THE EFFECT OF NEGATIVE AND POSITIVE ITEMS RATIO ON THE PSYCHOMETRICS OF THE ATTITUDE SCALES

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ABSTRACT

The study aims at finding out the effect of the number of negative and positive items on the psychometrics of attitude scales. To achieve this, three versions of an attitude scale with 68 items developed by Alma'jun (2013) are prepared. The items in the first, second and third versions of the scale are divided into 25% negative and 75% positive, 50% negative and 50% positive, and 75% negative and 25% positive items respectively.

The repeated measures design is used in the administration of the three versions on a sample of 300 male and female students who are randomly selected from the University of Baghdad. The sample is divided into three groups with 100 students in each. Participants in each group take the three versions of the scale but with different sequence. Then, the psychometrics of the items (item discrimination, item validity, and item reliability) in each version are calculated, in addition to the psychometrics of the scale version as a whole (validity and reliability).

The results achieved indicate that the second version in which the items are equally divided into negative and positive ones surpasses the other two versions in all the psychometrics of items as well as the whole scale. The third version comes second followed by the first one. Accordingly, it is recommended that the second version is used when constructing any attitude scale. A set of conclusions and other recommendations are also presented according to the results achieved in this study.

1. INTRODUCTION

The Problem :

It is a matter of fact that the specialists in the field of psychological measurement are currently devoting efforts to provide precise and valid instruments in order to measure the phenomena and the psychological features aiming to approach such precision in the field of educational and psychological measurement. Such an aim seems somewhat difficult for the various problems and difficulties encountered by the researchers in such a field . One such difficulties is the fact that the psychological phenomena are simply intangible or abstract concepts that can be induced by

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performance or behaviors in those situations related to the phenomenon in question or the trait itself (Maloney& Ward ,1980:66).

Furthermore, there are certain mistakes committed during the process of the psychological measurement in that such mistakes might increase or reduce the real grade of the trait ,knowing that the observation grade gained from the measurement application include mistakes that can be increased or reduced according to the sources of such mistakes . Such possible sources are the scale used ,the sample ,and the experimental settings(circumstances) .

The   scientists of measurement see that the mistakes raised from the scale is considered mostly effective on observation grade, as it is possible to control such mistakes related to the sample through the proper selection and precise representation by the population, and mistakes result from the experimental settings(circumstances) can be reduced by fixing such circumstances or isolating its effect experimentally or statistically .However , regardless of the efforts devoted to careful construction and design of the scale, there would be mistakes in the data collected because any scale consists of a set of items and it measures a sample of behavior from which we can infer the type of the trait we want to measure .So ,it is difficult to measure the behavior as a whole directly (Aiken,1988:16).Accordingly, one of the methodological problems in the psychological and attitude scales is related to items statement   because the psychological state of the respondents can be highly effected by the style of items statement as negative or positive. Moreover, there is a lack of the ground that approves or guarantees the precise number of both the positive and negative items included in the attitude scale. It is also noticed that researchers mostly enquire on the issue of the number of negative and positive items of the scale. The researchers of this study also have acquainted with many previous studies that used attitude scales and they have found out that there is no agreement among specialists on the accurate number of negative and positive items that should be included in and attitude scale.

Accordingly ,there seems a need to conduct such a study through comparing three versions of the attitude scale ,one of which consists of 25% negative and 75% positive items , the second version includes 50% negative and 50% positive items ,while the third one consists of 75% negative and 25% positive items .The aim here is to find out which version yields the best psychometrics.

The Significance :

  Scholars in psychology have exerted time and efforts to set proper and different attitude scales. These are simply a set of issues represented by argumentative themes in one subject that meet certain terms (Musa,2004 :27). Any scale aims at estimating the individual's view or attitude towards certain issues, subjects or people. This is likely to lead to the classification or estimation the attitude subject in the light of the results achieved by such scales. The significance of the attitude subjects and the way they are estimated springs from the organic relationship between the individual's attitudes and his/her behaviors .Such a relationship should be considered in the

prediction of the individual's attitudes in real social situations or in case of the prediction of the social change and the time it may take in the field of the interaction among the social groups (Hafez & Fattah, 200:253)

Attitudes are usually measured by using a specific sample of subjects and a questionnaire consist of a set of questions regarding a certain subject or phenomenon. The responses are, then, statistically analyzed to gain the results sought (Al-Kindri, 1992: 362)..

Measuring the psychological attitude   means converting it from the formula of (with or against) to a quantitative formula according to which individuals or groups can be compared with each other .The workability of attitude scale can be judged by considering and analyzing the subjects' responses. The large number of responses to the options (I don't know, I can't see, or I have no idea) is an indication of the weakness of the scale construction. So, attitude consistency should be carefully considered ,i.e. the scale should measure only one dimension and this feature is called ***one –dimensional***, and proper statistical means should be employed to verify this feature (Al-Ansari, 2000: 264).

Generally speaking, attitudes cannot be observed directly, rather they can be inferred by the behavior either by the individual's responses to the subject , persons or events or in terms of evaluative expressions and other verbal changes .Measurement of attitude aims at finding out approval or disapproval regarding the attitude as well as its intensity and reliability .

It is very important to measure the social and psychological attitudes because they;

- make it easy to predict the behavior,
- shed lights on the accuracy of the theoretical studies, and
- provide researchers in various experimental fields with the required data.

Accordingly, researchers may gain more knowledge about those factors that affect the existence ,intensity, stability, reliability, transferability, development, gradualness, and sudden rapid change of the attitude. Furthermore, measurement of attitude is especially useful if we want to modify or change the attitudes of a specific group towards a certain subject (Zahran, 1977: 143).

There are some principles that must be considered when measuring the psychological attitudes such as the field or subject to which the individuals' attitudes are precisely measured and that the scale must be of one dimension i.e. measuring the attitude towards one subject or theme.

The scale itself should indicate the individual's attitude towards the subject or theme from four angles : The orientation towards or against the subject , the degree of (agreement or disagreement) , the intensity (power of feeling positively or negatively) , the appearance or dominance (how

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important is the attitude for the individual and whether it is central, superficial or marginal), and finally both validity and reliability should be verified (Atwa, 1999: 104).

However, there are two basic reasons for measuring attitudes .The first one is that the results gained may shed light on the scope or validity of the theoretical studies as well as their faults. The second reason is that there are benefits resulting from measuring attitudes, and those benefits are integrated in other domains such as education, industry, and society during peace and war. So, the researcher can measure the type of the individuals' attitudes towards their environment which in turn expose their personal responses ,traits ,passions and their psychological positions about their surrounding environment (Al-Sa'eed, 1970: 261).

The importance of the present study circles around the fact that it is intended to introduce a new standard indication to increase the precision of the psychometrics of the scale depending on the number of the negative and positive items. The comparison between the three versions is according to the significant psychometrics of the scale such as validity, reliability, and items features which in turn help other researchers in the field of constructing the attitudes scales to use the proper version that yields the best psychometric features for the scale. To the best knowledge of the researchers, this study is the first one that tackles the ratio of negative and positive items to be included in the attitude scales, and also the researchers have not found any theoretical preference concerning the ratio of negative and positive items to be included in the scale.

Aims :

The current study aims at:

1-Measuring the psychometrics represented by item discrimination, item validity, item reliability, validity, and reliability of the scale three versions.
2-Comparing the psychometrics represented by item discrimination, item validity, item reliability, validity, and reliability of the scale three versions.

Limits   :

The present study is limited to:
1-undergraduate students at the University of Baghdad during the academic year 2015-2016.
2-attitude scale towards democracy, including 20 negative and 48 positive items.
3-the psychometrics represented by item discrimination, item validity, item reliability, validity, and reliability.
Keywords: attitude scale , psychometrics, Validity ,reliability

2. THEORETICAL BACKGROUND

Attitudes Measurement Techniques:

The most commonly used techniques in attitude measurement are:

1-**Behavioour Observation Technique:**

This technique depends on observing the individual's behaviors in natural situations or positions. It specifically suits children more than other ones.

2-Interview Technique:

This technique is suggested by Aice and Herricto find out the students' attitudes and values. It is time consuming as it takes a long time by the interviewer with each interviewee to find out the attitudes in question (Duran, 1985: 24).

3-Performance Technique:

This technique is based on observing the individual during the natural or professional behaviors or doing a certain job or work in a natural or pre-arranged experimental position (Al-Rousan etal, 1991: 23).

4-Self-report Technique :

This technique depends on a set of items related to the attitude intended to be measured and the respondent is requested to determine his/her response in terms of his/her own point of view or knowledge on the subject matter .This technique expresses precisely the spot of the individual on the scale. Moreover, it is easy to prepare and administer. It is effective in measuring the attitude intensity and scope. .This technique has a high value in transferring the expressions and descriptive data into digitals that can be subjected to statistical analysis (Hammouda & Imam, 1994: 8). Furthermore, Self-report Technique is mostly recognized by saving both time and costs on the part of the researcher (Al-Masri, 1999: 33).

Attitudes Classification:

An attitude is a state of nervous and psychological aptitude and readiness that organizes the individual's experience. It has a guided effect which indicates individuals' responses to subjects (themes) and positions (Al-Samarrai,1999: 141).

Generally speaking, attitudes are usually classified on different bases:

I. Theme- based Attitude:

a- **General:** It is the attitude that is concerned with the issue as a whole. In other words, it is the attitude which tackles the individual's behavior and actions of the whole element. This type of attitude is more stable than the specific one. Examples of such type of attitude are a man's attitude towards woman's work and the attitude towards foreigners of different nationalities.

b- **Specific:** It refers to the attitude that is concerned with part of the theme or issue. This attitude either disappears as a result of composing other special attitudes, or becomes constant and relatively stable such as children's fear of dogs rather than other animals (Al-Kindri, 1992: 325).

1- Individuals- based Attitude:

a- **Collective**: It is the attitude that is shared by a large number of individuals such as admiration of people to celebrities.

b- **Single**: It is the attitude which is assured by one individual in a group such as admiration of one person of his/her friend.

2- Clearness- based Attitude:

a- **Public**: It is the attitude in which a man does not feel embarrassed to show it public. It is in agreement with the standards and values of the group, such as membership of someone to the political parties.

b- **Confidential**: It is the attitude that the individual is afraid to show in public and it can be raised in specific positions such expressing oneself opinion on banned organizations (Al-Hiti, 1978: 58).

3- Strength- based Attitude:

a- **Strong**: It is the attitude that expresses the strong behavior which expresses determination. This attitude is more reliable and stable and hard to change such as the strong reaction to a certain social position.

b- **Weak**: It is the attitude that is embedded in the droopy and hesitated behavior and it can be modified and changed as in the weak and droopy reaction to a certain social position.

4- Goal- based Attitude:

a- **Positive**: It is the attitude developed by the individual towards love and respect.

b- **Negative**: It is the attitude developed by the individual away from the attitude's theme such as hatred and opposition. (Taqa:1989: 30).

3. METHODOLOGY

The Experimental Design

The researchers have adopted the experimental Repeated Measures Design with one experimental group upon which the administration of the scale versions is repeated. This type of design has many merits as Pedhazur (1982: 53) states that in this design the researcher can control the individual differences of the respondents in the variables that may affect the results obtained except the independent variable. This is likely to decrease the errors committed during measurement. Moreover, this design is more economic than other designs concerning the number of subjects required.

It is better for researchers using this design to present the versions or levels of the variable in question in a different arrangement to the groups involved so that the degree of each version or level is not affected by the sequence with which it is presented to the sample (Ismail,1987: 45).

The researchers have divided the subjects of the sample into three groups because the independent variable consists of three versions as shown in table (1):

Table (1): Repeated Measures Design in this study

Groups	Independent Variable	Dependent Variable	
	Scale Images	Psychometric Features	
		For item	For scale
G1	25% negative 75% positive 50% negative 50% positive 25% positive 75% negative	1- item discrimination 2- item validity 3- item variability	1- Validity 2- Reliability
G2	50% negative 50% positive 25% positive 75% negative 25% negative 75% positive		
G3	25% positive 75% negative 25% positive 75% negative 50% negative 50% positive		

Population

The population of the current study covers undergraduate students /morning study/ University of Baghdad for the academic year 2015-216 including (41068) male and female students distributing according to specialty, grade and gender. The total number of the scientific specialty is (24538) with percentage (60%) distributing into (10908) male students and (13630) female students. The number of the students majoring at the human sciences is (16530) with percentage (40%), while the total number of the 1st grade is (13250) with percentage (32%), whereas the 2nd grade is (10410) with percentage (25%), 3rd grade (8024) with percentage (20%), and 4th is (9384) with (23%). As

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for the gender, the total number of male students is (18480) with (45%), while the female ones is (22588) with (55%) of the population.

The Sample

The researchers intend to the sample of the study to include (300) of both genders who have been selected by Equal Random Stratified Sampling derived from college of Arts and college of Education/Ibn Rushd for Human sciences. The above number of the sample is suitable for the present study which adopts the Repeated Measures Design that requires doubling the size of the sample according to the levels of the independent variable as compared to other experimental studies. Thus, the researchers divide the sample into three parts according to the levels of the independent variable with (100) students per part. The scale versions have been presented with different sequence to drop out the effect of the scale arrangement as mentioned earlier.

The Instrument

Since the current study aims at making a comparison between the three versions of the attitude scale and not constructing the scale itself, a scale of the attitude towards democracy (Sahih,2013) with (68) items designed for the university students has been used. This scale is recognized as having both high validity and reliability. Its psychometrics have been verified according to the modern measurement theory. Moreover, the researchers secure the validity of the scale by exposing it to a jury of 8 experts in the field of Measurement and Testing. All jurors agree upon the validity of the three versions of the scale.

Scale Versions Evaluation

Items Psychometrics

The researchers verify the psychometrics of the items to compare between the three scale versions as follows:

Item Discrimination:

Two-sample t- test is used to compute the items discrimination power. The computed t-test value of the significant difference between the two contrasted groups of the total degree or score represents the discrimination power of the items. After arranging the scores from the highest to the lowest one, 27% of the sample in each of the contrasted groups is dealt with. Item discrimination coefficients are computed and found to range between 11.272-49.896, 10.465-58.905, and 16.753-82 for the first , second , and third versions respectively.

Item Validity:

Pearson Correlation Coefficient is used to compute the items validity of the three scale versions.

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The specialists in the field of the psychological measurement state that the correlation of the score of each item with an external or internal criterion is an indication of its validity. When there is no external criterion, an internal one is used represented by the total score of the respondent on the scale (Anastasi, 1976: 206). Validity coefficients are found to be ranging between 0.015-0.536, 0.010-0.718, and 0.001-0.683 for the first, second, and third versions respectively.

Item Reliability:

To compute the reliability coefficient of the items in the scale versions, the researchers multiply the SD of the item by its correlation coefficient with the total score, as suggested by Allen and Yen (1986: 124), after analyzing the subjects' responses (300 students) for the alternatives graded at the scale items. This method is used to compute the items reliability if the alternatives are graded (281-280 :1981 ،احمد). Item reliability coefficients are found range between 0.018-0.803, 0.011-0.907, and 0.001-0.977 for the first, second, and third versions respectively

The Scale Psychometrics

Scale Validity:

The researchers intend to find out the correlative validity for each version of the scale because it is one of the validity types suitable for the attitude scales. (Eysenck 1960) ,(Abu Allam, 1987), Al-Ubaidi, 1991), and (Alzibari,1997).

The researchers construct a self-estimate scale (attitude towards democracy) which consists of (7) degrees (scores). Pearson Correlation Coefficient is used to find out the correlative validity of each version of the scale and scores of the self-estimate criterion as illustrated in table (2) below :

Table (2): Results of Correlative Validity of the three Versions

Version	Item ratio	Correlative Validity Coefficient
1st	25% Negative -75% Positive	0.82
2nd	50% Negative -50% Positive	0.91
3rd	75% Negative -25% Positive	0.65

Scale Reliability:

Alpha Cronbach formula is used to compute the reliability coefficient of the scale versions according to the variance of the each item with the total variance. See table (3):

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Table (3): Results of Reliability of the three Versions

Version	Item ratio	Correlative Validity Coefficient
1st	25% Negative -75% Positive	0.901
2nd	50% Negative -50% Positive	0.943
3rd	75% Negative -25% Positive	0.916

Statistical Means:

SPSS is utilized in dealing with the statistical processing as follows:

- **Two – independent sample t-test**: to test the significant difference between the two contrasted groups in computing the discrimination power.

- **Pearson Correlation Coefficient:** to find out item- total correlations of the items in the three versions.

- **Item reliability coefficient** (Si Rix): To find out reliability of the scale versions.

- **Zr-test**: To find out the significant difference between the correlative validity coefficients and reliability coefficients (Glass, and Stanley, 1979: 311)

- ANOVA : To find out the statistical differences between the discrimination , validity, and reliability of the items in the three versions of the scale.

4. RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

This section is mainly concerned with presenting the results obtained according to the psychometrics of the scale versions and comparing between the psychometrics to identify which version is more preferable than the other two in constructing the scale attitude.

1. **Measuring the psychometric features (item discrimination, item validity, item reliability, validity, reliability) of the three images.**

The psychometric features of the items:

To achieve this aim, the items psychometrics in the three versions are computed. The indicators of discrimination, validity, and reliability of each item in the three versions are computed. Then a mean is computed for the discrimination, validity, and reliability of the items in each of the three versions. See table (4):

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Table (4): Item Discrimination, Validity, and Reliability Means

Version	Items Ratio	Item Discrimination Mean	Item Validity Mean	Item Reliability Mean
1st	25% Negative -75% Positive	28.772	0.231	0.272
2nd	50% Negative -50% Positive	45.858	0.385	0.434
3rd	75% Negative -25% Positive	30.822	0.281	0.3395

As the table shows, there are differences between the means of the three versions in that the second version gets the highest means in discrimination, validity, and reliability, then comes the third version and finally the first one comes last..

The Psychometric features of the Scale:

Validity:

Having computed the correlative validity of the three scale versions, the correlative coefficient of the first version is (0.082) with a statistical significance at a significant level (0.001). The computed t-value (24.85) is higher than the critical value (3.291), while the correlative coefficient of the second version is (0.91) with a statistical significance at a significant level (0.001). The computed t-value (28.43) is higher the critical value (3.291). The correlative coefficient of the third version is (0.65) with a statistical significance at a level (0.001). The computed t-value (14.77) is also higher than the critical value as shown in table (5):

Table (5): Correlative Validity Coefficient of the Scale Versions and their Computed T-Value

Version	Items ratio	Validity Coefficient	Computed T -Value	Critical T-table Value	Level of Significance
1st	25% Negative -75% Positive	0.82	24.85	3.291	Significant at 0.001
2nd	50% Negative -50% Positive	0.91	28.43		
3rd	75% Negative -25% Positive	0.65	14.77		

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Reliability:

Using Cronbach formula, the coefficient of the first version is found (0.901) with a statistical significance at level (0.001). The computed t-value (36.04) is higher than the critical one (3.291). The correlative coefficient of the second version is (0.943) with a statistical significance at a level (0.001). The computed t-value (94.3) is higher the critical value (3.291), while the reliability coefficient of the third version is (0.916) with a statistical significance at a level of (0.001). The computed t-value (45.8) is also higher than the critical value as shown in table (6):

Table (6): Reliability Coefficient of the Scale Versions and their Computed T-Value

Version	Item ratio	Validity Coefficient	Computed T -Value	Critical T-table Value	Level of Significance
1st	25% Negative -75% Positive	0.901	36.04	3.291	Significant at 0.001
2nd	50% Negative -50% Positive	0.943	94.3		
3rd	75% Negative -25% Positive	0.916	45.8		

2. **Comparing the Psychometric Features (item discrimination, item validity, item reliability, validity, reliability) of the three versions.**

The Psychometric Features of the items.

Discrimination:

ANOVA is used to find out the differences between the means of the items of the three versions as illustrated in table (7):

Table (7): Differences between the Means of the Items of the Three Versions

Source of Variance	S.S	d.f	M.S	F Value		Statistical Significance
				Computed	Critical	
B	11678.51	2	5839.24	30.078	2.995	Significant
W	39020.219	201	194.130			
T	50698.270	203				

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As table (7) shows, the computed F value is higher than the critical F-value. This indicates that there are statistically significant differences between the three versions regarding the discrimination coefficient. To find out the source of differences in the three versions, Scheffe's test is used as shown in table (8) below:

Table (8): Scheffe's Test Results

Version	Mean	1st	2nd	3rd
1st	28.772	---------------	16.968	2.05
2nd	45.74		-------------	14.858
3rd	30.30822			---------------

As the table illustrates, the differences between the three versions are higher than the critical Scheffe value and all differences are in favor of the second version. This means that the second version is better than both first and third versions regarding the discrimination in which the third version is found better than the first one.

Validity:

ANOVA is used to find the differences between the means of the items validity of the three versions of the scale as shown in table (9) below:

Table (9): ANOVA Results of the three versions

Source of Variance	S.S	d.f	M.S	F Value		Statistical Significance
				Computed	Critical	
B	0.834	2	0.417	16.774	2.995	
W	4.994	201	0.025			**Significant**
T	5.828	203				

The computed F value is higher than the critical F value which indicates that there are statistically significant differences between the three versions in the validity coefficient. To find out the source of differences between the three versions, Scheffe test is used as illustrated in table (10) below:

Table (10): Scheffe's Test Results

Version	Mean	1st	2nd	3rd
1st	0.231	--------	0.153	0.049
2nd	0.385		----------------	0.103
3rd	0.281			--------------

    As the above table shows, the differences between the three versions are higher than the critical difference of Scheffe's test and that all differences are in favor of the second version. This means that the second version is better than both first and third versions. The results indicate also that there is no difference between the first and third version in this regard.

Item Reliability:

        To find out the differences between the means of the item reliability of the three versions, ANOVA is used as indicated in table (11):

Table (11): ANOVA Results of the three versions

Source of Variance	S.S	d.f	M.S	F Value		Statistical Significance
				Computed	Critical	
B	0.947	2	0.487	90495	2.995	
W	10.304	201	0.051			Significant
T	11.278	203				

    The computed F value is higher than the critical one which indicates that there are statistically significant differences between the three versions concerning the item reliability coefficient. To find out the difference of differences in the three versions, Scheffe test is employed as revealed in table (12) below:

Table (12): Scheffe's Test Results

Version	Mean	1st	2nd	3rd
1st	0.272	------------	0.162	0.123
2nd	0.434		------------------	0.038
3rd	0.395			------------------

As the table shows, the differences between the three versions are higher than the critical Scheffe test value and the difference is in favor of the second version as compared with the first one, and in favor of the third version as compared with the first one, whereas there is no difference between the second and third versions.

The Psychometrics of the Scale:

Validity:

Z-test is used to find out the significant difference between the correlative validity coefficient of the scale versions as illustrated in table (13) below:

Table (13): Z Values between the Correlated Coefficient for the Three Versions

Version	Validity Coefficient	Fisher Standard Value	Computed Z Value	Critical Z Value	Level of Significance
1st	0.82	1.157	4.637	3.291	0.001 in favour of the 2nd
2nd	0.91	1.1528			
1st	0.82	1.157	4.7753	3.291	0.001 in favour of the 1st
3rd	0.65	0.775			
2nd	0.91	1.1528	9.412	3.291	0.001 in favour of the 2nd
3rd	0.65	0.775			

The above table reveals the following:

1- Superiority of the second version upon the first one with a statistical difference at a significant level of (0.001) and also its superiority on the third version at the same level.
2- Superiority of the first version upon the third one at a significant level of (0.001).

This result indicates the superiority of the second version upon the other two of the attitude scale regarding the correlative validity coefficient.

Reliability:

The Z-test has been used to find out the significance difference between the correlative coefficients as described in table (14) below:

Table (14): Z Values between the Correlated Coefficient for the Three Versions

Version	Validity Coefficient	Fisher Standard Value	Computed Z Value	Critical Z Value	Level of Significance
1st	0.901	1.499	3.55	3.291	0.001 in favour of the 2nd
2nd	0.943	1.783			
1st	0.901	1.499	0.725	1.96	Not Significant
3rd	0.916	0.557			
2nd	0.943	1.783	2.825	2.576	0.001 in favour of the 2nd
3rd	0.916	0.557			

The above table reveals that:

1- Superiority of the second image upon the first one with a statistically significant difference at a significant level (0.001), and also upon the third version at the same level.
2- There are no statistically significant differences between the first version and the third one.
3- Superiority of the second version upon the third one at a significant level (0.01).

The above result shows the superiority of the second version upon the other two ones of the attitude scale in relation to the correlative validity coefficient.

Recommendations:

In the light of the results obtained in the current study, the researchers put forward the following recommendations:

1. Adopting the scale second version ratio of positive and negative items (50% X 50%) in constructing attitude scales.
2. Conducting further studies for the specialists in the field of the psychological measurement and educational evaluation that highly depend on measurement in constructing the psychological scales according to the psychometrics related to validity and reliability.
3. Encouraging researchers in the field of the educational and psychological sciences to conduct more tests and scales.

Suggestions:

Based on the results gained, the researchers suggest the following:

1- Conducting a balancing study between the Latent Traits Theory Models (One – parameter, two – parameter, three – parameter) in preparing the scale versions.

2- Conducting a balancing study between the Latent Traits Theory Models and the Classical Theory in preparing the versions of the attitude scales.

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