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Construction of Scale to Measure the Attitude of the Scientists towards Organizational Climate

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ABSTRACT

A scale was developed to measure the scientists' attitude towards organizational climate based on "Scale Product Method" which combines the Thurston's technique of Equal Appearing Interval Scale for selection of the items and Likert's techniques of summated rating for ascertaining the response on the scale. A tentative list of 79 statements was drafted keeping in view the applicability of statements to the area of study. The statements collected were edited in the light of the criteria suggested by Edward. These statements were framed in such a way that they expresses feelings of the scientists towards organizational climate. The score of each individual item on the scale was calculated by summing up the weights of the individual items. In all, 29 statements were selected as they were found to be non-ambiguous and non factual. Scale and Q value of each statement was calculated by using Thurstone and Chave inter-quartile range. Finally, the scale consisted of 12 statements whose median (scale) values were greater than Q values. However, when a few statements had the same scale values, statements having lowest Q value were selected by arranging the scale value in an order. Reliability was tested with 20 respondents and its value was 0.72 and validity of the scale was examined.

Keywords: Scale, Attitude, Organizational Climate, Scientists, Continuum, Reliability, Validity

INTRODUCTION

Attitude has been defined as "the degree of positive or negative feeling, affect, opinion, action and belief associated with some psychological object". The psychological object may be any symbol, institution, person, phrase, slogan, idea or ideal towards which people may differ from each other with respect to positive or negative aspect. The cognitive component of an attitude consists of the beliefs, which involves attributes like favorable or unfavorable, desirable or undesirable, good or bad etc. The feeling component refers to the emotions which give attitude a motivating character or action tendencies. The action tendency component of an attitude includes all behavioral readiness associated with it. These three components of attitude, are, however, consistently related to each other.

METHODOLOGY

Among the techniques available for the construction of the scales, the Thurstone's Equal Appearing Interval Scale (1928) and the Likert's Summated Rating Scale (1932) are quite well known. Both the methods suffer from the limitations, the first one in getting discriminating response and second one in the selection of items. Thus, the technique chosen to construct the attitude scale was of "Scale Product Method" which combines the Thurstone's technique of equal appearing interval scale for selection of the items and Likert's technique of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949).

Item collection: The items making up an attitude scale are known as statements. A statement may be defined as anything that is said about a psychological object. In initial stage of developing the attitude scale towards organizational climate, a large number of statements about organizational climate were collected from the relevant literature as well as constructed through discussion with experts, major guide and extension personnel. The statements, thus selected were edited on the basis of the criteria laid down by Edward (1957). In all, 29 statements were selected as they were found to be non-ambiguous and non factual.

Item analysis: One hundred and twenty slips of these statements were handed over to the 120 selected extension educationists and scientists working in different colleges of Anand Agricultural University. In

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order to judge the degree of "Un-favorableness" to "Favorableness" of each statement on the five-point equal appearing interval continuum *i.e.* "Strongly agree", "Agree", "Undecided", "Disagree" and "Strongly disagree" (Appendix I). The judges were visited personally along with a letter of instructions to guide them for rating the statements in desired manner for each set of the statements. Out of these experts, only 50 experts returned the statements after duly recording their judgments and were considered for the analysis.

Determination of scale and quartile value

The five points of the rating scale were assigned, ranging from 1 for most unfavorable and 5 for most favorable. On the base of judgment, the median value of the distribution, and the Q value for the statement concerned was calculated, the inter-quartile range for each statement was also worked out for determination of ambiguity involved in the statement from the following formulas.

$$S = L + \frac{0.50 - \Sigma Pb}{Pw} \times i$$

Where,

S = Median or Scale value of statement

L = Lower limit of the interval in which the 50th centile falls

ΣPb = Sum of the proportion below the interval in which the 50th centile falls

Pw = Proportion within the interval in which the 50th centile falls

i = Width of the interval, which was assumed as equal to 1.0

Thurstone and Chave (Edwards, 1957) used the inter-quartile range Q as a means of the variation of the distribution of the judgments for a given statement. To determine value of Q, two other points were measured, the 75th centile (C75) and 25th centile (C25). The 25th centile was obtained by the following formula:

$$= L + \frac{0.25 - \Sigma Pb}{Pw} \times i$$

Where,

S = Median or Scale value of statement

L = Lower limit of the interval in which the 25th centile falls

ΣPb = Sum of the proportion below the interval in which the 25th centile falls

Pw = Proportion within the interval in which the 25th centile falls

i = Width of the interval, which was assumed as equal to 1.0

$$= L + \frac{0.75 - \Sigma Pb}{Pw} \times i$$

Where,

S = Median or Scale value of statement

L = Lower limit of the interval in which the 75th centile falls

ΣPb = Sum of the proportion below the interval in which the 75th centile falls

Pw = Proportion within the interval in which the 75th centile falls

i = Width of the interval, which was assumed as equal to 1.0

Then the interquartile range or Q value was obtained by taking the difference between C75 and C25 thus,

Q = C75 - C25

Final statements for attitude scale

When there was a good agreement among the judges, in judging the degree of agreement or disagreement of a statement, Q was smaller compared to the value obtained, when there was relatively little agreement among the judges it was reverse.

Only those items were selected whose median (scale) values were greater than Q values. However, when a few items had the same scale values, items having lowest Q value were selected (Thurstone, L. L. 1946). Based on the median and Q values 12 statements were finally selected to constitute attitude scale (Table 1).

Table 1: Final statements of the scale to measure attitude of the scientists towards organizational climate

Statements	SA	A	UD	DA	SDA
I think impression created by management in my university supports the research activity. (+)					
I believe that vertical communication between senior and junior employees is discouraging. (-)					
I consider that horizontal communication within the employees is cheering. (+)					

I think that efficiency of employee in my organization is considerable factor in delegating the power. (+)
I am unsatisfied with the working conditions of my university. (-)
I think working climate of my university is impractical. (-)
I believe that level of discipline in my university is well maintained. (+)
I believe that climate provided to develop career in my university is discouraging. (-)
I think that authority is failed in creating conducive working climate in my university. (-)
I think that critical decisions are taken in my university by participatory approach. (+)
I believe that infrastructural facility made available at my university is discouraging. (-)
I think organizational environment of my university is adaptive. (+)

SA=Strongly Agree A=Agree UD=Undecided DA=Disagree SDA=Strongly Disagree

Scoring system

The selected 12 statements for the final format of the attitude scale are randomly arranged to avoid response biases, which might contribute to low reliability and detraction from validity of the scale. The responses can be collected on five point continuums *viz.,* strongly agree, agree, undecided, disagree and strongly disagree with respective weights of 5, 4, 3, 2, and 1 for the favorable statements and with the respective weights of 1, 2, 3, 4, and 5 for the unfavorable statements.

Reliability of the scale

A scale is reliable when it consistently produces the same results when it applied to the same sample. In the present study, due to limited time and resources available, split-half method of testing reliability was used. The 12 statements were divided into two halves with 6 odd numbered in one half and 6 even numbered statements in the other. These were administered to 20 non-respondent scientists. Each of the two sets of statements was treated as a separate scale and then these two sub-scales were correlated. The coefficient of reliability was calculated by the Rulon's formula (Guilford, 1954), which came to 0.72. Reliability is directly related with the length of the scale when we split the scale on odd and even number items. Thus, the scale developed was found highly reliable.

Content validity of the scale

The validity of the scale was examined for content validity by determining how well the content of the scale represented the domain subject matter under study. Since as many items covering the area as possible were selected by discussion with experts, reviewing the literature and adherence to the judges ratings, it was presumed that the instrument satisfied the content validity.

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