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CONSTRUCTION OF TEACHERS' PERSONAL COMMITMENT SCALE: VALIDITY AND RELIABILITY ANALYSIS

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ABSTRACT

The objective of this study is to develop a reliable and valid scale that measures teachers' personal commitment. The respondents of the study are 500 schoolteachers from the city of Bangalore. The data was subjected to various statistical procedures to establish reliability and validity of the scale. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (.904) and Bartlett's Test (p=<.001) suggested that PCA could be undertaken. PCA analysis extracted three factors with a cumulative 64.590% variance. Cronbach's alpha of the eighteen item scale was .920. Convergent validity(CR), discriminant validity, nomological validity, variance extracted (VE) values, average variance extracted (AVE) values and squared multiple correlations (SMC) between the three factors are examined and reported. The results show that the evidence forconstruct validity and reliability is favourable for the personal commitment scale

KEYWORDS: Commitment, Personal commitment, Factor analysis, Construct validity.

INTRODUCTION

One of the most well-known factors that influence student performance in educational institutions is teachers' commitment. Teachers who work harder, who desire to carry out the responsibilities, who have a stronger affiliation to their institutions are generally said to have higher levels of commitment. Students of such teachers are more likely to learn and have desirable development. Teachers' who are caring, dedicated to their jobs and take their job seriously are the ones said to be committed. Teacher commitment is a key factor influencing the teaching-learning process. It is a personal identification of the individual teacher who is involved in their job well beyond their personal interests. A teachers' commitment is also maintaining the membership of the institutions beyond one's interest. All teachers falling in this category is said to have high levels of personal commitment.

Asares (2011) defined Commitment as a sense of fidelity and adherence, the sense of belonging in the core of commitment concept causes a constitution of a kind of connection between organization and individual and makes the individuals gather round a common value, aim and culture. Nias (1981) has defined Commitment as a term that teachers frequently use in describing themselves and each other.

Personal commitment is interaction dominated by obligations. These obligations may be mutual, or self-imposed, or explicitly stated, or may not. Distinction is often made between commitment as a member of an organization (such as a sporting team, a religion, or as an employee), and a personal commitment, which is often a pledge or promise to ones' self for personal growth.Being committed enforces a teacher to put their beliefs and values into practice and most of all in understanding their role as teachers. There is a common belief that one person can have only one commitment to which one could be sincerely devoted. But as a teacher, having the proper balance and perspective can lead to being committed to more than one development. In this study personal commitment is defined as - the relative strength of an individual's identification with, and involvement in a particular organizations development, in ones' own professional development and in the development of ones' students'.

For over five decades Organizational commitment is being researched on both in management and educational organizations. Various instruments have been developed to measure the employees' levels of commitment. Researchers have adopted researcher made and standardized instruments. The most widely used standardized tool is Meyer & Allen's Organizational Commitment Questionnaire (1984). This tool measures three types of commitment: affective, normative and continuance commitment. Mowday et.al. (1979) developed Organizational Commitment Questionnaire which has three components: (a) a strong belief in and acceptance of organizational goals and values, (b) a willingness to exert considerable effort on behalf of the organization, and (c) a strong desire to maintain membership in the organization.Üstuner, M. (2009) developed a one factor structure tool called Teachers' organizational Commitment Scale.Oganisational commitment scale developed byPenley and Gould (1988) has three subscales moral, calculative and alienativecommitment. Dave and Rajput (1998) have defined Teacher Commitment as Commitment to the learner, Commitment to the society, Commitment to the profession,Commitment to basic human values and Commitment to achieve excellence. Although there are many tools measuring commitment of teachers, there is no tool measuring personal commitment as defined by the researcher hence the development of the new tool. It is considered that development of an original standardized instrument to measure the personal commitment of teachers' can serve andcontribute to the quality of education.

PURPOSE OF THE STUDY

The purpose of this study is to develop an instrument to measure PersonalCommitment of school teachers.

METHODOLOGY

Sample and procedure

The study was carried out by administering the personal commitment scale to 500 teachers across Bangalore city. The teachers were representatives from 40; government, private aided and private unaided schools of Bangalore. The sample distribution is given below in Table-1. The teachers were instructed to note the time taken to complete the questionnaire and feel free to write their valuable comments and suggestions towards the end.

Table 1: Indicating the distribution of sample across Type of Management

Type of Management	N	Percent
Government	75	15
Private Aided	102	20.4
Private Unaided	323	64.6
Total	500	100

Face and Content Validity: The validity of the tool was built in the process of preparation of the tool. Face validity is the extent to which the content of the items is consistent with the construct definition, based solely on the researcher's judgment.A detailed review of Meyer & Allen's Organizational Commitment Questionnaire, Mowdayet.al's (1979) Organizational Commitment Questionnaire, Üstuner, M's (2009) Teachers' organizational Commitment Scale and Penley and Gould's (1988)Oganisational commitment scale was done and the initial 50 items were constructed. These 50 items fairly covered all the aspects of Personal commitment as defined by the researcher. The tool was given for validation to ten judges- 5 Management experts and 5 Education experts. The items of the tool were listed out in a tabular form with options of reject the item, accept the item and modify the item. Based on the feedback from the experts who validated the tool, twenty items were deleted, remaining were retained with only few minor word changes. A total of 30 items were retained. The criteria for selection of an item were the unanimity of the experts. The feedback from the experts confirmed that the tool with minor word changes in a few items had content validity.

Exploratory Factor Analysis (EFA) – Principal Component Analysis (PCA)

To extract factors for the personal Commitment Scale, the researcher used method of principal component analysis (PCA) incorporating varimax rotation. PCA is variance based extraction method of factor analysis. PCA is a statistical technique that transforms data from one set of variables into a smaller set of uncorrelated factors. It is also undertaken to establish the validity of the scale and it serves as preparation for a more thorough examination of the proposed structural model using SEM. Researcher examined a range of criteria in making important decisions about the number items to retain or delete and the number of factors to select. In this study the researcher has used KMO & Bartlett's Test, Extraction communalities and rotated varimax factor loadings to finalize on the factors and items for the personal commitment scale. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is reported to be high (.876) and Bartlett's Test (p=<.001) suggested that PCA could be undertaken. Factors and communalities of the personal commitment scale were assessed from the Principal Component Analysis. As an initial process, Eigen value > 1 was applied as guide for extracting components. On examining the communalities it was noted that items 1, 2, 3, 5, 6, 15, 17, & 20 had values less than 0.50 hence these items were deleted. Table 2 indicates the communalities of 18 items of the personal commitment scale that have values > 0.50.

Table 2: Communalities: Personal Commitment Scale

	Initial	Extraction
VAR00004	1.000	.562
VAR00007	1.000	.500
VAR00008	1.000	.536
VAR00009	1.000	.651
VAR00011	1.000	.607
VAR00012	1.000	.549
VAR00016	1.000	.531
VAR00018	1.000	.608
VAR00021	1.000	.610
VAR00022	1.000	.711
VAR00023	1.000	.680
VAR00024	1.000	.708
VAR00025	1.000	.742

VAR00026	1.000	.622
VAR00027	1.000	.812
VAR00028	1.000	.754
VAR00029	1.000	.695
VAR00030	1.000	.749
Extraction Method: Principal component Analysis.		

PCA analysis extracted three factors with a cumulative 64.590 variance. The variance explained ranged from 44.979 to 64.590. Thus, the extraction of three factors explained almost 65% of the variance which is above 60% generally seen as satisfactory in studies within social sciences (Hair et al., 1998). Further, the criteria for retaining three factors were eigen values greater than one and the ability to describe and label each factor from the description of the items. 0.50 of the factor loading was used as the threshold to ensure practical significance. Items 10, 13, 14 & 19 reported low factor loading (<0.50). These were deleted from the analysis one at a time and revised results were again examined. After deleting each one of these items from the respective factors, a satisfactory loading of more than 0.50 were reported for each of the items (Table-3). In all twelve items were deleted and eighteen items retained.

Table 3: Three Factor Model of Personal Commitment Scale

Factors	Item No.	Factor Loadings	No. of Items	Percentage of Variance explained
Factor 1 Others	VAR00027	.872	9	44.979
	VAR00028	.842		
	VAR00030	.839		
	VAR00029	.820		
	VAR00025	.794		
	VAR00024	.742		
	VAR00021	.658		
	VAR00023	.653		
	VAR00022	.555		
Factor 2 Organization	VAR00009	.773	5	13.077
	VAR00018	.748		
	VAR00004	.708		
	VAR00026	.642		
	VAR00012	.629		
Factor 3 Self	VAR00011	.733	4	6.534
	VAR00016	.640		
	VAR00007	.615		
	VAR00008	.590		
Total			18	64.590

In summary, PCA of Personal Commitment scale revealed a three factor structure of 18 items. Factor-1: Commitment towards others has 9 items, Factor-2: Commitment towards the organization has 5 items and Factor-3: Commitment towards self has 4 items.

Confirmatory Factor Analysis

As factorization explained a reasonable percentage of variance and to ensure good construct validity of the this scale although some items were deleted, composite reliability (CR), variance

extracted (VE) values, and discriminant validity by comparing the values of average variance extracted (AVE) and squared multiple correlations (SMC) between the three factors are examined and reported.

Construct validity: 'Construct validity is the extent to which a set of measured variables actually represent the theoretical latent construct they are designed to measure', (Hair et al. 2006). It is made up of four components: convergent validity, discriminant validity, nomological validity and face validity. To assess the construct validity of Personal Commitment scale exploratory and confirmatory factor analytic procedures are used.

Convergent validity: Convergent validity is the extent to which indicators of a specific construct 'converge' or share a high proportion of variance in common. Convergent validity identifies the proportion of variance for each factor. To assess this, standardized factor loadings are examined, composite or construct reliability (CR) and average variance extracted (AVE) is computed. As noted by Hair et al. (2006), CR values should be greater than 0.60 while AVE should be above 0.50. Recommended thresholds: CR > 0.60& AVE > 0.50, then construct internal consistency is evidenced (Fornell& Larker, 1981).Table 4 below summarizes the results from these computations.

Table 4: Average Variance Extracted and Construct Reliability for the personal commitment scale

Dimensions	# items	AVE (%)	CR (%)
Factor 1 (Others)	9	61.08%	88.46%
Factor 2 (Organization)	5	49.32%	70.59%
Factor 3 (Self)	4	41.83%	54.61%

AVE = Average Variance Extracted, CR = Construct Reliability

The evidence provides initial support for the convergent validity of the three factors of Personal commitment Scale. One factor AVE is greater than 60%, and two factors AVE is around 50%, two factors CR is greater than 0.60 and one factor CR is greater than 0.54, and hence they do not appear to be significantly harming the internal consistency. Together with these two measures and the fact that all the factor loadings being more than 0.50, gives strong evidence for convergent validity of the scale.

Discriminant validity: The discriminant validity examines the extent to which an independent variable is truly distinct from other independent variables in predicting the dependent variable (Hair et al.2006). It is the extent to which a construct is truly distinct from other constructs. To substantiate the evidence of discriminant validity, the values of average variance extracted (AVE) between dimensions were compared to squared multiple correlations of the two (Hair et al., 2006). 'If within each possible pairs of constructs, the shared variance observed is lower than the minimum of their AVEs, then discriminant validity is evidenced' (Fornell and Larker, 1981). If all variance extracted (AVE) estimates are larger than the corresponding squared inter-construct correlation estimates (SIC) then, the construct is said to have discriminant validity. Table 5 below gives the AVE and SIC of each factor of the personal commitment scale.

Table 5: Average Variance Extracted and Inter Construct Correlation for personal commitment scale

Dimensions	AVE (%)	Others	Organization	Self
Factor 1(Others)	61.08%	--	36.9%	47.3%
Factor 2 (Organization)	49.32%		--	43.8%
Factor 3 (Self)	41.83%			--

From Table 5, all the three inter-construct correlations it is clearly indicative that all squared inter-construct correlations SIC values are lesser than the AVE. This means the indicators have more in common with the construct they are associated with than they do with other constructs. This establishes strong evidence for discriminant validity of the scale.

Nomological validity: Nomological validity is the extent to which scale correlates in theoretically predicted ways with other distinct but related constructs. It is tested by examining whether or not the correlations between the constructs in the measurement theory make sense. The covariance matrix Phi (Φ) of construct correlations is useful in this assessment.In this study the covariance matrix of the personal commitment scale is given in Table 6 is used.

Table 6: Indicating the Covariance matrix of the Personal Commitment Scale

	Covariance Matrix : Personal Commitment scale																	
	Og1	**Sf1**	**Sf2**	**Og2**	**Sf3**	**Og3**	**Sf4**	**Og4**	**Ot1**	**Ot2**	**Ot3**	**Ot4**	**Ot5**	**Og5**	**Ot6**	**Ot7**	**Ot8**	**Ot9**
Og1	.977	.232	.235	**.510**	.321	**.501**	.290	**.425**	.191	.229	.244	.185	.093	**.401**	.154	.129	.102	.154
Sf1	.232	.665	**.312**	.280	**.294**	.303	**.400**	.243	.234	.304	.295	.220	.185	.301	.229	.211	.185	.152
Sf2	.235	**.312**	.789	.339	**.370**	.195	**.314**	.212	.309	.464	.382	.401	.346	.318	.342	.291	.240	.311
Og2	**.510**	.280	.339	1.074	.260	**.514**	.301	**.486**	.296	.265	.245	.246	.168	**.536**	.293	.236	.221	.184
Sf3	.321	**.294**	**.370**	.260	.830	.428	**.337**	.246	.253	.374	.356	.346	.312	.263	.170	.185	.205	.268
Og3	**.501**	.303	.195	**.514**	.428	1.193	.472	**.475**	.236	.288	.229	.178	.121	.357	.163	.220	.163	.145
Sf4	.290	**.400**	**.314**	.301	**.337**	.472	.956	.336	.349	.409	.394	.208	.155	.225	.258	.255	.251	.236
Og4	**.425**	.243	.212	**.486**	.246	**.475**	.336	.878	.294	.218	.312	.126	.035	.368	.154	.140	.117	.204
Ot1	.191	.234	.309	.296	.253	.236	.349	.294	.668	**.429**	**.484**	**.407**	**.316**	.353	**.459**	**.381**	**.333**	**.418**
Ot2	.229	.304	.464	.265	.374	.288	.409	.218	**.429**	.745	**.470**	**.472**	**.416**	.299	**.377**	**.367**	**.367**	**.392**
Ot3	.244	.295	.382	.245	.356	.229	.394	.312	**.484**	**.470**	.724	**.441**	.384	.339	**.452**	**.421**	**.384**	**.466**
Ot4	.185	.220	.401	.246	.346	.178	.208	.126	**.407**	**.472**	**.441**	.708	**.545**	.315	**.466**	**.384**	**.388**	**.444**
Ot5	.093	.185	.346	.168	.312	.121	.155	.035	**.316**	**.416**	**.384**	**.545**	.632	.290	**.433**	**.394**	**.437**	**.436**
Og5	.401	.301	.318	.536	.263	.357	.225	.368	**.353**	**.299**	**.339**	**.315**	.290	.897	**.438**	**.295**	**.251**	**.366**
Ot6	.154	.229	.342	.293	.170	.163	.258	.154	**.459**	**.377**	**.452**	**.466**	**.433**	.438	.735	**.520**	**.486**	**.523**
Ot7	.129	.211	.291	.236	.185	.220	.255	.140	**.381**	**.367**	**.421**	**.384**	**.394**	.295	**.520**	.614	**.515**	**.453**
Ot8	.102	.185	.240	.221	.205	.163	.251	.117	**.333**	**.367**	**.384**	**.388**	**.437**	.251	**.486**	**.515**	.662	**.455**
Og9	.154	.152	.311	.184	.268	.145	.236	.204	**.418**	**.392**	**.466**	**.444**	**.436**	.366	**.523**	**.453**	**.455**	.677

Table 6 clearly indicates that the coefficient of correlation between each item of a factor are higher, positive and significant than the correlation between the items of the other factors. The inter-construct correlations are all positive and significant for Personal commitment scale, hence the establishment of nomological validity.

Construct reliability: Is a measure of reliability and internal consistency based on the square of the total of factor loadings for a construct. The construct reliability of the personal commitment scale is given in Table 4.The construct reliability estimates of two constructs of the Personal Commitment scale exceeded 0.60 and of the other one construct is closer to 0.55, indicating fair construct reliability.

In summary, the CFA performed on all the factors of the personal commitment scale, after making appropriate revisions by dropping items with insignificant factor loadings, confirms that the scale has adequate convergent, discriminant and nomological validity and hence confirming the construct validity of the scale.

Reliability

Reliability, in simple terms, describes the repeatability and consistency of a test. It is done to check the internal consistency. "Internal consistency", refers to whether respondents are responding to the different items of a questionnaire in a consistent manner in a single trial. There are many methods of checking the internal consistency like test-retest method, split-half method, Cronbach's alpha etc. The

most sophisticated and widely applied index of internal consistency is "Cronbach's alpha (α)" which is used in this study. The overall reliability of the Personal Commtment scale is 0.920 indicating an excellent internal consistency. The alpha coefficient for factor 1 is 0.939, alpha coefficient for factor 2 is 0.807 and alpha coefficient for factor 3 is 0.741 indicating high internal consistency, this determined acceptable reliability.

CONCLUSION

The findings from the study indicate that Personal Commitment scale has 3 dimensions of commitment – commitment towards self-development (self), commitment towards organization (organization) and commitment towards others (others). In all there are 18 items, 4 items measuring self-dimension, 5 items measuring organization-dimension and 9 items measuring others-dimension. All are positive statements. The respondent is required to check on a 5-point scale how much each item is true about themselves. It is a self-rating scale. The rating is 0=strongly disagree, 1= disagree, 2=neither agree nor disagree, 3=agree, 4=strongly agree. Similar studies on the validity andreliability of the scale can be repeated on other teacher groups. This scale canbe used as an instrument in studies to measure teachers' personal commitment.

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