

Scale Construction to Measure the Attitude of Hilly Tribes towards Environmental Conservation

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ABSTRACT

To develop and standardize a scale to measure tribes' attitude towards environmental conservation "Equal Appearing Interval" method was used. Possible items concerning the psychological object i.e. 'Environmental Conservation' were collected. 42 judges responded their opinion. Finally on the basis of scale value and Q value 15 statements constituted scale. Items having high scale values with the corresponding Q values were selected from each compartment. The reliability (r 0.647) of the scale was determined by 'Split-half' method and administered in a non-sample area. Further, the whole test reliability (r_{tt}) was computed using the Spearman-Brown Prophecy formula and it was found to be 0.753 which is reliable. Content validation was carried out by subjecting the 15 items to judges' opinion on a four point continuum. The overall mean score of the scale was worked out as 3.19. The standardized scale would have practical applicability in discovering the intensity of attitude of tribes and thus it facilitates to take right decisions by policy makers.

Keywords: Attitude scale, Environmental conservation, Equal appearing interval, Scale construction, Tribes

INTRODUCTION

The debates and dialogues on global development have constantly focused on the issues of climate change and its adverse impact on human lives and their livelihood profiles (Raghuvanshi and Ansari, 2020). The global climate change has engrossed attention of thinkers from almost all fields and it is menacing to have significant and far reaching impacts on the human society (Brar *et al.*, 2020). Ensuring environmental sustainability is important to build resilient to climate change. Tribes are considered to be the guardians of the natural environment and they are playing a key role in tackling environmental degradation and climate change. India is the home for one third of the tribal population of the world because of the country's rich cultural and natural heritage. But there has been an alarm regarding the deterioration of country's environment and the condition

of the natural resources is worsening due to the over exploitation of the natural resources. The ecological balance in the nature is disrupted by many factors such as population explosion, rapid industrialization, modern agricultural practices, unplanned developmental activities, tourism, etc. Tribes are confronting with the problems of hunger, malnutrition, poverty, poor health facility and deprivation from natural resources. The present condition of the primitive tribes is comparatively worse. Added to these problems, they are facing the issue of environmental degradation which also acts as a major source of their problems. The relationship between tribes and the natural environment is symbiotic and any kind of issue in the environment has definite impacts on tribal community. Hence as the natural environment gets affected, the tribes are the main victims of the resulting environmental issues.

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Environmental issues in hilly tribal regions are outbursting in a fast rate from the last few decades by the demolition and degradation of the environment by human activities. Hilly tribal regions, the ecologically sensitive zones are having lower carrying capacities. But the regions have been experiencing high pressure for the development from the last few decades which has resulted a drastic change in the overall environment in and around the environmentally fragile hills. A perusal of different related literature confirm that the hilly tribal regions are confronting problems such as climatic issues (variations in rainfall, and temperature, unfavourable relative humidity, wind speed/velocity, unpleasant snowfall), reduction of green areas, water related issues, issues related to soil and crop, pollution of overall environment, destruction of scenic beauty, loss of biodiversity, health hazards, cultural changes due to environmental deterioration. These environmental problems affect the ecological balance. Attitude is the most indispensable concept in social psychology and plays an important role in behavior leading into social action. Therefore, their attitudinal inclination towards environmental conservation must be understood in the context itself. As such the paper explains the development and standardization of attitude scale to measure the attitude of the respondents towards conservation of the environment.

METHODOLOGY

One of the popular scaling techniques "Equal Appearing Interval" method developed by Thurstone and Chave (1929) was followed for the purpose. The attitude towards environmental conservation was operationalised as the degree of affect of the tribes towards the environmental protection. All the systematic steps were followed for the scale construction. Possible statements concerning the psychological object 'Environmental Conservation' was collected based on review of literature, discussion with scientists and extensionists. The items were screened by following the informal criteria suggested by Edwards (1969) for editing the statements to be used in the construction of the attitude scale. Based on the screening, the items were selected which formed the universe of content. Totally 90 statements were collected which were organised and

structured in the form of attitude items. The 90 statements were then subjected to judge's opinion on a five-point continuum, ranging from, most unfavourable to most favourable. The list of statements was sent to 60 judges who comprised of extension scientists from State Agricultural Universities of Tamil Nadu, Kerala, Andhra Pradesh and Karnataka and Gandhigram Rural University. Of the 60 judges, 42 judges responded. The Scale values and Q values were computed for the 90 statements by applying the formula as suggested by Thurstone and Chave (1929) which is as follows-

$$S = l + \left[0.50 - \frac{\sum pb}{pw} \right] i$$

Where, S – The median or scale value of the statement, l – The lower limit of the interval in which the median falls, $\sum pb$ – The sum of the proportions below the interval in which the median falls, Pw – The proportion within the interval in which the median falls, i – The width of the interval and is assumed to be equal to 1.0

$$Q = C_{75} - C_{25}$$

Where, Q – Interquartile range, C_{75} – the 75th centile,

$$C_{75} = l + \left[0.75 - \frac{\sum pb}{pw} \right] i \text{ and } C_{25} - \text{the } 25^{\text{th}} \text{ centile,}$$

$$C_{25} = l + \left[0.25 - \frac{\sum pb}{pw} \right] i$$

Scale reliability was calculated with Spearman-Brown Formula as follows:

$$r_{tt} = \frac{2r_{hh}}{1 + r_{hh}}$$

Where, r_{tt} – Reliability of a test estimated from reliability of one of its halves (Reliability coefficient of the whole test) and r_{hh} – Self correlation of a half test (Reliability coefficient of the half test)

RESULT AND DISCUSSION

An objective methodology was devised in order to select the attitude items keeping in mind that the statements selected should adequately represent the respective domain of the universe of content with respect to 'Environment conservation', equal appearing

interval, as far as possible items with high scale values and smaller Q values be selected and more or less equal number of items with favourable and unfavourable attitudes be selected. The scale values were arranged in descending order of magnitude and the difference between the successive scale values and the cumulative total of the computed differences were worked out. Finally 15 such items were arrived at. Since, the selected scale values should have equal appearing interval and distributed uniformly along the psychological continuum, it was necessary to form 15 compartments so as to select 15 statements at one statement from each compartment. The basis for forming the compartments was that, each compartment should be equally spaced in the continuum. For this purpose, the difference between the highest scale value (5.33) and the lowest scale value (1.14) was worked out. The difference value (4.19) was divided by 15. This formed the width of the

first class interval (0.279). The second interval was worked out by adding the difference value with the width of the first class interval. Thus the obtained second interval was 0.553. Subsequently all the 15 intervals were worked out adding the value 0.279 with the width interval. Each class interval represented a compartment for the selection of the attitude items. For example, the value 0.279 is close to 0.23 of the cumulative value of difference. Hence, this forms the first compartment. Similarly, fifteen compartments were worked out which is given in Table 1.

To select the attitude items from the 15 compartments, the scale values and the corresponding Q values were considered. One item from each compartment was selected based on the criteria already mentioned i.e. items having high scale values with the corresponding Q values. Care was taken to ensure that

Table 1: Final set of attitude items selected

S. No.	Item No.	Scale Value	Q Value	Item	Nature of item
1.	1	5.33	0.46	It is our duty to protect the environment for the future generation	Positive
2.	4	4.96	1.25	People have the right to use natural resources as much as they want	Negative
3.	11	4.73	1.01	Polluting the natural resources should be considered as a punishable offence	Positive
4.	12	4.46	2.6	Usage of chemical fertilizers and pesticides beyond the recommended level will never damage the environment	Negative
5.	58	4	0.94	Environmental protection must start from every home level	Positive
6.	41	3.84	1.07	Environmental education is not needed to preserve the environment	Negative
7.	53	3.28	2.32	Environment conservation is important to ensure the quality of life	Positive
8.	29	2.95	2.28	People can alter the environment to suit their needs irrespective of its consequences	Negative
9.	65	2.65	1.24	Practicing eco-friendly activities increases the pride of people	Positive
10.	67	2.55	0.94	Constant damage to the environment cause erratic variations in climatic factors	Positive
11.	72	2.5	1.02	It is our duty to plant more trees wherever possible to conserve our environment	Positive
12.	70	2.28	1	We alone are responsible for global warning and we have to take-up ameliorative measures	Positive
13.	71	1.95	1.19	Deforestation for developmental purpose will not affect our environment in any extent	Negative
14.	90	1.73	0.91	Application of chemical input will kill the natural enemies	Positive
15.	74	1.48	1.16	Adopting organic farming practices are wasteful efforts to conserve the environment	Negative

the selected items represented the universe of content and covered the psychological and economical domains of agriculture. Thereby, 15 items were selected with equal appearing interval and with a uniform distribution along the psychological continuum. The attitude scale thus constructed is given in the Table 1.

Reliability and content validity of the scale

The reliability of the scale was determined by 'Split-half' method. The split-half method is regarded by many as the best method for measuring reliability (Garrett, 1979). The 15 selected attitude items were divided into two halves by odd-even method (Singh, 2015). The two halves were administered separately to 30 tribal respondents' in a non-sample area. The scores were subjected to product moment correlation test in order to find out the reliability of the half test. The half-test reliability coefficient r was 0.647, which was significant at one per cent level of probability. Further the reliability coefficient of the whole test was computed using the Spearman-Brown Prophecy formula. The whole test reliability r_{tt} was 0.753. According to Singh (2015); Kumar *et al.* (2015); Kumar *et al.* (2016) when the purpose of the test is to compare the means of the two groups of narrow range, a reliability coefficient of 0.50 or 0.60 would suffice. Hence, the constructed scale is reliable as the r_{tt} was > 0.60 .

Content validity referred to the representativeness or sampling adequacy of the content of a measuring instrument (Kerlinger, 2010). Content validation was carried out by subjecting the selected 15 items to judges' opinion. Experts in the selected field of study formed the judges. They were asked to indicate the extent to which each attitude item covered the domains of the psychological object 'environmental conservation' or judge each item for its presumed relevance to the property being measured. The responses were obtained on a four – point continuum of 'most adequately covers', 'More adequately covers', 'less adequately covers' and 'least adequately covers'. Scores of 4, 3, 2 and 1 were given for the points on the continuum respectively. Totally 30 judges responded by sending their judgments. The mean score 2.5 was fixed as the basis for deciding the content validity of the scale. If the

overall mean score of the attitude items as rated by the judges was above 2.5, the scale will be declared as valid and if not otherwise. In the present case, the overall mean score was worked out as 3.19 and therefore the constructed attitude scale is said to be valid.

Administration of the scale

The final scale which would measure the attitude of tribes towards environmental conservation consisted of 15 statements. Each statement would be noted on a five-point continuum as strongly agree, agree, undecided, disagree, strongly disagree with scores of 7, 5, 4, 3, and 1, respectively for positive statements. Reversed scoring would be done in the case of negative statements. The score obtained for each statement would be summed up to arrive at the attitude score for the respondents. The score ranged from 105 (maximum) to 15 (minimum). Maximum score indicated a favourable attitude and minimum score indicated unfavourable attitude towards environmental conservation. The respondents would be categorized as 'less favourable', 'moderately favourable' and 'highly favourable' after getting the total attitude score based on the range values of the attitude score possible.

CONCLUSION

The standardized scale would have practical applicability in discovering the intensity of attitude of tribes and thus it facilitates to take right decisions by policy makers. The reliability and validity analysis revealed that selected items were highly reliable, valid and statistically significant. The scale was able to differentiate the tribes' categories by the response of tribes during reliability test. This is highly effective in quantification of behavioural aspects like attitude.

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