

Psychometric properties of the Dyadic Adjustment Scale (DAS) in a community sample of couples

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Abstract

Background: This study analyzed the psychometric properties of the Dyadic Adjustment Scale (DAS). **Method:** A sample of 1,180 participants, 590 adult heterosexual couples, from the Community of Madrid was examined via confirmatory factor analysis. **Results:** The results indicate that the factor structure of this scale fits the hierarchical factor model proposed by the test authors. The internal consistency, estimated using Cronbach's alpha coefficient was satisfactory for the total scale ($\alpha = .80$) and ranged from .13 to .88 for the subscales. Convergent validity was adequate in comparison to the Negotiation subscale (emotional and cognitive) from the Revised Conflict Tactics Scales (CTS2). No significant differences were observed between genders. Finally, concordance or agreement between partners was high. The lowest agreement was found for the Affectional Expression subscale. **Conclusions:** After examining the psychometric properties, the DAS was found to be a reliable and valid measurement of the sampled community of couples.

Keywords: Dyadic Adjustment Scale, couples, reliability, structural validity, agreement.

Resumen

Propiedades psicométricas de la Escala de Ajuste Diádico (DAS) en una muestra comunitaria de parejas. Antecedentes: el presente estudio analiza las propiedades psicométricas de la Escala de Ajuste Diádico (DAS). **Método:** se utilizó una muestra de 1.180 participantes, 590 parejas adultas de ambos sexos, pertenecientes a la Comunidad de Madrid. Se analizaron las respuestas de 590 parejas heterosexuales mediante un análisis factorial confirmatorio. **Resultados:** los resultados indicaron que la estructura factorial de la escala se ajusta al modelo factorial jerárquico propuesto por los autores de la prueba. La consistencia interna, estimada mediante el coeficiente alfa de Cronbach, fue satisfactoria para la escala total ($\alpha = .80$), oscilando dicho coeficiente para las subescalas desde .13 hasta .88. La validez convergente ha sido adecuada mediante su asociación con la subescala de negociación (emocional y cognitiva) de la CTS2. Las diferencias por género no revelaron diferencias estadísticamente significativas. Finalmente, la concordancia o acuerdo entre los miembros de la pareja fue elevada, dándose la menor concordancia en la subescala de expresión afectiva. **Conclusiones:** tras examinar las propiedades psicométricas de la Escala de Ajuste Diádico, se concluyó que esta escala proporciona una medida fiable y válida del ajuste diádico en muestras comunitarias de parejas.

Palabras clave: escala de ajuste diádico, parejas, fiabilidad, validez estructural, concordancia.

Dyadic adjustment has become a particularly relevant construct for social science researchers exploring the role given variables play in marital adjustment (Kenny & Ledermann, 2012). It is little wonder that the Dyadic Adjustment Scale (DAS, Spanier, 1976) is likely the most widely used scale for evaluating the quality and adjustment of a couple's relationship (Graham, Liu, & Jeziorski, 2006; Graham, Diebels, & Barnow, 2011). Its importance lies not only in its impact on personal well-being and mental health (Tesser & Beach, 1998) but also in its significance as a predictor of individual and family effectiveness, as shown by empirical

evidence (David, Steele, Forehand, & Armistead, 1996; Proulx, 2007).

Spanier (1976) precisely defined dyadic adjustment as a *process* that determines the degree of (a) problematic differences in a couple, (b) interpersonal tension and personal anxiety, (c) dyadic satisfaction, (d) dyadic cohesion, and (e) consensus on matters important to dyadic interactions. Moreover, the scale, as designed by the author of the present study, includes a total compound score referred to as the *total dyadic adjustment*, which is a reliable indicator of the relationship adjustment. This term, in fact, refers to the broad diversity of the relations studied in modern research of couple relationships (Graham, Diebels, & Barnow, 2011; Meil, 2011).

In 2011, the rate of matrimonial dissolution (annulments, separations and divorces) was approximately 2.34 per thousand inhabitants in Spain (0.3% more than in the year 2010). The average duration of a marriage before separation is 15.7 years

(National Institute of Statistics, INE, 2011). Similarly, the number of marriages in other European Union countries has decreased, while the number of divorces has gradually increased in recent years (Eurostat, 2011). As Cáceres (2012) noted, these data reveal the magnitude and significance of dyadic adjustment in adult relationships due to the social, educational, personal and even clinical impact divorce and separation have on members of the ex-couple.

The DAS (Spanier, 1976) has been used for a variety of purposes. First, it has been used in a wide variety of clinical and research contexts to help detect conflicts in couple relationships. The total DAS score not only discriminates between well-adjusted and poorly adjusted couples but also determines those with a high probability of divorce (Crane, Busby, & Larson, 1991; Spanier, 1988; Graham et al., 2006). Second, the dimensions of the scale (consensus, cohesion, satisfaction and affection) can be used separately without losing their reliability or validity (Graham et al., 2006; Spanier, 1976). Finally, in the clinical sphere, these dimensions provide information on the best choice of therapeutic or preventive intervention and even facilitate evaluating the therapeutic process changes because the pre-treatment score is related to the therapy results (Christensen et al., 2004).

The DAS has been adapted for several countries, and various abbreviated forms have been developed with adequate reliability and validity (Busby, Crane, Larson, & Christensen, 1995; Hunsley, Best, Lefebvre, & Vito, 2001; Kurdek, 1992; Sabourin, Valois, & Lussier, 2005; Santos-Iglesias, Vallejo-Medina, & Sierra, 2009). In general, studies into the psychometric properties of the DAS report high total scale reliability. For example, in the meta-analysis performed by Graham et al. (2006), the reliability of the global score was high, averaging .915 for the studies considered, and all of the subscales had high reliability, except for the affectional subscale.

However, one of the most controversial aspects of the DAS is its factor structure. Studies have had problems confirming the original structure of the four factors proposed by Spanier (1976); both exploratory and confirmatory factor analyses have revealed that items in the affection scale are a single factor, while the satisfaction scale emerges as a factor that includes items from other scales, such as the consensus and cohesion scales (see Graham et al., 2006). Consequently, various studies have questioned whether the scale has a unidimensional, multidimensional, (Dinkel & Balck, 2006; Fisilogly & Demir, 2000; Hollist et al., 2012) or hierarchical structure composed of four integrated factors within a second-order factor (Busby et al., 1995; Cáceres, pending publication; Sabourin et al., 1990; Shek & Cheung, 2008; Vandeleur, Fenton, Ferrero, & Preisig, 2003).

In Spain, the DAS was translated by Bornstein and Bornstein (1988) as well as by Cáceres (1996). Nevertheless, there is scarce information on the psychometric properties of this scale involving community samples of couples. Santos-Iglesias, Vallejo-Medina and Sierra (2009) proposed a short form for use with the Spanish population. In a recent study, Cáceres (pending publication) analyzed the psychometric properties of the DAS in a sample of dysfunctional couples and found support for a hierarchical factor model (four factors integrated into a second-order factor). Furthermore, this scale has been used in Spain in both clinical and research contexts (Cáceres, 2002; 2004; Cáceres & Cáceres, 2006; Cáceres, 2011; Espina et al., 2000; Espina, 2002; Ortiz, Gómez, & Apodaca, 2002).

In short, there is a need for Spanish instruments that can provide sufficient psychometric guarantees for adult communities to evaluate the dyadic adjustment of couples. Thus, the present study has two objectives: a) to analyze the psychometric properties of the DAS both in relation to its reliability and its factor and criterion-related validity for a sample of couples and b) to analyze the degree of agreement or response correspondence between both members of the couple for each factor and the total scale score.

Method

Participants

The sample for this study consisted of 1,180 participants (590 adult heterosexual couples), aged between 18 and 80 years, from the community of Madrid. All participants provided the following sociodemographic data: age, sex, civil status, nationality, and partner's sex. For this study, maintaining a current, heterosexual relationship was established as the inclusion criterion, and the following were established as exclusion criteria: (a) being a minor (less than 18 years old), (b) not currently being in a relationship, and (c) being in a same-sex relationship.

Of the participants, 78.9% were married, 14.3% were single and living with a partner, 4.9% were common-law couples, and 1.9% were widowed, separated, or divorced and living with a partner. The men's mean age was 45.39 years ($SD = 10.43$), and the women's mean age was 42.63 ($SD = 10.16$). The average relationship length was 18.45 years ($SD = 11.96$). Of the sample, 97% were Spaniards, and 3% were of other nationalities. With regard to occupation, 43.2% were employees, 16.4% were civil servants, 11.4% were self-employed or autonomous workers, 8% were businessmen, 18.7% were unemployed, and 2.3% were students.

Instruments and variables

Sociodemographic Questionnaire. Diverse items were included to assess the following sociodemographic and personal variables of the participants: age, sex, civil status, nationality, professional activity, and current partner's sex and age.

DAS. The Dyadic Adjustment Scale (Spanier, 1976) was translated and adapted to Spanish by Cáceres (1996). This self-applied scale has 32 related items measuring the degree of partner satisfaction. High scores indicate greater satisfaction, and low scores indicate conflict between the couple. The internal consistency of the scale in the original study was satisfactory ($\alpha = .96$). The data indicated that the total scale and its components have sufficiently high consistency to justify their use (Consensus: .90, Satisfaction: .94, Cohesion: .86, Affectional Expression: .96).

CTS-2. The *Revised Conflict Tactics Scales* (Straus et al., 1996) are one of the most widely used instruments for studying the prevalence and incidence of violence between couples. It is a self-report questionnaire with 39 duplicate items, that is, 39 questions as the perpetrator and 39 questions as the victim (78 items in total), where participants rate both the degree to which each partner performs specific acts of physical, psychological, and sexual violence against the other and their use of justifications and negotiations to solve conflicts.

The CTS-2 has shown good psychometric properties for the Spanish adult population (Graña, Rodríguez, Andreu, & Peña, in the press). Its Cronbach's alpha coefficients were satisfactory for

both perpetration and victimization across the various subscales ($\alpha = .84$ and $\alpha = .83$) and within the Negotiation ($\alpha = .76$ and $\alpha = .75$), Psychological Aggression ($\alpha = .72$ and $\alpha = .73$), Physical Assault ($\alpha = .79$ and $\alpha = .80$), Sexual Coercion ($\alpha = .62$ and $\alpha = .63$) and Injury ($\alpha = .75$ and $\alpha = .69$) subscales.

Procedure

This investigation was performed during the years 2010 and 2012. To obtain the sample most representative of the active population in the diverse urban areas of the Region of Madrid, we selected 100 students out of a total of 300 from the Department of Clinical Psychology of the Complutense University of Madrid who wished to obtain research credit. This selection of research assistants began with an informative talk about the study characteristics to all 4th-year students with a specialty in Clinical Psychology. The students were informed that the order their request to participate in the investigation arrived in and the geographical area where they lived would be taken into account during selection. We used the population census of the Region of Madrid from 2010 as a reference for the desired distribution of researcher assistants, and the following geographical areas were considered for the study: (a) Madrid capital 55% (58 assistants), (b) Northern metropolitan area 5% (5 assistants), (c) Eastern metropolitan area 9% (10 assistants), (d) Southern metropolitan area 24% (20 assistants), and (e) Western metropolitan area 7% (7 research assistants). Each assistant had to administer 16 protocols to people they knew and to strangers from their residential area; each protocol took approximately 25 minutes to complete.

All of the participants in the final sample population participated voluntarily and confidentially in this study. The protocol was anonymous and contained simple introductory instructions asking each member of the couple to fill it out independently and send it to a PO BOX in a different envelope.

Initially, 1,600 protocols were handed out, and the response rate was 77.7%. Of the 1,243 protocols returned, 5% (63) were rejected because they had faulty data, had been completed randomly, or had a low response consistency. This final aspect was detected using four items with similar content that had been deliberately included in the battery to eliminate any items with inverse/contradictory responses.

Data analysis

The SPSS 19 program was used to analyze the psychometric properties of the DAS with the exception of the confirmatory factor analysis, which used the AMOS 19 program. Because the number of response options varied from one item to another, the scores for each scale were transformed into standard z scores (Graham et al., 2006; Santos-Iglesias, Vallejo-Medina, & Sierra, 2009) to simplify their interpretation and any comparison between scales.

Several confirmatory factor analyses conducted to empirically verify whether the scores from the Spanish version of the protocol yielded the theoretically expected factors. The required estimates were based on the polychoric correlation matrix and asymptotic covariance matrix. The chosen estimation method was *Maximum verisimilitude*. Following the recommendations of Hu and Bentler (1999), a combination of the most frequently used indices in the investigation was presented to determine the fit of the proposed model. Values above .90 were considered adequate using the

goodness-of-fit index (GFI). For the root mean square error of approximation (RMSEA), values equal to or less than .05 indicated a good fit for the model. The various chi-squared factor models of Satorra-Bentler and the Akaike Information Criterion (AIC) were also presented.

The differences in the averages between men and women were calculated using Student's t -test. Cronbach's alpha coefficient was used to calculate the internal consistency, and the intraclass correlation coefficient (ICC) was used to calculate the degree of agreement. The scale proposed by Fleiss and Cohen (1973) was used to interpret the ICC. These authors suggested the following interpretation for agreement: < .30 = poor or null; .31-.50 = mediocre; .51-.70 = moderate; .71- .90 = good, and > .90 = very good.

Results

Factor structure

To determine whether the correlation matrix could be factored, the Kaiser-Meyer-Olkin (KMO = .923) test for sample adequacy and Barlett ($\chi^2 = 14,421.960$, $p < .001$) test for sphericity were first applied. Both confirmed the adequacy of the data for factor analysis. Three factor structures were initially tested using confirmatory factor analysis (method of maximum verisimilitude). The first factor structure hypothesized that the data fit a single factor (monofactorial model), which analyzes the fit to the most parsimonious structure possible. The second hypothesized a fit using four factors (consensus, satisfaction, affectional expression and cohesion) similar to the original version (tetra-factorial model). The third structure contained the four factors cited previously, but in this case, they were integrated into a second-order factor (hierarchical model).

The goodness-of-fit indices (GFIs) for the various factorial solutions are shown in Table 1. As indicated, the obtained indices do not suggest an optimal fit for either the unifactorial model ($\chi^2 = 2,933.5$; AIC = 3,059.53; RMSEA = .07 and GFI = .88) or the model consisting of four factors. Although the indices were slightly improved, they were still not satisfactory ($\chi^2 = 2,443.3$; AIC = 2,571.71; RMSEA = .06 and GFI = .90). In contrast, the hierarchical model, which consists of the four factors secondary to a first-order common factor, yielded the best GFI ($\chi^2 = 2,260.5$; AIC = 2,396.51; RMSEA = .05 and GFI = .91). Hence, the hierarchical factorial solution emerges as the one most parsimonious with and best adjusted to the data. This factor structure also results in a single global dyadic adjustment score that facilitates using this instrument for clinical evaluations. Furthermore, as suggested in the discussion, this model is the most coherent from both a theoretical and empirical perspective.

Table 1
Goodness-of-fit indices (GFI) for each model

	Chi-Squared	d.f.	AIC	RMSEA	GFI
1F Model	2,933.5*	465	3,059.53	.07	.88
4F Model	2,443.3*	464	2,571.71	.06	.90
Hierarchical 4F Model	2,260.5*	460	2,396.51	.05	.91
* $p < .01$					

Normative data and differences between men and women

According to Table 2, no statistically significant differences were found between men and women for the subscales. The average percentage of married couples coexisting without significant relationship problems is included in parentheses.

Reliability

The DAS showed high internal consistency ($\alpha = .80$) despite the low reliability of certain subscales (Consensus = .88; Cohesion = .72; Satisfaction = .27 and Affection = .13).

Interrelation of the DAS Scales

The correlation between the DAS subscales fluctuated from low to moderate, which indicates that the constructs are only somewhat related to one another. The subscales with the greatest correlation were affection and consensus ($r = .58$) and cohesion and consensus ($r = .39$). The correlations to the satisfaction scale were the lowest (Table 3).

Criterion validity

The validity of the DAS criterion was estimated with respect to other scores for the related variables, such as the negotiation subscale (emotional and cognitive) from the Revised Conflict Tactics Scales (CTS-2) (Straus et al., 1996). The negotiation scale implies actions or strategies used by the couple to solve

disagreements through debate and reasoning, while the emotional negotiation subscale evaluates the degree to which positive affection is communicated using questions about expressing feelings of care and respect toward the partner. The results of this analysis showed that the highest correlation was for the cohesion subscale. Furthermore, the emotional and cognitive negotiation subscales had statistically significant correlations to the total DAS scale (Table 4).

Discriminant validity

With respect to the discriminant validity, the correlation between the DAS scales and the measurements of both psychological and physical aggression from CTS-2 (Straus et al., 1996) were negative and very low, as expected.

Analysis of agreement in perceived adjustment

We evaluated the agreement between couples for the four dimensions in the DAS and total scale. Thus, the ICCs (intraclass correlation coefficients) were calculated with the respective 95% confidence intervals. The results are presented in Table 5 and indicate that the degree of agreement was significant for all of the subscales in the scale. The greatest agreement was obtained for the cohesion subscale and the total scale because they had the highest scores. The greatest discrepancy occurred for the dimension evaluating affectional expression.

Table 2
Averages and standard deviations (in parentheses) for the DAS and the differences between men and women (N=1180)

Scale	Total	Men	Women	T
Consensus (58)	51.64 (8.24)	51.76 (8.14)	51.52 (8.36)	-0.504
Satisfaction (40)	26.88 (4.58)	26.85 (4.49)	26.92 (4.67)	0.263
Cohesion (13)	14.73 (4.96)	14.65 (4.94)	14.81 (4.98)	-0.563
Affection (9)	8.63 (1.72)	8.63 (1.72)	8.67 (1.72)	0.389
Total dyadic adjustment (115)	101.89 (13.65)	101.86 (13.33)	101.91 (13.98)	.07

* p<.05; ** p<.01; *** p<.001

Table 3
Correlation (Pearson) between the DAS subscales

	Consensus	Satisfaction	Cohesion	Affection
Consensus	-			
Satisfaction	.14**	-		
Cohesion	.39**	.12**	-	
Affection	.58**	.06*	.28**	-

* p<.05; ** p<.01

Table 4
Correlation (Pearson) between the CTS2 and DAS subscales

	Consensus	Satisfaction	Cohesion	Affection	Total
Negotiation					
Emotional	-.03	0	.25**	-.01	.06*
Cognitive	-.09**	0	.16**	-.03	.02
Psychological aggression total	-.32**	-.08	-.11**	-.21**	-.27**
Minor	-.33**	-.03	-.11**	-.21**	-.27**
Major	-.17**	-.03	-.04	-.13**	-.15**
Total physical aggression total	-.10**	-.08**	.03	-.07*	-.09**
Minor	-.10**	-.09**	.03	-.06*	-.09**
Major	-.04	0	0	-.03	-.03

* p<.05; ** p<.01

Table 5
Analysis of agreement between the couple in the DAS dimensions (N= 590 couples)

	P	IC 95%
Consensus	.48*	.41 - .54
Satisfaction	.49*	.41 - .54
Cohesion	.53*	.47 - .59
Affectional expression	.29*	.22 - .36
Total dyadic adjustment	.52*	.46 - .59

* p<.001

Discussion

The expressed aim of this study was to examine the psychometric properties of scores obtained from a community sample of couples using the Spanish version of the DAS scale. The results showed that these scores are satisfactory, and the analysis indicated that the factor structure of the scale is hierarchical and consists of four factors integrated into a second-order factor, which is equivalent to the total score and similar to that proposed by the author of the initial study. These results also coincide with evidence found in various other studies (Fisiloglu & Demir, 2000; Gómez & Leal, 2008; Hollist et al., 2012; Sabourin et al., 1990; Shek & Cheung, 2008; Vandeleur et al., 2003). This hierarchical factor model leads to a single global score for the dyadic adjustment, which facilitates the practical use of this instrument for evaluating and diagnosing couples in community populations.

The differences between men and women were not statistically significant due to the sample used and other aspects. Moreover, because a community rather than a clinical sample was used, these results lack any immediate practical implications. However, the intercorrelation between the subscales was significant and positive with low to moderate values. These results are mainly due to the sample size used in this study.

The reliability of the overall scale and the consensus and cohesion of the subscales were high and similar to those obtained from the meta-analysis performed by Graham et al. (2006). The low internal consistency of the satisfaction subscale possibly results from many items being loaded on more than one factor with the highest loads for some items not corresponding to the original approach proposed by Spanier (1976). Further, many items from

the cohesion and consensus factors were loaded on the affectional expression factor. This aspect may combine with the number of items included in the factor and the homogeneity of the sample used to cause the observed low internal consistency. However, a shortened Spanish version of this scale used by Santos-Iglesias et al. (2009) and the sample composition studied by Cáceres (pending publication) indicate that affectional expression may imply different connotations for samples with different characteristics.

The results supported the validity criterion and discriminant for the scores because the measured correlations for negotiations were higher than those using the psychological and physical aggression measurements from the CTS-2 (Straus et al., 1996). The studied sample was composed of couples that do not present significant conflictivity, as they not only obtain lower scores than conflictive couples or those who use aggressive tactics in their relations, but they also showed more agreement between both members of the couple. These results agree with those reported by Cáceres (pending publication).

Several limitations should be considered when interpreting the results of this study. First, the sample was not a clinical sample. Future research should analyze whether the results are maintained for couples with problematic relationships who need therapeutic help. Finally, although the confidentiality of the data has been assured, no social desirability scale was administered. This factor may distort the responses provided by participating couples.

In summary, we conclude that the psychometric properties of the Spanish version of the DAS are comparable to those of the original version. It is therefore a test that can be used with sufficient guarantee for evaluating the dyadic adjustment of Spanish couples.

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