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Factorial invariance and norms of the 30-item shortened-version of the Revised Child Anxiety and Depression Scale (RCADS-30)

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Abstract

Background: Anxiety and depressive disorders are among the most common mental disorders during childhood and adolescence. As the 30-item shortened version of the Revised Child Anxiety and Depression Scale (RCADS-30) exhibits excellent psychometric properties, it is one of the most commonly used scales for the initial detection and assessment of these symptoms in children and adolescents. This is because of the advantage of its brevity when compared to the 47-item version. The aim of this study was to analyse factorial invariance according to sex, age, and format used to administer the test, and to identify the RCADS-30 subscales. **Method:** A sample of 3,708 Spanish children and adolescents aged between 7 and 18 years old (M = 12.0 years, SD = 2.8) participated in the study. **Results:** The factorial structure of the RCADS-30 is invariant according to sex, age, and format used to administer the scale. **Conclusions:** The RCADS-30 exhibited excellent factorial invariance for the variables analysed, confirming its usability for different types of sample and administration formats.

Keywords: Revised Child Anxiety and Depression Scale, RCADS-30, children, adolescents, anxiety, depression.

Resumen

Invarianza factorial y baremos de la versión reducida de 30 ítems de la Revised Child Anxiety and Depression Scale (RCADS-30). **Antecedentes:** los trastornos de ansiedad y depresión se encuentran entre los más comunes durante la infancia y la adolescencia. La versión reducida de 30 ítems de la Revised Child Anxiety and Depression Scale presenta propiedades psicométricas excelentes, lo que hace que sea una de las escalas más empleadas para la detección y evaluación inicial de estos síntomas en niños y adolescentes, con la ventaja de su brevedad frente a la versión original. El objetivo de este estudio es estudiar la invarianza factorial según sexo, edad y tipo de aplicación de la prueba e identificar los baremos de la RCADS-30. **Método:** para ello, se empleó una muestra de 3.708 niños y adolescentes españoles entre 7 y 18 años de edad (M = 12,0 años; DT = 2,8). **Resultados:** los resultados obtenidos muestran que la estructura factorial de la RCADS es invariante en función del sexo, edad y modalidad de aplicación. **Conclusiones**: la RCADS-30 ha mostrado una óptima invarianza factorial para las variables analizadas, lo que confirma la posibilidad de su empleo en diferentes tipos de muestra y modalidades de aplicación.

Palabras clave: Revised Child Anxiety and Depression Scale, niños, adolescentes, ansiedad, depresión.

It has been suggested that 6.5% of the world's child and adolescent population has an anxiety disorder and 2.6% has a depressive disorder (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015), with a noticeable comorbidity of both disorders. Between 15% and 70% of children and adolescents who are diagnosed with depression have a comorbid anxiety disorder. In the case of young adults with an anxiety disorder, the rate of comorbidity with depressive disorders is generally lower, between 10% and 15% (Cummings et al., 2014). Due to the negative consequences that symptoms of anxiety and depression have on children's development, a preventive strategy of early detection and intervention is absolutely essential (Sánchez-Hernández, Méndez, & Garber, 2014). Comparisons are often made between population groups, distinguishing between variables such as sex, level of evolutionary development or different formats of the same test. The use of equivalent instruments among these groups is necessary to minimize evaluation biases.

Factorial invariance examines the degree to which an instrument measures the same constructs between two or more groups. Establishing factorial invariance is essential to make comparisons between groups. Without it, we cannot be sure whether the differences in a score are due to differences in the latent variables of the scale or in constructs irrelevant to the instrument (Cheung & Rensvold, 2002).

The Revised Child Anxiety and Depression Scale (RCADS) is a self-report instrument designed to identify clinical symptoms of anxiety and depression in children and adolescents (Chorpita, Moffitt, & Gray, 2005; Chorpita, Yim, Moffit, Umemoto, & Francis, 2000), as using a transdiagnostic approach and is suitable for assessing symptoms in a variety of anxiety and depression disorders (García-Escalera, Chorot, Valiente, Reales, & Sandín, 2016). The psychometric properties of this instrument have been assessed in the general population and in clinical practice (Chorot,

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Valiente, Magaz, Santed, & Sandín, 2017; Chorpita et al., 2005, 2000; Piqueras, Martín-Vivar, Sandín, San Luis, & Pineda, 2017; Piqueras, Pineda, Martín-Vivar, & Sandín, 2017; Sandín, Chorot, Valiente, & Chorpita, 2010). The main purpose of this study was to analyse the factorial invariance (FI) of the RCADS-30 according to sex, age and format used to administer it (online vs. pencil and paper) in a large sample of children and adolescents. An initial objective was to examine whether the six-factor configural model originally described for the scale was complied with. Following this, we intended to provide normative data for the scale.

Method

Instruments

Revised Child Anxiety and Depression Scale. The original version of the RCADS (Chorpita et al., 2000; Sandín et al., 2010; Sandín, Valiente, & Chorot, 2009) consists of a 47-item Likert-type scale ranging from 0 to 3 points (never, sometimes, often, and always). It assesses a broad spectrum of anxiety and depression symptoms in children and adolescents. It obtains scores on six subscales of symptoms of disorders such as separation anxiety disorder (SAD), social phobia (SP), generalised anxiety disorder (GAD), panic disorder (PD), obsessive-compulsive disorder (OCD) and major depressive disorder (MDD). It also enables the calculation of a total score of anxiety symptoms (ANX) and a total score of anxiety and depression symptoms (RCADST; total score on the scale). A recent meta-analysis showed the excellent psychometric properties of the test in different contexts, cultures and languages (Piqueras, Martín-Vivar et al., 2017). This study used the Spanish 30-item shortened version (Sandín et al., 2010). The internal consistency (Cronbach's alpha coefficient) of the subscales for this present study was: SAD = .87, SP = .80, GAD = .84, PD = .84, OCD = .79, MDD = .78, ANX = .93 and RCADST = .93; these were very similar values to those described by Piqueras, Martín-Vivar et al. (2017) and Chorot et al. (2017).

Procedure

The study was approved by the Research Ethics Committee of the Miguel Hernández of Elche University. Recruitment of participants was carried out through incidental sampling. Inclusion required the parents or guardians responsible for the minors to sign an informed consent form. Each member of the sample completed the RCADS in their assigned format (either online or pencil and paper) with their classmates; support was given by experienced psychologists who instructed them, resolved doubts, and informed the children and adolescents that there were no right and wrong answers.

Participants

The sample was composed of 3,708 students in primary, secondary, and high school from three regions in the southeast of Spain. Of these, 1,879 were boys (50.7%) and 1,829 girls (49.3%). The age range of the sample was between 7 and 18 years (M = 12.0 years, SD = 2.8). The cut-off age for the groups was established at the evolutionary development age of 12 years, thus dividing the sample into two groups. One group was made up of children, with an age range of 7 and 11 years, inclusive, with a total of 1,762 participants, representing 47.5% of the sample. The other group was made up of adolescents, with an age range of 12 to 18 years, with a total of 1,946 participants, representing 52.5% of the sample. The participants were also classified according to whether the test was administered to them online or using a pencil and paper format. This resulted in other two groups: the online group comprising 1,973 participants and representing 53.2% of the sample, and the pencil and paper group, comprising 1,735 participants and representing 46.8% of the sample.

Data analysis

In accordance with the ordinal nature of the items in the RCADS and because it is a four-point scale, we chose to use the polychoric correlation matrix. As a method of estimating parameters, we opted for the diagonally weighted least squares (DWLS) procedure. This method is specifically designed for ordinal data and does not make assumptions about the normality of the data. Some simulation work reflects less bias and greater accuracy when compared to other applicable methods, such as robust maximum likelihood (Li, 2016).

Subsequently, the progressive evaluation of the factorial invariance (FI) or the step-up constraints method, following the procedure described by Dimitrov (2010), was conducted. From a statistical approach, the evaluation of the FI is determined from the chi-square differences ($\Delta\chi^2$) between the compared models. Specifically, computing the Satorra-Bentler scaled chi-square difference ($SBS\Delta\chi^2$) is recommended in those cases in which multivariate normality cannot be assumed (Dimitrov, 2010; Satorra & Bentler, 2001). However, certain simulation studies have highlighted the high sensitivity of chi-square to sample size (Cheung & Rensvold, 2002). Consequently, with large samples $\Delta\chi^2$ may show statistically significant differences when, in reality, the absolute differences in the estimated parameters are trivial. In these cases, it has been suggested that fit indices, such as the comparative fit index (CFI), could be much more robust with large samples (Meade, Johnson, & Braddy, 2008). Following the criteria proposed by (Cheung & Rensvold, 2002), we assume that differences between the values in the CFI less than -.01 are evidence of FI.

The statistical analyses were performed using the statistical program R (R Core Team, 2016), the Lavaan package (Rosseel, 2012) and the syntax described by Beaujean (2014).

Preparation of the scales was carried out by calculating the t scores using the program SPSS. Each subscale was calculated separately, and the scores were classified according to participants' educational level (primary, secondary, and high school), sex and age.

Results

Multivariate factorial invariance of the RCADS

The equivalence of the groups' configural model was tested. The results show an adequate fit with the following values: CFI > .95, RMSEA < .06 and SRMR < .08 (see Table 1) for all groups (boys vs. girls, children vs. adolescents and online vs. pencil and paper). After confirming the evidence of M0 fit, we examined the value of the weak FI (M1). The fit of this second model showed adequate results, with CFI, RMSEA and SRMR values that hardly

differed to the previous model, so we could conclude that the model also complies with weak FI for all groups compared. The next step was to assess the strong FI. As can be seen in Table 1, again the results hardly change when compared with the previous model, thus complying with strong FI. When assessing strict FI, the results do not vary, thus showing evidence of strict FI and reaching the maximum level of measurement invariance. In the last step, we wanted to assess the structural invariance, although this level of FI does not need to be reached to compare measures between the groups. The results show small differences in CFI, RMSEA and SRMR, but in no case do they exceed the threshold proposed by Cheung and Rensvold (2002), thus showing evidence of structural FI in the model for all groups.

Differences in latent means of the factors

Once the FI was established, the latent means of the factors between the groups were compared. To estimate the differences between the latent means of the constructs, the means of one of the compared groups (e.g. children) were set to zero, while the means of the other groups were freely estimated. In this regard, boys, children and the pencil and paper format group were taken as a reference for comparisons. The results of these comparisons can be seen in Table 2.

After comparing boys and girls, the greatest differences were observed in the SP (-.198) and SAD (-0.199) sub-scales, with the OCD subscale (-.027) showing the least variation.

If we focus on the comparison between children and adolescents, the subscales that showed the greatest differences were GAD (-.612) and OCD (-.376), where SP (-.083) is the subscale with the least variation. Regarding the RCADS format administered, all differences were below .20. The greatest difference was observed in the OCD subscale, with a difference of -.194 and the subscale with the lowest variation was PD, with .023.

Regarding the direction of these differences, it was found that the group of boys, children and the online format administered obtained higher scores when compared to their equivalents in all factors. The only subscales that showed a different trend were MDD in the case of children and adolescents and PD in the case of format used to administer the test.

Table 1
Results of the structural invariance analysis and measurement of the RCADS according to sex, evolutionary stage and format used to administer the scale

Model	χ^2	df	CFI	RMSEA	SRMR	ΔCFI
Boys vs girls						
M0	3736.31	780	.983	.046	.053	–
M1	3882.55	804	.982	.046	.054	-.001
M2	4036.82	858	.982	.045	.053	.000
M3	4036.83	858	.982	.045	.053	.000
M4	4224.55	879	.981	.046	.055	-.001
Children vs adolescents						
M0	3346.35	780	.985	.042	.050	–
M1	3687.15	804	.984	.044	.053	-.001
M2	4229.72	858	.981	.046	.052	-.003
M3	4229.72	858	.981	.046	.052	.000
M4	4574.12	879	.979	.048	.053	-.002
Online vs pencil and paper						
M0	3737.85	780	.984	.046	.053	–
M1	3994.67	804	.982	.047	.055	-.002
M2	4027.25	858	.982	.045	.053	.000
M3	4027.25	858	.982	.045	.053	.000
M4	4376.77	879	.981	.047	.054	-.001

Note: RCADS = 30-item version of the Revised Child Anxiety and Depression Scale (Sandín et al., 2010). M0 = model without restrictions; M1 = factorial loads; M2 = M1 + intercepts; M3 = M2 + items residual variances/covariances; M4 = M2 + factors residual variances/covariances

Table 2
Comparisons of latent means in the constructs of the RCADS between the groups

Construct	Compared groups Difference[a] (SE)		
	Boys vs Girls	Children vs adolescents	Online vs pencil and paper
Major depression	-.166(.015)***	181(015)***	-.041(.014)**
Panic disorder	-.136(.016)***	-.117(.015)***	.023(.015)
Social phobia	-.198(.013)***	-.083(.012)***	-.155(.012)***
Separation anxiety disorder	-.199(.016)***	-.612(.021)***	-.113(.015)***
Generalised anxiety disorder	-.139(.009)***	-.167(.009)***	-.085(.008)***
Obsessive-compulsive disorder	-.027(.014)	-.376(.016)***	-.194(.014)***

Note: RCADS = 30-item version of the Revised Child Anxiety and Depression Scale (Sandín et al., 2010); a = Differences between the latent means of the constructs
** $p < .01$; *** $p < .001$

Regarding the RCADS scales

Finally, we calculated the RCADS-30 population scales in the sample; the results are shown in Table 3. The t scores obtained for each subscale were first classified according to sex. For each group, a classification was made according to age.

The scales of the original version are classified according to the sample's academic year. For this reason, and to integrate the use of the original version with this reduced version, a classification was included according to the age and educational level of the child (primary, secondary, and high school).

Discussion

The aim of this study was to obtain evidence on the equivalence of the RCADS-30 structure for (a) both sexes, (b) for children and adolescents, and (c) for the online versus the pencil and paper formats.

First, through an exploratory analysis of the response patterns, we tried to determine whether the six-factor configural model originally described by the authors of the RCADS-30 was complied with by the groups (Sandín et al., 2010). These factors referred to the six subscales of the scale, i.e. MDD, GAD, OCD, PD, SAD, and SP. Our results showed an adequate fit for the six factors. These results are consistent with the data reported by other authors regarding the RCADS structure (Chorpita et al., 2005; Mathyssek et al., 2013; Kosters, Chinapaw, Zwaanswijk, van der Wal, & Koot, 2015; Sandín et al., 2009).

The primary objective of the study was to examine the FI of the RCADS-30 by gender, age, and format (online vs. pencil and paper), conducted through an analysis of the measurement FI and

Table 3
Descriptive statistics and scales in *t* scores for each RCADS-30 subscale, based on participants' age and sex

	Primary School Boys												Primary School Girls											
	7 to 9 years old						10 to 11 years old						7 to 9 years old						10 to 11 years old					
	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF
B	419	419	419	419	419	419	451	451	451	451	451	451	362	362	362	362	362	362	504	504	504	504	504	504
M	3.08	8.91	5.48	3.04	4.62	5.57	2.88	8.39	4.24	2.42	3.01	5.37	3.25	5.52	3.71	2.26	2.06	5.52	3.83	7.91	3.13	2.35	7.91	5.31
SD	2.64	3.73	3.58	2.77	3.58	3.59	2.65	3.85	3.18	2.43	2.98	3.60	2.61	3.76	3.13	2.45	2.36	3.76	2.66	3.46	2.77	2.50	3.46	3.42
Direct Scores																								
0	38.32	26.14	34.69	39.02	37.07	34.49	39.10	28.20	36.67	40.00	39.89	35.09	37.56	28.22	38.15	40.79	41.28	35.31	35.60	27.17	38.71	40.61	41.58	34.47
1	42.11	28.81	37.49	42.63	39.87	37.27	42.88	30.80	39.81	44.13	43.24	37.86	41.39	30.97	41.35	44.86	45.51	37.97	39.36	30.06	42.31	44.61	46.28	37.39
2	45.90	31.49	40.28	46.24	42.66	40.05	46.66	33.40	42.96	48.25	46.60	40.64	45.21	33.72	44.54	48.94	49.74	40.63	43.12	32.94	45.92	48.61	50.99	40.31
3	49.69	34.17	43.08	49.85	45.46	42.84	50.44	36.00	46.11	52.37	49.95	43.42	49.04	36.46	47.74	53.02	53.97	43.29	46.88	35.83	49.53	5261	55.70	43.24
4	53.48	36.85	45.87	53.46	48.25	45.62	54.21	38.59	49.25	56.49	53.30	46.20	52.86	39.21	50.94	57.10	58.20	45.95	50.63	38.72	53.13	56.61	60.40	46.16
5	57.28	39.53	48.67	57.07	51.05	48.41	57.99	41.19	52.40	60.61	56.65	48.98	56.69	41.96	54.13	61.17	62.44	48.61	54.39	41.60	56.74	60.61	65.11	49.08
6	61.07	42.20	51.46	60.68	53.84	51.19	61.77	43.79	55.55	64.73	60.01	51.76	60.52	44.70	57.33	65.25	66.67	51.27	58.15	44.49	60.35	64.61	69.81	52.00
7	64.86	44.88	54.26	64.29	56.64	53.97	65.55	46.38	58.69	68.85	63.36	54.54	64.34	47.45	60.52	69.33	70.90	53.93	61.91	47.38	63.95	68.61	74.52	54.92
8	68.65	47.56	57.05	67.90	59.43	56.76	69.33	48.98	61.84	72.97	66.71	57.32	68.17	50.20	63.72	73.40	75.13	56.59	65.67	50.26	67.56	72.61	79.22	57.84
9	72.44	50.24	59.85	71.51	62.23	59.54	73.11	51.58	64.99	77.09	70.07	60.10	71.99	52.94	66.91	77.48	79.36	59.25	69.43	53.15	71.17	76.61	83.93	60.76
10	76.24	52.91	62.64	75.12	65.02	62.32	76.88	54.17	68.13	81.21	73.42	62.88	75.82	55.69	70.11	81.56	83.59	61.91	73.19	56.04	74.77	80.61	88.63	63.69
11	80.03	55.59	65.44	78.73	67.81	65.11	80.66	56.77	71.28	85.33	76.77	65.66	79.65	58.44	73.31	85.64	87.82	64.57	76.94	58.92	78.38	84.61	93.34	66.61
12		58.27	68.23	82.34	70.61	67.89	84.44	59.37	74.42		80.12	68.44	83.47	61.19	76.50	89.71		67.23	80.70	61.81	81.99			69.53
13		60.95	71.03		73.40	70.67	88.22	61.97	77.57	93.57	83.48	71.22		63.93	79.70		96.28	69.89	84.46	64.70			102.75	72.45
14	91.40	63.63	73.82		76.20	73.46	92.00	64.56				74.00	91.12	66.68	82.89	97.87	100.51	72.55		67.58		96.61		75.37
15	95.19	66.30	76.62		78.99	76.24	95.78	67.16	83.86	101.81		76.78		69.43				75.21		70.47				78.29

Note: RCADS-30 direct scores (30-item version of the Revised Child Anxiety and Depression Scale; Sandín et al., 2010). MDD = Major Depressive Disorder, GAD = Generalised Anxiety Disorder, OCD = Obsessive Compulsive Disorder, PD = Panic Disorder, SAD = Separation Anxiety Disorder, SP = Social Phobia

Table 3
Descriptive statistics and scales in *t* scores for each RCADS-30 subscale, based on participants' age and sex (continued)

	High School Boys												High School Girls											
	12 to 13 years old						14 to 16 years old						12 to 13 years old						14 to 16 years old					
	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF	MDD	GAD	OCD	PD	SAD	SF
B	362	362	362	362	362	362	504	504	504	504	504	504	392	392	392	392	392	392	466	466	466	466	466	466
M	3.25	5.52	3.71	2.26	2.06	5.52	3.83	7.91	3.13	2.35	7.91	5.31	2.75	7.15	3.35	1.60	1.52	4.36	3.09	6.15	2.81	1.38	0.86	4.20
SD	2.61	3.76	3.13	2.45	2.36	3.76	2.66	3.46	2.77	2.50	3.46	3.42	2.40	3.65	3.00	2.06	2.14	3.25	2.47	3.31	2.62	1.95	1.47	3.20
Direct Scores																								
0	37.56	28.22	38.15	40.79	41.28	35.31	35.60	27.17	38.71	40.61	41.58	34.47	38.53	30.43	38.85	42.22	42.87	36.57	37.48	31.40	39.27	42.91	44.15	36.87
1	41.39	30.97	41.35	44.86	45.51	37.97	39.36	30.06	42.31	44.61	46.28	37.39	42.70	33.16	42.18	47.09	47.54	39.65	41.53	34.42	43.08	48.04	50.97	39.99
2	45.21	33.72	44.54	48.94	49.74	40.63	43.12	32.94	45.92	48.61	50.99	40.31	46.87	35.90	45.51	51.95	52.22	42.73	45.59	37.45	46.89	53.17	57.78	43.12
3	49.04	36.46	47.74	53.02	53.97	43.29	46.88	35.83	49.53	5261	55.70	43.24	51.04	38.64	48.84	56.81	56.89	45.81	49.64	40.47	50.70	58.30	64.60	46.24
4	52.86	39.21	50.94	57.10	58.20	45.95	50.63	38.72	53.13	56.61	60.40	46.16	55.21	41.37	52.18	61.67	61.57	48.89	53.70	43.50	54.52	63.43	71.42	49.37
5	56.69	41.96	54.13	61.17	62.44	48.61	54.39	41.60	56.74	60.61	65.11	49.08	59.38	44.11	55.51	66.53	66.24	51.97	57.75	46.52	58.33	68.55	78.23	52.50
6	60.52	44.70	57.33	65.25	66.67	51.27	58.15	44.49	60.35	64.61	69.81	52.00	63.55	46.85	58.84	71.39	70.91	55.05	61.81	49.55	62.14	73.68	85.05	55.62
7	64.34	47.45	60.52	69.33	70.90	53.93	61.91	47.38	63.95	68.61	74.52	54.92	67.72	49.58	62.17	76.26	75.59	58.13	65.86	52.57	65.95	78.81	91.87	58.75
8	68.17	50.20	63.72	73.40	75.13	56.59	65.67	50.26	67.56	72.61	79.22	57.84	71.89	52.32	65.51	81.12	80.26	61.21	69.92	55.59	69.76	83.94	98.68	61.87
9	71.99	52.94	66.91	77.48	79.36	59.25	69.43	53.15	71.17	76.61	83.93	60.76	76.06	5505	68.84	85.98	84.94	64.29	73.98	58.62	73.57	89.07		65.00
10	75.82	55.69	70.11	81.56	83.59	61.91	73.19	56.04	74.77	80.61	88.63	63.69	80.23	57.79	72.17	90.84	89.61	67.38	78.03	61.64	77.39			68.12
11	79.65	58.44	73.31	85.64	87.82	64.57	76.94	58.92	78.38	84.61	93.34	66.61	84.40	60.53	75.50			70.46	82.09	64.67				71.25
12	83.47	61.19	76.50	89.71		67.23	80.70	61.81	81.99			69.53	88.56	63.26	78.84		98.96	73.54	86.14	67.69	85.01	104.45		74.38
13		63.93	79.70		96.28	69.89	84.46	64.70			102.75	72.45		66.00	82.17			76.62		70.72	88.82			77.50
14	91.12	66.68	82.89	97.87	100.51	72.55		67.58		96.61		75.37		68.73				79.70	94.25	73.74		114.71		80.63
15		69.43				75.21		70.47				78.29		71.47	88.83					76.77				83.75

Note: RCADS-30 direct scores (30-item version of the Revised Child Anxiety and Depression Scale; Sandín et al., 2010). MDD = Major Depressive Disorder, GAD = Generalised Anxiety Disorder, OCD = Obsessive Compulsive Disorder, PD = Panic Disorder, SAD = Separation Anxiety Disorder, SP = Social Phobia

Table 3
Descriptive statistics and scales in *t* scores for each RCADS-30 subscale, based on participants' age and sex (continued)

	High School Boys						High School Boys					
	17 to 18 years old						17 to 18 years old					
	MDD	**GAD**	**OCD**	**PD**	**SAD**	**SF**	**MDD**	**GAD**	**OCD**	**PD**	**SAD**	**SF**
n	118	118	118	118	118	118	97	97	97	97	97	97
M	4.00	7.70	2.83	2.00	1.47	4.76	3.09	6.12	2.58	1.00	0.59	3.62
SD	2.35	3.46	2.47	2.36	2.07	3.48	2.38	3.21	2.24	1.48	1.30	3.20
Direct Scores												
0	32.95		38.53	41.54	42.86	36.33	36.99	30.90	38.49	43.21	45.47	38.70
1	37.21	30.65	42.58	45.77	47.70	39.20	41.19	34.02	42.96	50.00	53.18	41.82
2	41.48	33.54	46.63	50.00	52.54	42.07	45.40	37.14	47.42	56.79	60.89	44.95
3	45.74	36.43	50.69	54.23	57.38	44.94	49.61	40.26	51.89	63.59	76.31	48.07
4	50.00	39.31	54.74	58.46	62.22	47.81	53.82	43.38	56.35	70.38	84.02	51.19
5	54.26	42.20	58.79	62.69	67.06	50.68	58.03	46.49	60.82	77.17		54.31
6	58.52	45.08	62.84	66.92	71.90	53.55	62.23	49.61	65.28	83.97		57.44
7	62.79	47.97	66.89	71.15		56.42	66.44	52.73	69.74			60.56
8	67.05	50.86	70.95	75.38		59.29	70.65	55.85	74.21			63.68
9	71.31	53.74	75.00	79.61		62.17		58.97			114.86	66.80
10	75.57	56.63		83.84		65.04	79.07	62.09	83.14			69.92
11	79.84	59.51	83.10		96.10	67.91	83.27	65.21				73.05
12		62.40			100.94	70.78		68.33				76.17
13		65.29				73.65		71.45				
14		68.17										82.41
15		71.06				79.39						

Note: RCADS-30 direct scores (30-item version of the Revised Child Anxiety and Depression Scale; Sandín et al., 2010). MDD = Major Depressive Disorder, GAD = Generalised Anxiety Disorder, OCD = Obsessive Compulsive Disorder, PD = Panic Disorder, SAD = Separation Anxiety Disorder, SP = Social Phobia

structural FI. This analysis was carried out through a comparison between latent means in the different variables.

Regarding the sex variable, the differences obtained between latent means in all the subscales were below 0.20, which shows that this variable has minimal influence on the test score. These results differ from those found by Sandín et al. (2010) for the same version. These authors found significant differences in all the subscales of the RCADS-30 according to gender groups, except in OCD, PD and MDD, which showed sex to have a moderate effect on the scores. In the present study, the subscales SP and SAD reflected the highest values, which coincides with findings of the study conducted by Sandín et al. (2010). The study carried out by Chorpita et al. (2005), with the original 47-item version, found a moderate effect of sex in the scale's score, a result that contrasts with those found in this study.

Regarding age, the differences found were less than .20 in all subscales, except for the SAD and OCD subscales. These exceptions show that the influence of age on the corresponding subscale is significant, although moderate, which is consistent with results obtained by Chorpita et al. (2005) with the original 47-item version. No other studies have been conducted regarding the properties of the RCADS-30 and, therefore, no comparisons can be drawn.

One of the novel aspects of this study has been to raise the possibility of administering the RCADS online. As we have mentioned, the development of new technologies and their extended presence in society makes it easier to administer assessment and diagnostic tests. As there are several advantages of administering the test online over the pencil and paper format, such as facilitating the coding of responses and reducing the number of errors and unanswered questions, it is important to assess its influence on test scores. The results show that all subscales present differences with latent means below .20, justifying the minimal influence this variable has on scores. This can be considered a further advantage as its use will not generate an additional variable that influences the scores obtained.

Although the results obtained from this study show the psychometric benefits of the RCADS-30, future research should carry out an analysis of other variables, such as the country the test is administered in, the language used or the type of sample. Additionally, further study into the properties of RCADS-30 in its online format is necessary to clarify and highlight advantages and disadvantages when compared to the conventional method of administration.

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