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The Psychometric Parameters of the Spanish Form of the Arabic Obsessive Compulsive Scale (S-AOCS)

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The aim of this study was to describe the psychometric properties of the Spanish version of the Arabic Obsessive Compulsive Scale (S-AOCS). The original scale was first translated into Spanish by language experts using the back translation procedure, and then administered to a total of 312 Spanish university students from Barcelona. Four-week test-retest was 0.88 indicating its high temporal stability. Cronbach's alpha value of the S-AOCS reached 0.82 indicating its good internal consistency. The S-AOCS correlated 0.72 with the Maudsley Obsessive-Compulsive Inventory and 0.56 with the Kuwait University Anxiety Scale indicating good criterion-related validity. Finally, a principal axis analysis with Oblimin rotation was carried out. Five factors were extracted, accounting for 37.88% of the total variance. These factors were labeled: Obsessive thoughts and rumination (16.61%), Meticulousness and perfectionism (6.48%), Indecision and doubts (5.59%), Ritualism (4.74%) and Checking (4.45%). The results indicate that the S-AOCS administered to this Spanish sample yields good internal consistency, temporal stability, criterion-related validity and a five-factor structure reflecting important features of obsessive compulsive disorder. In general, the S-AOCS could be recommended in research on obsession-compulsion among Spanish college students.

Key words: Obsessive-compulsive disorder, Arabic Obsessive-Compulsive Scale, Spanish form.

INTRODUCTION

Obsessive-compulsive disorder (OCD) is characterized by recurrent intrusive thoughts and compulsive behavior that cause significant distress. It may result in large amounts of time being wasted and have a marked effect on an individual's daily routine, his/her work or academic relationships, and social and family life; it therefore leads to a serious deterioration in the quality of life of sufferers (Masellis, Rector, & Richter, 2003). The most common manifestations of OCD include aggressive/somatic obsessions with compulsive thoughts, worries about contamination linked to cleaning, ordering and counting compulsions, symmetry, and religious and sexual preoccupations (Aouizerate, Guehl, Cuny, Rougier, Bioulac, Tignol, *et al.*, 2004).

Although it is difficult to estimate accurately the prevalence of OCD in the population, as many sufferers try to hide the symptoms from others and avoid seeking specialist help, recent studies suggest that the disorder affects between 1% and 2% of the general population, there being no significant differences between men and women (Angst *et al.*, 2004; Gadit, 2003; Mohammadi *et al.*, 2004). It is also relatively common in childhood and adolescence, with correct diagnosis being particularly important at this stage as the disorder may have a negative effect on emotional and

intellectual development, and may even lay the foundations for future disabilities (Presta *et al.*, 2003).

OCD shows high comorbidity with other mental disorders, and is frequently associated with depression and anxiety (Zohar, 1999), social phobia (Jaisoorya, Janardhan Reddy, & Srinath, 2003), eating disorders (Lennkh *et al.*, 1998), tic-related symptomatology, especially Tourette's syndrome (Richter, Summerfeldt, Antony, & Swinson, 2003), attention deficit and hyperactivity disorder (Geller *et al.*, 2004), body dysmorphic disorder (Carroll, Scahill, & Phillips, 2002) and trichotillomania (Hautmann, Hercogova, & Lotti, 2002).

There is a large body of research indicating the high incidence of obsessions (about 80%) in the general (nonclinical) population as well as the similarity between normal and pathological obsessions (de Silva & Rachman, 1992, p. 9; Salkovskis & Harrisson, 1984; Sanavio, 1988). There are no differences between normal subjects and patients in either the form or content of the obsessions. Nevertheless, obsessions of patients occur more frequently, last longer, are more intense, disrupt their lives deeply, arouse more discomfort and resistance as well as urge to neutralize, and are difficult to dismiss. The same findings apply well to compulsions (see: de Silva & Rachman, 1992, p. 9f).

Depending on the aforementioned result, it seems more appropriate to consider normal and abnormal obsessions and compulsions in the light of the quantitative and dimensional approach.

The assessment of obsessive-compulsive features has traditionally been carried out using sub-scales from multiphasic personality inventories, for example, the Pt scale of the MMPI, the O-C scale of the SCL-90-R (Derogatis, 1994), and the compulsive clinical personality pattern in the MCMI (Million, 1994). In the last two decades, there have been good and separate scales to assess OCD, e.g., the Maudsley Obsessive-Compulsive Inventory (Hodgson & Rachman, 1977); the Compulsive Activity Checklist (Freund, Stekette, & Foa, 1987); the Padua Inventory (Sanavio, 1988; Burns, Keortge, Formea, & Sternberger, 1996); the Yale-Brown Obsessive Compulsive Scale (Goodman *et al.*, 1989); and the Obsessive Compulsive Inventory (Foa, Kozak, Salkovskis, Coles, & Amir, 1998). It is difficult, in languages other than English, to find tests that are specifically designed and validated for the measurement of obsessions and compulsions.

The Arabic Obsessive-Compulsive Scale (AOCS), developed by Abdel-Khalek (1998), is a self-administered questionnaire comprising 32 statements in a dichotomous true/false response format. It was originally developed and validated in Arabic, and subsequently adapted by its author into English. In its original form, the AOCS had an internal consistency coefficient of 0.80 and a test-retest correlation of 0.85, and it correlated positively with neuroticism, trait anxiety, depression, and sleep disorders, while it showed a negative correlation with extroversion. The factor structure of the scale in Arab samples revealed seven significant factors (Abdel-Khalek, 1998).

Similar results with respect to the psychometric properties of the AOCS have been obtained in studies conducted with the English version of the scale in North American samples (Abdel-Khalek & Lester, 1998, 1999a, 1999b, 2000; 2002a, 2002b, 2003). However, different sets of factors were extracted using Kuwaiti and American college students (Abdel-Khalek, Lester, & Barrett, 2002). As stated by them, "the AOCS has importance because of its non-European/non-American origin, and it is to be hoped that more scales are developed by psychologists outside of Europe and America, thereby bringing alternative cultural perspectives to test construction" (p. 9).

The aim of the present study was to explore the psychometric properties of the Spanish version (S-AOCS) translated and adapted from English in a sample of Spanish college students. That is, to estimate its descriptive statistics, internal consistency, temporal stability, criterion-related validity, and factorial structure.

Method

Participants

A total of 312 individuals (210 women and 102 men) took part in the study. They were all Spanish students from either the Faculty of Psychology at the University of Barcelona or the Gimbernat Nursing School of the Autonomous University of Barcelona, both in Spain. Their mean age was 21.45 (SD = 3.46), with a range of 18 to 47 years.

Another 104 participants (65 women and 39 men) were recruited to compute the test-retest reliability of the scale. In addition, 28 Spanish teachers of English belonging to six

language schools in Barcelona completed both the English and Spanish forms of the AOCS in order to determine their linguistic equivalence.

Instruments

1. The *Arabic Obsessive Compulsive Scale* (AOCS; Abdel-Khalek, 1998): It is designed to assess OCD. It consists of 32 statements answered on a true/false format, and thus possible total scores can range from 0 to 32, with higher scores indicating higher obsession and compulsion. The English version of the AOCS (Abdel-Khalek, 1998) was translated into Spanish using the back translation procedure (Brislin, 1970, 1980). Twenty-eight teachers of English, all of whom were Spanish citizens and fluent in both Spanish and English, completed the English and Spanish forms of the AOCS that were presented to them separately in a counterbalanced—and randomly assigned—order. The correlation coefficient between the two versions of the AOCS was 0.96, indicating high equivalence of the two versions.
2. The *Maudsley Obsessive Compulsive Inventory* (MOCI; Hodgson & Rachman, 1977): The MOCI is a self-administered questionnaire designed to assess behaviors associated with OCD. It comprises 30 statements with dichotomous-response items (true/false). Possible total scores on the MOCI can range from 0 to 30, with higher scores indicating higher obsession and compulsion. The MOCI consists of four subscales (checking, washing, repetitive slowness, and constant doubts) in order to distinguish between obsessive symptoms and compulsive behaviors. Because of the low reliabilities of these subcomponents, it was advised to use the total score (Abdel-Khalek & Lester, 2002c). The MOCI was translated into Spanish in this study using the back translation procedure.
3. The *Kuwait University Anxiety Scale* (KUAS; Abdel-Khalek, 2000) in its Spanish version (S-KUAS; Abdel-Khalek, Tomás-Sábado, & Gómez-Benito, 2004): The KUAS is designed to assess anxiety as a general trait. It consists of 20 statements answered on a 4-point intensity scale, anchored by 1: Rarely and 4: Always. Thus, the possible total scores can range from 20 to 80. Higher scores on the KUAS denote high anxiety. The scale comprised three factors labeled: *cognitive-affective factor*, *behavioral-subjective factor*, and *somatic factor*.

Procedure

All subjects responded to the previously described three instruments anonymously and in a group setting (in the classrooms of their respective universities). No time limit was set. All subjects volunteered to take part, having been previously informed about the confidentiality and anonymity of the data.

Different analyses were then conducted to determine the psychometric properties of the S-AOCS. All statistical analyses were carried out using SPSS 11.0.1 for Windows (SPSS, 1990).

Table 1: Retest, Cronbach Alpha of the S-AOCS, and the Correlations between the Spanish Forms of the AOCS, MOCI and KUAS for Women, Men, and the Total Sample

Sample	Retest		Alpha		<i>r</i> with S-AOCS	
	N	<i>r</i> ₁₁	N	<i>r</i> ₁₁	MOCI	KUAS
Women	65	0.89	210	0.80	0.71*	0.56*
Men	39	0.86	102	0.82	0.74*	0.53*
Total sample	104	0.88	312	0.82	0.72*	0.56*

* $p < 0.001$

Results

Descriptive statistics

The S-AOCS mean scores were 13.04 (SD = 5.40) for women, and 10.95 (SD = 5.83) for men. The difference between the mean scores of men and women was significant ($t = 3.12$; $p < 0.01$; 2-tailed).

Temporal stability

The S-AOCS was administered to 104 students (65 women and 39 men) and the retest was carried out after four weeks. The test-retest reliability coefficient reached 0.89 for women, 0.86 for men and 0.88 for the whole sample.

Internal consistency

Cronbach's alpha coefficient of the 32 items of the S-AOCS was computed for the total sample. It reached 0.80, 0.82 and 0.82 for women, men and the total sample, respectively. The range of item-remainder correlations was 0.07 to 0.50 for women and 0.09 to 0.60 for men.

Criterion-related validity

All subjects completed the Spanish forms of the AOCS, MOCI and the KUAS. Table 1 shows the inter-correlations between the three scales for women, men and the total sample. All the correlations are significant. The salient finding in this table is the significant and high correlation between the S-AOCS and S-MOCI (i.e., 0.72), indicating the S-AOCS highest criterion-related validity against the S-MOCI. Furthermore, the correlation between the S-AOCS and the S-KUAS is 0.56. The difference between the two last mentioned correlations were significant (Z statistics = 3.44, $p = .001$), indicating the discriminant validity of the S-AOCS.

Factorial structure

The factorial structure of the S-AOCS among men and women separately was not analyzed as the item/subject ratio for the sample of men did not guarantee the stability of the solutions obtained. Therefore, the combined sample of men and women ($N = 312$) was used in the factor analysis of the scale.

Prior to determining the factorial structure of the S-AOCS, the suitability of factor analysis was examined by measuring sample adequacy using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. A KMO value of 0.79 was reached and Bartlett's test of sphericity proved significant ($p < 0.001$). A factor analysis using the principal axis method with Oblimin rotation was then carried out.

In order to define the number of factors to be retained, two criteria were determined as follows:

(a) The Kaiser test with an eigenvalue ≥ 1.0 ; and

(b) Item loading ≥ 0.30 . Based on these criteria, eleven factors were extracted accounting for 59.02% of the total variance. Given that some factors had hardly any loadings greater than or equal to 0.30, a third criterion was added. That is to include only those factors with at least three loadings greater than or equal to 0.30, and this resulted in six factors.

Another factor analysis was then carried out, fixing the number of factors to be extracted at six; however, only five of them fulfilled the above three criteria, this being totally consistent with the information provided through analysis of the scree test. The data were then re-factored, fixing the number of factors at five; these factors, taken together, accounted for 37.88% of the total variance. It was therefore decided to retain this five-factor structure as being the most suitable for explaining the observed data. Based on the salient loading as $\geq .30$, the five factors accounted for 12, 5, 4, 7, and 11 loadings respectively. Table 2 shows the factorial structure of the S-AOCS, specifying the loadings greater than or equal to 0.30 in bold, along with the eigenvalue and explained variance of each factor.

Table 2: Oblique (Oblimin) Five Factor Solution for the Spanish Form of the AOCs and the Factor Loadings

Scale Items (Shortened)	Factor				
	1	2	3	4	5
1. I carry out my work very slowly	-.056	.390	.243	-.128	-.239
2. I wash my hands frequently	-.031	.159	.054	-.334	-.215
3. I must do certain things according to a specific order	.252	.261	-.103	-.558	-.258
4. I repeat the same things or sentences	.188	-.009	.246	-.480	-.258
5. My life is dominated by special habits	.227	.170	-.014	-.552	-.116
6. I go back to make sure I have locked the doors	.091	.170	.045	-.091	-.579
7. I do not think of what people say	.267	.274	.147	-.137	-.202
8. I am suspicious of many things	.358	.130	.216	-.056	-.351
9. I am a hesitant person	.252	.067	.574	-.170	-.176
10. I forget annoying things	.372	.264	.177	.036	-.213
11. Before sleep I make sure that I have locked the doors	.154	.174	.045	-.227	-.483
12. I keep thinking about a certain sentence	.227	.007	-.048	-.234	-.343
13. I feel compelled to arrange things	.218	.357	-.031	-.548	-.376
14. I imagine disastrous things will happen	.429	-.113	.082	-.214	-.442
15. I do not like strict discipline	.136	.145	-.206	-.114	-.118
16. Trivial things preoccupy me	.459	.182	.419	-.374	-.294
17. I do not care for precise details	-.016	.325	-.021	-.039	-.031
18. I do not feel obliged to do certain things	.146	.216	-.044	-.161	-.048
19. I am a meticulous person	.160	.622	.069	-.164	-.301
20. Troublesome thoughts plague me	.658	.012	.190	-.214	-.382
21. My problem is reviewing things frequently	.425	.350	.264	-.232	-.324
22. I make decisions quickly	.148	.291	.447	-.082	-.131
23. I am obsessed by bad thoughts	.572	-.099	.165	-.238	-.308
24. I do not repeat certain things	.128	-.035	.105	-.309	-.084
25. When I make mistakes, I become very annoyed	.349	.107	.147	-.192	-.299
26. I do not enjoy life	.620	.159	.122	-.284	-.115
27. I count unimportant things	.170	.108	.062	-.179	-.403
28. I am optimistic	.611	.078	.285	-.108	-.114
29. I am obliged to do useless things	.300	.041	-.042	-.159	-.132
30. I am an obsessive person	.444	.042	.122	-.298	-.234
31. I can decide on matters	.250	.026	.599	-.111	-.085
32. Impossible questions come to my mind	.244	.120	-.037	-.162	-.188
Eigenvalue	5.32	2.07	1.79	1.52	1.42
% variance	16.61	6.48	5.59	4.74	4.45

Factor 1 was labeled *Obsessive thoughts and rumination*; its highest factor loadings were on items 20 ('Troublesome and silly thoughts plague me'), 26 ('I do not enjoy life as others do'), 28 ('I am optimistic'), 23 ('I am obsessed by bad thoughts, and find it difficult to get rid of them'), 16 ('Trivial things preoccupy me and dominate my thoughts'), 30 ('I am an obsessive person'), 21 ('My main problem is reviewing things frequently'), 10 ('I forget annoying, painful or bad things'), 8 ('I am suspicious of many things in this world'), 25 ('When I make some mistakes, I become so annoyed that I cannot sleep'), and 29 ('I find myself obliged to do useless things').

Factor 2 was labeled *Meticulousness and perfectionism*, and had its highest loadings on items 19 ('I am a very meticulous and accurate person'), 1 ('I carry out my work very slowly so as to be sure that I have done it properly'), and 17 ('I do not care for precise details about any subject or work').

Factor 3 was labeled *Indecision and doubts*; its highest factor loadings were on items 31 ('I can decide on matters'), 9 ('I am a hesitant person in many ways'), and 22 ('I make decisions quickly').

Factor 4 was labeled *Ritualism*, and had its highest loadings on items 3 ('Before going to bed, I feel I must do certain things according to a specific order'), 5 ('My life is dominated by special habits and specific systems'), 13 ('I often feel compelled to arrange things or to do tasks in a special way'), 4 ('When I talk I tend to repeat the same things or sentences several times'), 2 ('I wash my hands a great number of times'), and 24 ('I do not repeat certain things without a definite aim').

Table 3: Correlation Matrix between the Five Factors

Factor	1	2	3	4	5
1	1.000				
2	.119	1.000			
3	.158	.005	1.000		
4	-.278	-.165	-.004	1.000	
5	-.317	-.214	-.126	.304	1.000

Finally, factor 5 was labeled *Checking*; its highest factor loadings were on items 6 ('After leaving home, I sometimes go back to make sure I have locked the doors, or closed the water taps and turned off the lights, etc. '), 11 ('Before going to sleep, I make sure several times that I have locked the doors and windows'), 14 ('I imagine disastrous things will happen as a result of small mistakes made by me'), 27 ('I count unimportant things such as the number of stairs, floors, windows, lights or telephone poles') and 12 ('I keep thinking about a certain sentence, medicine or tune').

It can be seen in Table 2 that 28 (87.5%) of the 32 scale items have loadings greater than 0.30 on at least one factor, indicating the good fit of these items for measuring the different features of obsessive and compulsive behavior. However, five items number: 8, 14, 19, 20 and 23 loaded on two factors, whereas three items number: 13, 16, and 21 loaded onto three factors, a finding which again illustrates the complexity of obsessive and compulsive traits and the correlation between, and interference with, its several aspects. Four items (7, 15, 18 and 32) had no salient loadings on any of the factors.

Table 3 shows the interrelations between the factors, distinguishing some of considerable magnitude, such as that between factors 1 and 5, 1 and 4, and 4 and 5, as well as other insignificant ones, such as between 2 and 3, and 3 and 4.

Discussion

The results obtained with the Spanish form of the AOCS in the present sample of college students show the coefficients of internal consistency (0.82) and temporal stability (i.e., 0.88) that are either similar to, or higher than, those obtained in studies conducted with the Arabic and English forms (Abdel-Khalek, 1998; Abdel-Khalek & Lester, 1998). Kline (1993, p. 13; 1998, p. 29f) maintained that the minimum level of acceptable reliability is 0.70. Obviously, the present results were higher than that criterion. In terms of the scale's criterion-related validity, the present results are also either similar to, or higher than previous findings (Abdel-Khalek & Lester, 1999a; 2002a). It is particularly worth noting that the same criterion, i.e., the MOCI, was used in the previous Arabic and American samples, as well as the present one, which all demonstrated the AOCS good criterion related validity in Arabic, English, and Spanish versions.

The present sample of Spanish undergraduates scored as less obsessive compulsive than U.S. and Kuwaiti college students (Abdel-Khalek & Lester, 1999b). This result coincides with previous findings on anxiety and death anxiety (Abdel-Khalek, 2003, Abdel-Khalek et al., 2004).

Based on three criteria, i.e., the Kaiser test, item loading ≥ 0.30 , and at least three salient loadings onto the factor, the present analysis yields five factors: *Obsessive thoughts and rumination*, *Meticulousness and perfectionism*, *Indecision and doubts*, *Ritualism*, and *Checking*. It is particularly noteworthy that this five factor solution was consistent with the scree test. Several studies have pointed out the specific strengths of the scree test in determining the number of factors to retain (Cattell, 1988; Wood, Tataryn, & Gorusch, 1996; Zwick & Velicer, 1986).

However, seven factors were extracted in an Egyptian sample using the same scale, but with a different criterion, that is, the eigenvalue > 1.0 (Abdel-Khalek, 1998). These factors were: *Obsessive doubts*, *Orderliness and discipline*, *Slowness and hesitation*, *Rumination and compulsion*, *Meticulousness and repetition*, *Checking*, and *Obsessive thoughts*.

It is obvious that the rules for determining the number of factors to retain were different in the present and Egyptian studies. Notwithstanding all these differences, the factors extracted from the Egyptian sample (the original sample) vis-à-vis the Kuwaiti and American samples as well as the present sample were consistent in each case, and were highly relevant to the phenomenon of obsession and compulsion. Almost all of these factors were previously extracted in one or the other factor analyses of scales to measure obsessive-compulsive tendencies (see, for example, Cooper & Kelleher, 1973; Hodgson & Rachman, 1977; Sanavio, 1988). In sum, the replicability of factors (Gorsuch, 1983) in the present analysis as compared with previous analyses of Egyptian, Kuwaiti and American participants was not high.

The five-factor structure disclosed in the current investigation can, as a whole, be considered coherent and significant in that it refers to the key features of OCD identified, to varying degrees, in previous research. The discrepancies observed in comparison to the original study on Egyptians by Abdel-Khalek (1998) with respect to the number of both factors and significant item loadings on each factor can be understood in terms of the cultural differences observed in the features of anxiety disorders in the societies from which the respective

samples were drawn (Abdel-Khalek, 2003; Abdel-Khalek, Tomás-Sábado, & Gómez-Benito, 2004).

In conclusion, the Spanish version of the AOCS can be considered a useful and appropriate instrument for assessing the presence and intensity of OCD in Spanish-speaking college students. Furthermore, the relatively low inter-factor correlation coefficients (some of which are practically zero) suggest that the subscales based on the factor scores might be considered in addition to the total scale score.

The present study nevertheless has certain limitations which must be taken into account. The most important of these concerns is the limited representativeness of the sample used. Consequently, further studies are required that include clinical samples. There is also a need to correlate the S-AOCS to other personality measures.

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Appendix**Items of the Spanish Form of the AOCs***

- 1 Trabajo con lentitud para asegurarme que hago las cosas bien
- 2 Me lavo las manos muy a menudo
- 3 Antes de irme a dormir, me siento obligado a hacer ciertas cosas en un orden determinado
- 4 Cuando hablo, suelo repetir las mismas cosas o expresiones muchas veces
- 5 Mi vida está dominada por hábitos especiales y sistemas determinados
- 6 Después de salir de casa, a veces vuelvo para asegurarme de que he cerrado bien la puerta, o los grifos del agua, o las luces, etc.
- 7 No pienso mucho en lo que dice la gente
- 8 Desconfío de muchas cosas en este mundo
- 9 Soy una persona indecisa en muchos asuntos
- 10 Olvido las cosas molestas, dolorosas o desagradables
- 11 Antes de irme a la cama, me aseguro varias veces de que he cerrado las puertas y ventanas
- 12 Me vienen a la memoria repetidamente frases, melodías, nombres de medicinas...
- 13 Muchas veces me siento obligado a ordenar las cosas o hacer los trabajos de una manera determinada
- 14 Imagino que ocurrirán desgracias como consecuencia de pequeños errores cometidos por mí
- 15 No me gusta la disciplina estricta ni la exactitud extrema
- 16 Cosas de poca importancia me preocupan y dominan mis pensamientos
- 17 No me interesan los pequeños detalles de un tema o trabajo
- 18 No me siento obligado a hacer ciertas cosas
- 19 Soy una persona muy meticulosa y perfeccionista
- 20 Me persiguen pensamientos molestos y ridículos
- 21 Mi gran problema es que analizo las cosas de forma reiterada
- 22 Tomo decisiones con rapidez
- 23 Me dominan malos pensamientos y tengo dificultades para deshacerme de ellos
- 24 No repito ciertas cosas sin un motivo determinado
- 25 Cuando cometo algún error, me molesta tanto que no puedo dormir
- 26 No disfruto de la vida como el resto de la gente
- 27 Suelo contar cosas sin importancia: escalones, pisos, ventanas, farolas...
- 28 Soy optimista
- 29 Me siento obligado a hacer cosas inútiles
- 30 Soy una persona obsesiva
- 31 Tengo capacidad de decisión
- 32 Me vienen a la mente algunas preguntas de imposible respuesta

*The items were answered according to the True/False format.