

## VALIDATION OF ADOLESCENT DISSOCIATIVE EXPERIENCES SCALE IN IRAN

Niyusha Alaii Fard Zari<sup>1\*</sup>, Adis Kraskian Mujembari<sup>2</sup>

<sup>1</sup>Graduate of Clinical Psychology, Department of Psychology, Kish International Branch, Islamic Azad University, Kish Island, Iran.

<sup>2</sup>Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran.

\*Corresponding Author

### ABSTRACT

The aim of this study was to evaluate the psychometric characteristics of Adolescent Dissociative Experiences Scale (A-DES) in Iranian society. This study was form descriptive-type research. The study sample consisted of 530 students (280 female and 250 male) selected in a multistage random cluster among students of Alborz Province high schools; After the translation of the Dissociative Experiences Scale of teens and revert back to the original language, the scale was translated into Farsi again. After final approval, surveys were taken for implementation of questionnaires in the sample. In order to answer the research questions and examine the hypotheses of research, analyses of classical psychometric theory including analysis of exploratory factor analysis and confirmatory factor analysis with principal components were used. Also to check the validity of the scale, some methods were used including the correlation between the total score and subscales as convergent validity, dividing method and Cronbach's alpha coefficient to estimate the internal consistency and tables of norm scale for presenting the Z sigma-aligned scores, the T score and rating percent in SPSS software. The results showed that exploratory factor analysis and confirmatory factor analysis showed the validity of the test to measure the Dissociative Experiences of teens in the Iranian community. The results of this study confirmed the convergent validity of Dissociative Experiences Scale of juveniles in Iran. Estimated coefficients showed reliability of scale and subscales in both dimensions of internal consistency and reliability. Also regarding the results of comparison of juveniles Dissociative Experiences scores and its subscale in gender groups, norm scale was drafted based on the percentile ranks and Z and T-standard scores for all subjects.

**KEYWORDS:** Adolescence Dissociative Experiences (A-DES), Factor Analysis (exploratory and confirmatory), Validity, Reliability, Norm Navigation

### INTRODUCTION

Adolescence is one of the important and outstanding processes in social and psychological development. In this period, the need for emotional balance, especially the balance between emotion and intellect, understanding the value of existential self-awareness (recognizing the talents, abilities and interest), selection of real goals in life, emotional independence from the families, keeping mental and emotional balance against the environmental stressors, healthy relationships with others, gaining necessary social skills to make friends, being familiar with healthy lifestyles and effective recognition are from the most important requirements in the adolescence. Adolescence is a period that seems to be similar to adulthood in the case of decision making, but it should be mentioned that teenager's decisions are still unstable and in some cases may lead to dysfunctional and even dangerous behaviors (Luna, B., Padmanabhan, A., and O'Hearn, K., 2010). Perhaps Erickson (1950, 1968) was the first person identified 'personality' as an important step towards the formation of teenager's character and move toward a fruitful and desirable future (Loraburg, 2007, translated by Seyyed Mohammadi, 2009). Ericsson believed that Juvenile phase from age 12 to 18 is a very critical period, because at this time the fundamental question of person arises about his identity. This stage is time for interpretation and consolidation, where each of our feeling and what we know about ourselves are combined in a combination (Schultz, translated by Karimi et al., 2011). According to Ericsson, 'Self' means as a hypothetical or motivation existence. This inner hypothetical identity acts as the inhibitor and director of actions against motivations, fears and needs. Here, Self is a hypothetical existence, the internal aspect with a certain role to play there. In Ericsson's theory, formation of a stable and coherent sense of identity is the main task of the individual in adolescence (Kroger, 1997). Berzonsky (2002) also knows the identity as a judge self, and believes that people express their theories by different styles and approaches (Berzonsky, 2003). Gilligan (1982) considers the identity formation as an ongoing and permanent process of evolution. In his view, identity is an overall process that encompasses cognition and emotion together. Identity formation is about the problem of how what is known as 'self' becomes pale and takes a new life.

Most people consider themselves as a human with a basic personality and have an integrated feeling. But patients with dissociative disorders lose their feeling of unified consciousness. One feels lack of identity, is confused about his identity or has multiple identities. Anything that usually gives people a single character (thoughts, feelings and unified actions) is not integrated for patients with dissociative disorders (Kaplan and Sadock, 2007). The main feature of dissociative disorders is disruptive functions of consciousness, memory, identity or perception. Dissociative disorders are very severe and their anxiety and conflict are so severe that part of the personality is separated from his wise performance. Confusion may be sudden, gradual, transient or chronic. The person with dissociative disorders loses his awareness temporarily, his awareness of the environment becomes less and in some cases it is possible to show strange physical gestures. After occurrence of dissociative disorders, access to contents of analyzed sections becomes impossible for the rest content of consciousness mind (Haljin, 2008). The basic feature of dissociative disorders is included of disruption in continuous normal functions of consciousness, memory, identity or perception of the environment. This break may be sudden or gradual onset and transient or chronic. According to the DSM-TV-TR dissociative disorders are include of Dissociative identity disorder, depersonalization disorder, dissociative amnesia, dissociative fugue and indefinite dissociative disorders (Kaplan and Sadock , 2007). In recent years many studies have been conducted to test assessment tools of dissociation disorders in adults. Most of these studies are based on dissociative experiences Scale (DES) in adults. A self-report tool was created by Bernstein and Putnam in 1986 in order to screening of dissociation practices in adults. Since availability of DES, at least 135 screening study have used dissociation disorders in adults in order to screening of dissociation disorders and improving the understanding of dissociation in adults (Van Uzendoorn and Schuengel, 1996). Because of lack of suitable tool for measuring and observing dissociation disorders in children and adolescents, our understanding of dissociation disorders in this age group is low (Armstrong, Carlson, Libero and Smith, 1997). But recently, some studies are published for validation in the field of the checklist of dissociation disorders in children (CDC; Putnam, Helmers and Trickett, 1993) prepared for tracing the dissociation disorders in children and teenagers. In this way, Adolescent Dissociative Experiences Scale (A-DES) (Armstrong, Putnam, Carlson, Libero and Smith, 1997) was designed to measure dissociation in adolescents of ages of 11 and 17. This scale evaluates the dissociation in four areas: dissociative amnesia, the imaginary involvement and absorption, passive influence, depersonalization and de-realization. In recent years many validation studies (Armstrong et al., 1997; Brunner, Parzer, Schuld, & Resch, 2000; Farrington, Waller, Smerden, & Faupel, 2001; Kisiel & Lyons, 2001; Muris, Merckelbach, & Peeters, 2003; Prohl, Resch, Parzer, 2001; Smith & Carlson, 1996; Zoroglu, Sar, Tuzun, Tutkun, & Savas, 2002) have concluded that internal consistency of A-DES is high. Although A-DES seems to be a reliable and credit tool for evaluation of dissociation, as is validity is confirmed in lots of studies abroad, as far as we know, this tool is not applied in the country and its validity and reliability are not calculated and are not standardized for use in the country. So for use it in the country, it is necessary to prepare the internal norms and ensure it works on teenagers. According to the material presented above, researcher is trying to determine the Psychometric characteristics of the dissociation disorders in adolescent population in Iran, after translational of its scale of teenagers (A-DES).

## **MATERIALS AND METHODS**

### **Research Methodology**

This study aims to develop and determine norms of a standardized questionnaire 'analyzed experiences of adolescence' and determine the validity and norms and prepare the norm tables for it. Therefore, the study is "descriptive".

### **Population, sample and sampling**

The study population included all boys and girls of high school in the academic year of 2013-2014 in Alborz Province. Volume of the sample group proper for factor analysis is included of 100 persons=weak, 200 persons= not bad, 300 persons= good, 500 persons=very good, 1000 persons= excellent (Comrey, A.L. and Lee, H.B., 1992).

Regarding the mentioned conditions for present research, a very good sample (500 persons) was considered and considering the removal of unfilled and invalid questionnaires, 20% was added to the cases and the questionnaire was applied for 600 students. After conducting the study and removing the imperfect questionnaires, data of 530 persons (280girls and 250 boys) was analyzed.

The sample of this study was elected by multistage random cluster of high school students of Alborz Province. so that in the beginning among 8 District Education areas of Alborz including 4 districts in Karaj and territories: Savojbolaq, Nazar Abad, Taleqan and Eshtehard (total number of public high schools: 174, number of public female schools: 103

and number of public male school: 71; total number of high school students: 3477 (1908 girls and 1569 boys)) of two regions of Karaj and Nazar Abad were randomly selected.

In the second step, among the selected male and female high schools, 5 of them were randomly selected, and at the final step among the selected high schools 6 0students in each high school were chosen for filling the questionnaires. So, a total number of 530 students (280 female and 250 male) formed the research sample.

**Measurement Tool**

**Adolescence Dissociative Experiments Scale (A-DES)**

Adolescence Dissociative Experiments Scale (A-DES) was prepared by Armstrong et al. (1997) was prepared. A-DES contained 30 sections drafted for assessment of pathological dissociation in adolescents with ages between 11 and 18 years have been developed. Question of the A-DES were about to examine four areas that would reflect the essential aspects of the fragmentation: Experiences of dissociative amnesia, depersonalization/de-realization, absorption/fanciful activities and passive effect. These systems were ranked based on 11-point Likert scale ranging from 0 = never to 10=always based on time and without scores are moderate rate. The total A-DES was without the average total score for each section. Total number of A-DES is calculated based on the average score in each section. The average score of 4 or higher than the A-DES is indicative of pathological dissociation (Kisiel and Lyons, 2001).

**Research Findings**

Table 1. Frequency and percentage of sample group based on the demographic characteristics (n=530)

	%	frequency	
			Gender
	47.2	250	boy
	52.8	280	girl
			(Grade (high school
	47.2	250	First
	27.00	143	Second
	12.6	67	Third
	13.2	70	Fourth

Continue Table 1. Frequency and percentage of sample group based on the demographic characteristics (n=530)

	%	Frequency	
			Age
	4.2	22	14
	24.3	129	15
	34.9	185	16
	25.5	135	17
	11.1	59	18

The average and standard deviation of test are presented via 30-step questions in Table 3-4, and the mean and standard deviation of the total score of the sample group according to gender, grade and age of participants is presented in Table 3<sup>1</sup>.

<sup>1</sup> Since scoring spectrum of questions is in the 1-10 scale, in calculation of the total scale number after adding the numbers of 30 questions, the output score was divided by 30 to report the total score in the 1-10 domain.

Table 3. Mean and standard deviation of Adolescence Dissociative Experiences Scale scores A-DES (n=530)

SD	M	Question	SD	M	Question	SD	M	Question
2.88	1.95	21	3.12	2.46	11	3.02	3.39	1
2.28	1.22	22	2.87	2.16	12	2.60	2.05	2
3.27	2.92	23	2.64	1.46	13	3.16	2.43	3
2.95	2.13	24	2.50	1.65	14	2.83	2.26	4
3.06	2.04	25	2.04	1.08	15	2.50	1.85	5
3.63	3.23	26	2.88	2.15	16	2.54	1.45	6
2.91	1.84	27	3.45	3.52	17	2.62	2.61	7
2.69	1.39	28	2.93	2.33	18	2.53	1.84	8
3.11	2.03	29	3.44	3.23	19	2.50	1.52	9
2.61	1.31	30	3.42	3.28	20	3.56	3.04	10

To assess the validity of Adolescent Dissociative Experiences Scale (A-DES) two exploratory factor analysis<sup>2</sup> and confirmatory factor analysis<sup>3</sup> was used.

In the present study in order to answer the question of what saturation factors are in the test, principal component analysis method is used. According to this method in each of the diametric places, a number is placed which in addition to the common variance and variance suite also encompasses error variance. This method is used for structure search to determine the variance of all studied variables. In order to determine the final answer and identify the agent or factors that might constitute the basis of this questionnaire

Table 4. Size of KMO indicator and Bartlett's test of sphericity of questions correlation matrix

0.954	KMO sample adequacy indicator	
6801.5	Chi-square	Bartlett's test of sphericity
435	Degree of freedom	
0.0001	Significance level	

In present study as shown in Table 4 the statistical index of Bartlett test was 6801.5 and its significance level was less than 0.0001. Thus, in addition to the adequacy of sampling, performance analysis based on correlation matrix between the materials of questionnaire is justified.

To determine the point that ingredients of a questionnaire study are saturated by several significant factors, three major indexes are considered:

1. Eigen value
2. The proportion of variance explained by each factor

Results have shown that Eigen value of 4 factors is larger than 1 and coverage percentage of variance between scale ingredients of these factors was 46.243%, 4.692%, 4.0245 and 3.145%, respectively. The combination of these 4 factors determines 58.374% of total variance of scale ingredients.

Regarding above conditions and role of the 1<sup>st</sup> to 4<sup>th</sup> factors in explanation of common variance, and also considering the point that in some of the past researches the 3-factors model (Dubester, K.A. and Braun, B.G., 1995) and also in some of 4-factors models (Armonstrong, Putnam and Carlson, 1990) were presented and investigated for adolescence dissociative experiences scale.

<sup>2</sup>. exploratory factor analysis (EFA)

<sup>3</sup>. confirmatory factor analysis (CFA)

Also, the considerable and different roles of the first factor in description of the common variance in scale were selected among the factors obtained by analysis of main components in three steps. First one factor, then three factors and finally 4 significant factors with maximum Eigen value were selected and extracted from Adolescence dissociative Experiences Scale.

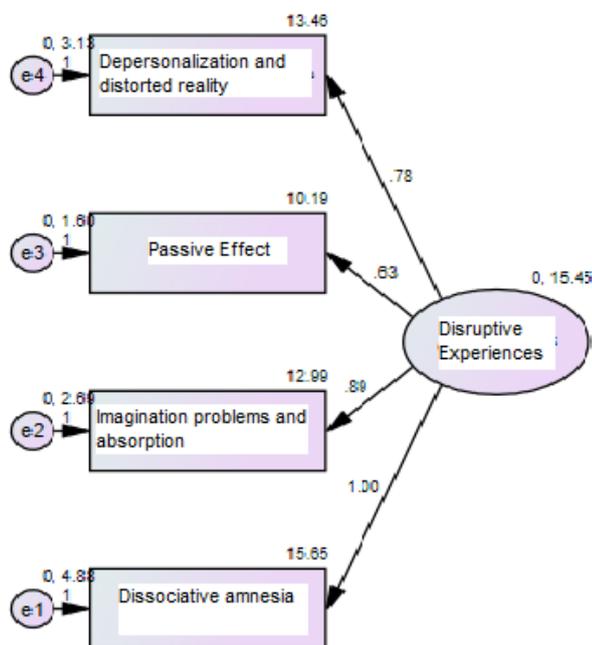


Fig 1. Three-Factor Model of confirmatory factor analysis in non-standardized coefficients

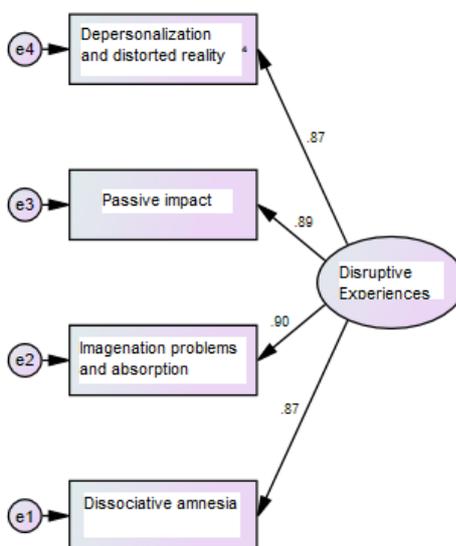


Fig 2. Four-Factor Model of confirmatory factor analysis in standardized coefficients

Table 5. Fitting indicators confirmatory factor analysis

Fitting indicators		Indicator
Allowable limit	value	
<3	1.27	$\frac{\chi^2}{df}$
<0.1	0.04	RMSEA <sup>4</sup>
>0.9	0.98	CFI <sup>5</sup>
>0.9	0.94	NFI <sup>6</sup>
>0.9	0.96	GFI <sup>7</sup>
>0.9	0.91	<sup>8</sup> AGFI

According to the results obtained by above tables it could be said that totally, the model has a proper condition for describing and fitting and the hypothesis of researcher for 4-factor questionnaire of dissociative experiences is confirmed.

Table 6. Reliability coefficients (internal consistency) scale

subscales					
Passive effect	Depersonalization and de-realization	Imagination problems and absorptions	Dissociative amnesia		
2	13	7	8	No. of questions	4-factor model
0.655	0.888	0.818	0.847	Cronbach's alpha	

The estimated coefficients reflect the scale and subscales reliability in the internal consistency.

## RESULTS AND DISCUSSIONS

According to the results of this study, Cronbach's alpha coefficient for internal consistency of Dissociative Experiences Scale in 4-Factor Model, Cronbach's alpha for the first factor (dissociative amnesia) 0.847, the second factor (imagination and absorption problems) 0.818, for a third (and de-realization depersonalization) 0.888 and for the fourth factor (passive influence) was 0.655, respectively. The internal consistency of the scale was calculated as 0.94. Cronbach's alpha coefficient scale with the condition of removing any of the questions from the 30-step of scale, were calculated and the results showed that the removal of any of the questions will not increase the Cronbach's alpha coefficient, in other words questions of scale have high internal consistency. The results of this study as a whole represents the high internal consistency of the questions of Adolescence Dissociative Experiences Scale in Iranian society; the results are consistent with the findings of the Smith and Carlson (1996) (alpha 0.92); Armstrong et al. (1997) and Muris et al., (2003), (alpha 0.93), Brunner et al., (2000) and Farrington et al., (2001), (alpha 0.94). Their research showed that internal consistency of scale using Cronbach's alpha coefficient for the entire sample is 0.93, consistent with results (0.94) of this study. In the studies of Zoroglu et al, Cronbach's alpha of subscales are as follows: amnesia (.85), absorption (0.72), passive effect (0.73) and depersonalization / unrealistic of (0.82), which were similar to findings of this research. But the internal consistency of components: imagination and absorption (0.818) and

<sup>4</sup> Root Mean Square Error Approximation

<sup>5</sup> Comparative Fit Index

<sup>6</sup> Normed Fit Index

<sup>7</sup> Goodness of Fit Index

<sup>8</sup> Adjusted Goodness of Fit Index

depersonalization-de-realization (0.888) in this study were higher than the Zoroglu et al. Also, results of this research are consistent with the findings of Soukup, Papez, Kubena and Mikolajova (2010). They derived the Cronbach's alpha of whole test in order to determining the internal consistency of their scale test in non-clinical population as 0.92, similar to results of this study (0.94). To assess the validity of Adolescent Dissociative Experiences Scale (A-DES) two methods of exploratory factor analysis and confirmatory factor analysis were used. In the present study in order to answer the question that whether the test is saturated by what factors or not, the principal component analysis (PC) was used. Before implementation of factor analysis, two assumptions including: 1) Kaiser-Mayer-Olkin of sample adequacy and 2) to ensure that the correlation matrix of infrastructure of factor analysis in community is not zero, it was studied and the results showed that the amount (KMO) was 0.954 showing the quality of sampling in the present study. Also, in order to investigating that whether the matrix of correlation between the questionnaire materials is zero or not, the statistical indicator of Bartlett test was 6801.5 and its significance level was less than 0.0001. In this way, in addition to the quality of sampling, the analyses based on correlation matrices between the questionnaire materials were also reasonable.

To determine the point that the set of the materials in the studied questionnaire were saturated by how many significant factors, results showed that Eigen value of 4 factors were higher than 1 and the percentage of common variance coverage among the scale materials for these factors were 46.243%, 4.692%, 4.024% and 3.415%. The combination of these 4 factors altogether was 58.374% of the whole variance of scaled materials. Due to the above conditions and the role of the first to fourth factors in explanation of common variance, and also by taking into account the fact that in some previous research three-factor model (like Dubester, K.A. and Braun, B.G., 1995) and in some studies of four factors: (like Armonstrong, Putnam and Carlson, 1990) were presented and studied for the Adolescence Dissociative Experiences Scale. Also significant and different role of the first factor in explaining the common variance in scale, among the factor obtained by using main components analysis in three steps, first one factor, then three and finally four significant factors with greatest Eigen values were selected and extracted from Adolescence Dissociative Experiences Scale. In this research, the Promax Rotation was used for definition and identification of factors (The coefficients higher than 0.3 were considered in definition of factors). In the uni-factor model the factor that was evaluated by all 30 scale materials can be named as "Dissociative Experiences".

Table 7. The 3 and 4 factor model of ADE-S

Scaled materials	Percentage of explained variance	Name of factor	factor	Model
(13, 15, 16, 18, 21, 22, 25, 27, 28, 29, 30)	46.243	Depersonalization and de-realization	1 <sup>st</sup>	4-factor
(1, 2)	4.692	Passive effect	2 <sup>nd</sup>	
(10, 11, 17, 19, 20, 23, 26)	4.024	Imagination problems and absorption	3 <sup>rd</sup>	
(4, 5, 6, 7, 8, 12, 14, 24)	3.415	Dissociative amnesia	4 <sup>th</sup>	

Results of investigation of fitting indicators showed that the extracted structure from the exploratory factor analysis is conformed. Therefore, results of exploratory factor analysis and confirmative factor analysis show the validity of the test for evaluation of the Adolescence Dissociative Experiences in Iranian community.

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