

## **FACTOR STRUCTURE AND PSYCHOMETRIC PROPERTIES OF THE SPANISH VERSION OF THE “DYSFUNCTIONAL ATTITUDE SCALE-REVISED”**

Francisco J. Ruiz<sup>1</sup>, Juan C. Suárez-Falcón<sup>2</sup>, Paula Odriozola-González<sup>3</sup>,  
Adrián Barbero-Rubio<sup>4</sup>, Juan C. López-López<sup>4</sup>, Nikolett Eisenbeck<sup>4</sup>,  
Lidia Budziszewska<sup>4</sup>, and Enrique Gil<sup>4</sup>

<sup>1</sup>Konrad Lorenz University Foundation (Colombia), <sup>2</sup>National Distance Education University, <sup>3</sup>University of Oviedo, <sup>4</sup>University of Almería (Spain)

### **Abstract**

The Dysfunctional Attitude Scale (DAS) is a 40-item measure of dysfunctional schemas, a key construct of the cognitive model of depression. Most research has relied on the total score because of the mixed results of previous exploratory factor analyses conducted on the DAS. Accordingly, a revised, 17-item version of the DAS (hereafter, the DAS-R) has been recently proposed using confirmatory factor analysis (CFA) and containing two factors: Perfectionism/Performance evaluation and Dependency. This study analyzes the factor structure and psychometric properties of the Spanish version of the DAS-R with a total of 629 participants. The DAS-R showed good internal consistency, temporal stability, and discriminant and convergent validity. CFA supported the two-factor solution found in the original scale; however, a hierarchical factor model with two first-order factors and a general factor showed the best fit of the data. The DAS-R provides general and specific measures of dysfunctional schemas that are theoretically meaningful.

KEY WORDS: *Dysfunctional Attitude Scale Revised, depression, confirmatory factor analysis, hierarchical factor structure.*

### **Resumen**

La “Escala de actitudes disfuncionales” (DAS) es una medida de 40 ítems de los esquemas disfuncionales, un constructo clave del modelo cognitivo de la depresión. La mayor parte de la investigación ha utilizado la puntuación total debido a los resultados mixtos de los análisis factoriales exploratorios realizados sobre el DAS. De acuerdo a esto, una versión reducida del DAS con 17 ítems (DAS-R) ha sido propuesta recientemente usando análisis factorial confirmatorio (AFC) y consistente en dos factores: Perfeccionismo/Evaluación del rendimiento y Dependencia. Este estudio analiza la estructura factorial y las propiedades psicométricas de la versión española de la DAS-R con un total de 629 participantes. La DAS-R mostró una buena consistencia interna, estabilidad temporal y validez discriminante y convergente. El AFC apoyó el modelo

bifactorial encontrado en la escala original; sin embargo, un modelo factorial jerárquico con dos factores de primer orden y un factor general mostró el mejor ajuste a los datos. La DAS-R provee medidas generales y específicas de los esquemas disfuncionales que son teóricamente significativas.

PALABRAS CLAVE: *Escala de actitudes disfuncionales revisada, depresión, análisis factorial confirmatorio, estructura jerárquica.*

## Introduction

Dysfunctional or depressogenic schemas are the main cognitive vulnerability to depression according to the diathesis stress model of cognitive therapy (CT; Beck, Rush, Shaw, & Emery, 1979). They are thought to be shaped by early negative life experiences, to be relatively stable, and to remain latent until the individual encounters negative events that activate them. In this case, dysfunctional schemas would skew the information processing system, leading to the production of negative automatic thoughts that constitute the cognitive triad (i.e., negative views about oneself, the world, and the future) and are considered to be the most proximal cause of depression (Beck et al., 1979; Vázquez, Hervás, & Romero, 2010).

The measurement of dysfunctional schemas has been mainly conducted by applying the Dysfunctional Attitude Scale (DAS; Weisman & Beck, 1978). The DAS originally consisted of 100 items, but was refined by Weissman (1979) into two 40-item forms that were supposed to be parallel (the DAS-A and DAS-B). However, most of the subsequent research was conducted with the DAS-A, which is usually simply referred to as DAS (hereafter, the DAS-A will be simply be referred to as the DAS). Although the DAS has been widely accepted as a measure of dysfunctional schemas, exploratory factor analyses (EFA) have yielded mixed results with regard to the number of factors extracted, with most of the studies showing between two-factor and four-factor solutions (e.g., Cane, Olinger, Gotlib, & Kuiper, 1986; Chioqueta & Stiles, 2006; Power et al., 1994; Sanz & Vázquez, 1993). Probably due to the disparate factor structures found for the DAS, most of the studies have relied on the total score of the DAS as a general cognitive vulnerability to depression. However, relying on the total scores of the DAS might not always be the most adequate strategy because, according to Beck (1987), vulnerable individuals might show only specific dysfunctional schemas rather than the whole range of dysfunctional beliefs measured by the DAS.

In a recent study, de Graaf, Roelofs, and Huibers (2009) noted the limitations of the previous EFA studies and used confirmatory factor analysis (CFA) to compare the fit of the previously proposed factor structures using a Dutch version of the DAS with a very large general population sample ( $N= 8960$ ). The authors found that the two-factor solution was the most adequate fit of the data. Accordingly, they revised the DAS by retaining 17 items of the 40 original ones. The revised version of the DAS (hereafter the DAS-R) consists of two correlated factors labeled as Perfectionism/Performance evaluation, with 11 items, and Dependency, with 6 items. The authors suggested that the DAS-R might contain a

second-order factor, but that possibility was not analyzed in the study. The DAS-R showed good reliability and convergent construct validity.

De Graaf et al. (2009) advocated the use of the DAS-R because it has several advantages over the full version. First, the DAS-R showed a clear factor structure consisting of two correlated factors. Second, it possesses good psychometric properties in terms of model fit, reliability, and convergent construct validity. Third, the DAS-R is a shorter version of the DAS that, while maintaining its psychometric quality, can shorten the administration time. Lastly, the DAS-R contains two theoretically meaningful subscales that measure specific dysfunctional schemas. This constitutes an advance in the analysis of the cognitive model of depression. A limitation of de Graaf et al.'s study, however, is that the validation of the DAS-R was only conducted with a Dutch version of the DAS. Therefore, exploration of the DAS-R factor structure and psychometric properties in other languages and cultures is needed.

The current study aimed to analyze the factor structure and psychometric properties of the Spanish version of the DAS-R with three samples from independent studies ( $N= 629$ ). It was hypothesized that the Spanish version of the DAS-R would show the same two-factor solution found by de Graaf et al. (2009) and would have similar psychometric properties. Lastly, we hypothesized that the DAS-R would have a hierarchical factor structure with a higher order construct, reflecting dysfunctional schemas in general, and the two first-order factors proposed by de Graaf et al.

## Method

### *Participants*

Sample 1. The sample consisted of 210 undergraduates (age range 18-45,  $M= 20.46$ ,  $SD= 3.45$ ) from a university from the north of Spain: 64% were studying Psychology, 15% Speech Therapy, and 21% Teaching. Eighty-four percent were women. Nineteen percent had received psychological or psychiatric treatment at some time, but only 4% were currently in treatment. Also, 4% of participants were taking some psychotropic medication.

Sample 2. The sample consisted of 289 participants (59.5% females) with age ranging between 22 and 82 years ( $M= 35.38$ ,  $SD= 8.63$ ). The relative educational level of the participants was: 7.3% primary studies (i.e., compulsory education), 32.8% mid-level study graduates (i.e., high school or vocational training), and 59.9% were college graduates. They responded to an anonymous internet survey distributed through social media. All of them were Spanish speakers. Thirty-six percent reported having received psychological or psychiatric treatment at some time, but only 6.6% were currently in treatment. Also, 4.8% of participants reported consumption of some psychotropic medication. Specific details about the type of psychological or psychiatric treatment received were not reported.

Sample 3. It consisted of 130 undergraduates (age range 18-46,  $M= 22.58$ ,  $SD= 5.09$ ) from a university from the south of Spain. Most of them (77%) were studying Psychology. The remaining 23% of participants were studying Teaching,

Law, or English Philology. Fifty-nine percent were women. Nineteen percent had received psychological or psychiatric treatment at some time, but only 3.1% were currently in treatment. Also, 3.8% of participants were taking some psychotropic medication. Specific details about the type of psychological or psychiatric treatment received were not reported.

### *Instruments*

- 1) "Dysfunctional Attitude Scale" (DAS; Weissman & Beck, 1978). The DAS is a measure of dysfunctional schemas which comprises 40 items that are rated on a 7-point Likert scale (7= *fully agree*; 1= *fully disagree*). Previous EFA have yielded between two-factor and four-factor solutions (e.g., Cane et al., 1986; Chioqueta & Stiles, 2006). We used the Spanish version of the DAS by Sanz and Vázquez (1993, 1994), which showed an overall Cronbach's alpha of .84 and three factors that were called Achievement ( $\alpha = .79$ ), Dependency ( $\alpha = .72$ ), and Autonomous attitudes ( $\alpha = .39$ ). The last factor seemed to represent an artifact because it only included the positively worded items were included. This DAS version showed convergent and discriminant validity because depressed participants scored higher than nondepressed ones (Sanz & Vázquez, 1993, 1994). A revised version of the DAS (DAS-R; de Graaf et al., 2009) contains 17 items grouped in two factors: Perfectionism/Performance evaluation (e.g., "It is difficult to be happy, unless one is good-looking, intelligent, rich and creative") and Dependency (e.g., "My value as a person depends greatly on what others think of me"). The same response scale as in the DAS is used in the DAS-R. The authors found excellent internal consistency for the total DAS-R ( $\alpha = .91$ ) and the Perfectionism/Performance evaluation factor ( $\alpha = .90$ ), while the Dependency factor showed good internal consistency ( $\alpha = .81$ ). To administer the DAS-R, we used only the 17 items of the Spanish version of the DAS (Sanz & Vázquez, 1993).
- 2) "Automatic Thoughts Questionnaire" (ATQ; Hollon & Kendall, 1980). The ATQ is a measure of the frequency of negative automatic thoughts experienced during the past week and consists of 30 items, each consisting of a negative automatic thought, that are rated on a 5-point Likert scale (5= *all the time*; 1= *not at all*). Examples of items are "I'm no good," "Nothing feels good anymore," "What's wrong with me?" and "I'm worthless." In this study, we used the Spanish version by Cano-García and Rodríguez-Franco (2002), which showed excellent internal consistency, convergent validity, and a four-factor solution. A reduced, 8-item version of the ATQ (ATQ-8) has been recently proposed that showed good psychometric properties and a one-factor solution (Netemeyer et al., 2002). A modification of the ATQ-8 scale measuring the believability of the automatic thoughts (Zettle & Hayes, 1986) was also added. In this modification of the ATQ-8, participants first respond to the frequency of the negative automatic thoughts according to the original ATQ-8 and then they respond to the same items but in a scale that represents thought believability.

- 3) "Beck Depression Inventory-II" (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a widely used 21-item self-report measure of depressive symptoms in adolescents and adults. Participants are asked to rate how they have felt during the past two weeks on a scale ranging from 0 (*not present*) to 3 (*severe*). We used the Spanish version by Sanz, Perdigón, and Vázquez (2003), which presented adequate psychometric properties as well as convergent, discriminant, and predictive validity.
- 4) "Depression Anxiety and Stress Scales-21" (DASS-21; Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 is a 21-item, 4-point Likert scale (3= *applied to me very much, or most of the time*; 0= *did not apply to me at all*) consisting of sentences describing negative emotional states. It contains three subscales (Depression, Anxiety, and Stress) and has shown good internal consistency and convergent and discriminant validity (Antony et al., 1998). Alpha values in this study were .91, .86, and .85 for the depression, anxiety, and stress subscales, respectively.
- 5) "Metacognitions Questionnaire-30" (MCQ-30; Wells & Cartwright-Hatton, 2004). The MCQ-30 is a short version of the MCQ-65. It is a 30-item, 4-point Likert type scale (4= *agree very much*, 1= *do not agree*) that measures dysfunctional metacognitive beliefs. It contains the following five factors: Positive beliefs about worry, Negative beliefs about uncontrollability and danger of worry, Beliefs about the need to control thoughts, Cognitive confidence, and Cognitive self-consciousness. The MCQ-30 has shown good internal consistency, convergent validity, and acceptable test-retest reliability (Wells & Cartwright-Hatton, 2004). Only the first three factors were administered. We used the Spanish version employed by Odriozola-González (2011). Alphas found were .86, .73, and .73 for Positive beliefs, Negative beliefs, and Need to control, respectively.
- 6) "Acceptance and Action Questionnaire-II" (AAQ-II; Bond et al., 2011). The AAQ-II is a general measure of psychological inflexibility. It consists of 7 items that are rated on a 7-point Likert scale (7= *always true*; 1= *never true*). The items reflect unwillingness to experience unwanted emotions and thoughts (e.g., "I worry about not being able to control my worries and feelings") and the inability to be in the present moment and behave according to value-directed actions when experiencing psychological events that could undermine them (e.g., "My painful experiences and memories make it difficult for me to live a life that I would value"). In this study, we used the Spanish version that has shown a one-factor solution, good internal consistency, and discriminant, convergent, and divergent validity (Ruiz, Langer, Luciano, Cangas, & Beltrán, 2013).
- 7) "Believability of Anxious Feelings and Thoughts Questionnaire" (BAFT; Herzberg et al., 2012). The BAFT is a self-report measure of cognitive fusion with anxious thoughts and feelings. It consists of 16 items representing different thoughts that are rated on a 7-point Likert scale ranging from 1 (*not at all believable*) to 7 (*completely believable*) according to the extent that the individual believes in them. The BAFT has excellent internal consistency and a hierarchical factor structure with three lower order factors and one hierarchical

factor. The Spanish version by Ruiz, Odriozola-González, and Suárez-Falcón (2014) was used.

### *Procedure*

Participants were recruited as described above. Individuals who provided informed consent were given a questionnaire packet including some instruments. The full DAS was administered to sample 1 ( $\alpha = .89$  in this study), while only the items of the revised version were applied to samples 2 and 3. The ATQ was applied to sample 1 ( $\alpha = .95$ ), whereas the ATQ-8 was administered to sample 3 (alphas of .80 and .86 for the frequency and believability scales, respectively). The BDI-II was applied to samples 1 and 3 ( $\alpha = .86$  in both cases) and the DASS-21 to sample 2 (alpha values of .91, .86, and .85 for the depression, anxiety, and stress subscales, respectively). The MCQ-30 was administered in sample 2 (alphas of .86, .73, and .73 for positive beliefs, negative beliefs, and need to control, respectively). The AAQ-II was applied to all three samples (alphas of .88, .89, and .89 for samples 1 to 3, respectively). Lastly, the BAFT was administered in sample 2 ( $\alpha = .93$ ).

### *Data analysis*

Prior to conducting factor analyses, data from all samples were examined searching for missing values. Only ten values of the DAS-R were missed (1.6%; one value for items 5, 6, 9, 12, 13, 14, 15, and 16, and two values for item 7). These data were imputed using the replacing option of the Factor 9.2 (Lorenzo-Seva & Ferrando, 2006).

The robustness of the two-factor model found by de Graaf et al. (2009) and the alternative one-factor model was assessed by conducting confirmatory factor analyses (CFA) on the overall sample using LISREL, version 8.71 (Jöreskog & Sörbom, 1999) and adopting a maximum-likelihood estimation method. The one-factor model was analyzed because most of the studies use the total score on the DAS without separating the scores by their factors. Goodness-of-fit was examined computing the following fit indexes: (a) the root mean square error of approximation (RMSEA); (b) the comparative fit index (CFI); (c) the non-normed fit index (NNFI); (d) the goodness-of-fit index (GFI); and (e) the expected cross-validation index (ECVI). According to Kelloway (1998), RMSEA values of .10 represent a good fit, with values below .05 representing a very good fit to the data. With respect to the CFI, NNFI, and GFI, values above .90 indicate well-fitting models, and above .95 represent a very good fit to the data. The ECVI was computed to compare the goodness-of-fit of the two-factor versus the one-factor model (lower values indicate better fit to the model). Lastly, the difference between the chi-square-values for the two models was calculated following a likelihood ratio test under the null hypothesis that the one-factor model fits as well as the two-factor model. This chi-square difference is also chi-square distributed with degrees of freedom equal to the difference between the degrees of freedom of the two compared models.

An additional CFA was conducted to test for the presence of a second-order factor, as was suggested by de Graaf et al. (2009). The fit of this model was compared to the one of the two-correlated-factor model. Following the recommendations by Gignac (2007), the Schmid-Leiman transformation (Schmid & Leiman, 1957) was conducted as an alternative to the nested factors modeling to explore the factor loadings of the items and the extracted variance accounted for by the general factor. This procedure performs a secondary exploratory factor analysis using the latent factor intercorrelations obtained from a previous EFA and facilitates interpretation of primary factors (items) relative to higher-order factors by computing direct relations between primary variables and second-order factors. Likewise, the proportion the general factor accounts for the extracted variance is indicative of the presence of a general factor (range= 40-50%; Gorsuch, 1983). This analysis was computed using Factor 9.2. An exploratory unweighted least squares factor analysis with direct oblimin rotation and the Schmid-Leiman transformation (Schmid & Leiman, 1957) was conducted. Additionally, the syntax developed by Wolf and Preising (2005) for SPSS was used to compute the total extracted variance accounted for by the higher order factor. Lastly, additional confirmatory factor analyses were performed with the model that showed the best fit to the data in order to explore whether the factor structure was the same for the samples that responded on paper-and-pencil (samples 1 and 3) and the sample that responded via internet (sample 2).

The remaining statistical analyses were performed on SPSS Statistics 17 (SPSS Inc., 2008). Cronbach's alphas providing confidence intervals according to Duhacheck and Iacobucci (2004) were computed to explore the internal consistency of the DAS-R. Corrected item-total correlations were obtained to identify items that should be removed because of low discrimination item index (i.e., values below .20). Descriptive data were also calculated. To examine discriminant construct validity, scores on the DAS-R were compared, computing Student's *t*, between: (a) participants receiving psychological or psychiatric treatment and those who were not receiving them (samples 1 and 2; analyses were not conducted with sample 3 because only 4 participants were receiving treatment in this sample); and (b) participants with scores above and below the cutoffs on the BDI-II (samples 1 and 3) and DASS-21 (sample 2). Temporal stability of the DAS-R scores across 9 months was examined in a subsample of 106 participants belonging to sample 2. Zero-order correlations between the DAS-R and the full DAS scale were computed for sample 1. Correlations with other scales were calculated to assess convergent construct validity. According to the cognitive theory of depression, it was expected that the DAS-R would show medium to strong correlations with negative automatic thoughts (the different versions of the ATQ) and with depressive (BDI-II and anxiety symptoms (DASS-21)). According to the metacognitive model of emotional disorders (e.g., Wells, 2009), it was expected that the DAS-R would show medium correlations with the subscales of the MCQ-30. Lastly, we expected that the DAS-R would show medium to strong correlations with the AAQ-II and BAFT because psychological inflexibility strongly correlated with the DAS in previous research (Cristea, Montgomery, Szamoskozi, & David, 2013; Ruiz & Odriozola-González, in press).

## Results

### Factor structure

Table 1 presents the results of the CFA comparing the two-factor and one-factor models. The one-factor model obtained an acceptable fit, but inferior to the one observed for the two-factor model. The chi-square difference between the two competing models was 370.38 ( $df= 1, p < .05$ ), indicating that the two-factor model showed a significantly better fit to the data. The two-factor model also had the lowest ECVI value. Scores on the goodness-of-fit indexes for the two-factor model were good for the RMSEA and the GFI, and very good for the CFI and NNFI. Both factors were strongly correlated ( $r = .78$ ). Table 2 shows the original items, their translation into Spanish, and factor loadings for the two-factor model.

**Table 1**

Goodness-of-fit indexes of the one-factor and two-factor models of the DAS ( $N = 629$ )

Goodness-of-fit indicators	Two-factor model	One-factor model
RMSEA [90% CI]	.053 [.046, .060]	.081 [.074, .087]
CFI	.99	.97
NNFI	.99	.97
GFI	.89	.82
ECVI [90% CI]	.63 [.55, .72]	1.07 [.95, 1.20]
$\chi^2$ ( $df$ ) Satorra-Bentler	323.46 (118)	603.79 (119)

Note: RMSEA= root mean square error of approximation; CFI= comparative fit index; NNFI= non-normed fit index; GFI= goodness-of-fit index; ECVI= expected cross-validation index.

The goodness-of-fit indexes for the two-factor model with a second-order factor are shown in Table 3. The model obtained an excellent fit to the data according to the RMSEA, CFI, NNFI, and GFI. The ECVI value was .54, indicating a better fit than the two-factor model. Lastly, the chi-square of the two-factor model with a general factor was 265.93, and the differences with the two-correlated-factor model were statistically significant. In summary, the CFA indicated that the two-factor model with a general factor showed the best fit to the data of the DAS-R. Figure 1 depicts the results of the standardized solution of the second-order factor model for the DAS-R.

**Table 2**  
Item description and their factor loadings of the DAS-R in a completely standardized solution

Factor/Item description	F1	F2
F1. Perfectionism/performance evaluation		
1. Es difícil ser feliz si no se es atractivo, inteligente, rico y creativo [It is difficult to be happy, unless one is good-looking, intelligent, rich, and creative]	.61	
2. Si no hago siempre las cosas bien, la gente no me respetará [If I do not do well all the time, people will not respect me]	.70	
3. Si una persona pide ayuda, es señal de debilidad [If a person asks for help, it is a sign of weakness]	.71	
4. Si no hago las cosas tan bien como los demás, eso significa que soy una persona inferior [If I do not do as well as other people, it means I am an inferior human being]	.83	
5. Si fracaso en mi trabajo seré un fracaso como persona [If I fail at my work, then I am a failure as a person]	.77	
6. Si no puedo hacer bien una cosa, es mejor no hacerla. [If you cannot do something well, there is little point in doing it at all]	.53	
7. Si alguien no está de acuerdo conmigo, eso probablemente indica que no le agrado [If someone disagrees with me, it probably indicates that he does not like me]	.65	
8. Si fracaso en parte, eso lo considero tan malo como ser un completo fracaso [If I fail partly, it is as bad as a complete failure]	.73	
9. Si los demás saben cómo eres realmente, te considerarán menos [If other people know what you're really like, they will think less of you]	.75	
10. Para ser una persona valiosa debo destacar de verdad por lo menos en un aspecto importante [If I am to be a worthwhile person, I must be truly outstanding in at least one major respect]	.71	
11. Hacer una pregunta me hace parecer inferior [If I ask a question, it makes me look inferior]	.63	
F2. Dependency		
12. Mi valor como persona depende en gran medida de lo que los demás opinen de mí [My value as a person depends greatly on what others think of me]		.83
13. Es horrible recibir la censura de personas importantes para uno [It is awful to be disapproved of by people important to you]		.51
14. Si uno no tiene otras personas en las que confiar, está destinado a estar triste [If you don't have other people to lean on, you are bound to be sad]		.58
15. Si desagradas a los demás no puedes ser feliz [If others dislike you, you cannot be happy]		.70
16. Mi felicidad depende más de los demás que de mí [My happiness depends more on other people than it does on me]		.72
17. Es muy importante lo que otras personas piensan sobre mí [What other people think about me is very important]		.77

**Table 3**  
Goodness-of-fit indexes of a two-factor model with a general factor ( $N= 629$ )

Goodness-of-fit indexes	Two-factor model with a general factor
RMSEA [90% CI]	.045 [.038, .052]
CFI	.99
NNFI	.99
GFI	.99
ECVI [90% CI]	.54 [.47, .62]
$\chi^2$ ( $df$ ) Satorra-Bentler	265.93 (117)

Note: RMSEA= root mean square error of approximation; CI= confidence interval; CFI= comparative fit index; NNFI= non-normed fit index; GFI= goodness of fit index; ECVI= expected cross-validation index.

According to the Schimid-Leiman transformation, all items of the DAS-R seemed to represent the general factor because they showed loadings above .30 (Tabachnick & Fidell, 2007). The range of factor loadings was between .43 (Item 6) and .70 (Item 12). The general factor accounted for 65.4% of the extracted variance, a proportion clearly above the range considered as indicative of the presence of a general factor (40%-50%; Gorsuch, 1983).

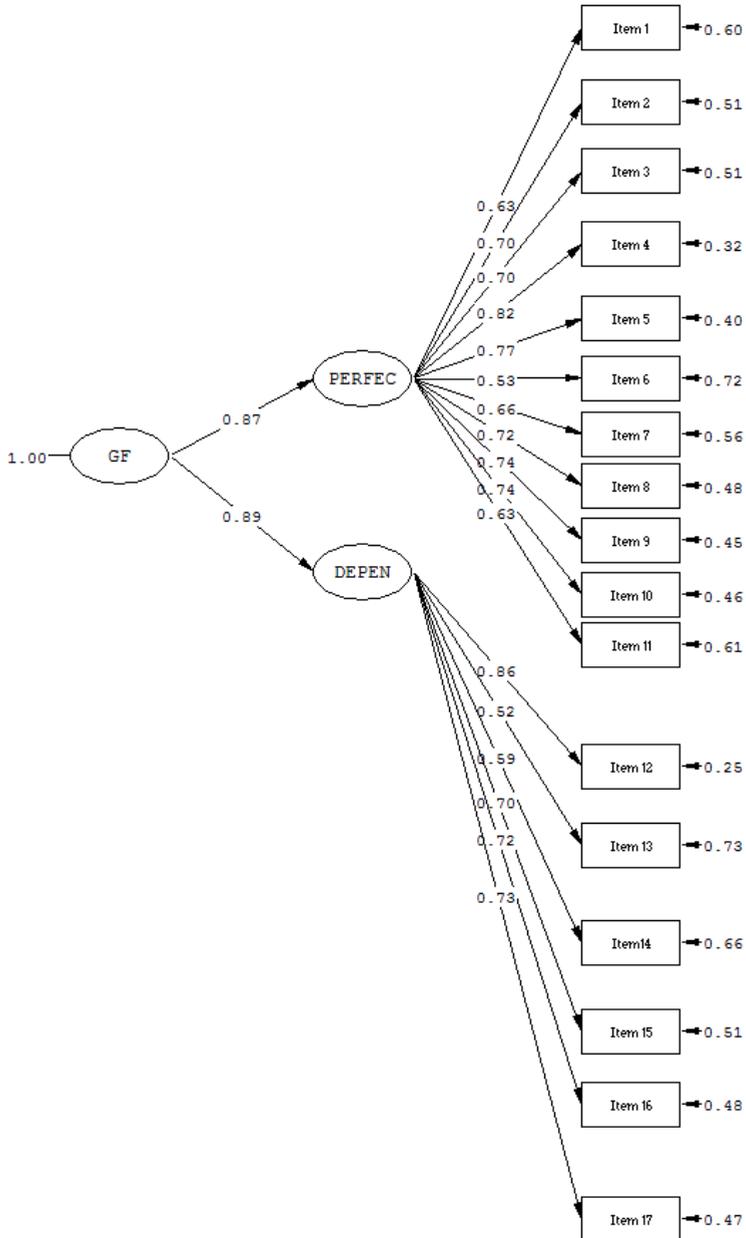
Lastly, the hierarchical factor structure presented very good and equivalent fits for the samples that completed the DAS-R on paper-and-pencil (samples 1 and 3: RMSEA= .041; CFI, NNFI, and GFI= .99; ECVI= .85; Satorra-Bentler  $\chi^2$ [117]= 173.34), and the sample that responded via internet (samples 2: RMSEA= .041; CFI, NNFI, and GFI= .99; ECVI= .76; Satorra-Bentler  $\chi^2$ [117]= 184.26). Factor loadings also showed the same pattern and were basically the same as in the total sample.

#### *Internal consistency, descriptive data and criterion validity*

Table 4 shows that Cronbach's alpha of the overall DAS-R ranged from .87 (sample 1) to .91 (sample 2), with an overall alpha of .90, 95% CI [.89, .91]. With respect to the DAS-R factors, Perfectionism/Performance Evaluation showed an alpha between .85 (sample 1) and .89 (sample 2), with an overall alpha of .87, 95% CI [.86, .89], whereas the alpha of Dependency ranged from .76 (samples 1 and 3) to .82 (sample 2), with an overall alpha of .81, 95% CI [.78, .83]. Corrected item-total correlations of the DAS-R ranged from .43 to .69 for the overall sample. With respect to the two factors, Perfectionism/Performance evaluation showed item-total correlation between .47 and .72, whereas for Dependency they were between .45 and .63.

Table 5 shows that participants with scores above the cutoffs on the BDI-II and DASS-21 scored statistically significantly higher on the DAS-R and its subscales than those with scores below these cutoffs. Additionally, participants receiving psychological/psychiatric treatment in sample 1, but not those from sample 2, showed higher scores on the DAS-R than those who were not receiving it.

**Figure 1**  
 Results on the confirmatory factor analysis to analyze the fit of a general second-order factor and two correlated first-order factors (N= 629)



Note: GF= General factor of dysfunctional schemas, PERFEC= Perfectionism/Performance evaluation; DEPEN= Dependency.

**Table 4**

Cronbach's alphas and descriptive data of the Dysfunctional Attitude Scale-Revised (DAS-R) across samples

Dysfunctional Attitude Scale-Revised (DAS-R)	Sample 1 (N= 210)	Sample 2 (N= 289)	Sample 3 (N= 130)
Total			
Cronbach's alpha	.87	.91	.90
<i>M (SD)</i>	45.46 (14.22)	42.50 (18.04)	39.86 (14.46)
Perfectionism/Performance evaluation			
Cronbach's alpha	.85	.89	.85
<i>M (SD)</i>	24.65 (14.22)	23.30 (11.83)	22.88 (9.09)
Dependency			
Cronbach's alpha	.76	.82	.81
<i>M (SD)</i>	20.79 (6.48)	19.19 (7.87)	16.92 (6.48)

**Table 5**

Mean DAS-R scores of participants who scored above and below the cutoffs of the BDI-II and DASS-21 or who were receiving psychological or psychiatric treatment

	Sample 1 (N= 210)		Sample 2 (N= 289)		Sample 3 (N= 130)
	BDI-II> 13	Receiving Treatment	DASS-21 - Total> 23	Receiving Treatment	BDI-II> 13
DAS-R total "Clinical"	54.04 (16.80) N= 54	69.89 (23.15) N= 9	58.36 (21.87) N= 39	50.68 (25.62) N= 19	47.08 (17.32) N= 37
DAS-R total "Nonclinical"	42.42 (11.77) N= 156	44.32 (12.66) N= 201	40.02 (16.07) N= 250	41.92 (17.31) N= 270	37.09 (11.91) N= 89
Student's <i>t</i>	4.68***	3.29*	5.03***	1.47	3.73***
Perfectionism Scores "Clinical"	30.53 (11.28) N= 54	39.00 (17.11) N= 9	34.00 (15.16) N= 39	29.21 (18.02) N= 19	26.58 (11.39) N= 38
Perfectionism Scores "Nonclinical"	22.59 (8.08) N=156	24.00 (8.74) N= 201	21.64 (10.30) N= 250	22.89 (11.20) N= 270	21.43 (7.41) N= 89
Student's <i>t</i>	4.79***	2.62*	4.92***	1.51	3.03**
Dependency Scores "Clinical"	23.70 (7.04) N= 54	30.89 (7.03) N= 9	24.36 (18.39) N= 39	21.47 (8.64) N= 19	20.46 (6.96) N= 37
Dependency Scores "Nonclinical"	19.75 (6.00) N= 156	20.32 (6.08) N= 201	18.39 (7.45) N= 250	19.03 (7.81) N= 19	15.58 (5.70) N= 91
Student's <i>t</i>	3.96***	5.06**	4.09***	1.31	4.11***

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p \leq .001$ .

*Temporal stability and zero-order correlations with other related constructs*

The temporal stability of the DAS-R across 9 months in a subsample of sample 2 ( $N=106$ ) was adequate ( $r=.72$ ). The overall DAS-R score was very strongly correlated with the complete DAS ( $r=.95$ ) in sample 1. The correlations of the DAS-R were comparable to those shown by the complete DAS in sample 1 (Table 6). The DAS-R also showed correlations with all other assessed constructs in theoretically coherent ways. Specifically, the DAS-R showed positive correlations with dysfunctional metacognitive beliefs, depression and anxiety symptoms, negative automatic thoughts, cognitive fusion, and psychological inflexibility.

**Table 6**

Zero-order correlations between the DAS-R scores and other relevant self-report measures

Measure	Sample	N	DAS-Total	DAS-R-Total	DAS-R-Perfor. evaluat.	DAS-R-Dependency
Dysfunctional Attitude Scale (DAS)	1	210	--	.95**	.88**	.78**
Dysfunctional Attitude Scale-Revised (DAS-R) (9 months)						
Total score	2	106	--	.72**	.67**	.60**
Performance evaluation	2	106	--	.67**	.71**	.46**
Dependency	2	106	--	.63**	.49**	.67**
Beck Depression Inventory-II (BDI-II)	1	210	.47**	.44**	.42**	.34**
BDI-II	3	130	--	.35**	.31**	.34**
Depression Anxiety Stress Scales (DASS)						
Total score	2	289	--	.47**	.48**	.35**
Depression	2	289	--	.45**	.48**	.31**
Anxiety	2	289	--	.38**	.39**	.29**
Stress	2	289	--	.45**	.45**	.37**
Automatic Thoughts Questionnaire (ATQ)	1	210	.56**	.54**	.53**	.43**
Automatic Thoughts Questionnaire-8 (ATQ-8)						
Total score	3	130	--	.54**	.52**	.48**
Believability	3	130	--	.43**	.38**	.42**
Metacognitions Questionnaire-30 (MCQ-30)						
Positive metacognitive beliefs	2	289	--	.39**	.38**	.31**
Negative metacognitive beliefs	2	289	--	.39**	.36**	.34**
Need to control thoughts	2	289	--	.35**	.35**	.28**
Acceptance and Action Questionnaire - II (AAQ-II)	1	210	.59**	.55**	.53**	.43**
AAQ-II	2	289	--	.43**	.43**	.37**
AAQ-II	3	130	--	.57**	.57**	.46**
Believability Of Anxious Feelings And Thoughts (BAFT)	2	289	--	.49**	.45**	.44**

Notes: Perfor. evaluat.= Performance evaluation. \* $p<.01$ ; \*\* $p<.001$ .

## Discussion

The data obtained in this study provide promising evidence that the Spanish version of the DAS-R is a valid and reliable measure of dysfunctional schemas. Overall, the current data are very similar to those obtained by de Graaf et al. (2009). Specifically, the DAS-R showed excellent internal consistency (overall  $\alpha = .90$ ), with good Cronbach's alphas for its factors (Perfectionism/Performance evaluation: overall  $\alpha = .87$ ; Dependency: overall  $\alpha = .81$ ). The construct convergent validity of the DAS-R was examined by analyzing its correlations with related constructs such as negative automatic thoughts, dysfunctional metacognitive beliefs, psychological inflexibility, and cognitive fusion. All correlations found were in the expected direction. The DAS-R also presented discriminant validity to the extent that participants experiencing mild levels of emotional symptoms (i.e., scores on the BDI-II and DASS-21) scored significantly higher on the DAS-R and its subscales than those who scored below the cutoffs. Likewise, participants who reported being in psychological/psychiatric treatment scored significantly higher on the DAS-R than participants who were not receiving treatment in sample 1. However, this result was not replicated in sample 2, probably due to the scarce number of participants who were receiving treatment.

The factor analyses conducted in this study deserve detailed attention. The CFA revealed that the two-factor model of the DAS-R obtained a better fit to the data than the alternative one-factor model. Likewise, all items showed factor loadings in the expected factors according to the study by de Graaf et al. (2009). However, as expected, a model consisting of a hierarchical structure with a general factor and the previous two first-order factors obtained the best fit to the data. The fit of this model was statistically significantly better than the two-factor model without a second-order factor. Lastly, similar fit indexes of the factor structure were found for the paper-and-pencil and internet samples, warranting the equivalence of administering the DAS-R in both ways.

The hierarchical factor structure found in this study has several relevant implications. On the one hand, the presence of a general factor provides a theoretical justification of using the total score of the DAS-R. This score provides a general measure of dysfunctional schemas and not the mere aggregation of the two types of dysfunctional schemas identified. On the other hand, in some contexts, it may be more advisable to analyze the scores on first-order factors: Perfectionism/Performance evaluation and Dependency. As previously discussed, the possibility of analyzing the presence of specific dysfunctional schemas can be seen as an advance in the study of depression according to CT.

Some limitations of this study are worth mentioning. Firstly, the functioning of the DAS-R was tested only in nonclinical samples; therefore, further research is necessary in clinical samples to confirm the results obtained in this study. Secondly, no information was obtained concerning the diagnosis and the course of therapy in participants who reported being in psychological/psychiatric treatment. Thirdly, the samples used in this study mostly consisted of undergraduate or graduate individuals and with a narrow age range. Accordingly, further study should analyze the psychometric properties and factor structure of the DAS-R with people with

less education. Fourthly, because all data were obtained using self-report measures, relationships among variables might be artificially inflated. Lastly, the results of the current study might only be applicable to Spanish speakers from Spain; however, our results are very similar to the ones obtained by de Graaf et al. (2009) in a Dutch general population. This suggests that the same factor structure of the DAS-R could be found in other languages and western cultures. Specifically, further research might analyze whether the Spanish version of the DAS-R retain similar psychometric properties and the same hierarchical structure with Spanish speakers from Latin American.

In conclusion, the Spanish version of the DAS-R seems to be a reliable and valid measure of dysfunctional schemas, consisting of a hierarchical factor structure with a general factor and two first-order factors. Due to the clear factor structure of the DAS-R, its use should be recommended instead of the full DAS scale. The DAS-R provides the researcher and clinician the possibility to investigate specific types of dysfunctional schemas reliably and provides a theoretically meaningful reason for the use of the total score as a general measure of dysfunctional thinking. Further research, however, should be conducted to confirm the psychometric properties and hierarchical factor structure of the DAS-R in other languages.

## References

- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales (DASS) in clinical groups and a community sample. *Psychological Assessment, 10*, 176-181.
- Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy: An International Quarterly, 1*, 5-37.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: Guilford.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: The Psychological Corporation.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*, 676-688.
- Cane, D. B., Olinger, J., Gotlib, I. H., & Kuiper, N. A. (1986). Factor structure of the Dysfunctional Attitude Scale in a student population. *Journal of Clinical Psychology, 42*, 307-309.
- Cano-García, F. J., & Rodríguez-Franco, L. (2002). Evaluación del lenguaje interno ansiosógeno y depresógeno en la experiencia de dolor crónico [Assessment of anxious and depressive self-talk in chronic pain experience] *Apuntes de Psicología, 20*, 329-346.
- Chioqueta, A. P., & Stiles, T. C. (2006). Factor structure of the Dysfunctional Attitude Scale (Form A) and the Automatic Thoughts Questionnaire: An exploratory study. *Psychometric Reports, 99*, 239-247.
- Cristea, I. A., Montgomery, G. H., Szamoskozi, S., & David, D. (2013). Key constructs in "classical" and "new wave" cognitive behavioral psychotherapies: Relationships among each other and with emotional distress. *Journal of Clinical Psychology, 69*, 584-599.

- Daza, P., Novy, D. M., Stanley, M., & Averill, P. (2002). The Depression Anxiety Stress Scale-21: Spanish translation and validation with a Hispanic sample. *Journal of Psychopathology and Behavioral Assessment, 24*, 195-205.
- de Graaf, L. E., Roelofs, J., & Huibers, M. J. H. (2009). Measuring dysfunctional attitudes in the general population: The Dysfunctional Attitude Scale (form A) Revised. *Cognitive Therapy and Research, 33*, 345-355.
- Duhacheck, A., & Iacobucci, D. (2004). Alpha's standard error (ASE): An accurate and precise confidence interval estimate. *Journal of Applied Psychology, 89*, 492-808.
- Gignac, G. E. (2007). Multi-factor modeling in individual differences research: Some recommendations and suggestions. *Personality and Individual Differences, 42*, 37-48.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Herzberg, K. N., Sheppard, S. C., Forsyth, J. P., Credé, M., Earleywine, M., & Eifert, G. H. (2012). The Believability of Anxious Feelings and Thoughts Questionnaire (BAFT): A psychometric evaluation of cognitive fusion in a nonclinical and highly anxious community sample. *Psychological Assessment, 24*, 877-891.
- Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an Automatic Thoughts Questionnaire. *Cognitive Therapy and Research, 4*, 383-395.
- Jöreskog, K. G., & Sörbom, D. (1999). *LISREL 8.30*. Chicago, IL: Scientific Software International.
- Kelloway, E. K. (1998). *Using LISREL for structural equation modeling: A researcher's guide*. Thousand Oaks, CA: Sage.
- Lorenzo-Seva, U., & Ferrando, P. (2006). FACTOR: A computer program to fit the exploratory factor analysis model. *Behavior Research Methods, 38*, 88-91.
- Netemeyer, R. G., Williamson, D. A., Burton, S., Biswas, D., Jindal, S., Landreth, S., Landreth, S., Mills, G., & Primeaux, S. (2002). Psychometric properties of shortened versions of the Automatic Thoughts Questionnaire. *Educational and Psychological Measurement, 62*, 111-129.
- Odrizola-González, P. (2011). *El papel del pensamiento mágico en las alucinaciones y el trastorno obsesivo compulsivo. Comparación entre grupos clínicos y no clínicos* [The role of magical thinking in hallucinations and obsessive-compulsive disorder. Comparison between clinical and nonclinical groups]. (Unpublished doctoral dissertation). University of Oviedo, Spain.
- Power, M. J., Katz, R., McGuffin, P., Duggan, C. F., Lam, D., & Beck, A. T. (1994). The Dysfunctional Attitude Scale (DAS): A comparison of forms A and B and proposal of a new subscaled version. *Journal of Research in Personality, 28*, 263-276.
- Ruiz, F. J., Langer, A. I., Luciano, C., Cangas, A. J., & Beltrán, I. (2013). Measuring experiential avoidance and psychological inflexibility: The Spanish translation of the Acceptance and Action Questionnaire. *Psicothema, 25*, 123-129.
- Ruiz, F. J., & Odrizola-González, P. (in press). The role of psychological inflexibility in Beck's cognitive model of depression. *Anales de Psicología*.
- Ruiz, F. J., Odrizola-González, P., & Suárez, J. C. (2014). The Spanish version of the Believability of Anxious Feelings and Thoughts. *Psicothema, 26*, 308-313.
- Sanz, J., Perdigón, A. L., & Vázquez, C. (2003). Adaptación española del Inventario para la Depresión de Beck-II (BDI-II). Propiedades psicométricas en población general [The Spanish adaptation of Beck's Depression Inventory- II (BDI-II): Psychometric properties in the general population]. *Clínica y Salud, 14*, 249-280.
- Sanz, J., & Vázquez, C. (1993). Adaptación española de la Escala de actitudes disfuncionales (DAS) de Weissman and Beck: Propiedades psicométricas y clínicas [Weissman and Beck's Dysfunctional Attitudes Scale Spanish adaptation: Psychometric and clinical properties]. *Análisis y Modificación de Conducta, 19*, 705-750.

- Sanz, J., & Vázquez, C. (1994). Algunas consideraciones adicionales sobre la versión española de la Escala de actitudes disfuncionales (DAS) de Weisman y Beck [Some additional considerations of the Spanish versión of the Weisman and Beck's Dysfunctional Attitudes Scale (DAS)]. *Análisis y Modificación de Conducta*, *20*, 669-673.
- Schmid, J., & Leiman, J. N. (1957). The development of hierarchical factor solutions. *Psychometrika*, *22*, 53-61.
- SPSS, Inc. (2008). SPSS Statistics 17 [software]. Chicago, IL.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston, MA: Allyn and Bacon.
- Vázquez, C., Hervás, G., & Romero, N. (2010). Modelos cognitivos de la depresión: Una revisión tras 30 años de investigación [Cognitive models of depression: A synthesis and new proposal based on 30 years of research]. *Behavioral Psychology/Psicología Conductual*, *18*, 139-165.
- Weissman, A. N. (1979). Assessing depressogenic attitudes: A validation study. Unpublished thesis. University of Pennsylvania.
- Weissman, A. N., & Beck, A. T. (1978, November). Development and validation of the Dysfunctional Attitude Scale: A preliminary investigation. Paper presented at the *Annual Meeting of the American Educational Research Association*, Toronto, Canada.
- Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York, NY: Guilford.
- Wells, A., & Cartwright-Hatton, S. (2004). A short form of the Metacognitions Questionnaire: Properties of the MCQ-30. *Behavior Research and Therapy*, *42*, 385-396.
- Wolf, H. G., & Preising, K. (2005). Exploring item and higher order factor structure with the Schmid-Leiman solution: Syntax codes for SPSS and SAS. *Behavior Research Methods*, *37*, 48-58.
- Zettle, R. D., & Hayes, S. C. (1986). Dysfunctional control by client verbal behavior: The context for reason giving. *The Analysis of Verbal Behavior*, *4*, 30-38.

RECEIVED: September 6, 2014

ACCEPTED: January 31, 2015

