Original Research Paper

Attitude towards Research Scale (ATRS):
A Factor Analytic Study

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ABSTRACT

Quality in higher education can be understood at two levels, At the first level, quality may be conceived in term of four main elements, namely, relevance of the system to the society In which it functions, and three main goals of the higher education system- multiplication of the skill and knowledge, producing excellence in research related areas and making impact on or influencing several system. *Objective:* To explore the factors underlying a scale to assess attitude towards research. *Sample:* The preliminary draft of the scale was administered on a sample of 270 individuals who are students of Ph.D. of Lucknow district. The sampling was done by employing purposive sampling. *Main outcome of result:* The scale developed and used in the present study had 60 items. The principal factoring with 5 factors in attitude scale viz Usefulness of research in professional carrier, Relevance of research in personal and social life, Ethics of Research, Difficulty of research and Anxiety, General aspects of Research and research process. Conclusion: The need of hour is to gear up efforts for accessibility of attitude formation both in terms of screening as well as, prevention and treatment.

Indian higher education has never received much prominence when compared to the primary level. Academicians of our country have already pointed out that for economic and social well-being of our country majorly depends on the quality and widespread of higher education in our country. The main obstruction is the misconceptions by the general public of our country which is accompanied by the economic issues. The vision of Ministry of Human Resource and Development heads the department of Higher Education whose aim is to realize India's human resource potential to its fullest in the education sector, with equity and excellence. Higher education is a costly affair when we take into consideration the fact that almost 20% of the population still lie under the poverty line. Out of these aspects, research is of utmost significance. Research means investigation ideas and uncovering useful knowledge or quality knowledge. By quality knowledge is meant the knowledge gathered through

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employ inappropriate research methodology i.e. appropriate research tools and analysis without biases. Thus, issues of quality in research works is very vital from the viewpoint of social and national development, but presently, it has been observed that quality of researches at various degree levels is very low. In this regard, an analysis of higher education and research scenario in ten state universities of India during 2000 to 2006 was conducted by Shetty et. al.(2010). It was reveled that the ratio of number of faculty to research publication varied from 1:0.05 to 1:9 in the selected universities. Universities of received the maximum research funds of 11.46 crore rupees and ranked first among the selected ten universities. Apart from this, it was pointed out by Malhotra (2008) that presently the researchers are provided basic theoretical knowledge of research process at the master's level and later they get in touch of the supervisors who without putting the researches to learn research process help them in selecting problems and conducting research. As result of all these discrepancies and flaws, students at higher education level and even sometimes faculty members, typically tend to view research and research-related activities could be created among students as well as faculty members. For better understanding of these attitudes towards research Papanastasiou (2005) had identified five factors of student's attitude research after carrying out factor analysis. These factors are: Usefulness of research, anxiety, positive feelings about research, life relevance of research to the students daily lives and difficulty of research .Walker (2010) conducted a confirmatory factor analysis (CFA) to examine if the developed five factor structure of the attitudes towards research scale was a proper model fit or if a different model more appropriately fit the sample data better then the one factor or the five factor structures, and numerous model fit indices comparison results indicated that the three-factor model was the more preferred model. The three-factor model was comprised of the latent factor 1) Research use 2) negative attributes of research and 3) positive attributes of research. Dr. Vishal Sood had identified four factor of students' attitude towards research after carrying out factor analysis. These factors are: 1) General aspect of research 2) Usefulness of research in professional carrier 3) Relevance of research in personal and social life 4) Difficulties in research and anxiety.

The above review of the scholarly literature indicates that negative attitude towards a course for example, statistics, mathematics or foreign language etc. have been found to have a significant negative effect on students, learning (Ma, 1995). Apart from this, the attitudes also influence the amount of efforts one is willing to make on learning a particular subject, which in turn influences the selection of more advance courses in similar areas such as, research an its related and its related aspects in important in order to enable teachers to develop instructional techniques leading to more positive attitudes towards this vital subject. Also, attitude towards research may be considered as the core or pivot for improving quality in research. However, there seems a dearth in the knowledge base concerning empirical investigations related to students' attitude towards research, especially in Indian educational scenario. Hence, the investigators felt the dire need to construct and standardize a scale to measure attitude of research students' scholars towards research and research related activities undertaken at higher education stage.

METHODOLOGY

The literature available in the area of development of attitude scales, anxiety scales and theoretical as well as practical aspect of research and research-related activities was reviewed intensively by the investigators. In addition, critical discussions were made with research experts and university teachers regarding different dimensions of attitude towards research. The scale for attitude towards research developed by Papanastasiou (2005) and Walker (2010) and suggestions made by them in this regard were kept in forefront this of deciding about dimensions of present attitude scale. On the basis of all this, it was finally decided to have following four dimensions for attitude scale towards research.

Dimensions of Scale

The method of summated rating as given by Likert (1932) had been employed for constructing the present scale. Each item/statement of the scale is to be rated on five consecutive points i.e. strongly agree, agree, undecided, disagree and strongly disagree. An individual respondent's score on the attitude scale is the sum total on his/ her rating all statements.

Constructions

After carrying out critical discussions with research experts, research scholars, college and University Professors and keeping in view the five dimensions of attitude towards research, the investigators developed the attitude scale by employing following steps:

Item Pool

Initially, a list of 60 items were pooled after getting the statements of opinion from research experts, research scholars, college and university Professors and teacher- educators. The statements were prepared in English language. The draft statements were arranged randomly and given to research experts from different fields to critically judge and evaluate the content

accuracy, relevance and coverage. The research experts were requested to adopt following criteria for evaluation of draft statements.

Mark '0' for Unacceptable them.

Mark '1' for item that 'may or may not be accepted'.

Mark '2' for 'Acceptable' item.

Thus, on the basis of above criteria and getting a minimum of 80% consensus of experts in respect of each item, two items were rejected and some items were modified. The assistance if language experts was also sought in order to check the linguistic accuracy and editorial quality of statements. Thus, the preliminary draft (tryout form) was prepared which contained a total60 items. The distribution of these 60 items in five dimensions of Attitude towards research was as follows:

1. Usefulness of research in professional carrier   -   14
2. Relevance of research in personal and social life -   10
3. Ethics of Research   -   12
4. Difficulty of research and Anxiety   -   12
5. General aspects of Research and research process-   12

Out of these 60 statements, 37 were positive (favorable) nature and remaining 23 statements were negative (unfavorable) type.

Try out of the scale

The preliminary draft of the scale was administered on a sample of 300 individuals who are students (research scholars) of Ph.D. of Lucknow. The sampling was done by employing purposive sampling. The scoring of positive and negative items was done in following manner:

Nature of Item	Strongly	Agree	Undecided	Disagree	S. Disagree
Positive	5	4	3	2	1
Negative	1	2	3	4	5

Scoring system

RESULTS

On the basis of the scores obtained by the respondents on all statements, the scale were arranged in descending order. Then, top 60 individual (top 27%) with highest total scores on the scale and the bottom 60 respondents (bottom 27 percent)with lowest total scores on the scale were extracted out to from criterion groups in order to evaluate each individual item of the scale as suggested by Edwards, 1957. Afterwards, means and S.D. were computed for each individual item separately for top 27% group of respondents. Finally, the t-value for all the 60 items were calculated and only those statements retained for final from the scale which were having t-value greater than 1.75. A t-value equal to or greater than 1.75 indicates that the average response of the top and bottom groups of respondents to a statement differs significantly. Thus, on the basis of this, out of 60 statement 17statements were rejected and remaining 43 statements were selected for final form of attitude scale. The t-values in respect of 60 statements are given in Table.

Item 1	5.808	Item 2	4.031	Item 3	1.96
Item 4	5.15	Item 5	0.383	Item 6	2.82
Item 7	2.60	Item 8	5.70	Item9	6.24
Item 10	5.70	Item 11	3.81	Item 12	6.53
Item 13	6.53	Item 14	6.55	Item 15	4.78
Item 16	6.23	Item 17	4.81	Item 18	5.03
Item 19	0.838	Item 20	2.79	Item 21	4.34
Item 22	3.12	Item 23	3.677	Item 24	1.59
Item 25	4.91	Item 26	2.84	Item 27	1.48
Item 28	2.12	Item 29	2.35	Item 30	1.23
Item 31	5.29	Item 32	5.52	Item 33	2.12
Item 34	4.34	Item 35	5.11	Item 36	3.03
Item 37	5.21	Item 38	4.98	Item 39	3.47
Item 40	3.38	Item 41	4.18	Item 42	1.88
Item 43	2.65	Item 44	4.00	Item 45	6.25
Item 46	4.05	Item 47	5.77	Item 48	1.24
Item 49	2.27	Item 50	2.69	Item 51	2.69
Item 52	3.74	Item 53	1.36	Item 54	1.76
Item 55	4.39	Item 56	0.58	Item 57	2.12
Item 58	5.25	Item 59	5.30	Item 60	0.28

t- Value of 60 items

The final form of the scale thus comprised of 43 statements out of which 23were 20 were positive (favorable) type and remaining 23 items were of negative (unfavorable) type. The distribution of these statements (both fav. And unfav.) carried out in five dimensions of attitude towards research is provided in following table:

Sr. No.	Dimension	Nature of Item		Total
1	Usefulness of research in Professional career	Favorable	8	10
		Unfavorable	2	
2	Relevance of research in Personal & social life.	Favorable	6	
		Unfavorable	1	7
3	Ethics of Research	Favorable	10	
		Unfavorable	1	11
4	Difficulty of research and Anxiety	Favorable	3	
		Unfavorable	6	9
5	General aspect of research And research process	Favorable	1	
		Unfavorable	6	7
		Total Fav. Items	27	43
		Total unfav. Items	16	

Distribution of statements (both favorable and unfavorable) in five dimensions of Attitude towards research scale.

Scoring Procedure

Attitude toward is a self-administering and self-reporting five points scale. Items of the scale are instatement from requiring information for each item on either of the five options on a continuum as follows; strongly agree, agree, undecided, disagree and strongly disagree.

The items are scores in such a manner that if answer to a positive item is 'Strongly Agree', a score of 5 is given; a score of 5 is given; for 'Agree', a score of 4; for 'Undecided' option, a score of 3; for "disagree', a score of 2 and for ' Strongly disagree' option, a score of 1 is awarded. On the other hand, in case of negative items, the above scoring procedure is completely reversed.

The sum of scores on all statements of the scale is considered as respondent's total attitude score. The score on these scales can range from 43 to 215. The higher total score on the scale will reflect favorable attitude towards research and vice-versa.

Reliability

The reliability of the scale was established by: (1) Split-Half method. For this, the scale was administered on the sample of 300 individuals who were Ph.D. students from the field of behavioral sciences. These respondents were different from those were earlier selected for carrying out them analysis of the scale.

Split-Half Reliability

The split- half reliability of the scale was also estimated by employing 'Product Moment correlation' method. For this, the scale was divided into tow halves by adopting odd even procedure. The split half reliability coefficient came out to be 0.53. After applying Spearman Brown Prophecy formulae, the reliability index for whole of the scale (complete scale) was found to be 0.92. This value is significant at 0.01 level of significance that the scale is internally consistent to measure attitude towards research.

Internal Consistency

The internal consistency of the scale was estimated with the help of coefficients of correlation (product moment correlation) between total score on the scale and score on each of five dimensions of attitude scale towards research. The values of coefficients representing internal consistency of the scale are given in following table.

s.n.	Dimension	'r' Value
1	Usefulness of research in professional carrier	0.48*
2	Relevance of research in personal and social life	0.42*
3	Ethics of Research	0.51*
4	Difficulty of research and Anxiety	0.55*
5	General aspects of Research and research process	0.38*

*significant at 0.01level of significance.

Validity
1. **Content Validity:** The content validity of the scale was established by carrying out critical discussions with the research experts at the time of development of preliminary draft of attitude scale. The experts were of the opinion that the statements of the scale are fully adequate and relevant to erasure the attitude towards research. In addition to this, only those items were retained in the preliminary draft of attitude scale for which there had at least 80% agreement amongst experts with regard to relevance of items to the attitude towards research. Thus, the scale possessed adequate content validity.

2. **Item Validity:** The scale can be considered to be valid enough in terms of item validity because only those items were retained in the final form of the scale which having t-value greater than 1.75 (highly discriminating items).

3. **Intrinsic Validity:** The correlation coefficients computed between scores on each of five dimensions and total score of attitude towards research ensured internal consistency of the scale. Also, the split-half reliability coefficient of 0.52 was also appreciable and ensured intrinsic validity of the scale.

4. **Face Validity:** The face validity refers to know whether present scale for attitude towards research looks valid to the subjects who take it (Anastasi, 1970). The face validity was established by having the reactions of research experts, Professors towards present attitude scale. They were of the opinion that present scale seemed to be valid enough for measuring attitude towards research.

5. **Cross Validity:** Each sample of respondents for carrying out item analysis, establishing reliability and for developing norms respectively was different entirely from one another so as to avoid the chance errors of carryover effect and hence, this ensured cross validity of the scale.

Mean	Median	Mode	S.D.	Q.D.	Skewness	Kurtosis	N
221.7	233.03	230.03	18.51	11.58	-0.04	0.27	300

DISCUSSION

Thus, the principal component analysis of the variables suggests that in ATRS scale 5 factors have emerged **(1) Attitude towards usefulness of research in Professional career, (2) Ethics of research (3) Difficulties of research and research anxiety (4) General aspect of research and research process: (5) Usefulness of research in professional career.**

The scale is fairly reliable and valid to measure attitude of research scholars towards research and research activity. The present scale can be employed to compare the attitude of different categories of respondents classified on the basis of different socio-demographic as well as other independent variables.

Conflict of Interest: The author declared no conflict of interest.

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