

REVIEW ARTICLE

Likert Technique of Attitude Scale Construction in Nursing Research

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ABSTRACT:

Aim: The aim of this paper were (1) to raise awareness of constructing Likert technique of attitude scale and (2) to provide strategies to enable nurse researcher to design and develop their attitude measure by following Likert technique.

Background: The number of questionnaires developed by nurses has increased in recent years. This paper explores the process by which a reliable and valid attitude questionnaire can be developed. We know that nurses are still not generally adept at the psychometric evaluation of new measures. In this paper steps in construction of attitude scale has explained in detail and simple to understand.

Methods: In this paper, Likert technique of attitude scale construction is discussed. Likert scale is by far the most popular attitude scale type. Likert in 1932 presented a technique which according to him did away with the need for a judging group. His procedure is to extract from the responses of a group of subjects indicating their own attitudes the sigma values to be assigned each response. A simpler method of assigning arbitrary values, 1, 2, 3, 4, 5 to the degrees of agreement and disagreement with each statement has also been suggested. Each step was mentioned clearly with examples. Different methods of reliability and validity include systematic and variable errors are mentioned. Principles of constructing attitude scale are mentioned.

Discussion: Attitude scales attempt to determine an individual believes, perceives *or* feels. It is a measuring device, consisting of statements to which the respondent must express degree of agreement or disagreement.

Conclusion: The systematic construction of attitude scale through Likert technique and steps was clearly described in this review article.

KEYWORDS: Constructing attitude scale, Likert technique, psychometric evaluation.

INTRODUCTION:

Likert-type scales is most popular form of attitude measurement (henceforth, referred to as “attitude scales”)^{1,2} are so called because they are a derivation of a scaling procedure developed by Rensis Likert, whose original procedure was designed to collect interval-level data. Attitude scales of this sort typically are comprised of a set of statements or “items” that scale a respondent’s level of agreement, favorability, or other similar perception.

The class of all possible items that could be made about a given referent object can be called a “universe of content,” describing possible stimuli from which attitudes toward that object may arise.

While it is highly possible that someone may have a favorable overall impression of a given object, yet be unfavorable about a particular aspect or dimension of it, and vice versa, any item statement used in a scale should be useful in differentiating between persons with favorable and unfavorable attitudes. Following are things to consider when creating an attitude scale.

The Likert scale is by far the most popular attitude scale type. Likert in 1932 presented a technique which according to him did away with the need for a judging group.

His procedure is to extract from the responses of a group of subjects indicating their own attitudes the sigma values to be assigned each response. A simpler method of assigning arbitrary values, 1, 2, 3, 4, 5 to the degrees of agreement and disagreement with each statement has also been suggested. This latter method is the more practical since total scores secured on such a basis correlate +.99 with those secured upon the basis of the sigma scoring technique.³

Attitudes are individually attributed emotions, beliefs and behavioral tendencies an individual has towards a specific abstract or concrete object.⁴ Attitude is a personal disposition common to individuals, but varying in degrees, which impels individuals to react to object, situations or prepositions in ways that can be called favourable or unfavourable. It is the degree of positive or negative disposition associated with some psychological object. Interest is a feeling which accompanies special attention to some content or objects. Interest and attitude denotes the positive or negative feeling or disposition. Hence, the statements to measure the dimension were constructed in terms of the interest and attitude is likely to have, whether it is positive or negative. Scaling is the science of determining measuring instruments for human judgment.

Attitude scales attempt to determine what an individual believes, perceives or feels. Attitudes can be measured toward self, others, and a variety of other activities, institutions, and situations. An attitude scale is a crude measuring device, consisting of a number of statements to which the respondent must express his or her degree of agreement or disagreement. Depending on the respondent's endorsement of each statement, a particular score is rendered. The total score which is calculated by adding up the scores for each item, places the respondent on a continuum from least favorable to most favorable. When the score is high more the favorable attitude of the respondents. The qualities of a person are not independent; rather they are interactive like cogs in a cogwheel. Due to this, changes in the quality of persons, behaviour, thoughts and understanding is directly connected to his attitudes. In other words, a person's change of behaviour is directly related to his attitude.⁵

An attitude is a hypothetical construct that represents an individual's degree of like or dislike for something. Attitudes are generally positive or negative views of a person, place, thing or event, this is often referred to as the attitude object. People can also be conflicted or ambivalent toward an object, meaning that they simultaneously possess both positive and negative attitudes toward the item in question

Basic components of attitude scale:

The three basic components of attitude are cognitive, cognitive and affective parts. *Cognitive Component* is mental component, consisting of opinion or belief and perception part of attitude. When constructing opinion or judgment scale on the basis of available information, first decide whether favorable or unfavorable opinion is that, it is the cognitive part of attitude. It is more fundamental and constant over time and more closely connected to basic values. *For an example* "I think my friend is kind, charming, and humorous." *Conative Component* refers to the emotional aspect of attitude. It is inclination of action. This is perhaps the most often referred part of attitude and decides mostly the desirable or undesirable aspect of attitude. *For an example* "I feel good when I am around my friend." *Affective Component* refers to the behavioral part of attitude. If we have a positive attitude for a particular object, it is likely to be translated into a particular type of behavior, such as buying or procuring that object. *For an example* "I try to hang out with my friend whenever I get the chance." Though most attitudes have all three components above mentioned, they can be more strongly rooted in either the cognitive or the affective component.

Likert technique of attitude scale :

For the assessment of attitudes, various methods such as observation, question lists, incomplete sentences and storytelling as well as various techniques such as choosing the wrong one and content analysis have been employed^{6,7}. However, the most prominent and widespread method for the assessment of attitude has been attitude scales. Several attitude scales are being used such as Bogardus social distance scale, Thurstone scale, Likert type attitude scale, Guttman scales, Osgood emotional meaning scale. There are four basic techniques used to develop attitude scale⁸. They are Likert scale, Semantic scale, Guttman scale and Thrustone scale⁹. However, Likert scales are a non-comparative scaling technique and are uni-dimensional (only measure a single trait) in nature. Respondents are asked to indicate their level of agreement with a given statement by way of an ordinal scale. The Likert-type scale is the most widely used method of scale construction because of its relative ease of construction, its use of fewer statistical assumptions, and the fact that, in contrast to other scaling techniques, no judges are required¹⁰

Steps in construction of Likert attitude scale:

1) **Discussion:** Informally discuss the issues with the people, extension workers, experts, NGOs and also consult secondary sources. *For an example* if an investigator wants to develop a scale on attitude of schizophrenic patients among schizophrenic patients among caregivers, discuss the topic within caregivers, staff nurses who is giving care to schizophrenic patients, experts in the field such as psychiatrist, psychologist, psychiatric nurse, psychiatric social workers and NGOs.

2) **Review:** Review related literature to the particular topic of interest. Refer journals, books, articles and net

sources. Literature review helps in the process of item generation for the scale¹¹

3) **Writing statements:** Based on the discussion and extensive review, collect a set of such statements on the issues. Make the items simple and straight forward so that respondents are able to fill out the scale quickly and easily¹²

Writing positive and negative statements: Write acceptance or rejection statements, it should imply a different degree of favorable or unfavorable attitude towards the issue in which an investigator intended to assess. Statement or item could be positive or negative. *Positive statements* should be objective statements which are acceptable by those having the attitude, and just as unacceptable by those not having it. *For an example* "I frequently use library resources to go beyond the required reading". *Negative statements* should be objective statements which are acceptable to those not having the attitude and just as unacceptable to those having it. *For an example* "Home work assignments are designed to meet course requirements. It is impractical in time and energy to do more than is required"¹³

4) **Create an item pool:** Continue writing items, both positive and negative, until item pool at least twice the size the size of instrument intended¹⁴ *For an example* "If an investigator plan to have 20 items in final scale, then create an item pool of 40 items".

5) **Editing of items:** After having collected as many relevant statement as possible, the next step is to go through each item carefully¹⁵

Criteria for editing:

Avoid the statements which refer to past rather than to present *for an example* "At one time small pox affected large number of people". Avoid using statements that are factual or capable of being interpreted as factual. *For an example* "Using power point slides is a modern medium in educational technology". Avoid irrelevant to be endorsed by almost every one or no one. For an example "Admitted in private hospital proves expensive". Avoid irrelevant to the object under consideration. For an example "In future surely there will be treatment for AIDS". Avoid more than one thought and double negative statements. *For an example* "Most of the people **do not** think that AIDS **does not** cure". Avoid certain word that may not be understood by the respondents. *For an example* "Depot injection is more advanced form". Avoid certain such universals such as **all, always, none, never, often** etc as these introduce ambiguity. Avoid such words as only, just, merely etc. Avoid biased languages. It is important to avoid using emotional words or phrases in items. Avoid double barrel questions, where the item actually combines two different questions into one. *For an example* "Do you think that the nursing service department is prompt and helpful?" Any items that include the word "and" should be closely

examined to see if it is actually a double barrel question. Avoid non monotonic questions, where people could provide the same answer to a question for different reasons. *For an example* "Only people in the nursing should be allowed to wear white uniform". Some could disagree with item either because they feel that nurses should be allowed to wear white uniform or because they feel that no one should be allowed to wear white uniform¹⁶.

6) **Rank:** After editing, select the items and give rating to the items. Rank orders the items on clarity and potency. Choose an equal number. Five categories are fairly standard. Some scale constructors use seven categories and some prefers four or six response categories with no middle category. All of these seem to work satisfactory¹⁷

7) **Scoring:** The points given for each response depend on whether the statement is positive or negative. The person who strongly agrees with a positive statement gets maximum points. One who strongly disagrees with a positive statement gets the minimum points. For the purpose of scoring, assign the numerical value of 5 to strongly agree, 4 to agree, 3 to undecided, 2 to disagree and 1 to strongly disagree. In case of the item is negative, reverse the order of scoring. 5 to strongly disagree, 4 to disagree, 3 to undecided, 2 to agree and 1 to strongly agree¹⁸

8) Write instructions which clearly explain how to select response on the form. Write in simple and easily understandable language.

9) **Formatting the scale:** Randomly order the selected items. Use letters to indicate choices such as SD, D, U, A, SA.

10) **Validity:** Validity is the extent to which the measure provides an accurate representation of what one is trying to measure. Validity includes both systematic and variable error components. A *systematic error*, also known as bias, is one that occurs in a consistent manner each time something is measured. *For an example* "A biased question would produce an error in the same direction each time it is asked". Such an error would be systematic error. A *variable error* is one that occurs randomly each time something is measured. *For an example* "A response that is less favorable than the true feeling because the respondent was in a bad mood (temporary characteristic) would not occur each time that individual's attitude is measured". In fact, an error in the opposite direction (overly favorable) would occur if the individual were in a good mood. This represents a variable error¹⁹

11) **Reliability:** The term reliability is used to refer to the degree of variable error in a measurement. Reliability is the extent to which a measurement is free of variable errors. This is reflected when repeated measures of the same stable characteristic in the same objects show limited variation²⁰.

Approaches to assessing reliability:

S. No	Approach	Description	uses
1.	Test Re-test reliability	Applying the same measure to the same objects a second time	Used to assess the consistency of a measure from one time to another
2	Alternative form reliability/parallel form	Measuring the same objects by two instruments that are designed to be as nearly alike as possible	Used to assess the consistency of the results of two tests constructed in the same way from the same content domain.
3	Internal comparison reliability/ internal consistency	Comparing the responses among the various items on a multiple-item index designed to measure homogeneous concept	Used to assess the consistency of results across items within a test.
4	Scorer reliability/ inter rater	Comparing the scores assigned by two or more judges	Used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon.

Pre-testing:

Pre-testing the questionnaire is an essential step before its completion. The purpose of the pretest is to enhance its clarity and to ensure acceptance of the study by the participants and also to check question wording. Provides information on possible ethical problems overlooked previously. Helps determine if the research questions or hypotheses are appropriate. Helps determine if the levels of measurement are appropriate for the selected variables. Provide a check that the population is appropriately defined. Provide information on the feasibility and the appropriateness of the sampling method. Helps determine sample size by allowing estimation of variance from the pre-test sample. Provide additional training for interviewers, instrument administrators, experimenters, coders, and data editors. Helps determine the length of the questionnaire²¹

Administration of questionnaire:

Administer the questionnaire after reliability, validity and pre test. The development of attitude scale requires the above mentioned steps and each step require constant attention to mould to shape the tool to be useful for all the professionals.

STABILITY AND CHANGE IN EXPLICIT ATTITUDE JUDGMENTS:

Attitude researchers infer that a person’s attitude is “stable” when the person provides similar attitude reports at different times and/or in different contexts. From the perspective of construal models, dispositional assumptions are not needed and the conditions of “stability” (i.e., similar judgments across time and contexts) and “change” (i.e., dissimilar judgments across time and contexts) can be derived from general judgment models: the conditions under which judges arrive at similar or different evaluations correspond to the conditions under which contextual influences are small (resulting in observed stability) rather than large (resulting in observed change)²²

ADVANTAGE AND DISADVANTAGE:

Likert scale advantages include the following determinants, (a) simple to construct,(b) each item of equal value, (c) likely to produce a highly reliable scale, (d) easy for respondents to read and complete, (e) furnishes consistent

assessment of attitudes, (f)adaptable to most measurement situations, (g) easy to administer, and (h)

Compatible with the most optical scan sheet formats^{23,24}However, the scale has been criticized because of (a) difficulty in demonstrating validity, (b) absence of one-dimensionality or homogeneity, (c) lack of reproducibility distance, (d) distance between points on scale cannot be presumed equal (which means that it may not represent the exact feelings of the respondent), (e) multi-dimensional concepts are not accounted for, and (f) the time required to construct valid and reliable instruments²⁵ Additionally, Likert scales suffer from defects of all self-reports, i.e., subjects misrepresentation

CONCLUSION:

An attitude scale can act as a cost-effective and easy to administer instrument for gathering baseline data. Although the scores (specifically middle of the range scores) may not give insights into the exact nature of an individual’s attitudes. A closer examination of the subjects responding to favorable and unfavorable statements, followed by interviews or group discussions is needed, will reveal potential contradictions in beliefs, and thus the areas of issues will need further clarification and support. Moreover, the administration of the attitude scale and subsequent discussion will give the opportunity of their attitudes and within them which can be less readily justified. If awareness of one’s attitudes is the first step towards clarifying them and developing the appropriate frame of reference in which to receive new ideas, then attitude scales can certainly help in achieving the aim.

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