

# The Struggle of Measurement of Attitudes Related to the Superstitious Beliefs

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## Abstract

The aim of the scale which is developed is to measure *attitudes related to superstitious beliefs*. The aim of developing the scale is to separate individuals who believe superstitious beliefs within the frame of the scale items (having superstitious beliefs) and individuals who don't believe these each other. 70 items, which are scaled with five points likert scale, are adapted to two separate sample group and the psychometric characteristics of the scale are examined. The significance of difference between averages of sub-super group of item scores and statistics of explanatory factor analysis, item-total correlations and Cronbach Alpha Coefficient are evaluated on the first sample group and the final form of 23 items is created. By collecting data from the second sample of the final form which is created, the power of the scale items to represent the structure is tested with the explanatory factor analysis. It is concluded that the dependability of the final form of 23 items is high and the evidences obtained in relation to the construct validity are suitable. It is observed that participants' attitudes related to the superstitious beliefs differentiate in terms of variables of gender and educational backgrounds.

**Keywords:** superstitious belief, attitudes, development of scale

## 1. Introduction

People's daily lives are full of many rational and superstitious behaviors. Superstitious beliefs and behaviors differ from culture to culture and are indispensable for the culture people experience. That is, sometimes the superstitious beliefs significantly affect decisions, which people take in their daily life, and their behaviors. The most important element which enables the superstitious beliefs to maintain continuity is its benefit to people and the belief of anxiety recover. According to Zhang (2012), the superstitious beliefs have significant effects on individuals when they make decision at risk. As long as individual think that the superstitious beliefs and behaviors is beneficial to themselves, they continue making them even if they know that the superstitious beliefs and behaviors are irrational. So, as long as people have the desire of knowing the future, the will of being safe, despair and fear, the superstitious beliefs will maintain continuity (Köse and Ayten, 2009).

It is said that the sources of many superstitious beliefs are based on antiquity societies such as Egypt, Indian, Phoenicia, Persian, Babel and Hellene (Karaca, 2001). Mostly future anxiety and despairs related to various topics maintain the superstitious beliefs and they guide future in some way and convert to future in their favor (Karaca, 2001). So, the starting point of superstitious beliefs is the sensorial properties such as fear and anxiety in the human nature. Turkish meaning of superstitious belief is unnecessary belief and it is defined as "The superstitious belief is to depend on an unsound and unfounded idea." (Gencan and Karadağ, 1978). It is possible that the superstitious belief can be evaluated as the paranormal beliefs (Aarnio, 2007). According to Tobacyk who has studies related to the topic, the paranormal belief is defined as "phenomenon keeping out the essential boundaries of science" (Arslan, 2010). So, the superstitious beliefs should not be merely thought as a part of religion. It is observed that people in different cultures, religions and even languages present some common superstitious beliefs. That is, even if material, which is used in sorcery and the superstitious beliefs, is taken from religion, the existence of innate power is accepted in words and practices which are used (Hökelekli, 1998).

According to Kayıklık (2005), the beliefs of people, who gain profound religious experiences with various reasons, mature depending on these experiences. If we compare with this state, in the superstitious beliefs, changes which occur in the lives of people enable people's superstitious beliefs to mature in the result of experiences. That is, according to Freud, beliefs related to postmortem are vital sources of satisfaction which is created by human psychology for consoling nuisances, pains and sufferings in this life. They are originated from fear and fright which are provoked by death and the psychological shock which people go towards healing these beliefs (Hökelekli, 1998).

Another opinion is that our cognitive sense practice to sense by establishing various connections between events and objects but in this process, sometimes wrong connections can be seen. These connections form the origin of superstitious belief by consolidating in time (Köse and Ayten, 2009). According to Russell (2005), "As long as you don't comprehend the certain difference between blind faith and sense and emotional values and real values, it is not possible that a real improvement can't be seen." Many theorists indicate in their studies that by increasing logic and common sense, it is possible that a fall can be seen in the effect of the superstitious beliefs (Barut, 2008; Arslan, 2004; Ayhan and Yazar, 2005).

Zeželj, Pavlovic, Vladislavljevic and Radivojevic (2009) stated in their studies that the superstitious beliefs is not truly equal to attitudes because the superstitious beliefs have some certain characteristics and these characteristics aren't required to be the characteristics of attitudes. It is observed that many writers are in agreement about that the superstitious beliefs are beliefs against rationalist norms in the society (Delacroix and Guillard, 2008).

### *1.1 The measurement of Attitudes*

According to Bloom'a (1971), human behaviors have three elements as cognitive, emotional and psychomotor. Attitudes also occur as the psychological variables which direct human behaviors and are back to behaviors. Attitude is defined as the tendency of giving learned negative or positive reaction against certain object, state, institute, concept or other people (Tezbaşaran, 1997). So, individual has the tendency of directing to emotion, opinion and behavior related to the attitude object. Thurstone (1931) defined attitude as the levels of negative or positive emotions related to a psychological object.

At the same time, attitudes are typical behaviors. Typical behaviors are features such as what individual make in the state, which s/he experiences, and dreaming about how s/he behaves without any forces, attitude, personality and clothes (Erkuş, 2012). It should not be forgotten that attitudes have three elements as cognitive, emotional and performative. Individual's opinion about the attitude element is cognitive element; her/his reaction of emotion and excitement is emotional element and her/his motor behavior is behavioral element.

### *1.2 The aim of Study*

The aim of developing the scale is to separate individuals who believe superstitious beliefs within the frame of the scale items (having superstitious beliefs) and individuals who don't believe these each other. In one way, it is study of development of scale. Another aim of study is to evaluate how participants' attitudes related to the superstitious beliefs differentiate in terms of gender and the educational backgrounds. It is possible that Tobacyk (2004)'s study about the paranormal belief scale development with 26 items and seven sub-dimensions and Huque and Chowdhury (2007)'s studies about the superstitious belief scale development with 31 items can be encountered. However, it is observed that the items of these scales are not dependant from the cultural features of society in which is lived.

At the same time, this study is important for the determination of relations between individuals' superstitious beliefs and different behaviors. When studies about education are evaluated, individuals' features such as anxieties, perceptions, academic achievements can be related with their superstitious beliefs and the superstitious beliefs can be dealt as a factor which affects to success.

## **2. Method**

### *2.1 Sample*

The release of attitudes and beliefs is between 13-21 years (Hökelekli, 1998, p. 280). According to Özkalp (2004), a significant part of attitudes are created in the first 20-25 years of life. With this reason, individuals who compose sample are formed individuals above 18 year. So, the intended population on which the scale can be practiced is adults. In other words, the group which measured feature is expected to be observed is adults.

### *2.2 The Tool of Data Collection*

The tool of data collection consists of items with quinary likert type. In the preparation of scale items, the study of writing composition with the topic of "what is your superstitious beliefs and why" is carried out on 10-15 adults. Individuals, who write composition, are regarded to be heterogeneous in terms of age, profession and gender. With compositions and as a result of relevant literature search, a pre-trying form with 70 items is created. The attitude statements, which form the testing form, are made prepared to the practice especially in terms of the writing principles of the attitude statement (Tezbaşaran, 1997) and by regarding experts' views. While 42 % of items in the testing form consist of (60%) positive statements, 28 % of them consist of (40%) negative statements.

### *2.3 Process*

Regarding positive and negative items in the scale items, the scores of scale are obtained. While positive statements are graded as strongly disagree 1, disagree 2, indecisive 3, agree 4 and strongly agree 5, negative statements are graded as strongly disagree 5, disagree 4, indecisive 3, agree 2 and strongly disagree 1. Individuals, who have high superstitious beliefs and believe in them, take high scores from the scale and individuals who don't believe in them take low scores from the scale.

The pilot scheme is carried out in two stages. In the first stage, the scale with 70 items is carried out 100 individuals and after data, which are obtained, made prepared to analysis, for the distinctiveness of scale items, the difference between averages of sub and super-groups is regarded and the significance level of difference is tested with t test. The explanatory factor analysis is evaluated for the construct validity; Cronbach Alpha coefficient and item-total correlations are evaluated with the internal consistency of items and the final form is created. In the second stage, the final form is carried out on 947 individuals. The feature of attitude related to the superstition belief is the implicit variable and the items of scale are observed variables. They are subjected to

explanatory factor analysis and the level of representing structure of items is regarded.

In terms of variables of gender and the educational backgrounds, the independent variables, whether or not participants' attitudes related to measured superstitious beliefs differentiate, are tested with t test and one way test of variance.

In the study, the explanatory factor analysis is used for the independent samples, t test and one way analysis of variance are used for SPSS 15.0 program and the confirmatory factor analysis is used for LISREL 8.53 program.

#### 4. Findings

##### 4.1 First Stage: Findings Related to Item Validity Analysis of the Items of Scale

For sub-super group method, the scale with 70 items which is carried out 100 participants is obtained participants' scale scores by grading and the scale scores are ranged to low scores from high scores. While super-group presents individuals who have high superstitious beliefs, sub-group presents individuals who have low superstitious beliefs. The group of % 27 taken from above and below data, which are ranged, is put into operation for the data analysis. The statistics of average and standard variation related to the scale items of individuals in sub and super groups are obtained and for determining the distinctiveness of the scale items, difference between averages of sub-super group is tested with t test. Ranged t value which is obtained about items is shown in Table 1.

Table 1. t Value Related to Averages of Sub-Super Group of the Scale Items

item no	t value	item no	t value
m69	13,31	m62	4,42
m63	8,02	m43	4,38
m33	7,51	m15	4,36
m60	7,18	m17	4,29
m45	7,00	m32	4,22
m4	6,78	m49	4,19
m61	6,76	m21	4,11
m70	6,40	m38	3,97
m5	6,30	m14	3,90
m42	6,24	m56	3,88
m44	6,15	m18	3,71
m22	6,14	m31	3,65
m1	6,05	m8	3,64
m64	5,87	m54	3,63
m30	5,86	m47	3,62
m34	5,78	m51	3,61
m59	5,78	m53	3,50
m52	5,77	m25	3,21
m2	5,76	m28	3,10
m41	5,70	m20	3,08
m40	5,27	m39	3,02
m29	5,09	m66	2,86
m23	5,06	m48	2,81
m35	5,03	m13	2,72
m55	4,97	m57 #	2,38
m67	4,93	m58 #	2,35
m50	4,92	m68 #	2,27
m10	4,83	m9 #	2,20
m27	4,82	m24 #	2,19
m37	4,81	m12 #	1,30
m26	4,76	m19 #	1,14
m65	4,60	m6 #	1,11
m11	4,59	m3 #	1,09
m36	4,53	m7 #	0,62
m46	4,47	m16 #	0,40

#  $p > 0.01$  and they are items which have not the validity of item.

It is observed that 52 is the degree of freedom and in 0.01 significance level, critical t value is 2.66 and eleven items are under the critical value, in other words, there is no the significance difference between averages of sub-super groups ( $p > 0.01$ ). 3, 6, 7, 9, 12, 16, 19, 24, 57, 58 and 68<sup>th</sup> items are extracted from the scale and the working on remained items is maintained with the confirmatory factor analysis.

#### 4.2 First Stage: Findings Related to the Confirmatory Factor Analysis for the Construct Validity

For the determination of factorial structure of the scale with remained 59 items and at the same time, the study of validity, the principal component method and the confirmatory factor analysis are carried out. In the first explanatory factor analysis which is carried out, the graph of the basic values is firstly examined and as to the graph of the basic values, it comes up that items show a structure with one factor.

When the explanatory factor analysis is carried out in the second time by limiting with one factor, the factor charges are evaluated. It is stated that in the process of the development of scale, the factor charge is required to be at least 0.30 and the difference between two high charge values is required to be at least 0.10 (Çokluk, Şekercioğlu and Büyüköztürk, 2010; Tabachnick and Fidel, 2001, p. 622-623). So, since the factor charge of two items, particularly 28<sup>th</sup> and 31<sup>st</sup> items, is below to 0,30 value, the item, which has the lowest factor charge (31<sup>st</sup> item), is extracted and the change of the factor charge is observed. In the processes of factor analyses which are carried out, the factor charges of 31<sup>st</sup>, 28<sup>th</sup> and 13<sup>th</sup> items are respectively extracted from the scale with the reason that they are not suitable. When the explanatory factor analysis is carried out again with remained 56 items, the values of the factor charge of items and the results of variance which is explained, KMO statistic and Bartlett sphericity test are shown in Table 2.

Table 2. The Results of the Explanatory Factor Analysis

item no	factor loading	item no	factor loading
m69	0,751	m48	0,500
m45	0,717	m50	0,500
m60	0,672	m49	0,496
m36	0,650	m62	0,490
m63	0,645	m67	0,489
m33	0,634	m54	0,488
m42	0,619	m52	0,486
m44	0,617	m40	0,485
m4	0,608	m64	0,479
m61	0,576	m37	0,476
m10	0,563	m46	0,473
m22	0,562	m39	0,470
m5	0,560	m56	0,464
m41	0,558	m38	0,463
m29	0,553	m23	0,460
m70	0,551	m25	0,439
m55	0,547	m53	0,418
m59	0,539	m32	0,406
m65	0,538	m8	0,394
m30	0,532	m21	0,383
m27	0,532	m20	0,377
m1	0,530	m51	0,373
m47	0,529	m18	0,371
m35	0,528	m26	0,360
m2	0,517	m34	0,348
m43	0,513	m17	0,342
m11	0,513	m66	0,334
m14	0,503	m15	0,328

Kaiser-Meyer-Olkin Measure of Sampling Adequacy= 0.723

Bartlett's Test of Sphericity = 3250,488 df=1540 p=0.000

Variance Explained with One factor =%26,34

KMO statistic is 0,723. So, this statistic is higher than 0.50 and it shows that the number of samples for data is enough (Kalaycı, 2005, p. 322). Also, the results of Bartlett sphericity test test the suitability of data for the

factor analysis. So, it is observed that data are suitable to the factor analysis for these data ( $p < 0.05$ ). The factor charges belonging to the scale items show variability between 0.328 and 0.751.

When the results of the factor graph belonging to the Eigenvalues values are examined, it is observed that 56 items are more specifically collected under one factor. As seen in the graph of the eigenvalues, the eigen value in the first factor is 14.751 and the eigen value in the second factor is 3.016. In the evaluations of one dimension, the extents of eigenvalues in the first and second factors in the line chart are compared. Since the eigen value in the first factor is much higher than the eigen value in the second factor, it can be said that the assumption of one dimension of the scale is met ([http://work.psych.uiuc.edu/irt/dim\\_main.asp](http://work.psych.uiuc.edu/irt/dim_main.asp)). Cronbach Alpha means the internal consistency of 56 trying items and its reliability co-efficient is calculated as 0.946. It is observed that there are acceptable reliability coefficient on account of the fact that the reliability coefficient in the meaning of the internal consistency is higher than the value of 0.70. Coefficients of the internal consistency are not tested in the lack hypothesis and so, the lower limit of acceptable reliability co-efficient is 0.70 (Erkuş, 2003). The item-total correlations of items which are calculated are presented in Table 3.

Table 3. Item-Total Correlations

Item no	Item Total Correlations	Item no	Item Total Correlations
m1	0,497	m40	0,460
m2	0,482	m41	0,541
m4	0,581	m42	0,589
m5	0,534	m43	0,469
m8	0,380	m44	0,583
m10	0,523	m45	0,681
m11	0,477	m46	0,449
m14	0,471	m47	0,498
m15	0,312	m48	0,472
m17	0,318	m49	0,476
m18	0,344	m50	0,477
m20	0,350	m51	0,350
m21	0,368	m52	0,460
m22	0,543	m53	0,388
m23	0,432	m54	0,457
m25	0,412	m55	0,522
m26	0,346	m56	0,435
m27	0,495	m59	0,507
m29	0,531	m60	0,644
m30	0,508	m61	0,543
m32	0,386	m62	0,454
m33	0,609	m63	0,614
m34	0,326	m64	0,460
m35	0,502	m65	0,503
m36	0,615	m66	0,316
m37	0,462	m67	0,474
m38	0,436	m69	0,726
m39	0,443	m70	0,528

It is expected that the scale items and coefficients of the internal consistency are higher than the value of 0.30 (Atılgan, Kan and Doğan, 2009, p.325). It is observed that the attitude items and item-total correlations, which are developed in the study, show variability between 0.312 and 0.726.

As evaluating the significance of difference between averages of sub and super-group, the factor charges obtained from the explanatory factor analysis and item-total correlations, remained 56 items are determined from the scale of 71 items and 23 items are chosen from these items for the final practice. When choosing items, items which have the highest t value in the test of average difference of sub and super-group, experts' views and the distribution of negative and positive items are especially regarded. Since the confirmatory factor analysis generates interpretable results in big samples, as the second stage, the scale of 23 items is carried out on group of 947 individuals and data are collected again.

#### 4.3 Second Stage: Findings Related to the Explanatory Factor Analysis for the Construct Validity

The confirmatory factor analysis unlike the explanatory factor analysis is used for confirming a factorial structure, which is specified by researcher, or testing a theoretical model/theory which is specified before (Kline, 2005). To test theoretically the construct validity of "The Attitude Scale of the Superstitious Belief" which is prepared as one dimension, the confirmatory factor analysis is carried out. 11 of the final scale of 23 items which is practiced on 947 individuals (947 individuals' reactions to the scale items are obtained from the internet by way of various social networks, e-mail groups and forums which show the heterogeneous characteristic in terms of job, age and gender six years after the first pilot practice.) are positive and 12 of it are negative. When the premise of normality with multi-dimensional isn't met in the confirmatory factor analysis, it is solved with Weighted Least Squares (Yılmaz and Çelik, 2009). In these study, the premise of normality with multi-dimensional is not met and so, the possibility method is at most used in the predictions. It is found as GFI 0.95, AGFI 0.94, S-RMR 0.07 and RMSEA 0.053 from the accordance indexes which are evaluated. It is clearly seen from these accordance indexes, for GFI and AGFI, 0.90 and values above it; for S-RMR accordance index, 0.10 and values below it and for RMSEA, 0.05 and values below it highly accord with the model which is suggested (Çokluk, Şekercioğlu and Büyüköztürk, 2010; Ceylan and Berberoğlu, 2007). It is observed that the statistic of rate of similarity chi-square is  $X^2(230)=833.53$ ,  $P<0.01$  and the rate of the value of chi-square to the extent of independence is 3.62. So, according to  $X^2/Sd$  rate, data are attuned in the medium level.

The values of factor charge (*Lambda*) of the scale items after the confirmatory factor analysis, the square ( $R^2$ ) of multi-correlation which determined the power of relation between each items and the implicit variable and t values which show the significance of relation of the attitude scale related to the superstitious beliefs which consists of 23 items are shown in Table 4.

Table 4. DFA Statistics Related to the Scale Items

	Lamda	R <sup>2</sup>	t value
1-Some numbers bring good luck to me.	0,75	0,46	31,28
2-People who are colored-eye hex.	0,69	0,31	20,34
3-There is no object to which I believe its luck.	0,44	0,07	9,3
4-When eye trembles, despair or happiness are experienced.	0,51	0,29	18,28
5-Fortunetelling is emotional exploitation.	0,74	0,35	24,03
6-When palm itches, money comes or goes	0,68	0,37	24,71
7-When somebody hear a bad word, s/he should pull her/his ears and knock on wood.	0,42	0,07	8,83
8-There is no blind, bad luck.	0,77	0,28	19,38
9-Zodiac affects our behaviors.	0,86	0,36	25,49
10-People should not believe palm-reading.	0,71	0,41	26,46
11-The superstitious beliefs are the adaptation of people.	0,81	0,45	31,29
12-People should not trust in fortunes	0,71	0,41	27,39
13-People should not believe in tarot.	0,63	0,28	21,61
14-Staring at space is a sign of the coming of guests.	0,61	0,44	25,33
15-I don't think as "When I feel my ears burning, somebody badly speaks about me."	0,56	0,12	12,57
16- It is not possible to know the future.	0,54	0,23	16,54
17-In nights, cutting nails brings bad luck.	0,27	0,14	9,85
18- Breaking mirror in thirteenth Friday of a month brings to grief.	0,22	0,24	11,8
19- Daily zodiac interpretations is not right, real	0,71	0,33	21,54
20- Blue bead should be worn against the evil eye.	0,84	0,37	25,55
21- When owl signs, it isn't brought bad luck.	0,21	0,01	4,05
22-People don't believe in the dream interpretations.	0,57	0,18	15,46
23- People don't make a wish by going mausoleums.	0,63	0,23	18,65

According to the results of the confirmatory factor analysis, t values of all items are found significance ( $p<0.01$ ). In other words, it can be said that, the scale items efficiently represent the implicit variable related to the superstition beliefs. When variances ( $R^2$ ) are evaluated, the first item "Some numbers bring good luck to me (0.46)." reveals at most to the implicit variable related to the superstition beliefs and the twenty first item "When owl signs, it isn't brought bad luck (0.01)." reveals at least to the implicit variable related to the superstition beliefs. It is significant that 21<sup>st</sup> item make a little contribution to the implicit variable but t value is significance. In following practices, 21<sup>st</sup> item is changed as "At nights, hearing owl's voice isn't sign to bad luck." and answerers understand better this item. So, it is thought that this item leads to increase variance which is explained.

In the extent of sample of 947 individuals, Cronbach Alpha reliability coefficient, which gives the data of

internal consistency of 23 items, is calculated as 0.824.

#### 4.4 The effect of Variables of Gender and the Education Backgrounds

Whether or not 947 participants' attitudes related to the superstitious beliefs, which are measured, differentiate as to their gender and educational backgrounds is presented in Table 5.

Table 5. Attitudes in Terms of Variables of Gender and the Education Backgrounds

		N	Mean	Std. deviation	t/F	Sig.
Gender	women	430	2,29	0,61	t=7,237	0,000**
	men	517	2,00	0,60		
Educational status	primary education	114	2,51	0,72	F=16,906	0,000**
	high school	96	2,08	0,56		
	Associate/license	443	2,08	0,57		
	Graduate	291	2,09	0,61		

\*\*p<0.01

According to results, participants' attitudes related to the superstitious beliefs differentiate in terms of their genders (t=7,237; p<0.01). It is found that women's attitudes, which are measured, are relatively higher than men's attitudes. Participants' attitudes related to the superstitious beliefs also differentiate in terms of their educational backgrounds (F=16,906; p<0.01). Since the group variances are homogenous, when the results of LSD test are evaluated from the multi-group comparisons, it is between the attitudes related to the superstitious beliefs of participants, whose educational background is elementary school and attitudes, which are measured, of participants whose educational background are higher than them.

Arslan (2005) came through in his study that individuals' anxiety levels of the superstitious beliefs affect from variables such as "gender, socio-economic level in society, education and job". It is found in some studies which examine the relation of gender and the superstitious beliefs that women's tendency to believe the superstitious beliefs and the supernatural events is higher than men (Aarnio, 2007; Ayten and Köse, 2009). In this study, a similar finding occurs. It is observed that as increasing intelligence and the educational level, individuals' superstitious beliefs decrease (Ayten and Köse, 2009). It is observed in this study that as increasing the educational level, measured averages of attitudes related to the superstitious beliefs show a decrease.

## 5. Result and Suggestions

In this study, the process of development of attitude scale related to the superstitious beliefs is dealt. In this study, the construct validity and reliability of the scale are evaluated on two different sample groups. The scale which is prepared as 70 items are practiced on 100 individuals and it is seen that the difference of eleven items between averages of sub-and super-groups isn't significance. After these items are extracted from the scale, the explanatory factor analysis is practiced on remained items and as to the results, more three items are extracted from the scale. Fewer scales are formed among remained 56 items. The scale is arranged as 23 items and is practiced by reaching a sample of 947 individuals. Also, the theoretical structure of the scale is tested with the confirmatory factor analysis. The relations of all items to measure the structure are found to be significance in the confirmatory factor analysis. It is observed that the internal consistency of scale is high in each sample group and different number of items. It is thought that structures which can be measured with fewer items increase the tendency of answerers to answer. Scales with fewer items decrease distraction and exhaustion because of shortening the time to answer and increase the motivation of answerers. That is, while a sample of 100 individuals can be reached with the scale of 70 items in longer time periods, a sample of 947 individuals can be reached with the scale of 70 items in less time periods.

In the scale which is developed in this period, the cross validation of items in sub-samples (gender, the educational backgrounds and etc.) should be tested. By practicing the scale scores with different scales, their studies can be practiced as to the external criterion. Its relations with scales such as religious attitude scale (Ok, 2007), Superstitious belief anxiety scale (Arslan, 2005), Central epistemological beliefs scale (Oksal, Şanşekerçi and Bilgin, 2006) can be tested and discussed.

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