

# Creating and Validating the Adjustment Inventory for the Students of Islamic Azad University of Ahvaz

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## Abstract

This study was conducted in order to create and validate the adjustment inventory. The sample consisted of 1005 students of Islamic Azad University of Ahvaz who were selected using the multi-stage random sampling method. The adjustment inventory consisting of 100 items was employed to measure their adjustment. Each item was scored on the five-point Likert scale from Not fully used to Fully used. After data collection, the correlation between each item and the total score was determined. The coefficients for 11 items were weak and statistically insignificant. The Cronbach's Alpha coefficient for the 100-item set was 0.758 and after eliminating 11 items for a set of 89 questions, it was 0.76. Factor analysis was conducted in order to verify the construct validity of the inventory; the KMO value was 0.915 and the significant Bartlett's sphere test indicated that there were suitable conditions for conducting factor analysis. After eliminating the inappropriate questions with a factor load of less than 0.3, using the Principal Component Analysis (PCA) and varimax rotation, with respect to the factor matrix, gradient diagram and the percentage of explained variance, four factors were extracted from a set of 90 items, explaining 44.87% of the total variance among the variables. The first factor with 29 items and the special value of 16.63 covers about 55.17% of the total variance of the variables and is an indicator of health adjustment;

the second factor with 20 items indicates academic adjustment, the third factor with 21 items, shows the family adjustment and the fourth factor with 11 items measures the emotional adjustment and the fifth factor with eight items indicates the social adjustment.

**Key words:** Adjustment, Validity, Inventory, Narration

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## Introduction

Contemporary mankind lives in a world that requires more individual and social flexibility and adjustment (1). Individual adjustment occurs when a person can establish a healthy relationship between themselves and the social environment. The social environment also includes the family, the educational setting, the business environment, and so on. If one fails to interact with the environment in a desirable manner, he/she is not considered adjustable (2).

Adjustment originates from biology. For the first time, Darwin suggested it in his theory of evolution, then this concept has been used in other sciences, such as psychology and sociology (3,4). This term refers, in biological terms, to biological structures that facilitate the survival of the species, and includes not only humans but also animals and plants (4). In psychology, adjustment is assumed to be more or less consciously based on if one adjusts to the social, natural or cultural environment. This adjustment requires that a person has to change themselves or actively make changes in the environment, and as a result, the necessary coordination is established between the individual and the environment (4). Adjustment is a behavior that increases the individual's competence and average ability to improve their past and nearby people. Because the content of social learning is not genetic, the proper behavior of the individual is in response to and selected by social consequences. In other words, this behavior is strengthened and one learns that they will get a good result by repeating it (5).

Adjustment is a relative concept and differs in societies under the influence of cultures and beliefs. On the other hand, human behavior is affected by various factors, such as family, school, peer group and other social factors. Human personality will be perfect if a good balance and interaction are established between themselves and the surrounding environment.

Social pressures clearly have a great influence on individual behavior. On the other hand, human beings are flexible. They adapt not only to the environment, but also change the environment according to their own needs (6). The human being is a social being, so for success it is necessary to achieve a good adjustment within the society. If the learner fails to achieve adjustment, misadjustment occurs and they distance themselves from balanced behavior and show a kind of misadjustment including aggression, anxiety, anti-social personality, attention drawing, escape from school and habitual disorders. Therefore, it is vital to adjust and coordinate yourself with the surrounding environment. Daily struggles focus on this adjustment. Everybody consciously and unconsciously seeks to satisfy their various but conflicting needs in the environment where they live. Underlying factors such as educational methods, school factors, values and beliefs, peer group, family and education are effective in formation of adjustment. Recognition of the factors affecting the students' adjustment at the critical age and the sustainability effects that this

period has on the formation of a teenage personality can predict and plan in helping them to provide good mental health (5).

Adjustment, to Sinha and Singh (1993), is the emotional stability and courage in social relationships, as well as the interest in education and school, which is seen as emotional adaptation, social adjustment and educational adaptation. Also, Sinha and Singh (1993) defined academic or educational adjustment as having positive attitudes toward the academic goals, the effective effort to achieve academic goals and the positive attitude to the educational environment, and considered social adjustment as the mechanisms by which a person finds the ability to belong to a group, and emotional adjustment as the mechanism by which the person finds emotional stability (7).

### Social adjustment

Social adjustment involves the individual's adjustment to his or her social environment and refers to a process in which the relationships between individuals, groups and other elements are satisfactory, so that provides mutual satisfaction (8).

### Emotional adjustment

Emotional adjustment is the mechanism by which a person achieves emotional stability. It includes good mental health, satisfaction with personal life, and coordination between feelings, thoughts and deeds (9).

### Educational adjustment

Educational adjustment refers to the satisfaction and effective functioning in the educational environment (10).

### Family adjustment

Family adjustment is the mechanism by which a person acquires a sense of security and trust towards family members, especially parents, thereby establishing a proper relationship with them (11).

### Health adjustment

Health adjustment includes "a sense of responsibility towards oneself and the choice of a healthy lifestyle." The World Health Organization (1947) defines health as: "Health is the state of complete physical and psychological well-being, and not just the absence of illness or disability" (9).

The development of measurement methods and new psychometric theories have led to the emergence of new scholarly methods for assessing the talents, abilities and other psychometric characteristics of individuals that have been considered by the instructors, consultants, psychologists and other behavioral science experts. Although a number of instruments have been developed for measurement of religious tendencies and similar subjects, limited research has been carried out on the measurement of faith due to its newness. Because this tool (inventory) is designed to measure students' faith, it is necessary to measure its validity and reliability among the students. Considering that the subject under study has

an exploratory aspect, it is also necessary to provide an answer to the following questions:

1. Is there enough internal consistency between the set of questions that are presented to assess the students' adjustment?
2. Is the set of questions designed to measure the students' adjustment sufficiently valid?
3. What are the underlying components of adjustment inventory for students and how much are they saturated?

## Method

The statistical population in this study consists of all 1,005 high school students of Ahvaz in the academic year of 2016-2017. A multi-stage sampling method was used to determine the sample size. To this end, the population of each school was determined by Ahvaz Education Administration and randomly divided into four districts (Districts 1, 2, 3 and 4) by lot, from all four districts in proportion to the population of each district based on sex. The adjustment inventory is designed to be applicable to all adjustment areas with visible adjustment and implications. Therefore, the questions are designed to show people's adjustment in social, emotional, educational, family and health adjustments.

The main collection consists of 100 items. Initially, the content validity of the questions was approved by a number of professors, psychologists and counselors to ensure that the items are understandable and applicable to the student groups. After this stage, the items were administered for a group of 1,005 high school students from Islamic Azad University of Ahwaz.

The initial validity coefficient of the inventory for the set of 100 questions was  $r_{tt} = 0.756$ . For the second time, the validity of the inventory was calculated after the removal of other questions with factor load less than 0.3. The validity coefficient after the elimination of questions 2, 6, 12, 36, 37, 38, 57, 71, 77, 87, and 96 for the 90-item set was re-calculated and was  $r_{tt} = 0.76$ .

In the present study, the KMO value is 0.915 and the Bartlett test was 23510.627 which is significant at 0.0001. Thus, in addition to the sampling adequacy, the implementation of the factor analysis based on the understudy matrix can also be justified.

627.23510, which is significant at 0.0001. In addition, = to the sampling adequacy, the implementation of the factor analysis based on the matrix under study can also be justified.

Table 2 shows the initial statistical characteristics that were obtained by the analysis of the main components, with a special value of 5 factors higher than 1, and the extent of explaining the common variance of variables for these five factors is equal to 29.826% of the total variance of variables.

The slope design, which is a graph of the special values of a 100-item faith inventory, is shown in Figure 1.

The slope design indicates that the contribution of the first factor in the variance of all variables is significant and differs from the contribution of other factors. In the next step, based on the special value, the percentage of variance and the slope design, five factors were considered as the basis for determining the final characteristics. Here, it is worth noting that some researchers in order to investigate the nature of relationships between variables and finding definitions of factors state that coefficients above 0.30 and coefficients higher than 0.40 are significant in the definition of factors and the coefficients below this limit are considered to be zero (random factor). For example, Jones (1954) used the lowest coefficient of 0.3, Houman (1988) used 0.35 and Reynold et al. (1981) used 0.4 values. In the present study, this coefficient is equal to 0.30.

Given that variables in factors 6 and 7 have a factor load, but the number of questions in these factors is less than 3, so according to the relevant theories, sometimes four questions and sometimes 10 questions are at least needed to form a factor. In this study, at least 4 questions were considered for the formation of the factor. Based on the results of factor analysis and the above-mentioned indicators, four factors were extracted from all questions and the special value of four factors/ fourth factor explain the value higher than 29.82. The first factor is a special value of 16.63 and ultimately the fifth factor justifies a special value of 2.11. After ensuring that the sampling is adequate and that the correlation matrix, which is the basis of the factor analysis, is not equal to zero in population, factor analysis was performed.

The special values of these four factors, the percentage of explanation of variance and the condensation percentage of the explained variance are shown in Table 3.

The extracted factors were transferred to new axes using the varimax rotation method. The main matrix after the varimax rotation, which was obtained after 8 repetitions, was shown in Table 4.

**Table 1: KMO size and results of Bartlett’s test of adjustment inventory**

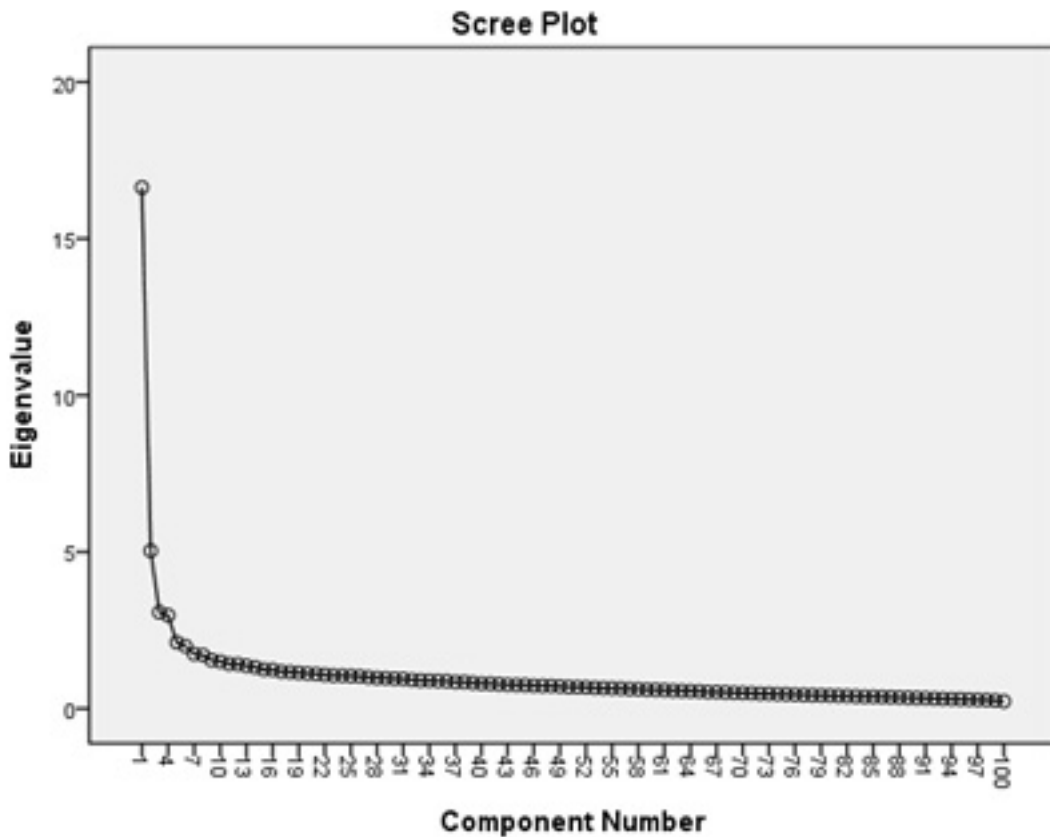
KMO	Bartlett's test	Sig
0.915	23510.627	0.0001

**Table (2): Primary statistical characteristics of a 100-question inventory**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.633	16.633	16.633	16.633	16.633	16.633	9.400	9.400	9.400
2	5.035	5.035	21.668	5.035	5.035	21.668	6.658	6.658	16.058
3	3.071	3.071	24.739	3.071	3.071	24.739	6.441	6.441	22.499
4	2.975	2.975	27.714	2.975	2.975	27.714	4.445	4.445	26.944
5	2.112	2.112	29.826	2.112	2.112	29.826	2.882	2.882	29.826

The slope design, which is a graph of the special values of a 100-item faith inventory, is shown Figure 1.

**Figure 1: Slope design**



**Table 3: Special value of the percentage of the explanation of the condensation variance of the five factors**

Final Statistics			
Factor	Eigenvalue	Pct of Var	Cum Pct
1	16.63	16.63	16.63
2	5.03	5.03	21.66
3	3.07	3.07	24.73
4	2.97	2.97	27.71
5	2.11	2.11	29.82

Table 4: Factor matrix after rotation

	Component				
	1	2	3	4	5
q80	.579				
q45	.564				
q54	-.563				
q59	.556				
q34	-.554	.357			
q22	.544				
q68	-.541	.472			
q39	.539				
q9	.521				
q52	.519				
q60	.497		.312		
q65	.493				
q19	.482				
q50	.475				
q55	.464				
q3	.460				
q47	.455				
q33	.451			.411	
q94	.451		.360		
q84	.448				
q1	.414				
q15	-.382		-.333		
q100	.382				
q90	-.378				
q30	.373			.339	
q74	-.372	.303			
q78	.339	.319			
q10	.332				
q62	.317				
q83		.554			
q98		.538			
q43		.532			
q93		.508			
q63	-.335	.502			
q31	-.331	.499			
q18	-.398	.496			
q8		.489			
q53		.489			
q51		.485			
q91		.481			
q73	-.428	.475			
q27		.471			
q46	-.382	.438			

q64		.526			
q69		.522			
q95		.521			
q29		.498			
q75		.493			
q20		.467			
q70		-.462			
q44		.344	-.460		
q4		.308	-.451		
q5		.450			
q89		.440			
q17		.434			
q40	.375	.423			
q79	.326	.409			
q66		.388			
q42		.384			
q14		-.365			
q35		.350			
q99		.324			
q23			.574		
q24			.473		
q48			.465		
q67			.429		
q13			.409		
q7			.409		
q28			.403		
q58	.341		.385		
q82			.339		
q32			.335		
q92			.312		
q26					-.534
q21					-.494
q81					.455
q61					.433
q85				-.315	-.426
q76				.306	.402
q86				.338	.377
q97					-.374
Extraction Method: Principal Component Analysis.					
Rotation Method with Kaiser Normalization.					
a. Rotation converged in 13 iterations.					

## Discussion and Conclusion

To investigate the construct validity and answer the question that deals with the number of factors that saturate the faith inventory, the Principal Component Analysis (PC) method was used. Before performing factor analysis, sampling adequacy was proved using Kaiser Mager Olking (KMO) size, and also rejecting the null hypothesis by the Bartlett Sphericity test that the identity matrix is correct in the population; this shows that factor analysis is justifiable.

The factor matrix indicates that the first factor has the highest factor load and its contribution is also more significant than other factors. The results of factor analysis show that this scale has sufficient validity and is saturated with five factors. In order to simplify the extraction factors, the varimax rotation was used. After the interpretation and naming of the factors, the results are as follows:

The largest factor load in the structure matrix is for question 80 (0.579).

Questions 4-15-18-31-33-34-40-44-46-49-58-60-63-68-73-74-76-78-79-85-86-94 focus on two or three factors that are likely to be complicated questions.

The rest of the questions are very pure or their factor load in other factors other than the extracted clusters is negligible.

There is no question without factor load, and in each factor there are at least four variables.

A set of questions with a strong and meaningful correlation make up a piece of test that were extracted and named as follows.

1. There was 29 items in the first factor marked as "health".
2. There was 20 items in the second factor marked as "educational".
3. There was 21 items in the third factor marked as "family".
4. There was 11 items in the fourth factor marked as "emotional".
5. There was 8 items in the fifth factor marked as "society".

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