Development of School Climate Scale (SCS): Measuring Primary School Teachers' Perceptions in Islamabad, Pakistan

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The present study was carried out to develop an indigenous instrument to assess teachers' perception of school climate in primary schools of Islamabad, Pakistan. An item pool of 110 items was generated through literature review, interviews with school heads, and focus group discussions with teachers. For pilot testing SCS was administered to a sample of primary school teachers (N=243) from Federal Capital, Islamabad. Exploratory Factor Analysis (EFA) yielded three factors i.e., relationships, support and obstacles to teaching. Psychometric properties of the scale were found to be satisfactory. The instrument could be helpful in gathering insight about various aspects of school climate and help researchers, principals, and teachers in improving the teaching-learning process and overall effectiveness of schools in Pakistan.

Key words: School climate, exploratory factor analysis, teachers

The research on school climate has emerged from the research in the areas of organizational psychology and school effectiveness, having borrowed instruments, theories, and methods from both the disciplines (Anderson, 1982; Schoen & Teddlie, 2008; Van Houtte, 2005). Researchers do not agree upon a single definition of school climate and use a variety of terms, such as milieu, atmosphere, feelings, tone, or setting of the school (Freiberg, 1999; Homana, Barber, & Torney-Purta, 2006; Tagiuri, 1968).

School climate is defined as the set of internal attributes that distinguish one school from another and, influence the behaviors of each school member (Hoy & Miskel, 1996). It is a product of the formal and informal set of rules, procedures and policies which influence the attitudes and actions of the school staff and students. According to Perkins (2006), school climate is the learning environment created through the interplay of human relationships, physical settings, and psychological atmosphere of the school.

Each member of the school observes and experiences the climate in a different way and is influenced differently. Students, parents, teachers, administrators, and community members experience the feel a school emanates and develop an opinion accordingly. Some of these observations may be conveyed as open, vigorous, pleasant, relaxed, reserved, unreceptive, inflexible, or closed (Hoy, Tarter, & Kottkamp, 1991; Lunenburg & Ornstein, 2004; Norton, 2008). Perceptions of each school member should be considered important. Each individual views the school's climate in a different light, according to his or her own personal dealings, communication, and experiences (Halpin & Croft, as cited in Hoy, Smith, & Sweetland, 2002). Primarily, organizational school climate is built upon and determined by the perceptions of teachers and administrators in the school (Hoy & Miskel, 2008; Le Cornu, 2009; Mine, 2009). A precise representation of the school climate exists when the perception of the individuals' work environment is cohesive (Kelley, Thornton, & Daugherty, 2005; Marzano, Waters, & McNulty, 2005; Robinson, 2010).

Assessment of the school climate reveals the strong and weak points of a school. However, the importance of school climate goes far beyond than having a positive reaction or interaction with the school. It has been linked with many other positive school features (Lehr, 2005). Teachers' perceptions of the school climate effect school success and students' academic achievement (Greenberg, 2004; Le Cornu, 2009). A positive school climate results in an increased job satisfaction, for the school personnel (Ma & MacMillan, 1999; Cohen, Pickeral, & McCloskey, 2009), increased retention and attendance, and better home-school relationships (DiStefano et al., 2007). Furthermore, a positive school climate can effect personal growth and learning (of teachers). It is related to professional and organizational commitment (Tarter, Hoy, & Kottkamp, 1990). A positive school climate is also associated with the development of teachers' beliefs that they can positively effect student learning (Hoy & Woolfolk, 1993) and teacher retention (Fulton, Yoon, & Lee, 2005).

It is important to know how teachers perceive their school climate, as they are the ones who are directly involved in the teaching-learning process (Sutherland, 1994). So far several instrument have been developed to assess school climate, it is only recently that teachers' perspective has been considered important in assessment. With specific reference to Pakistan, school conditions, system and climate are different from other countries, especially the developed ones. Here the schools have a hierarchical structure that is characterized by super-subordinate relationships, lack of cooperation and availability of limited resources. According to Sayed and Akber (2007) the worth of teaching profession has been understated to such an extent that no one would deliberately choose to be a teacher. The work environment is also not easy for the teachers. Therefore, the climate in

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Pakistani schools needs exploration using the indicators which are most relevant to the given socio-cultural and administrative and managerial environment. Therefore, it was in this spirit that the present study was planned for developing an instrument that would reflect the teachers' perception of school climate in Pakistani schools.

Method

Objectives

The study had the following objectives:

1. To develop an indigenous instrument for assessing teachers' perception of school climate in Pakistani primary schools.
2. To establish psychometric properties of the developed instrument (i.e., reliability and validity indices).

For developing the instrument the study was carried out in three phases:

Phase I

This comprised of three steps, (1) Literature review, (2) interviews with school heads, and (3) Focus groups with school teachers.

Literature review

For developing the theoretical insight into the construct school climate Haplin and Croft's typology (as cited in Hoy, Smith, & Sweetland, 2002), Moos (1973) theory of work environment and, Hoy, Tarter &, Kottkamp (1991), and Hoy and Tarter's concept of openness and health of the school climate were studied. The existing instruments for assessing the school climate were also reviewed, including Organizational Climate Description Questionnaire (OCDQ; Hoy, Tarter, & Kottkamp, 1991), and Organizational Climate Index (OCI; Hoy, Smith, & Sweetland, 2002). This activity served two purposes first it helped the researcher to narrow down the large number of dimensions that have already been identified and secondly it guided the researcher to formulate questions for the interviews and focus group discussions conducted in the step two of the present research.

Interviews with school heads

For generation of the item pool, qualitative interviews were conducted with the heads of three primary schools of Islamabad. These school heads had an average experience of 33.1 years and served as a head in the same school for at least 2 years. These school heads had willingly agreed to contribute to the researcher's understanding of the construct of school climate.

Focus groups with primary school teachers

The researcher prepared a focus group guideline. Two focus group discussion sessions were held. The first conducted with 8 teachers, and the second with 6 teachers from primary schools of Islamabad. This helped the researcher in understanding, teachers' perceptions and experiences in the school and knowing what teachers thought would make the schools' climate more positive.

Phase II

This phase comprised of three steps, namely (1) Generation of the item pool and item evaluation (2) Committee approach for selection of items (3) Exploratory Factor Analysis (EFA).

Generation of the item pool and item evaluation

45 items were generated from focus groups, 30 items were written in the light of information obtained from school heads. The remaining items were drawn from reviewing the existing research literature and instruments. Hence, an item pool comprising 110 items was prepared.

Two subject experts and three Ph.D. students were requested to categorize these 110 statements with relevance to ten dimensions as derived from the existing literature. These ten dimensions included (1) collegial and intimate teacher behavior, (2) supportive principal behavior, (3) parent-teacher relationships, (4) teacher-student relationships/quality of classroom interactions, (5) difficulties in teaching, (6) opportunities for professional development and growth, (7) change and innovation,(8) resource support, (9) order and discipline, and (10) teacher autonomy.

Committee approach for selection of items

A committee was formed in order to aid the researcher in selecting best items from the item pool. The aim of this consultation was to (1) reduce the number of items; (2) to choose items most relevant to the suggested dimensions; and (3) to eliminate items measuring the same aspect of the suggested dimension. As a result 47 items that were considered overlapping, inappropriate and ambiguous were eliminated. The initial form of the scale included 63 items. A higher score on this initial form of SCS would mean that the teacher has positive perception about school climate and vice-versa.

Sample

The sample comprised of 243 primary school teachers. The teachers were from the primary schools under the jurisdiction of Federal Directorate of Education (FDE) Islamabad. The mean age of the teachers was 39.5 years (*SD*=9.2). The mean education of the teachers was 14 years (*SD*=7.2). 102 teachers had education level up to Masters (50.7%), 77 teachers had BA/BSc degree (38.3%), 19 teachers had education level up to FA/F.Sc. (9.5%). However only three teachers had education up to Matric (3.5%). The mean professional experience of the teacher was 15 years. The data was collected from the schools in G-sector, F-Sector, I-Sector and Bhara Kahu. The mean monthly income of the sample was Rs.22000 per month. The sample comprised of female teachers only as it is FDE's policy to appoint female teachers at primary school level in schools located in urban areas of Islamabad.

Procedure

For data collection, permission was taken from the Director Schools, Federal Directorate of Education. After the permission for conducting the research was granted, the school heads were contacted and their consent was obtained to collect data from their respective schools. Teachers were contacted for their participation in the research during school hours. In some schools researcher was allowed to meet the teachers individually and distribute the questionnaires. However, in other schools researcher was asked to leave the questionnaires with school administration, to be distributed and filled in by the teachers during their free time. The instructions were written clearly on the title page. Teachers were requested to sign a consent form. They were assured about the confidentiality of their responses.

Exploratory Factor Analysis (EFA)

An EFA was carried out to determine the factor structure and to test the dimensionality of the initial form of the School Climate Scale (SCS). Bartlett's test of Sphericity and Kaesier-Meyer-Olkim (KMO) measure was computed for verification of data fit for factor analysis. According to these results value of KMO was .82 for SCS and Bartlett's test of Sphericity had a value of 5513.36. As these values were significant ($p \leq .00$), so data was considered appropriate for factor analysis. Kasier (1974) recommends that KMO value close to 1 indicates that patterns of correlations are relatively compact, so factor analysis should yield distinct and reliable factor results. Therefore, EFA was carried out on the 63 items of SCS.

The Principal Component Analysis (PCA) using oblique rotation for SCS

The data was factor analyzed using Principal Component Analysis with oblique rotation. When number of factors with Eigen value greater than 1 were allowed this resulted in over-factoring i.e., leading to a solution where the major factors are well estimated by the obtained loadings but where there are also additional poorly defined factors (with few, if any, variables loading well on them). Factor analysis was tried with 8, 5 and 3 number of factors. When the number of factors was limited to three a meaningful factor solution emerged. Table 1 shows the factor structure of SCS. The three-factor solution was clearly corresponding to the best approximation of simple structure and yielded more interpretable results. All those items that had factor loading greater than .40 were retained in each factor.

Table 1

Factor Structure of School Climate Scale (*N=243)*

Item No.	Factor I	Factor II	Factor III
53	**.71**	.08	.11
62	**.65**	.19	.10
34	**.63**	.01	-.04
60	**.64**	.16	.03
44	**.63**	.07	.08
29	**.62**	.07	.06
37	**.61**	.14	-.03
43	**.60**	.22	.10
36	**.60**	.06	.03
30	**.59**	.01	.10
61	**.58**	.18	.01
49	**.55**	.24	-.04
41	**.50**	.14	-.12
59	**.49**	.15	.11
42	**.48**	.41	.12
57	**.47**	.38	.12
58	**.46**	.35	.16
63	**.43**	.12	.19
23	.02	**.66**	.22
28	.13	**.64**	-.11
26	.16	**.60**	-.01
5	.03	**.56**	-.02
39	.16	**.53**	-.12
2	-.08	**.51**	.05
27	.22	**.50**	.23
16	.09	**.49**	-.08
20	.22	**.49**	.28
9	.10	**.49**	.10
12	.25	**.48**	.18
32	.27	**.48**	.01
17	.04	**.47**	-.08
35	.27	**.46**	-.01
40	.35	**.43**	-.12
13	.22	**.42**	.04
3	.01	**.41**	-.23
18	.04	-.02	**.61**
25	.15	-.00	**.54**
51	-.03	.12	**.53**
31	.11	-.15	**.52**
11	.25	-.06	**.50**
38	-.08	.03	**.48**
55	-.28	.13	**.43**
7	-.16	.14	**.42**
8	.24	-.14	**.41**
46	-.03	.19	**.40**
50	.15	-.01	**.40**

Note. Only those items appear in the table that have factor loading of .4 and above.

Table 2
Eigen Values and Percentage Variance Explained by the Extraction Sum of Squared Loadings of School Climate Scale (SCS) (N=243)

Factors	Eigen Values	Percentage of Variance	Cumulative Percentage
1	10.71	20.21	14.49
2	3.56	6.71	26.24
3	3.00	5.67	32.20

The total variance explained by SCS is 32.20%. Factor I has Eigen value 10.71 and explains 20.21% of variance, factor II has Eigen value 3.56 that explains 6.71% variance. Whereas factor III has Eigen value 3.00, that explains 5.67% of variance.

The item total correlation for the School Climate Scale ranged .31 to .59 significant at .05 and .01 further strengthening the evidence for its construct validity.

Final School Climate Scale (SCS)

The factor analysis revealed a multifactor structure for SCS. The scale was developed to measure teachers' perception of the school climate in primary schools. The final selection of the items was based on the two criteria's i.e., factor loadings greater than or equal to .40 (Kline, 1994) on one factor only and theoretical relevance of the particular items to one of the three factors derived from the data. On this basis, the final version of the SCS was prepared. This scale has three dimensions or subscales, which are as follows:

Factor I. Items that loaded on this factor were related to teachers' relationships and interaction with their colleagues, students and students' parents. This factor was named as 'relationships'. It has 16 items—4 items are related to teachers and their students' parents, 6 items are related to teachers and their students and 5 items are related to interactions between teachers. Item No. 42 cross-loaded on factor II so it was not retained. Item No. 58 was discarded as it was not found to be theoretically relevant to this subscale. The factor I comprised of items 29, 30, 34, 36, 37, 41, 43, 44, 49, 53, 57, 59, 60, 61, 62, 63.

Factor II. Items that loaded on factor II were related to support rendered to teachers in various forms i.e., support from principal, support for training and professional growth and teacher autonomy. This factor has 14 items and it was named as support. 7 items pertain to the support provided by the principal to teachers, 5 items were related to the support provided for professional development and growth, and 2 items were found to be related to the autonomous decision making of the teacher. It was decided not to retain Item No. 3, 17 and 27 after committee approach because these items were found not theoretically relevant to factor II. Item number 42 cross-loaded on factor I so it was not included in factor II also. The number of items included in factor II is 2, 5, 9, 12, 13, 16, 20, 23, 26, 28, 32, 35, 39, and 40.

Factor III. Items that loaded on factor III were related to the obstacles that teachers face during teaching that is lack of resources and work load. 7 items were related to lack of physical resources, 2 items were related to the excessive work load. Item No. 8 was not retained because it was found not related to the rest of the items that loaded on factor III. So, finally 10 items were retained. The number of items retained was 7, 11, 18, 25, 31, 38, 46, 50, 51 and 55. This factor was named as obstacles to teaching. All these items were reverse scored.

The final version of the school climate scale has 40 items, divided into three subscales namely support, relationships and obstacles to teaching.

Table 3
Alpha Reliability Coefficient and Subscale Correlations of School Climate Scale (SCS) (*N*=243)

Scales	α	*M*(*SD*)	Support	Relationships	Obstacles to teaching
School Climate Scale	.77		.89**	.87**	.53**
Support	.73	53.6(5.09)	-	.62**	.32**
Relationships	.70	44.5(5.17)		-	.28**
Obstacles to teaching	.57	28.4(3.06)			-

***p*<.01

Table 3 indicates that a positive correlation exists among support, relationships, and obstacles to teaching. The Alpha coefficient values as mentioned in the table range from .57 to .73 for the subscales, which is within the acceptable limit. For full scale alpha reliability is .77 for the full scale, hence indicating that SCS is a reliable measure.

Convergent and Discriminant Validity Indices for School Climate Scale (SCS)

In order to provide evidence for convergent and discriminant validity of School Climate Scale a correlation was computed between scores on SCS and subscales of Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1986). MBI has three subscales namely Emotional Exhaustion (EE), Depersonalization (DP) and, Personal Accomplishment (PA). For this purpose, a sample of 80 primary school teachers was taken from the private schools in Islamabad.

Table 4
Alpha Reliability Coefficients and Correlations among School Climate Scale (SCS) and subscales of Maslach Burnout Inventory (MBI) (N=80)

MBI Sub-scales	α	*M*(*SD*)	SCS
EE	.76	16.3(9.51)	-.41**
DP	.71	6.50 (4.13)	-.36**
PE	.69	26.9 (6.31)	.27**

Note. EE = Emotional Exhaustion; DP = Depersonalization; PA = Personal Accomplishment; SCS = School Climate Scale ***p* < .05

Table 4 shows that Emotional Exhaustion and Depersonalization have a negative relationship with the teachers' perception of school climate. On the other hand Personal Accomplishment has a positive relationship with the teachers' perception of the school climate.

Discussion

Schools are often assessed in terms of their effectiveness. School climate that is positive and healthy facilitates the optimal functioning of the schools. As school climate effects teachers and students (who are prime stakeholders in the school context) it becomes all the more important to know how they perceive and experience the climate of the school. The present study was conducted to develop an instrument for assessing teachers' perception of school climate. The study was completed in two phases and each phase was completed in several steps. In phase I existing theories of school climate and existing instruments were reviewed to develop an understanding of the construct of school climate. In order to explore the indigenous perspective on school climate, school heads were interviewed. Two focus groups discussion sessions were also held with the teachers from primary schools. During phase II of the present study 110 items were generated on the basis of the information obtained in the phase I. These items were evaluated through committee approach. 63 items were retained in the initial form of the school climate scale.

Principal Component Analysis (PCA) with an oblique rotation was done. The results showed that the construct of school climate is multidimensional and has three underlying factors namely Relationships, Support and Obstacles to Teaching. Together these three factors explained 32% of the variance. The construct of school climate is generally characterized as multidimensional and representative of shared perceptions of behavior (Van Houtte, 2005). Factor one was named as 'Relationships', which represents collegial relationships between teachers, trust and cooperation between parents and teachers and open communication with the students. Previous researches have also shown that teachers' work environment, peer relationships, and feelings of inclusion and respect are important aspects of a positive school climate (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). The second factor that emerged was 'support'—referring to the support rendered to the teachers by the school head in various forms. Supportive principal behavior has been identified as an important component of school climate. According to Sweeney (1992), providing support for teachers will impact the entire staff in a positive manner. The third factor indicated the problems that teachers might face while working in the classroom and school. For example the non availability of material support such as sufficient space to sit, props to teach and so on posed difficulty for teachers. Work overload is also another potential source of problems as teachers might be unable to concentrate on their teaching quality, if they are involved too much in the administrative duties and if they are overburdened by their teaching duties. Such obstacles tend to lower teachers' positive perception of the school climate.

As far as the psychometric properties of the SCS are concerned the alpha reliability coefficient for the subscales and the full scale were found to be satisfactory. Further evidence of the validity was provided in the form of convergent and discriminant validity. This was done by correlating the scores on SCS to subject scores on subscales of Maslach Burnout Inventory (i.e., Emotional Exhaustion, Depersonalization and Personal Accomplishment). Teachers' positive perception of the school climate shows a positive relationship with personal accomplishment. On the other hand it shows a negative relationship with the emotional exhaustion and depersonalization. These findings are supported by the existing research literature.

Conclusion

The current study provided a baseline for assessment of the climate of primary schools in Pakistan (based on teachers' perceptions). It helped in better understanding the relative importance of various components of school climate with specific reference to schools in Pakistan. The results of this study supported the proposition that school climate is a multidimensional construct. Although this study reports the preliminary development of the School Climate Scale it can still be used by the school administrators to assess the perception of the teachers about the school climate. Both the school administrators and teachers can benefit from the information obtained through such an assessment and try to improve the aspects of the school which are not seen positively.

Limitations and Suggestions

On the basis of satisfactory reliability and validity tests, the SCS can be used to assess teachers' perceptions of the school climate. However, there are a few limitations. The results of the present study provide sufficient evidence of the construct validity of the SCS. Also evidence for convergent and discriminant validity was established in the present study. The psychometric properties of the instrument should be strengthened using Confirmatory Factor Analysis (i.e., through maximum likelihood method and goodness of fit indices should be reported). This study gives limited view of the some components of school climate and how teachers perceive it. However the sample for the study comprised only primary school teachers from federal capital Islamabad. Therefore, it is important to replicate this study using data collected from other cities of Pakistan. Furthermore the data was not collected across different school levels that is, secondary and higher secondary schools. Validation of School Climate Scale across various school levels is also needed.

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