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Approaches to Attitude Measurement: a Critical Analysis of their Salient Features

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Abstract
Attitudes are predispositions to react positively or negatively, in some degrees, towards a class of objects, ideas, institutions, or people. Therefore, the most straightforward way of finding out about someone's attitudes would be to ask them. However, attitudes are related to self-image and social acceptance. In order to preserve a positive self-image, people's responses may be affected by social desirables. They may know well about their true attitudes, but answer in a way that they feel socially acceptable. It is against this basis that the paper focuses on the methods of measuring attitudes. The paper critically examines the basic steps in developing and rating of likert or summated rating scales, thurstone or equal appearing interval scales, Guttman or Cumulative scale, as well as Osgood's semantic differential scale such as generation of items, item selection, item sorting and final selection of scales. The implication of the study is that the reliability and validity of any attitude scale determined to a large degree by the design and construction of the scale. The study recommended among others that the researcher measuring attitudes should use definite approaches to evaluate attitudes in which people's actions correlated with their expressed opinion.

Keywords: Attitude measurement, Likert scale, Thurstone scale, Guttman scale, Osgood scale

Introduction
The definition and measurement of attitude have always constituted challenging tasks for researchers. If attitude is thought to be something within the person, which portrays an inclination, or predisposing, the question of how it may be identified or measured becomes very important. Esere (2002) defined attitude as mental disposition, as it indicates opinion or allegiance. She further stated that, attitudes are best expressed when an individual makes statements about his feeling or opinion on a certain events, ideas, situations or person. Osborne, Simeon and Collins (2003) considered attitude as an effective evaluation; they pointed out that attitude involves object for which the person has positive, neutral or negative affections. Adebowale, Adediwura and Bada (2009), defined attitudes as dispositions which have developed through long and complex process. Sheu, Owolabi & Ogunjimi (2015), also seen attitude as an organized predisposition to think, feel, perceive and behave towards a cognitive object.

Ogunleye (2001) pointed out that attitude are predispositions to react positively or negatively, in some degrees toward a class of objects, ideas, institutions, or people. Generally, students and teachers possess different attitudes toward their schools, groups, things or experience, which they bring to school each day. While the teacher may have noticed some of these attitudes, they seldom attempt to measure them. Therefore, the nature of questions and issues on attitude seem to imply the need for methods of assessment that are sensitive to nuances and inferences from beliefs, opinions and behaviours. Weinburgh (2005) reported that to make an effective

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measurement of attitude, researchers must be capable of drawing important patterns from subjective data. This issue centers on the use of carefully normed, objective, reliable easy-to-administer scales on the one hand situation, subjective, open-ended technique on the other.

There have been some definite approaches used to study attitudes. Evaluation and assessment of attitude are often accomplished through the use of the following scaling techniques:

(a) Likert or summated rating scales
(b) Thurstone or equal appearing interval scales
(c) Guttman or cumulative technique
(d) Osgood's semantic differential scale

(A) Likert or Summated Rating Scale

Likert or summated rating scale is a type of psychometric response scale often used in questionnaires and is the most widely used scale in survey research. Likert scale according to Latham (2006) is a bipolar scaling method, measuring either positive or negative response to a statement. By this method, a number of statements, positive and negative, regarding a chosen issue or objects are presented to the respondents. The respondent indicates his reaction to each statement in one of five ways along this order, Strongly Agree (SA), Agree (A), Undecided or Neutral, Disagree (D) and Strongly Disagree (SD). Numerical values are attached to each viz: 5,4,3,2,1, for a favourable statement, for an unfavourable statement the scores are reversed viz: 1,2,3,4,5 (Latham, 2006).

The scale was named after Rensis Likert, who published a report describing its use (Latham, 2006). Sometime apart of traditional five points scale, four points is used; this is a force choice method since middle option of "Neither agree nor disagree" is not available. The following are different Likert-type scale response anchors have identified by Vagias (2006):

Table 1: Likert-Type Scale Response Anchors

Level of Acceptability	**Level of Appropriateness**	**Level of Importance**	**Level of Agreement**
1. Totally unacceptable	1. Absolutely inappropriate	1. Not at all important	1. Strongly disagree
2. Unacceptable	2. Inappropriate	2. Low importance	2. Disagree
3. Slightly unacceptable	3. Slightly inappropriate	3. Slightly important	3. Somewhat disagree
4. Neutral	4. Neutral	4. Neutral	4. Neither agree or disagree
5. Slightly acceptable	5. Slightly appropriate	5. Moderately important	5. Somewhat agree
6. Acceptable	6. Appropriate	6. Very important	6. Agree
7. Perfectly Acceptable	7. Absolutely appropriate	7. Extremely important	7. Strongly agree
Knowledge of Action	**Level of Difficulty**	**Reflect Me**	**My beliefs**
1. Never true	1. Very difficult	1. Very untrue of me	1. Very untrue of what I believe
2. Rarely true	2. Difficult	2. Untrue of me	2. Untrue of what I believe
3. Sometimes but infrequently true	3. Neutral	3. Somewhat untrue of me	3. Somewhat untrue of what I believe
4. Neutral	4. Easy	4. Neutral	4. Neutral
5. Sometimes true	5. Very easy	5. Somewhat true of me	5. Somewhat true of what I believe
6. Usually true	**Level of Concern**	6. True of me	6. True of what I believe
7. Always true	1. Not at all concerned	7. Very true of me	7. Very true of what I believe
Priority:	2. Slightly concerned	**Priority Level**	
1. Not a priority	3. Somewhat concerned	1 – Not a priority	
	4. Moderately concerned		

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2. Low priority
3. Somewhat priority
4. Neutral
5. Moderate Priority
6. High priority
7. Essential priority

Affect on X
1 – No affect
2 – Minor affect
3 – Neutral
4 – Moderate affect
5 – Major affect

Frequency
1 – Never
2 – Rarely
3 – Occasionally
4 – A moderate amount
5 – A great deal

Level of Familiarity
1 – not at all familiar
2 – Slightly familiar
3 – Somewhat familiar
4 – Moderately familiar
5 – Extremely familiar

Level of Detraction
1 – Detracted very little
2 – Detracted little
3 – Neutral
4 – Detracted much
5 – Detracted very much

Level of Satisfaction – 5 point
1 – Not at all satisfied
2 – slightly satisfied
3 – moderately satisfied
4 – Very satisfied
5 – Extremely satisfied

Level of Influence
1 – not at all influential
2 – slightly influential
3 – somewhat influential
4 – very influential
5 – extremely influential

Level of Quality – 5 point
1 – Poor
2 – Fair
3 – Good
4 – Very good
5 – Excellent

5. Extremely concerned

Level of Consideration
1 – Would not consider
2 – Might or might not consider
3 – Definitely consider

Level of Support/Opposition
1 – Strongly oppose
2 – Somewhat oppose
3 – neutral
4 – Somewhat favor
5 – Strongly favor

Level of Desirability
1 – Very undesirable
2 – Undesirable
3 – neutral
4 – Desirable
5 – Very desirable

Frequency of Use
1. Never
2. Almost never
3. Occasionally/Sometimes
4. Almost every time
5. Every time

Level of Awareness
1 – not at all aware
2 – Slightly aware
3 – Somewhat aware
4 – Moderately aware
5 – Extremely aware

Good / Bad
1 – Very negative
2 –Negative
3 – Neutral
4 – Positive
5 – Very positive

Level of Satisfaction – 7 point
1 – Completely dissatisfied
2 – Mostly dissatisfied
3 – Somewhat dissatisfied
4 – neither satisfied or dissatisfied
5 – Somewhat satisfied
6 – Mostly satisfied
7 – Completely satisfied

2 – Low priority
3 – Medium priority
4 – High priority
5 – Essential

Level of Probability
1 – Not probable
2 – Somewhat improbable
3 – Neutral
4 – Somewhat probable
5 – Very probable

Level of Participation
1 – No, and not considered
2 – No, but considered
3 – Yes

Frequency – 7 point
1. Never
2. Rarely, in less than 10% of the chances when I could have
3. Occasionally, in about 30% of the chances when I could have
4. Sometimes, in about 50% of the chances when I could have
5. Frequently, in about 70% of the chances when I could have
6. Usually, in about 90% of the chances I could have.
7. Every time

Level of Difficulty
1 – Very difficult
2 – Difficult
3 – Neutral
4 – Easy
5 – Very easy

Barriers
1 – Not a barrier
2 – Somewhat of a barrier
3 – Moderate barrier
4 – Extreme barrier

Level of Problem
1 – Not at all a problem
2 – Minor problem
3 – Moderate problem
4 – Serious problem

Level of Agreement
1. Strongly disagree
2. Disagree
3. Neither agree or disagree
4. Agree
5. Strongly agree

Frequency – 5 point
1 – Never
2 – Rarely
3 – Sometimes
4 – Often
5 – Always

Amount of Use
1. Never use
2. Almost never
3. Occasionally/Sometimes
4. Almost every time
5. Frequently use

Likelihood
1 – Extremely unlikely
2 – unlikely
3 – Neutral
4 – likely
5 – Extremely likely

Level of Responsibility
1 – Not at all responsible
2 – somewhat responsible
3 – mostly responsible
4 – completely responsible

Level of Satisfaction – 5 point
1 – Very dissatisfied
2 – dissatisfied
3 – unsure
4 – satisfied
5 – Very satisfied

Comparison of Two Products
1 – much worse
2 – somewhat worse
3 – about the same
4 – somewhat better
5 – much better

(Vagias, 2006)

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William (2006) stated the following basic steps in developing a Likert or Summated scale:

Definiting the Focus:

As in scaling methods, the first step is to define what it is you are trying to measure, because likert scale is a unidimentional scaling method. It is assumed that the concept one want to measure is one dimensional in nature.

Generating the Items:

Next is to create a set of potential scale items that can be arrange on a 1- to – 5 or 1-to-7 disagree, agrees response scale. Sometimes item can be created by the researcher based on his intimate understanding of the subject matter. But, more often than not, it is helpful to engage a number of people in the item creation step. It is desirable to have as large set of potential items as possible at this stage, about 80-100 would be best.

Rating the Items:

The next step is to have a group of judges to rate the items. Usually researcher would use a 1 to 5 scale where: 1 = Strongly unfavourable to the concept, 2 = somewhat unfavourable to the concept, 3 = undecided, 4 = somewhat favourable to the concept, 5 = Strongly favourably to the concept. At this stage, the judges are not telling researcher what they believe; they are judging how favourable each item is with respect to the construct of interest.

Selecting the Items:

The next step is to compute the inter-correlations between all pairs of items, based on the rating of the judges. Items can also be select by compute each individual's score by summing the scores of the responses to each of them. Eliminate those items that do not discriminate between the high and low scores on the total judging. Determine the average score on each statement among those in the high quartile and similarly among those in the low quartile. Those statements on which these averages differ by the largest amount are most discriminating.

(B) Thurstone or Equal Appearing Interval Scales

The Thurstone scale was the first formal technique for measuring an attitude. It was developed by Loius Leon Thurstone 1920s, as a means of measuring attitudes. It is made up of statements about a particular issue, and each statement has a numerical value indicating how favourable or unfavourable it is judged to be. People check each of the statements to which they agree, and a mean score is computed, indicating their attitude, Thurstone cited in William (2006). Thurstone scale is also called the method of equal appearing intervals, is more laborious than the likert scale and so less used by researchers. The procedure is as follows:

Item Selection:

About 100-200 items or statements which could be judged as favourable or unfavourable are selected on the attitude or feeling being measured. The statements should be direct and express positive, neutral or negative feelings towards some institution or objects.

Sorting of Items:

About 50 judges are made to sort the statements into seven, nine or eleven categories depending on the favourableness or non-favourableness of each expression. The judges's classification must be noted, represent their judgments of the favourableness of the statements and has nothing to do with the judges own attitude toward the object. To be able to categorize about

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150 statements, the judge determines the category of each by putting the slip to each statement in a pile in each of the categories or by assigning a category code (1-11) to each statement.

Selecting Scale Items:

About 20-25 items are finally selected to be on the scale. Their choice is determined by the number of judges that agree to place in the same category.

Were the highest number of judges agree to place item in category one, the item is selected. So are items selected throughout all categories (William, 2006)

(C) Guttman Scale or Cummulative Technique

A guttman scale is a psychological instrument developed by Louis Guttman in 1944 called Guttman's scale or cumulative scale or scaleogram analysis to overcome the problems seen in likert and thurstone scales. The critics of the later two pointed out that the scales contained heterogenous statements on various dimension or an attitude object. Guttman felt that several dimensions are lumbed on one scale and so the scores so obtained may be difficult to interpreter as the attitude of thee respondent to a particular dimension of the issue. His technique stresses on unidimensional scale that would show attitude a single dimension. A respondent who agrees with item "B" automatically agrees with "A" and if he agreed with "C" he agrees with "A" and "B". The property of Guttman's model is that a person's entire set of responses to all items can be predicted from their cumulative score because the model is deterministic (Andrich, 2005).

The Guttman scale is used mostly when researchers want to design a short questionnaire with good discriminating ability. The Guttman model works best for constructs that are hierarchies and highly structured such as social distance, organizational hierarchies and evolutionary stages. Guttman suggested three conditions for selecting scales items:

1. There must be an attitude towards the object, class of object, event or idea in the mind of the people in the population sampled;
2. Set of statements which must be meaningful and which would elicit responses that would show attitude of the respondents must be found;
3. The items, statements or questions must represent different degrees along a single dimension in each dimension in each compartment of the scale.

(D) Osgood's Semantic Differential Scale

Osgood and others developed another approach to measuring attitudes towards objects, subjects and events. Unlike Thurstone and Likert, the method is not that of attitude scale construction but rather a way of measuring attitude. Osgood's technique requires the respondents to rate a particular object along some types of bipolar semantic scale for example, sweet – sour. This method is used on the principle that is denotative and the connotative. Osgood used a seven point-scale-three positive, zero mid-way and three negative. In addition Osgood's semantic differential scale used factors in the use of adjectives:

1. The evaluation factors e.g. good – bad, clean – dirty;
2. The potency factor e.g. strong – weak, large – small;
3. The activity factor e.g. active – passive, fast – slow (Osgood, Suci and Tannebaum 1957).

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Table 2: Graphical summary of the four Approaches

Approaches	Major Advantages	Major Limitation	Questioning of Validity	Practicability
Likert or summating rating scale	The scale is easily transforms into a seemingly interval scale which is amenable to statistical analysis i.e. chi-square(X^2). It yields satisfactorily reliability. Judges are not employed in this method; instead the scale is derived by item analysis technique.	It is an ordinal scale and therefore has a limited value in statistical analysis. It is an arbitrary scales and it has the problem of validity and reliability.	Most of the attitude scales do a sufficiently good job of sampling verbal reactions to be considered valid measures of expressed attitudes.	In practice, it is flexible and consequently can be used to measure in minute detail and the degree of intensity of feeling or attitudes.
Thurstone or equal appearing interval scale	Judges determine the points on the attitude continuum, and their judgement represents a great achievement in attitude scale construction.	Thurstone scale is more laborious than the likert scale and less used by the researchers, because of the variability in the judge's judgement.	They achieved the content representativeness of the scaling procedures by starting with a broad collection of the things that people says about an issue.	Thurstone scale is more laborious and less used by the researchers.
Guttman scales or Cummulative technique.	The scale is ranked on single underlying dimension, and allows the researcher to predict all of the responses to the scale items following the selected item.	The major problem of this scale is its inconsistencies in the selection and predictions of the responses.	However, the validity of the scale can be tested in much the same manner as with the other measuring procedure.	The Guttman scale is used mostly when researchers want to design a short questionnaire with good discrimination ability. It works best for constructs that are hierarchical and highly structured i.e social distance, organizational hierarchies etc.
Osgood's semantic differential scale.	This scale is one of the most widely used in the measurement of attitudes. One of the reasons is the fertility of the items. The bipolar adjectives pairs can be used for a wide variety of subjects, and as such the scale is nicknamed "the ever ready".	The biggest limitation of this scale is that, the properties of the level of measurement are unknown. Therefore most statistically sound approach treats it as an ordinal scale.		In practice this scale provides an interesting insight into the border area between linguistics and psychology.

Implications of these scales to research studies

Attitude is regarded as a complex structure comprised of affective and cognitive components. These components were found to account for behavior and behavioural intentions of an individual. Katz and Scotland (1999) point out that all true attitude measuring scale must have

both cognitive and affective components. Similarly, it has been observed by the researchers such as Ostrom(1999) and Kothandapani (2000) that evaluative dimension of each of discussed measuring instruments represent alternative measure of affective or cognitive component of attitude (unidimensional). It was observed that only Likert or Summated scale that can identify the two components of attitude.

It was also observed that the precision (reliability) and accuracy (validity) of verbal instrument determined to a large degree by the design and construction of the scale (Andrich, 2005). When questionnaire are designed, feasibility, validity and reliability are important. Patient preference and ease of completion are good indicators of an instrument's feasibility. People regardless of age prefer the Likert scale and find it easiest to complete than any other scales.

Conclusion

The most common method of obtaining an estimate of a person's attitude is through an attitude scale. In these techniques, the individual is asked to exams their opinion on several controversial statements about the psychological object under consideration. The logic behind the use of opinion to measure attitude is that it helps respondents to enlist their feelings about a social object under study. To the extent people's actions correlated with the expressed opinion. We can naturally predict the formal from the later. However, the significance of all these attitude scale is to measure what it prepare to measured, and yields higher coefficient in all it psychometric properties.

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