



RESEARCH ARTICLE

Adult Disorganized Attachment Scale: Turkish adaptation, validity, and reliability study

Ipek Senkal Erturk¹, Aysegul Durak Batigun¹

¹Ankara University, Faculty of Languages History and Geography, Department of Psychology, Ankara - Turkey

ABSTRACT

Objective: The aim of the current study was to adapt the Adult Disorganized Attachment Scale (ADA) to Turkish and to examine its psychometric properties.

Method: The study was conducted with 2 separate sample groups of married individuals. The first sample group, which was used to perform exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), consisted of 285 individuals (66% female, 33.7% male) aged 20-45 years (32.41±5.40 years). The second sample group, for which only CFA was performed, comprised 585 individuals (50.4% female, 49.2% male) aged 21-50 years (34.33±6.23 years). The Paulson Daily Living Inventory and the Experiences in Close Relationships measures were used as convergent validity criteria, and the Borderline Personality Inventory was used as a discriminant validity criterion.

Results: The EFA resulted in a single-factor structure to evaluate disorganized attachment in adult romantic relationships. The model fit indices obtained as a result of CFA were within the acceptable limits in both sample groups. The other validity and reliability values determined were also found to be sufficient.

Conclusion: This Turkish version of the ADA can be considered a valid and reliable scale to be used in studies related to attachment in adult romantic relationships.

Keywords: Adaptation, adult romantic relationships, disorganized attachment, reliability, validity

INTRODUCTION

Adult attachment has been a topic of interest among researchers of both social and clinical psychology. Current studies in the literature have generally focused on the results of adult attachment measured in 2 continuous dimensions, anxiety and avoidance, and the association with various variables (1-3). According to attachment theory, infants' bonds with caregivers and their early experiences become internal working models that shape individuals' initial self-perceptions and their expectations of others' sensitivity in future relationships

(4,5). It has been suggested that mental representations, or internal working models, form the framework of interpersonal expectations in adulthood and guide the individual's emotions, attitudes, and behaviors in interpersonal relationships, especially close relationships, and influence self-development (5-9).

This theory holds that the attachment style is molded to some extent by early experiences with attachment figures (primary caregivers) (10). As a result of the Strange Situation laboratory experiment (11), in which individual differences in the attachment security of 10-18-month-old infants were investigated, 3 basic

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Correspondence: Ipek Senkal Erturk, Ankara University, Faculty of Languages, History and Geography, Department of Psychology, Ankara - Turkey

E-mail: isenkal@ankara.edu.tr

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attachment patterns emerged: secure, anxious/ambivalent, and avoidant, which were classified as “organized” (10,11). A demonstrated lack of a consistent strategy while interacting with attachment figures and ability to cope with stressful attachment-related situations during this experiment is a characteristic feature of disorganized attachment, the fourth category proposed by Main and Solomon (12).

Many aspects of attachment in romantic relationships and the establishment of other close relationships can also be understood on the basis of attachment theory (7). Contrary to the avoidance and anxiety dimensions of attachment, the main feature of adult disorganization is a fear of romantic attachment figures, namely romantic partners (10). The fear of attachment figures by adults with attachment disorder can lead to conflicting and confusing behaviors. These individuals may try to approach their partners in times of distress, but these efforts may be interrupted or incomplete because their fear of the partner may cause a simultaneous desire to withdraw, which may seem inconsistent (10). This inconsistency can prevent understanding of impulses, behaviors, and attitudes in attachment environments, and may cause deterioration in romantic or other close relationships (10). A theoretical approach to examining the predictive features or clinical consequences of adult disorganized attachment in interpersonal relationships has been provided in a limited number of studies in the literature. For instance, one study found that only disorganized attachment was a mediator for the relationship between childhood trauma and the perpetration of physical violence in adult romantic relationships (13). In the same study, it was revealed that the tendency of adults with a high level of disorganized attachment to use physical violence against their partner could not be broken even when current partner abuse was controlled. Similarly, another study found that disorganized attachment in adulthood was the only variable that significantly predicted physical aggression (10). From this point of view, it can be concluded that individuals with a high level of adult disorganized attachment may make hostile attributions to neutral behavior, view it as an attack, and may consider conflict a threat to their relationship (10). Examination of the clinical results of adult disorganized attachment has revealed that borderline personality disorder may be particularly important. For instance, adults with borderline personality disorder have been more likely to be classified as disorganized rather than insecure-

organized when compared with study participants with other diagnoses (anxiety or depressive disorder) or undiagnosed participants (14). This finding supports the theoretical knowledge that the origin of borderline personality disorder may be based on a disorganized attachment pattern developed in childhood (15,16) and that patients with borderline personality disorder have a disorganized attachment style (17). In addition, recent studies have found that disorganized attachment in adulthood is associated with dissociative symptoms (18,19). Similarly, according to Jacobvitz and Reisz (20), adult disorganized attachment may predispose individuals to dissociative mental processes, including post-traumatic stress disorder and depersonalization. In another study, disorganized attachment in adulthood has also been found to be highly associated with internalizing symptoms (anxiety and depression) even after controlling for anxious and avoidant attachment (10). However, a review of the literature of studies conducted in Turkey yielded no study examining the clinical consequences of disorganized attachment in adulthood or its predictive features in interpersonal relationships. In other words, to the best of our knowledge, disorganized attachment in adulthood has not been examined in Turkey in the context of various associated psychological symptoms (borderline personality disorder, symptoms of anxiety and depression, dissociative and traumatic symptoms, etc.) and deterioration in interpersonal relationships, especially partner violence, anger, and aggression. This is an important gap in the literature of our country.

When assessing attachment style, social psychologists often rely on continuous and dimensional self-report measures, such as the Experiences in Close Relationships (ECR) questionnaire (21) and the Experiences in Close Relationships-Revised (ECR-R) (22), rather than comprehensive interview measures (10). Self-report scales that make dimensional assessments generally evaluate attachment in adult romantic relationships in 2 dimensions: anxiety and avoidance (23,24), but attachment can also be examined using 3 dimensions: secure, anxious, and avoidant, especially in studies conducted from a clinical perspective (25). Both 2-dimension and 3-dimension scales have been used in the literature (26,27). However, the only self-report scale that subjectively addresses the construct of disorganized attachment in adults is the 9-item Adult Disorganized Attachment (ADA) scale (10). This scale focuses on fear and confusion about romantic relationships and distrust of romantic partners.

Unlike other self-report attachment measures used in social psychology, the Adult Attachment Interview (AAI) tool assesses mental representations of attachment from a developmental and clinical psychology perspective (28). The "unresolved" category measured in the AAI conceptually overlaps with the disorganized attachment category observed in the Strange Situation experiment (29,30). The AAI is generally accepted as the gold standard for the assessment of adult attachment representations, due to its widespread use and numerous research findings proving its validity (31-33). Although the AAI has such an important role in the attachment literature, it is quite difficult to use because it is detailed, time-consuming, and based on face-to-face interaction, and the administration and scoring require a long process of training and certification (34,35). Furthermore, since it has not been adapted to Turkish, it cannot yet be used in our country. The meaning of adult disorganized attachment, how it can be evaluated, whether the related variables are similar to those seen in childhood and adolescence, and especially the role in romantic relationships have not been discussed yet in Turkey due to the lack of a measurement tool. There is a need for an appropriate measurement instrument to evaluate adult disorganized attachment in our country. Thus, the main purpose of this research was to create a Turkish adaptation of the ADA and perform a validity and reliability study. The aim of this study was to determine whether adult disorganized attachment is a different construct from adult anxious and avoidant attachment. Providing a Turkish version of the ADA will fill the gap in the attachment literature and ensure that attachment is considered comprehensively in our country. The clinical consequences of adult disorganized attachment or its predictive features in interpersonal relationships will be examined both in our country and in cross-cultural studies. At the same time, the findings obtained from this study can guide clinical applications. In this regard, it is thought that the present study offers an important contribution to the attachment literature.

METHOD

The Ankara University Ethics Committee granted approval for this study on February 19, 2018 (No: 56786525-050.04.04/13421) and the participants provided written, informed consent. All of the respondents were provided with information about the goals of the study, assured that the information obtained would be kept confidential, and that they could

discontinue participation at any time. They were also given an email address to contact a researcher. All of the members of the study indicated in writing that their participation was voluntary.

Confirmatory factor analysis (CFA) was used to test the construct. The sample was randomly divided into 2 sample groups as suggested in the relevant literature (36-38).

Sample I

Data were collected from 316 participants aged 20-45 years (32.41 ± 5.40 years) who resided in various provinces of Turkey and the final analyses were conducted using the data of 285 participants. Of the group, 188 (66.0%) were female, 96 (33.7%) were male, and 1 (0.3%) did not report their gender. The duration of marriage varied 4-284 months (73.62 ± 70.26 months). The research sample was selected using the convenience sampling technique (39). The Levinson life cycle age group definitions (40) were applied, and adults aged 20-45 years, that is, early adulthood, which is known to be the most important turning point in family life (41), were included. It is thought that having a psychiatric diagnosis may significantly affect adult disorganized attachment, since adult disorganized attachment is associated with aggression, anxiety symptoms, and depressive symptoms (10). Therefore, an inclusion criterion of no psychiatric diagnosis in the previous 6 months was used in order to avoid any confounding effect. Accordingly, 10 participants who reported that they had a recent psychiatric diagnosis (e.g., bipolar disorder, obsessive-compulsive disorder, generalized anxiety disorder, major depression, etc.), and 6 participants over the age of 45 years (50.00 ± 5.83 years) were not included in the sample. In addition, 14 participants who did not complete some parts of the scales or left items blank, were excluded.

Sample II

Data were collected from 631 participants between the ages of 21-50 years (34.33 ± 6.23 years) who resided in various provinces of Turkey and the data of 585 participants were used for the analyses. Of the participants, 295 (50.4%) were female, 288 (49.2%) were male, and 2 (0.3%) did not report their gender. The duration of marriage varied 3-348 months (93.90 ± 78.14 months). The sample was selected using the convenience sampling technique (39). Additionally, 37 participants who did not complete some parts of the scales or left some items blank were excluded from the sample. In this sample, only CFA was performed.

Information about the demographic characteristics of the participants in both sample groups is presented in Table 1.

Measures

Demographic Information Form: This form was prepared by the researchers to obtain various sociodemographic information, such as gender, age, income level, psychiatric diagnosis, and duration of marriage.

Adult Disorganized Attachment Scale: The ADA was developed by Paetzold et al. (10) to measure the level of disorganized attachment in adulthood. It is a self-report scale consisting of 9 items and responses are provided using a 7-point Likert type scale (1=strongly disagree,

7=strongly agree). The total score can range 9-63 points. The Cronbach alpha value for the group consisting of all participants (N=510) was 0.91. A single-factor structure explained 58.76% of the variance (10). The Turkish version of the scale is provided in Appendix 1.

Borderline Personality Inventory: The Borderline Personality Inventory (BPI) was developed by Leichsenring (42) to measure the level of a borderline personality pattern. This self-report scale consists of 53 true/false items based on Kernberg's structure of borderline personality organization. The total score is calculated using the first 51 items of the scale; the total number of "true" responses indicates the level of borderline personality pattern. A validity and reliability study of a Turkish version of the scale was conducted by

Table 1: Demographic characteristics of the samples

Variable	First sample N=285		Second sample N=585	
	n	%	n	%
Sex				
Female	188	66.0	295	50.4
Male	96	33.7	288	49.2
Not reported	1	0.3	2	0.3
Level of education				
Primary school-high school	50	17.6	128	21.9
University	164	57.6	321	54.9
Postgraduate	70	24.6	128	21.9
Not reported	1	0.2	8	1.4
Level of income				
Low	11	3.9	26	4.4
Middle	159	55.8	349	59.7
Upper-middle	109	38.2	190	32.5
Upper	2	0.7	6	1.0
Not reported	4	1.4	14	2.4
Children				
Yes	186	65.3	415	70.9
No	97	34.0	165	28.2
Not reported	2	0.7	5	0.9
Traumatic event				
Yes	63	22.1	74	12.6
No	220	77.2	506	86.5
Not reported	2	0.7	5	0.9
Sudden death of a loved one				
Yes	87	30.5	191	32.6
No	197	69.1	388	66.3
Not reported	1	0.4	6	1.0

Aydemir et al. (43). The score obtained from the scale can be used as a continuous variable, or a categorical evaluation can be made using a cut-off score of 15/16. The Cronbach alpha internal consistency coefficient of the group consisting of all participants was found to be 0.92 (43). The Cronbach alpha internal consistency coefficient calculated for the current study was 0.89.

Paulson Daily Living Inventory: The Paulson Daily Living Inventory (PDLI) was developed by Paulson (44) to assess projective identification between spouses. The scale was created based on the groundwork of Klein's object relations theory and was conceptualized on the basis that early object relationships were re-staged in relationships with a spouse in adulthood. A validity and reliability study of a Turkish scale was performed by Göral Alkan (45). The 60-item scale is scored as true=1 and false=0. There are 5 subscales, each consisting of 12 items, conceptualized on the basis of a paranoid-schizoid position and a depressive position. Projective identification is not thought to be used in the depressive position; therefore, the depressive position subscale was not used in this study. The Cronbach alpha internal consistency coefficient of the scale for the projective identification total score was reported to be 0.80 (45). The Cronbach alpha internal consistency coefficient calculated for the current study was 0.84 for the projective identification total score.

Experiences in Close Relationships Inventory: The ECR inventory was developed by Brennan et al. (21) to assess attachment anxiety and avoidance in close relationships. It consists of a total of 36 items, 18 related to the anxiety dimension and 18 pertaining to the avoidance dimension. The items are rated on a 7-point Likert-type scale (1=disagree strongly, 7=agree strongly). A Turkish adaptation was created by Sümer (24) that consists of 2 subdimensions: attachment anxiety and attachment avoidance. Sahin and Yaka (25) re-evaluated the factor structure of the scale and identified 3 factors that explained 44.17% of the variance (secure attachment, anxious attachment, and avoidant attachment). They reported a Cronbach alpha coefficient of 0.89 for the anxious attachment subscale, 0.87 for the avoidant attachment subscale, and 0.87 for the secure attachment subscale (25). The Cronbach alpha internal consistency coefficient calculated for the current study was 0.91 for anxious attachment, 0.80 for avoidant attachment, and 0.87 for secure attachment.

Procedure

Four clinical psychologists who are fluent in both English and Turkish each translated the original ADA

scale into Turkish. Next, a team of 4 clinical psychologists who performed the translation and 2 clinical psychologists who reviewed the translated text compared and discussed the translations, and created a consensus translation. The Turkish scale was evaluated by 3 different clinical psychologists, who are fluent in English and who were employed in academia and practice in order to evaluate whether the translation fully conformed to the intended meaning. The Turkish scale was finalized according to their recommendations. The scale items were then translated back into the original language (English) by a clinical psychologist with advanced knowledge of English and fluent speaking skills. Finally, the English back-translation of the scale was sent to Dr. Ramona L. Paetzold to evaluate whether the meaning of the scale in our language was acceptable and the scale was fully finalized with a few additional corrections (items 1, 8, and 9) in line with the feedback received. Dr. Paetzold approved the equivalency of the final version of the scale.

A pilot test with 10 married individuals was performed in order to test the language structure and comprehensibility of the Turkish version and it was determined that the scale was understandable. The study data were collected from volunteer participants through face-to-face interviews and via an online survey system over a period of 3 months. In all, 188 (66%) participants responded using the online survey, and 97 (34%) in face-to-face interviews. The scales (ADA, BPI, PDLI and ECR) were provided to the participants in different sequences, so as to control for order effect.

SPSS Statistics for Windows, Version 22.0 and IBM SPSS AMOS Version 22.0 statistical software (IBM Corp., Armonk, NY, USA) were used to perform the analysis of the data.

RESULTS

The initial step was to conduct an analysis of missing continuous variable data before proceeding to the statistical analysis. For the assumption of normality (values between +2.0 and -2.0) (46), the distribution of the data was assessed and outlier analysis was performed for adult disorganized attachment continuous variable that did not show normal distribution. The Mahalanobis distance was calculated and evaluated for multivariate outliers ($p < 0.001$); univariate outliers were evaluated using z distribution ($|z| \geq 3.29$) (47). As a result of the analyses, the data of 1 participant was excluded from the sample and not included in the analysis due to the possible effect of an outlier on the results. In conclusion,

the analyses were performed using the data set of 285 participants that met the normal distribution assumption.

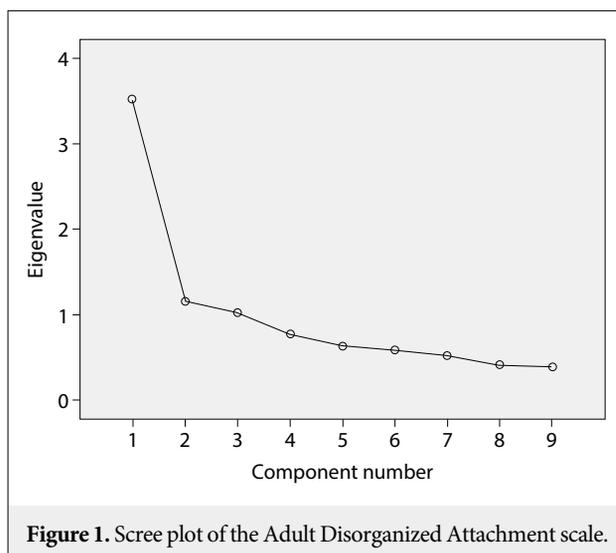
Validity Findings

Exploratory Factor Analysis (Construct Validity)

Exploratory factor analysis (EFA) was performed to determine the construct validity of the scale. First, the Kaiser-Meyer-Olkin (KMO) value, which should be ≥ 0.60 (48), was checked to determine whether the correlation matrix of the items was suitable for factor analysis, and the KMO value was found to be 0.82. The Bartlett Test of Sphericity was also performed and it was observed that the data differed significantly ($\chi^2=654.24$, $df=36$, $p<0.001$). The data were judged suitable for factor analysis (49), which was performed using the principal components method and varimax rotation. As a result of the initial analysis performed without determining the number of factors, 3 factors were obtained with an eigenvalue >1 that explained 63.31% of the total variance. Examination of the scree plot indicated that these 3 factors could be grouped under a single factor, and since the original scale had a single-factor structure, a single-factor solution was confirmed (Figure 1).

The factor load of the scale, the variance it explained, the eigenvalue and the Cronbach alpha reliability coefficient, and the mean and SD values of the scale items are presented in Table 2.

As seen in Table 2, the factor loads of all items ranged 0.34-0.75. The single-factor structure explained 39.11% of the total variance.



Confirmatory Factor Analysis (Construct Validity)

Two separate CFA tests were performed on both the first sample and the second sample to determine whether the single-factor model obtained in EFA was confirmed. Path diagram, goodness-of-fit criteria, and suggested modification indices were taken into consideration in the CFA evaluation. In line with the model suggestions, the error variances of the items were associated for the first sample, while the error variances of the items were not required to be associated for the second sample. In the first sample, 2 error associations (items 3 and 8, items 1 and 6, respectively) were made in line with the proposed modification indices. It is critical

Table 2: Adult Disorganized Attachment Scale factor structure

Scale items	Mean	SD	Factor loadings	Corrected item-total correlation
1. Fear is a common feeling in close relationships.	3.27	1.99	0.34	0.27***
2. I believe that romantic partners often try to take advantage of each other.	2.31	1.67	0.62	0.48***
3. I never know who I am with romantic partners.	1.77	1.47	0.57	0.43***
4. I find romantic partners to be rather scary.	1.48	1.33	0.65	0.48***
5. It is dangerous to trust romantic partners.	2.02	1.62	0.74	0.61***
6. It is normal to have traumatic experiences with the people you feel close to.	2.64	1.88	0.52	0.43***
7. Strangers are not as scary as romantic partners.	1.76	1.61	0.67	0.52***
8. I could never view romantic partners as totally trustworthy.	2.24	1.84	0.67	0.53***
9. Compared to most people, I feel generally confused about romantic relationships.	2.33	1.76	0.75	0.62***
Explained variance (%): 39.11				
Eigenvalue: 3.52				
Cronbach alfa: 0.79				

*** $p<0.001$

Table 3: Fit index values

First sample	χ^2	df	χ^2/df	CFI	GFI	AGFI	RMSEA
First model	121.03	27	4.48	0.85	0.91	0.85	0.11
Second model-1 error association	91.92	26	3.54	0.90	0.93	0.88	0.09
Final model-2 error associations	74.92	25	3.00	0.92	0.94	0.90	0.08
Second sample	χ^2	df	χ^2/df	CFI	GFI	AGFI	RMSEA
First model	97.33	27	3.61	0.93	0.96	0.94	0.07

AGFI: Adjusted goodness-of-fit index, CFI: Comparative fit index, GFI: Goodness-of-fit index, RMSEA: Root-mean-squared error of approximation

to add only 1 error association to the model at a time, as modification index values can vary greatly from 1 error association to another. Therefore, it seems reasonable to begin error association analysis with the modification index value, which will provide the greatest change (50). This method was used in this study. Accordingly, in parallel with the modification indices suggested for the first sample, the errors of items 3 and 8, which had the largest modification index value, were associated, and the 2 models were compared using the χ^2 difference test (47). The test result showed that this error association improved the model fit (χ^2 difference [1, N=285]=29.11, $p < 0.05$). After this error association, the model was re-tested. Then, in line with the suggested error association in the modification indices, the errors of items 1 and 6 with the largest modification index value were associated, and this error association also resulted in an improved model fit (χ^2 difference [1, N=285]=17.00, $p < 0.05$). The CFA results of the first and second samples are presented in Figure 2 and Figure 3, respectively.

The fit indices of the models before and after the error associations in the first sample, and the model fit indices seen in the second sample, which did not require error association, are presented in Table 3.

In the first sample group, there were significant differences in the fit indices between the first model ($\chi^2=121.03$ [$p < 0.001$], $\chi^2/df=4.48$, RMSEA=0.11, CFI=0.85, GFI=0.91, AGFI=0.85) and the final model in which 2 error associations were made ($\chi^2=74.92$ [$p < 0.001$], $\chi^2/df=3.00$, RMSEA=0.08, CFI=0.92, GFI=0.94, AGFI=0.90). The fit indices of the final model were acceptable. In the second sample group, in which the CFA was performed, the first model ($\chi^2=97.33$ [$p < 0.001$], $\chi^2/df=3.61$, RMSEA=0.07, CFI=0.93, GFI=0.96, AGFI=0.94) had acceptable fit indices.

Convergent Validity

The correlation coefficients between the ADA total score and the ECR and PDLI scores were examined to determine the convergent validity. The correlation

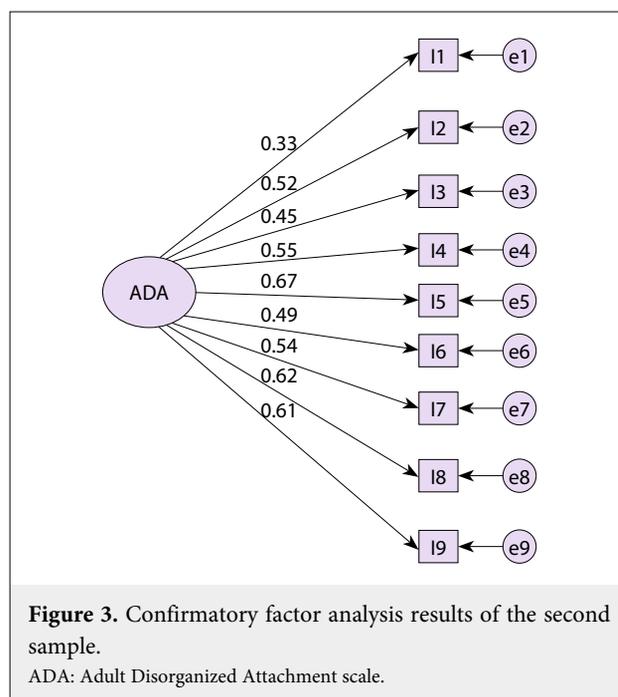
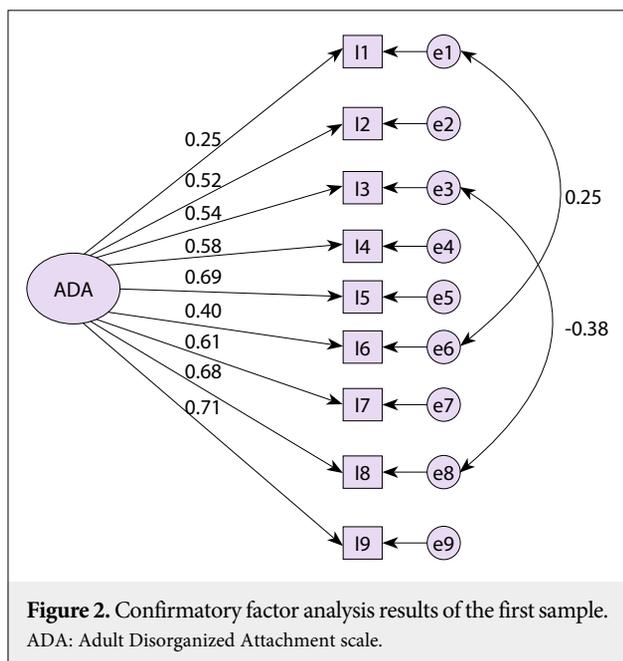


Table 4: Correlation coefficients between variables, mean and standard deviation values of variables

	1	2	3	4	5	Mean	SD
1. ADA	1					19.81	9.32
2. PDLI	0.35***	1				21.96	7.16
3. ECR Anxious	0.38***	0.50***	1			63.38	22.68
4. ECR Avoidant	0.35***	0.38***	0.43***	1		19.21	8.69
5. ECR Secure	-0.22***	-0.15*	0.07	-0.42***	1	46.06	11.06

*p<0.05, ***p<0.001. ADA: Adult Disorganized Attachment Scale, ECR: Experiences in Close Relationships questionnaire, PDLI: Paulson Daily Living Inventory

coefficients and the mean and SD values of the variables are presented in Table 4.

The correlation coefficients between the ADA total score and the other scales were in the expected direction and significant. The coefficients ranged from -0.22 ($p<0.001$) to 0.38 ($p<0.001$).

Discriminant Validity

To obtain more information about the validity of the scale, end-group analyses were carried out, comparing the ADA scores of individuals who might be at risk for borderline personality organization and individuals who were not at risk for borderline personality organization. Two groups were created using the established BPI cut-off score of 15 points. Those with a BPI score of ≤ 15 was grouped as "those not at risk of borderline personality organization," and those with a BPI score >15 were grouped as "those at risk of borderline personality organization." A group of 116 individuals were randomly selected from individuals who were not at risk of borderline personality organization ($n=227$) to perform a t-test to statistically compare the ADA score of the 2 groups. Specifically, the ADA scores of individuals who were not considered at risk for borderline personality organization ($n=116$) and those who might have been at risk ($n=58$) were compared. The results indicated that the at-risk individuals had a significantly higher ADA total score (25.98 ± 9.22) than those without an apparent risk for borderline personality organization (18.65 ± 9.92) ($t=5.06$, $p<0.001$).

Reliability Findings

The Cronbach alpha internal consistency coefficient and item-total correlations were examined to determine the reliability of the scale. The Cronbach alpha coefficient of the Turkish version of the ADA was 0.79 for the total score. The item-total correlations of the scale are presented in Table 2. As can be seen in Table 2, there were significant and expected correlations between the ADA total score and scale items that ranged from 0.27 ($p<0.001$) to 0.62 ($p<0.001$).

Findings Related to Research Variables

Regression Analysis

Simple regression analysis conducted to determine whether adult anxious and avoidant attachment predicted adult disorganized attachment indicated that adult anxious and avoidant attachment was responsible for only 18% of the variance in adult disorganized attachment ($F[2, 284]=32.38$, $p<0.001$). Our results, consistent with the original study (10), indicated that adult disorganized attachment is a different construct than adult anxious and avoidant attachment.

DISCUSSION

The results of the current study indicated that this Turkish version of 9-item ADA is a valid and reliable scale.

The factor analysis performed according to the principal components method and varimax rotation demonstrated that a single-factor structure to evaluate adult disorganized attachment was appropriate. The factor loads of all items ranged from 0.34 to 0.75, and the single-factor structure explained 39.11% of the total variance.

The CFA of the scale was tested using 2 sample groups to determine whether the single-factor structure obtained from the EFA was confirmed. Testing EFA findings with a different sample is a method that has been frequently recommended and applied (36,37,48). The relevant literature states that the results of EFA and CFA performed on the same sample were similar to the results seen when EFA and CFA were applied to 2 different sample groups (36). We confirmed the single-factor structure that emerged in the original study of the scale (10) in both samples of the current study. This provides stronger evidence for the construct validity of the new scale. Consistent with the suggestions of the model, the error variances of the items in the first sample were associated. The proposed modification indices were taken into account when associating error variances. In the literature, an error association of <5 , in line with proposed modification indices, is considered

acceptable (51,52). When observed variables (e.g., scale items) are under a similar construct (latent variable), measurement errors of these variables are also correlated with each other (50). Similarly, Kline (53) argued that observed variables with error associations measure a common construct that is not clearly represented in the model. Furthermore, overlaps in item content can trigger error covariances (50). From this point of view, in the current study, the errors of the items under the single-factor structure (disorganized attachment in adulthood) were associated (2 error associations) in line with the proposed modification indices, taking into account the content of the items. It was determined that the items with error associations (items 3 and 8, and items 1 and 6, respectively) represented the same latent variable (disorganized attachment in adulthood) and had similar content. Therefore, it was considered appropriate to make error associations for these items. Examining the values obtained to test the fit of the data, first of all, for the final model in which 2 errors were associated in the first sample, the χ^2/df ratio was 3.00; whereas, in the second example, it was 3.61 for the model without error association. A value <3 indicates perfect fit, and a value <5 indicates an acceptable fit (53-55). When the fit indices were examined in the first and second samples (GFI=0.94, CFI=0.92, AGFI=0.90, RMSEA=0.08; GFI=0.96, CFI=0.93, AGFI=0.94, RMSEA=0.07, respectively), the model provided an acceptable level of fit in both samples. GFI and CFI values approaching 1 indicate perfect fit, and values between 0.90 and 0.95 indicate an acceptable fit (47). RMSEA values of ≤ 0.08 are acceptable (47,55,56). The RMSEA value of this study was within acceptable limits.

Our analysis of the convergent validity of the scale revealed that, as expected, the ADA total score was positively correlated with the ECR anxious and avoidant attachment subdimensions and with the PDLI total score and negatively correlated with the ECR secure attachment subdimension. As the disorganized attachment scores of married individuals increased, the levels of anxious attachment, avoidant attachment, and projective identification also increased, and the level of secure attachment decreased. Current research findings support the results of the original study of the scale indicating that adult disorganized attachment was positively associated with anxious and avoidant attachment in adulthood (10). We noted that the correlation coefficients examining the association between adult disorganized attachment and anxious and avoidant attachment in adulthood were moderate ($r=0.38$, $r=0.35$, respectively) (57), or in other words, not high. The fact that anxious and avoidant

attachment in adulthood was responsible for only 18% of the variance in adult disorganized attachment was also consistent with this finding. These findings indicate that, in line with the original study of the scale, disorganized attachment in adulthood is associated with anxious and avoidant attachment in adulthood, but is a different construct (10). The association between disorganized attachment in adulthood and other attachment dimensions provided support for the convergent validity of the scale and provide a better understanding of the concept of disorganized attachment in adulthood. In addition, projective identification refers to both an intrapsychic and an interpersonal concept (58). Similarly, since self-development can be examined on an interpersonal basis according to the object relations-based attachment theory (59), it may be that attachment dimensions can be considered constructs related to both intrapsychic and interpersonal relations. Accordingly, it can be said that disorganized attachment in adulthood reflects the appearance of personality pattern in adult romantic relationships. From this point of view, it is thought that both constructs appear to be similar in terms of pointing to both intrapsychic and interpersonal concepts and reflecting the appearance of the personality pattern in romantic relationships. Therefore, projective identification was used as another variable to support the validity of the ADA, and these 2 constructs were indeed significantly correlated as expected, contributing to the convergent validity of the scale. At the same time, empirical evidence was obtained indicating that these 2 constructs overlap in intrapsychic and interpersonal contexts.

Examination of the discriminant validity of the scale demonstrated that the ADA can distinguish individuals with high and low BPI scores. Individuals at risk for borderline personality pattern had a significantly higher ADA total score than individuals who were not at risk for borderline personality pattern. This finding is consistent with theoretical explanations (15-17,60,61) and limited empirical research findings in the literature (14,62). It can be concluded that the ADA can significantly distinguish individuals who are at risk for borderline personality pattern from individuals who are not at risk. These findings constitute sufficient evidence for the validity of ADA.

The reliability analysis of the scale yielded a Cronbach alpha coefficient of 0.79. A value of >0.60 (63) or >0.70 (64) is generally considered satisfactory in psychology research. The corrected item-total correlation coefficients of the scale were also in the expected direction and significant. Based on the

knowledge that the item-total correlation should be ≥ 0.20 (57) or ≥ 0.30 (65), the values of the current study were satisfactory. The findings indicated that the scale has an acceptable level of reliability.

Our results demonstrated that the Turkish version of ADA is a valid and reliable scale to assess disorganized attachment in adulthood. Due to the lack of Turkish measurement tools to evaluate adult disorganized attachment in romantic relationships, to our knowledge, there have been no local studies focusing on this issue. Therefore, the inability to analyze adult disorganized attachment quantitatively has represented a gap in the Turkish literature. It is argued that the Turkish adaptation of the ADA, the validity and reliability of which was demonstrated in this study, will help to fill the gap in the relevant literature and will be valuable in future studies, especially those examining various psychopathologies (e.g., borderline personality disorder, dissociation disorders, post-traumatic stress disorder, depression, anxiety disorders, etc.) and deterioration in interpersonal relationships, including partner violence, anger, and aggression. Studies of this subject using clinical samples of participants with psychiatric diagnoses, or comparative samples (clinical vs. non-clinical) will contribute to the literature.

The lack of test-retest reliability analysis can be considered a limitation of this research. In addition to the reliability methods used in the current study, test-retest reliability analyses in future studies to determine the invariance over time are recommended. The addition of this scale to assess disorganized attachment in adulthood will enable discussion of attachment dimensions in romantic relationships as a whole for the first time in our country. Understanding what disorganized attachment means in adulthood, how it develops, and how it is reflected in adult relationships, will be important to developing effective interventions (20). In conclusion, the findings obtained from this use of the Turkish ADA scale will form the basis for studies on disorganized attachment in adulthood and will guide clinicians in practice.

Contribution Categories		Author Initials
Category 1	Concept/Design	I.S.E., A.D.B.
	Data acquisition	I.S.E.
	Data analysis/Interpretation	I.S.E., A.D.B.
Category 2	Drafting manuscript	I.S.E.
	Critical revision of manuscript	A.D.B.
Category 3	Final approval and accountability	I.S.E., A.D.B.
Other	Technical or material support	N/A
	Supervision	N/A

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APPENDIX 1**Yetişkinlikte Düzensiz Bağlanma Ölçeği (YDBÖ)**

Aşağıdaki ifadeler romantik ilişkilerde nasıl hissettiğinizle ilgilidir. Sadece şu anki ilişkinizde neler olduğuyula değil, genel olarak ilişkilerinizi nasıl yaşadığınızla ilgileniyoruz. Lütfen her bir ifadeye ne kadar katılıp katılmadığınızı belirterek yanıt veriniz.

	1 kesinlikle katılmıyorum	2	3	4	5	6	7 kesinlikle katılıyorum						
1.	Korku yakın ilişkilerde yaygın (olağan) bir duygudur.						1	2	3	4	5	6	7
2.	Romantik ilişkide olan kişilerin sıklıkla birbirlerini kullanmaya çalıştıklarına inanırım.						1	2	3	4	5	6	7
3.	Romantik ilişkide olduğum kişilerle birlikteyken kim olduğumu hiç bilemem.						1	2	3	4	5	6	7
4.	Romantik ilişkide olduğum kişileri oldukça korkutucu bulurum.						1	2	3	4	5	6	7
5.	Romantik ilişkide olduğum kişilere güvenmek tehlikelidir.						1	2	3	4	5	6	7
6.	Yakın hissettiğiniz insanlarla travmatik deneyimlerin yaşanması normaldir.						1	2	3	4	5	6	7
7.	Yabancılar, romantik ilişkide olduğum kişiler kadar korkutucu değildir.						1	2	3	4	5	6	7
8.	Romantik ilişkide olduğum kişileri hiçbir zaman tamamen güvenilir kişiler olarak göremem.						1	2	3	4	5	6	7
9.	Çoğu insana kıyasla, romantik ilişkiler konusunda genel olarak kafam karışıktır.						1	2	3	4	5	6	7