Psychometric Properties of the Spanish and American Versions of the ECR Adult Attachment Questionnaire

A Comparative Study

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Abstract. We compared the psychometric properties of the American and Spanish versions of the Experiences in Close Relationship measure (ECR; Brennan, Clark, & Shaver, 1998; ECR-S, Alonso-Arbiol, Balluerka, & Shaver, 2007; Alonso-Arbiol, Shaver, & Yárnoz, 2002), which assesses individual differences in attachment-related anxiety and avoidance. The American version of the questionnaire was administered to 1,265 Americans and the Spanish version to 747 Spaniards, all of them university students. The results indicate that the two linguistic versions are comparable, and that the Avoidance and Anxiety scales exhibit high internal consistency reliability in both languages, although the α values are slightly lower for the Spanish version. Avoidance was related to relationship status in both language groups, with about the same effect size. The factor structure of the measure was similar across both the American and Spanish samples.

Keywords: adult attachment, test adaptation, psychometric properties, Spanish, cross-cultural studies

Bowlby's (1982/1969; see also Ainsworth, Blehar, Waters, & Wall, 1978) attachment theory was first developed to describe the emotional bond of a child to his or her primary caregiver, but since the seminal work of Hazan and Shaver (1987), it has also been applied to the study of adult romantic relationships (see Mikulincer & Goodman, 2006, for an overview). The adult version of the theory is now a leading conceptual framework for research in social, personality, and clinical psychology. Research on adult attachment is progressing in many different countries, which means that sound measures of key attachment constructs are needed in different languages.

In early research on attachment theory, Ainsworth et al. (1978) identified three patterns of infant attachment to mother: secure, anxious, and avoidant. In the initial work on adult romantic attachment, Hazan and Shaver (1987) created a parallel self-report measure with which adults could indicate which of three attachment styles was most like their own. Subsequent research (e.g., Brennan et al., 1998; Fraley & Waller, 1998; Griffin & Bartholomew, 1994) revealed that attachment styles are more appropriately conceptualized as regions in a continuous two-dimensional space. The two dimensions were called Model of Self (positive vs. negative) and Model of Others (positive vs. negative) by Bartholomew and her colleagues (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994) and attachment-related Anxiety and Avoidance by Brennan

et al. (1998). The first dimension (self-model, or anxiety) is concerned with fear of rejection and abandonment by romantic partners; the second dimension (other-model, or avoidance) is concerned with the degree to which a person feels uncomfortable depending on and being close to (i.e., psychologically intimate with) others.

Brennan et al. (1998) factor-analyzed numerous self-report scales measuring aspects of attachment style and created the Experiences in Close Relationships (ECR) measure based on the analysis. They collected data from over 1,000 university students and found that two orthogonal factors provided a good summary of the structure of all the items, and that the two factors, attachment-related anxiety and avoidance, corresponded well conceptually to the two orthogonal dimensions underlying Ainsworth et al.'s (1978) coding of infants' attachment behavior and to the two dimensions used by Bartholomew and colleagues to define four adult attachment styles. The ECR is currently one of the most widely used measures of individual differences in adult attachment style in English-speaking countries. Since 1998, it has been used in hundreds of studies that provide extensive evidence for its reliability and construct validity (see Mikulincer & Shaver, 2007).

Research on adult attachment is gradually spreading around the world. A recent bibliographic search (Alonso-Arbiol et al., 2007) showed that adult attachment research

is becoming increasingly visible at Spanish-language conferences and in international journals. In order to pursue this work optimally in Spanish-speaking areas, we (Alonso-Arbiol et al., 2002; Alonso-Arbiol et al., 2007) have created a Spanish version of the ECR (called the ECR-S) and have studied its performance in various samples.

Nevertheless, the ECR-S has not yet been subjected to some of the major tests of cross-cultural compatibility recommended for test adaptations. Hambleton (2005), for example, pointed out the need for multiple tests of comparability when evaluating the equivalence of parallel measures in two different languages. Two such tests involve comparing the factor structures and internal consistencies of the parallel sets of items in the two languages. Here, we examine and compare the psychometric properties of the newly created Spanish ECR-S with the properties of the American ECR, with each being administered to large samples of college students from two state universities, one in Spain and one in the United States.

To compare the factor structures, following the recommendations of Church and Burke (1994) and McCrae, Zonderman, Costa, Bond, and Pauonen (1996), we conducted a confirmatory factor analysis (CFA) based on covariance matrices for each sample. We computed the internal consistency reliabilities of the scales in both languages and compared them using Feldt's W (1969). We also report the associations between the ECR and ECR-S scales and romantic relationship status. (Previous studies have found people who are involved in romantic relationships to be less avoidant than people who are not involved in relationships; e.g., Hazan & Shaver, 1987; Noftle & Shaver, 2006.)

Method

Participants

The sample was composed of 2,012 university students, 747 Spaniards and 1,265 Americans. The Spanish participants (379 women, 368 men) were undergraduate students at the University of the Basque Country, with a mean age of 20.35 years (SD = 2.39). As for couple status, 40.5% were stably involved in a romantic relationship, while the other 59.5% were not involved in a relationship. The American participants (885 women, 375 men[1]) were undergraduate students at the University of California, Davis, with a mean age of 19.58 years (SD = 2.26). As for relationship status, 40.8% were stably involved in a romantic relationship (i.e, "single, but in a romantic relationship" or "married or cohabiting"[2]), and the other 50.2% were not involved in a relationship (i.e., "single and not in a romantic relationship").

Measure

Experiences in Close Relationships Measure

This self-report questionnaire assesses individual differences on the two major dimensions of adult attachment style: avoidance of intimacy and interdependence, and anxiety about rejection and abandonment. The Avoidance scale contains 18 Likert-type items, as does the Anxiety scale. Each item is rated on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*).

Spanish Version of the ECR-S

A back-translation design was used to increase linguistic equivalence between the existing English-language ECR and its Spanish version. Each English item was independently translated by the same two bilingual researchers into Spanish, and the two translations were compared, discussed, and eventually reduced to a single mutually agreeable wording. A third bilingual person, unfamiliar with attachment theory, then translated the proposed Spanish-language items back into English. This translation was examined by us to determine whether the items seemed to be essentially the same as the English-language originals. Some slight changes were made during this process to improve the Spanish wording (see Alonso-Arbiol et al., 2007, for a more detailed discussion of the changes). Once the item wording had been decided, the items were placed in a questionnaire format in the same order used in the original American version, and with the same Likert-type answer alternatives (in Spanish, the anchor term *disagree strongly* was *completamente en desacuerdo* and the term *agree strongly* was *completamente de acuerdo*).

Procedure

In Spain, data were collected in the students' classrooms. After permission was granted by an instructor, students who agreed to participate in the study filled out the questionnaire, including demographic questions, before the class itself began. In the United States, data were collected via an on-line survey program, as a part of the prescreening process at the UC Davis Psychology Department. Students who agreed to participate completed the English version of the ECR and a few demographic questions. They did so individually and at a time of their own choice. Anonymity of all participants in both locations was assured.

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[1]   Five participants did not report their gender.
[2]   From those stably involved in a romantic relationship, 1.3% and 1.9% were married or cohabiting in the Spanish and American samples, respectively.

Results

In Table 1 we display the means and *SD*s for the Anxiety and Avoidance scales in the two samples, as well as Student *t* values and Cohen *d* values between such means. As can be seen, Americans had slightly higher Avoidance scores and Spaniards had moderately higher Anxiety scores.

Table 1. Comparison of means and *SD*s between the Spanish ($N = 747$) and the American ($N = 1,265$) samples on the two ECR scales

Scale	Spanish sample		American sample		*t*	Cohen's *d*
	M	*SD*	*M*	*SD*		
Avoidance	2.79	.87	2.99	1.17	4.41***	.19
Anxiety	4.11	.86	3.65	1.19	–9.85***	.44

***$p < .001$

Internal Consistency Reliability

In Table 2 we report the Cronbach's α coefficients for each scale in both samples, as well as the Feldt's *W* (1969) statistic comparing the internal consistencies across the two languages. All four coefficients were greater than .85, indicating good reliability. Nevertheless, statistically significant differences were found between the corresponding α values for the ECR and ECR-S scales ($p < .01$ in both cases), because the α values were somewhat lower for the two ECR-S scales.

Table 2. Comparison of internal consistency coefficients for the Spanish and American versions of the ECR

Scale	Cronbach's α		Feldt's *W*
	Spanish ECR	American ECR	
Avoidance	.87	.94	2.167**
Anxiety	.85	.92	1.875**

**$p < .01$, two-tailed.

Validity

Criterion-Related Validity

To obtain empirical evidence of criterion validity, we examined the association between relationship status (being or not being in a relationship at the time of the study) and a person's scores on the ECR or ECR-S Avoidance scales. Previous studies (e.g., Hazan & Shaver, 1987; Noftle & Shaver, 2006) have shown that Avoidance is associated with not being involved in a relationship. In the present samples, in both countries, uncoupled participants were significantly more avoidant than their coupled counterparts. In Spain, $t(745) = 13.39$, $p < .001$ (uncoupled *M* = 3.10, *SD* = .79; coupled *M* = 2.32, *SD* = .76). In the United States, $t(1263) = 16.26$, $p < .001$ (uncoupled *M* = 3.39, *SD*

= 1.05; coupled *M* = 2.39, *SD* = 1.08). Because almost any difference might have been statistically significant with such large sample sizes, we also calculated the effect sizes (Cohen's *d* = .94, for Spaniards; Cohen's *d* = 1.00, for Americans) and found them to be large in both samples and similar in size.

Factor Validity

To corroborate that both the American and the Spanish versions of the ECR had the claimed underlying two-dimensional structure, we conducted a confirmatory factor analysis (CFA) in each sample specifying a model with two dimensions.

Brennan et al. (1998) used exploratory factor analysis to arrive at the two general dimensions of attachment insecurity, anxiety and avoidance, included in the ECR. Building on this work, and using the LISREL 8 program (Jöreskog & Sörbom, 1993), we performed a CFA on the original ECR items to confirm the two-dimensional structure in a sample different from the one used to create the measure, and another CFA was conducted on the Spanish version to test whether this two-dimensional model also applies to ECR-S. To perform these analyses, we formulated three parcels of items for the avoidance subscale and three parcels for the anxiety subscale in each sample (for further explanation of this procedure, see Kishton & Widaman, 1994; Little, Cunningham, Shahar, & Widaman, 2002). The parceling procedure is used in structural equation modeling to reduce the number of parameter estimates to facilitate model identification, decrease the indicator-to-subject ratio, and decrease the potential for distributional violations that might occur on individual items. (By parceling, each variable is based on the average of three item scores.)

The first avoidance parcel was the mean of every third avoidance item on the ECR, beginning with item #1. The second avoidance parcel was the mean of every third avoidance item beginning with the second item, and the third avoidance parcel was the mean of every third avoidance item beginning with the third item. Thus, the 18 avoidance items were divided into three 6-item parcels, and the mean of the three avoidance parcels was the avoidance scale's overall score. The same procedure was used with the anxiety items to arrive at three 6-item anxiety parcels. The three avoidance parcels were specified to load on the Avoidance factor, the three anxiety parcels were specified to load on the Anxiety factor, and the correlation between the Avoidance and Anxiety factors was unspecified in advance.

The fit of the model was evaluated by the following indices: (a) the χ² likelihood ratio statistic; (b) Jöreskog and Sörbom's (1981) goodness of fit index (GFI) and adjusted goodness of fit index (AGFI); (c) Tucker and Lewis' (1973) nonnormed fit index (NNFI); (d) Bentler's (1990) comparative fit index (CFI); and (e) Steiger's (1990) root mean square error of approximation (RMSEA). Due to the large

Table 3. Goodness of fit for the two-dimensional model of the ECR based on confirmatory factor analyses of the American and Spanish data

Two-dimensional model	df	χ^2	GFI	AGFI	NNFI	CFI	RMSEA
American	8	18.25	.99	.99	1.00	1.00	.03
Spanish	8	66.04	.97	.92	.95	.97	.10

Note. df = degrees of freedom; χ^2 = the minimum fit function χ^2; GFI = goodness of fit index; AGFI = adjusted goodness of fit index; NNFI = nonnormed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

sample size, the χ^2 statistical index was statistically significant for this a priori model using the Spanish data, χ^2 (8, N = 714) = 66.54, p < .01, and also for the American data, χ^2 (8, N = 1140) = 18.25, p < .01. Nevertheless, practical indices of fit, including the GFI, AGFI, NNFI, CFI, and RMSEA, indicated a good fit (see Table 3). With the NNFI, a fit index of 1.00 is considered an exact fit, and models with a fit above .90 are considered tenable (Bentler, 1992). Values of RMSEA smaller than .08 indicate an acceptable fit and values greater than .10 indicate that a model should be rejected (Cudeck & Browne, 1993). The distributions of the GFI, AGFI, and CFI are unknown, so no statistical test or critical value is available (Jöreskog & Sörbom, 1986). For all three relative fit-indices, as a rule of thumb, values greater than .90 are considered as indicating a good fit (Hoyle, 1995). Thus, overall the a priori two-dimensional model fit both the Spanish and the American data sets well.

According to Brennan et al. (1998), the two dimensions of the ECR are essentially orthogonal, and in their exploratory factor analysis, the two dimensions were in fact not highly correlated. In our two CFA analyses, the correlation was not specified and instead was freely estimated. It proved to be .27 in the American sample (a bit higher than usual) and .00, as expected, in the Spanish sample.

Discussion

Using the recommended methods for comparing parallel psychological measures in two different languages or in different cultures with different languages, we found that the ECR and ECR-S have the theoretically expected two-dimensional factor structure and adequate internal consistency reliabilities. In line with adult attachment theory (Mikulincer & Shaver, 2007) and the research literature based on the English-language ECR, two major orthogonal factors underlie the two sets of items, one assessing avoidant attachment and one assessing anxious attachment. All coefficient alphas were above .85. In both samples, the avoidance dimension was inversely related, and to about the

same degree, to being involved in a romantic relationship at the time of the study.

The pattern of means on the two scales was somewhat different between the Spanish and American samples, with the Spanish anxiety mean being substantially higher than the American anxiety mean, and the Spanish avoidance mean being slightly lower than the American avoidance mean. This difference is compatible with a previous cross-cultural study by Schmitt et al. (2004), which used a Spanish translation of Bartholomew and Horowitz's (1991) Relationship Questionnaire, a very brief measure of adult attachment style. In that study, the mean scores of Spanish and Western American (including Californian) college students differed on Model of Self, which is similar to Anxiety (d = .65), and Model of Others, which is similar to avoidance (d = 1.00).[3] That is, Spanish students were more anxious and less avoidant than Western American students in Schmitt et al.'s study, as in ours. Thus, the different patterns of means may indicate true cross-cultural differences, not in the measures, but in avoidance and anxiety themselves. The difference in means may also have affected the different correlations between the Anxiety and Avoidance dimensions in our two samples.

The higher anxiety mean in the Spanish sample indicates that there are relatively fewer securely attached individuals in that sample, where security is defined as having a low score on both insecurity dimensions. When a person scores relatively low on both dimensions, this contributes to a correlation between the dimensions, which in the American sample proved to be .27, which is still quite compatible with the claim that the two insecurity dimensions are fairly distinct.

Even though the ECR and ECR-S have similar factor structures, and their avoidance scales relate similarly to current relationship status, the α coefficients were somewhat higher for the ECR than for the ECR-S, as noticed by a statistically significant difference between the corresponding α coefficients in American and the Spanish samples. Although the ECR-S alphas were quite adequate (≥ .85), there may be subtle differences in the wording or culturally embedded meanings of some of the items. We are currently looking into that possibility. For the present, however, the ECR-S is an excellent measure of adult attachment insecurities. Although more work needs to be done to assure that the scales are suitable for more general adult samples, not just college students, our own preliminary studies of nonstudent groups in Spain (e.g., Alonso-Arbiol et al., 2007) suggest that the ECR-S will work well for diverse samples of Spanish-speaking adults.

Authors' Note

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[3]   We calculated the Cohen's *d* values, which were not provided in Schmitt et al.'s article.

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