davranışlarınızla ilişkilidir. **SON İKİ HAFTA İÇİNDE** aşağıdaki listede yer alan düşünce ve davranışları ne ölçüde yaşadığınızı size en uygun puanı işaretleyerek belirtiniz.

0	1	2	3
Hiç	Bazen	Çoğu zaman	Her zaman

1.Gerçekten yapmak zorunda olmadığım halde kendimi sık sık belirli şeyleri yapmak zorunda hissederim (yukarı çıkarken her zaman basamakları saymak zorunda hissetmek gibi). Yapmazsam kötü bir şey olacakmış gibi gelir.	(0)	(1)	(2)	(3)
2.Düşünceler veya kelimeler istemediğim halde kafamda defalarca tekrarlanır durur.	(0)	(1)	(2)	(3)
3.Bir şeyleri birkaç kere kontrol etmek zorunda kalırım (örneğin, elektrik düğmelerinin veya pencerelerin kapalı olduğunu).	(0)	(1)	(2)	(3)
4.Kirden ve kirli şeylerden nefret ederim.	(0)	(1)	(2)	(3)
5.Bir şey, başkaları tarafından kullanılmış veya ona dokunulmuşsa benim için artık bitmiştir.	(0)	(1)	(2)	(3)
6. Bir şeye karar vermek benim için çok zordur.	(0)	(1)	(2)	(3)
7. Yeterince temiz olup olmadığım konusunda endişe yaşarım.	(0)	(1)	(2)	(3)
8. Ellerimin temiz kalması konusunda çok titizlenirim.	(0)	(1)	(2)	(3)
9. Akşam bir şeyleri yerine geri koyarken, tam olarak doğru yerinde olmasını sağlamam gerekir (örneğin, özel bir sıraya göre veya belirli bir şekilde).	(0)	(1)	(2)	(3)
10. Başka insanlar okulda bir şeylerimi karıştırırsa öfkelenirim.	(0)	(1)	(2)	(3)
11. Ödevlerimin tam olarak doğru olduğundan emin olana kadar çok fazla ekstra zaman harcarım.	(0)	(1)	(2)	(3)
12. Bana yeterince doğru gelinceye kadar bir şeyleri belirli bir sayıda tekrar tekrar yaparım.	(0)	(1)	(2)	(3)
13. Özel bir şekilde birkaç kere sayı saymak veya sayıları zihnimde tekrar ederek kontrol etmek zorundayım.	(0)	(1)	(2)	(3)
14. Bir şeyleri tekrar tekrar baştan yapmak zorunda olduğum için okul ödevlerimi veya diğer işlerimi tamamlamakta sorun yaşarım.	(0)	(1)	(2)	(3)
15. Belirli bir sayıya kadar saydığım veya bir şeyleri belirli bir sayıda yapmak zorunda olduğum özel bir sayı vardır.	(0)	(1)	(2)	(3)
16. Benden başka hiç kimse bunun kötü bir şey olduğunu düşünmediği halde yaptığım bir şeylerden sık sık suçluluk duyarım.	(0)	(1)	(2)	(3)
17. Bir şeyleri tam olarak yapmak istediğim şekilde yapamadığım zaman çok fazla endişelenirim.	(0)	(1)	(2)	(3)
18. Doğru şeyi yaptığımdan tam olarak emin olamadığım için yaptığım şeylerin üzerinde düşünür dururum.	(0)	(1)	(2)	(3)
19. Kötü şanstan korunabilmek için hareketlerimi veya konuşmalarımı özel bir şekilde ayarlamaya çalışırım.	(0)	(1)	(2)	(3)
20. Kötü şansı veya kötü şeyleri benden uzak tutacağını umarak içimden belirli sayıda tekrarladığım özel sayılar veya kelimeler vardır.	(0)	(1)	(2)	(3)