CHAPTER THREE

METHODOLOGY

3.1 Introduction

This study aimed at identifying the impact of teacher collegiality on teacher organizational and professional commitment as well as its link to student academic achievement in public secondary schools of Islamabad, Pakistan. The study also examined the differences in teacher collegiality, organizational commitment, and professional commitment between high-achieving and low-achieving public secondary school teachers. The research questions guiding this study were:

1. What is the impact of teacher collegiality on (a) teacher organizational commitment; and (b) teacher professional commitment among high-achieving public secondary schools of Islamabad?

2. What is the impact of teacher collegiality on (i) teacher organizational commitment; and (ii) teacher professional commitment among low-achieving public secondary schools of Islamabad?

3. What are the differences in teacher collegiality, organizational commitment, and professional commitment between high-achieving and low-achieving public secondary school teachers in Islamabad?

4. What are the effects of the selected demographic variables (gender, educational attainment, and professional experience) on (a) teacher collegiality; (b) organizational commitment; and (c) professional commitment among public secondary school teachers in Islamabad?

These research questions guided the collection of detailed descriptive information from the public secondary school teachers regarding their collegiality and commitment to schools and to the teaching profession. This chapter describes the conceptual framework of the study as well as its design and methodology. The sample and participant selection and data collection procedures will be discussed in detail. The measures used to collect data for independent and dependent variables in the conceptual model will be described. Furthermore, the analytic techniques chosen to test the hypotheses will be presented.

3.2 Research Framework and Hypotheses

The conceptual framework of this research is based on social capital theory (Bourdieu, 1986; Coleman & Hoffer, 1987; Coleman & Schneider, 1993) which is a social science concept used in sociology, business, economics, health, organizational behavior, and political science that refers to connections within and between social networks. Although there are a variety of related definitions of social capital, all of them tend to share the core idea that social networks have

value. Social relations and ties among individuals can bring positive effects and productive benefits. Social capital theory suggests that individuals are conditioned by their interactions and that productive use of this social control can produce greater effectiveness.

The present study will attempt to verify the research theories found in the literature that relate teacher collegiality with increased organizational and professional commitment and its relationship with student academic achievement. The proposed conceptual model of the study (Figure 3.1) shows that teacher collegiality (an independent variable) affects teacher organizational commitment and teacher professional commitment (dependent variables). School achievement acts as a confounding variable that correlates (positively or negatively) with both the independent variable and the dependent variables. The teacher demographic variables such as gender, educational attainment, and professional experience will act as control variables.

Collegiality, in this model, is conceptualized as the presence of seven specific behaviors of teachers in schools: (a) *demonstrating mutual support and trust*; (b) *observing each other* engage in the practice of teaching; (c) engaging together in *planning and assessing* their practices; (d) *sharing ideas and expertise* with one another; (e) *teaching each other* the art of teaching and learning; (f) *developing curriculum together*; (g) *sharing resources* with each other like lesson plans, worksheets, and educational books.

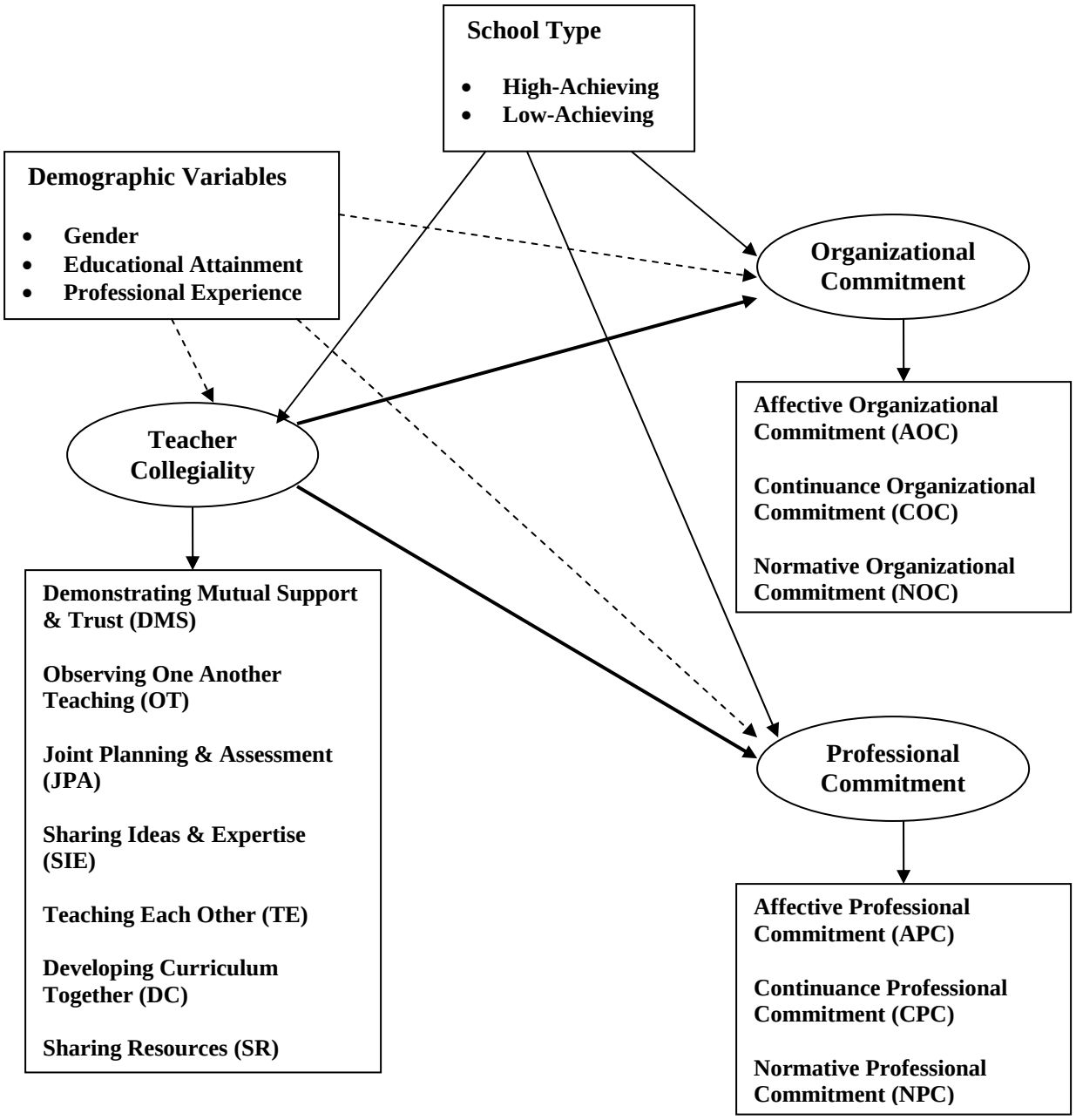

Figure 3.1. Conceptual framework of the study.

This framework illustrates two different types of teacher commitment; organizational commitment - commitment to school and professional commitment - commitment to the teaching profession. The three-component models of

organizational commitment and professional commitment are adopted by Meyer, Allen, and Smith (1993).

Fourteen research hypotheses were developed for this investigation based on the studies found in the literature review. These research hypotheses are stated below, preceded by the research theories providing the underpinnings for the generation of these hypotheses.

Reyes (1992) believed that teachers tend to be more committed to their schools when social interactions among them are highly collegial. Teachers' relationships with their colleagues seem to be the most influential factor in teachers' willingness to remain committed to a specific school organization (Mutchler, 2005). Hoy, Tarter, and Bliss (1990) claim that those teachers are more committed to their schools and to the success of their students who work in an atmosphere characterized by sincere, positive, and supportive relationships with colleagues. Graham (1996) further supported the idea stating that teachers who practice higher levels of collegiality are more committed to their respective schools than those who work in isolation.

Hypothesis 1: Teacher collegiality will have a positive impact on teacher organizational commitment.

Many researchers argue that collegiality promotes such a cultural climate that allows teachers to share their expertise and engage in professional inquiry (Hausman & Goldring, 2001; Scribner et al., 1999). As a result, teachers become a source of professional growth for each other (Bransford et al., 1999) and their commitment level increases consequently. Teachers' commitment to teaching is associated with collegiality (Firestone & Rosenblum, 1988) and teachers' enjoyment in their work is linked to their sense of school community (Bryk & Driscoll, 1988). Singh and Billingsley (1998) argued that teachers' professional commitment is heavily influenced by their colleagues and becomes directly related to the level of peer support. Rosenholtz and Smylie (1984) claimed that collegiality can contribute to teachers' desire to remain in the teaching profession; this was further supported by Barth (1990) who stated that teachers who work collegially are more likely to remain in the profession because they feel supported and valued in their role. Research by Hausman and Goldring (2001) has also shown that teachers who felt a sense of collegiality were the most professionally committed.

Hypothesis 2: Teacher collegiality will have a positive impact on teacher professional commitment.

Research literature on education reform and school improvement suggests that improved student performance may be fully realized only when teachers routinely function as teams and abandon their traditional norms of isolationism

and individualism (Leonard & Leonard, 2003). Teacher collegiality is regarded as one of the most common attributes found in all successful and effective schools. Successful schools can be differentiated from less successful schools by establishing time for teacher talk, teacher observation, and teachers teaching each other (Campo, 1993). Educational researchers have agreed that lasting school improvement must have collegiality as a core element (Bolman & Deal, 1991; Goodlad, 1999; Sergiovanni, 1994).

A small but growing body of evidence suggests a positive relationship between teacher collegiality and student academic achievement (e.g., Goddard et al., 2007; Hord, 1997; Louis & Marks, 1998; McLaughlin & Talbert, 1993; Newmann & Wehlage, 1995; Rosenholtz, 1989). It is believed that higher collegial relations among teaching staff lead to higher quality instruction and, in turn, increased student academic achievement (Barth, 1990; Schmoker, 1999). Inger (1993) suggests that teacher collegiality has a significant impact on student achievement. He claims that although the results are not uniformly good, teachers who have worked together see substantial improvements in their students' achievement, behavior, and attitude. Erb (1997) supports his views stating that reported benefits for student of teachers working together include improved academic achievement and improved attitudes towards school and learning.

Hypothesis 3: Teacher collegiality will be higher in high-achieving schools than in low-achieving schools.

Kushman (1992) found a positive correlation between teacher organizational commitment and student achievement in urban elementary and middle schools. Hoy and Woolfolk (1993) also suggest that higher organizational commitment is related to higher student academic achievement. Reyes and Fuller (1995) studied communal schools which fostered shared values among employees; they indicated that high teacher commitment to school was related to students' math achievement in both middle and high schools.

Hypothesis 4: Teacher organizational commitment will be higher in high-achieving schools than in low-achieving schools.

Teacher professional commitment is also considered as a significant factor in improving student academic achievement. Researchers claim that greater teacher interest in their profession and improvement in teaching strategies is positively associated with higher quality teaching and thus, can lead to greater student learning. Rosenholtz (1989) found an association between teacher commitment to teaching and student achievement in math and reading. Firestone and Pennell (1993) suggest that though high teacher professional commitment may not increase academic success, low teacher commitment to teaching did contribute to a reduction in student achievement. Riehl and Sipple (1996) also support the view stating that in schools where teachers are professionally committed, there is a positive effect on student achievement. Pressley, Rankin, and Yokoi (1996)

reported similar findings about the positive relationship between these two variables.

Hypothesis 5: Teacher professional commitment will be higher in high-achieving schools than in low-achieving schools.

Research suggests that gender plays a vital role in determining peer collegial relationships in the workplace. Fritz (1997) in her study of differences in men's and women's peer relationships on a large, diverse sample found that women are more collegial than men in their workplaces. Odden and Sias (1997) claimed that a higher proportion of collegial peer relationships were found among female workers as compared to male workers. In a related vein, Cahill and Sias (1997) also found that women regard talking with colleagues about a work-related problem as more important than their male counterparts. Women were more likely than men to talk to their peers when faced with problems at work and prefer to work in groups. Researchers also suggest that women are more likely than men to seek emotional support from coworkers (Cahill & Sias, 1997; Fritz, 1997).

Females are regarded as more people-oriented and it is claimed that communality is a central feature of the female stereotype which refers to an emotional, interpersonal orientation (Conway & Vartanian, 2000). In a very recent study of secondary science teachers, Huang and Fraser (2009) found that female teachers perceive greater collegiality among teachers as compared to their

male counterparts. Celep's (2000) study in a primary school setting also revealed that female teachers perceive more positive relationships among colleagues when compared with male teachers.

Hypothesis 6: Female teachers will be more collegial than male teachers.

Collegiality and collaboration increase with an increase in employee educational level (Sveiby & Simons, 2002). According to Sveiby and Simons' (2002) study, employees with higher education regarded collegiality as more favorable in the workplace than employees with less educational attainment. In another study conducted by the Spanish Ministry of Labor and Social Affairs (2004), it was concluded that a positive relationship exists between employee educational attainment and incidence of teamwork. The study claims that employees with higher educational degrees reported higher level of teamwork with their colleagues than those with less educational degrees.

Hypothesis 7: Teachers with more educational attainment will be more collegial than teachers with less educational attainment.

Sveiby and Simons (2002) further claim that collegial relations improve with an increase in employees' work experience. According to their study, employees with more years of experience in their profession were found to be more collegial than those with less work experience.

Hypothesis 8: Teachers with more professional experience will be more collegial than teachers with less professional experience.

Many researchers found gender to be an important predictor of organizational commitment. Mathieu and Zajac (1990) found American women to be more committed to their organization than men; however, the differences were not large. Reyes (1990, 1992) in his study of school teachers also found females to be more committed than their male counterparts. Harrison and Hubbard (1998) in their research on Mexican employees found women to be less committed to the organization than male employees. In the case of Pakistan, a general assumption is that females are less committed to their organizations than males as they believe in their major role as a homemaker and family care taker even though they attend universities on a large scale.

Hypothesis 9: Male teachers will be more committed to their organizations than female teachers.

A negative correlation has been found between educational qualifications and organizational commitment (Angle & Perry, 1981, 1983; Mathieu & Zajac, 1990; Mowday et al., 1982). Harrison and Hubbard (1998) further confirmed these findings stating that there is no significant positive correlation between organizational commitment and educational attainment.

Hypothesis 10: Teachers with more educational attainment will be less committed to their organizations than teachers with less educational attainment.

Hellman (1997) and Weisberg and Kirschenbaum (1991) found that more experienced employees were less likely to leave their organization. Kushman (1992) in his study of urban elementary and middle school teachers found a positive correlation between the number of years in teaching and organizational commitment. Cheng (1990) in his study of school teachers found years of experience to be positively correlated with organizational commitment. Similarly, Jorde-Bloom (1988) also found that teachers' professional experience was positively associated with their commitment to the organization.

Hypothesis 11: Teachers with more professional experience will be more committed to their organizations than teachers with less professional experience.

Ingersoll and Alsalam (1997) in their study of elementary and secondary school teachers in the United States found male teachers to be slightly less committed to the teaching profession than female teachers. Karakus and Aslan (2009) in their most recent study determined high school teachers' professional commitment in Turkey. They also found gender to be significantly correlated with teachers' commitment to their profession. Their results showed that female teachers are more committed to the teaching profession than their male

counterparts. However, in case of Pakistan, the traditional social and familial circumstances make it difficult for female workers to remain highly committed to their profession.

Hypothesis 12: Male teachers will be more committed to their profession than female teachers.

Surendra and Anita (1988) in their study of secondary school teachers found that teachers having more educational attainment were more professionally committed as compared to those with less qualification and training. Colarelli and Bishop (1990) claim, that educational attainment is positively correlated to general career commitment. Carson and Bedeian (1994) also state that education level is positively related to employee professional commitment. Debbie (2006) supports the view stating that as level of education increases so does the level of professional commitment. Den Hartog and Belschak (2007) in their research on health care sector employees also found that professional commitment was positively correlated with education level.

Hypothesis 13: Teachers with more educational attainment will be more committed to their profession than teachers with less educational attainment.

Surendra and Anita (1988) further claim that the longer the length of service the higher is the teachers' professional commitment. Rosenholtz and Simpson

(1990) suggest that professional experience is positively related with teacher commitment to their profession. Similarly, according to Blau (1985), career commitment is strongly correlated with employee professional experience. Carson and Bedeian (1994) and Hung and Liu (1999) also suggest a positive relationship between professional experience and employee commitment to the profession. Debbie (2006) in her study found that years of experience positively influence employees' level of commitment to the profession. This might be because those who have invested much time and effort in a particular profession are reluctant to change it.

Hypothesis 14: Teachers with more professional experience will be more committed to their profession than teachers with less professional experience.

3.3 Research Design

In order to investigate the hypotheses and theories in the educational field, two major research methodologies have been developed. These methodologies are quantitative measurement and analysis, and qualitative research.

Quantitative research is an inquiry into an identified problem, based on testing a theory, measured with numbers, and analyzed using statistical techniques. The main goal of quantitative methods is to determine whether the predictive generalizations of a theory hold true. It is based primarily on deductive

forms of logic, and theories and hypotheses are tested in a cause-effect order. The purpose is to develop generalizations that contribute to theory that enable the researcher to predict, explain, and understand a phenomenon.

The research design used for this study is a quantitative, non-experimental, cross sectional research design. This research design is chosen for the present investigation because it allows predictions in a large sample with limited resources. A cross sectional survey design is used to examine the demographic variables of gender, educational attainment, and professional experience; teacher collegiality; organizational commitment; and professional commitment among the selected sample.

3.4 Sample and Participant Selection

Teachers of public secondary schools (both male and female) from across the federal capital district of Islamabad served as research population. The total number of public secondary school teachers working in Islamabad is 2,148 (AEPAM, 2004-05). The sample size for the current study using 95% of confidence level and 5% of confidence interval was determined to be 326.

The selection of high-achieving and low-achieving schools was based on their students' secondary school certification (SSC) results on the Federal Board of Intermediate and Secondary Education (FBISE) examination for two

concurrent school years, namely 2008 and 2009. The following criteria were used:

- High-achieving schools were those listed schools where 100% of the students had passed the SSC Annual examination and more than 50% of the students had achieved either A-1 or A grade. The results were checked for the 2009 SSC Annual examination and then rechecked for the previous school year that is 2008.

- Low-achieving schools were those listed schools where (1) at least 20% of the students could not pass the SSC Annual examination by either getting compartment (failing in one or more subjects) or had completely failed, and (2) 50% of the passing students either got C grade or less than C grade. The results were checked for the 2009 SSC Annual examination and then rechecked for the previous school year that is 2008.

3.5 Data Collection Procedure

Permission from the Federal Directorate of Education (FDE), Government of Pakistan was taken as the first step in conducting this study. The administrators or the principals of the sampled schools were needed to be willing to participate in the research project and to allow their teachers the choice of becoming involved in the study. Therefore, these schools were visited personally and the principals of the selected sites were approached to outline the purpose and value of the current

research in order to get the formal permission for conducting the study at their respective schools. The principals were required to accept the invitation to participate before the research could proceed.

Upon getting approval from the principals, the survey questionnaires along with the cover letter were distributed to all the teaching staff numbering 445 in total. The cover letter indicated the aim of the research, its significance, and the time required to fill out the questionnaire. It also assured the participants that the information would be collected independent of their organization, that their participation would be voluntary, and their responses would be kept confidential to encourage sincerity and truthfulness in responses. A total of 364 completed questionnaires (a response rate of 81.79%) were collected from 17 public secondary schools including eight high-achieving (four male and four female) and nine low-achieving (four male and five female) schools.

Survey research can be conducted in a number of ways, such as using mail surveys, online or web-based surveys. However, the response rates from mail surveys are often very low. Similarly, limited access to technology and lack of familiarity with the technology on the part of respondents can potentially affect the response rate to online surveys (Shannon & Bradshaw, 2002). Most specifically, in the case of Pakistan, very few teachers are accessible to online services due to the limited resources in the educational sector. Therefore, data collection for this study was done in person, primarily by the researcher, by

visiting sites to meet with groups of teachers. The priority of personal contact with respondents and the goal of high response rate ultimately determined the nature of the sampling approach.

3.6 Instrumentation and Measures

The questionnaire consisted of three sections. The first section consisted of the cover letter (see Appendix B). The second section included the questions related to the demographic variables specifically teacher personal variables such as gender, educational level, and professional experience. The third section comprised the scale measuring teacher collegiality (38-items), organizational commitment (18-items), and professional commitment (18-items). Ratings were made on 7 point Likert type scale (1 = strongly disagree to 7 = strongly agree) for all the items.

3.6.1 Measurement of Teacher Collegiality

Teacher collegiality was measured using a self-developed scale consisted of 38-items. This scale measured seven dimensions of collegiality among school teachers: *Demonstrating Mutual Support and Trust* (7-items), *Observing One Another Teaching* (6-items), *Joint Planning and Assessment* (7-items), *Sharing Ideas and Expertise* (6-items), *Teaching Each Other* (5-items), *Developing Curriculum Together* (4-items), and *Sharing Resources* (3-items). A Likert scale

ranging from 1 to 7 (1 = strongly disagree; 7 = strongly agree) was used. Six items in this scale were negatively phrased, and were reverse scored. The negatively keyed items were included in the scale in order to control for acquiescence response bias and to encourage respondents to think about each statement carefully rather than mindlessly adapting a pattern of agreeing or disagreeing with the statements.

Examples of items from the Teacher Collegiality Scale (TCS) include: (a) *Demonstrating Mutual Support and Trust* - Professional interactions among teachers are cooperative and supportive; (b) *Observing One Another Teaching* - We regularly observe one another teaching as a part of sharing and improving instructional strategies; (c) *Joint Planning and Assessment* - We jointly plan and prepare teaching strategies and procedures; (d) *Sharing Ideas and Expertise* - We often ask each other about classroom management ideas and suggestions; (e) *Teaching Each Other* - We often teach each other informally; (f) *Developing Curriculum Together* - Teachers in this school jointly prepare their lesson plans; (g) *Sharing Resources* - My colleagues and I share materials related to my subject teaching.

3.6.1.1 Development of Teacher Collegiality Scale and Pilot Study Results

The first step in developing the instrument, titled the ‘Teacher Collegiality Scale’ (TCS) was searching for the items in the literature to address the collegial

practices of school teachers. For gathering the items for the instrument, the main sources consulted were Barth (1990), DuFour (2004), Goodlad (1984), Hord (1997, 1998), Jarzabkowski (1999, 2002), Johnson (1990), Little (1982, 1990), Nias (1998), Retallick and Butt (2004), Rosenholtz (1989), and Zahorik (1987). Sixty-six items were gathered and written initially for the scale. The scale was then sent to five secondary school teachers in Pakistan to check for further improvement and/or clarification of the items. Some minor amendments were made based on their suggestions. For examining the content validity of the scale, the scale was presented to a panel of experts for their professional judgment and opinion about whether the items were essential, useful or irrelevant to measuring the construct under study. Based on their reviews, some of the items were dropped from the questionnaire.

The modified questionnaire was then sent to six different secondary schools (four male and two female) located in two cities of Pakistan, namely Karachi and Lahore for the purpose of data collection. The school and teaching culture is almost similar in the major cities of Pakistan, therefore, the sample for this pilot study was considered as representative of the main research study sample. Participants were asked to respond to the questionnaire using 1 to 7 Likert intervals. Response options ranged from 1 (strongly disagree) to 7 (strongly agree), indicating how true each statement was about them.

A total of 118 usable responses were gathered to check for reliability and content validity of the instrument. The data were analyzed using SPSS version 16.0. Exploratory factor analysis (EFA), with principal component extraction and varimax rotation was conducted on all 60 items in the Teacher Collegiality Scale to verify the dimensionality of the overall instrument and to establish the instrument's initial construct validity. Factor analysis is a technique for investigating the structure of a data set about which one has few preconceptions. It is used to discover patterns in the relationships amongst variables and enables reduction of the number of variables into factors combined from these variables. Its main goal is to identify not-directly-observable factors based on a larger set of observable or measurable indicators (variables) and to provide a base for selecting items that exhibited the best convergent and discriminant validities. Principal component factor analysis was chosen over common factor analysis because the primary concern was data reduction and acquiring minimum number of factors to account for the maximum portion of the total variance represented in the original set of variables.

However, before employing factor analysis, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy along with Bartlett's test of sphericity was conducted to ensure the appropriateness of data for principal component factor analysis. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy compares the observed correlation coefficients to the partial correlation coefficients. Kaiser

(1974) recommends values greater than .5 as acceptable. A KMO value for this data set was .645 which was acceptable and indicated the applicability of EFA.

Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. For factor analysis to work some relationships between variables are needed and if the *R*-matrix were an identity matrix then all correlation coefficients would be zero. Therefore, the result of this test must be significant. A significant test shows that the *R*-matrix is not an identity matrix; therefore, there are some relationships between the variables one hopes to include in the analysis. For these data, Bartlett's test was highly significant ($p = .000$), and therefore, factor analysis was appropriate. The results of KMO and Bartlett's test are presented in Table 3.1

Table 3.1

Results of KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.645
Bartlett's Test of Sphericity	Approx. Chi-Square	3810.647
	df	1770.000
	Sig.	.000

Extraction of factors using K1 rule (eigenvalue-one criterion) extraction heuristic with eigenvalues greater than 1 indicated a 17 factor solution accounting for 78.63% of the total variance. In order to get fewer factors, a scree plot was employed. The scree plot graphs the eigenvalue against the factor number. These values in the first seven columns of the table were immediately above. After that the line was almost flat, showing that the each successive factor was accounting for smaller and smaller amounts of the total variance (as shown in Figure 3.2). Scree plot, therefore, suggested a seven factor solution and appeared to provide the most meaningful and logical interpretation. Zwick and Velicer (1986) suggest that the K1 rule often leads to over-factoring and that scree test is usually shown to be more accurate. Therefore, a seven factor solution was chosen on the basis of the scree test result.

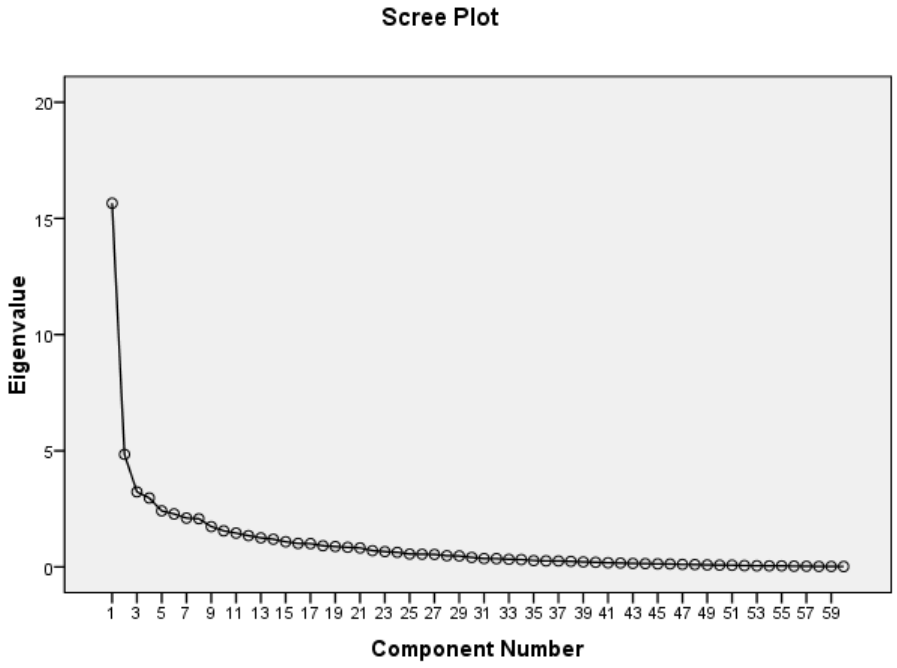

Figure 3.2. Factor scree plot.

Table 3.2

Factor Loadings for Teacher Collegiality Scale (TCS)

Factors Identified in TCS and its Related Items	**Factor Loadings**
Factor 1 (Demonstrating Mutual Support and Trust)	
38. Teachers provide strong social support for colleagues.	.871
39. Professional interactions among teachers are cooperative and supportive.	.832
50. There is a feeling of trust and confidence among staff members.	.530
52. I can count on most of my colleagues to help me out anywhere, anytime even though it may not be part of their official assignment.	.520
53*. Teachers in this school hide their failures and mistakes.	.450
43. Teachers consider their colleagues as their friends.	.433
40*. Teachers in this school do not respect the professional competence of their colleagues.	.405
Factor 2 (Observing One Another Teaching)	
46. We invite other teachers to observe our teaching.	.836
44*. Teachers in this school mind being observed by their colleagues while teaching.	.804
45. We regularly observe one another teaching as a part of sharing and improving instructional strategies.	.700
47. Most of the teachers in this school are receptive to the presence of other professionals in their classrooms.	.477

Factors Identified in TCS and its Related Items	Factor Loadings
54. I believe it to be beneficial for my teaching to be open with colleagues about my successes and challenges.	.440
51. Feedback received by the colleagues is considered and responded to appropriately.	.412
Factor 3 (Joint Planning and Assessment)	
31. Cooperation and collaboration exist across departments.	.728
29. We jointly plan and prepare teaching strategies and procedures.	.657
30. Majority of the teachers participate actively in meetings.	.534
21. We make collective agreements to test an idea or new approach in teaching.	.515
33. We jointly accredit new programs and practices.	.464
35. My colleagues and I collectively analyze our teaching practice.	.431
49*. Teachers do not praise or criticize each others' teaching.	.414
Factor 4 (Sharing Ideas and Expertise)	
13. We often argue over educational theories, philosophies, or approaches.	.813
12. Teachers encourage each other to contribute ideas and suggestions.	.801
15. We often ask each other about classroom management ideas and suggestions.	.612
5*. Teachers in this school do not feel comfortable about discussing their students' problems.	.428

Factors Identified in TCS and its Related Items	Factor Loadings
6. Teachers in this school often ask for suggestions to specific discipline problems.	.512
7. We discuss frequently about school improvement strategies.	.408
Factor 5 (Teaching Each Other)	
59. We often teach each other informally.	.828
60. Teachers in this school enjoy teaching in teams.	.776
58. We feel part of a learning community which values shared responsibility for ongoing learning.	.489
56. Teachers give demonstrations on how to use new models or strategies.	.456
55. Teachers in this school like to share what they have learned or wanted to learn.	.422
Factor 6 (Developing Curriculum Together)	
25. Most teachers in this school contribute actively to making decisions about curriculum.	.713
24. I find time to work with my colleagues on curriculum during a regular work day.	.596
27. Teachers in this school jointly prepare their lesson plans.	.570
16*. Teachers in this school feel hesitant in asking for help on specific instructional problems.	.493

Factors Identified in TCS and its Related Items	Factor Loadings
Factor 7 (Sharing Resources)	
9. My colleagues and I share materials related to my subject teaching.	.799
10. Teachers in this school often lend and borrow materials like worksheets and lesson plans.	.782
11. We often share journal articles and educational books.	.562

Note. Items marked with "*" are reversed scored.

Varimax rotation method was used with Kaiser Normalization to get the rotated factor matrix. It is a matrix of the factor loadings for each variable onto each factor. A minimum loading of 0.4 was set for a variable in order to define a factor. A loading of 0.4 or more is considered to be significant for this size of sample population (Hair et al., 2006); therefore, items with factor loadings less than 0.4 were suppressed and dropped. The results of rotated factor analysis are presented in Table 3.2. Factor loadings show how highly each variable is correlated with the factor. The higher the loading, the more the variable characterizes the factor.

The first factor, Factor 1 (7-items), was labeled '*Demonstrating Mutual Support and Trust*' and accounted for 26.09% of the total variance. Factor 2 (6-items) labeled as '*Observing One Another Teaching*' explained 8.07% of the

variance and Factor 3 (7-items) was labeled '*Joint Planning and Assessment*' which explained 5.38% of the total variance. Factor 4 (6-items) was named as '*Sharing Ideas and Expertise*' and accounted for 4.94% of the variance. Factor 5 (5-items) labeled '*Teaching Each Other*' and Factor 6 (4-items) labeled '*Developing Curriculum Together*' explained 4.02% and 3.80% of the variance respectively. The last Factor 7 (3-items) was named as '*Sharing Resources*' and explained 3.50% of the total variance for this scale.

3.6.1.2 Reliability Analysis of Teacher Collegiality Scale

After interpreting the factors, internal consistency (reliability) analysis was conducted using Cronbach's alpha for each of the Teacher Collegiality Scale's (TCS) subscales. Initially, Factor 1 (*Demonstrating Mutual Support and Trust*) had an alpha of .87; it appeared that item 37 was detracting from the reliability, so item 37 was removed. The final alpha calculation was .89. Factor 2 (*Observing One Another Teaching*) had an alpha of .83. Item 19 was detracting from the reliability, so it was removed to gain a final reliability of .84. Factor 3 (*Joint Planning and Assessment*) had an alpha of .85. Factor 4 (*Sharing Ideas and Expertise*) had an alpha of .83. The alpha for Factor 5 (*Teaching Each Other*) was .80. However, removing the item 23 could improve its reliability to .83; therefore, item 23 was removed from Factor 5. Factor 6 (*Developing Curriculum Together*) had an alpha of .77. Last, Factor 7 (*Sharing Resources*) had an alpha value equal to .74.

The Teacher Collegiality Scale (TCS) addresses seven interpretable and internally consistent dimensions with subscales' internal consistency ranging from .74 to .89. The results of Cronbach's alpha reliability for the seven sub-scales of TCS are presented in Table 3.3.

Based on these results, TCS can serve as a useful tool in measuring teacher collegiality throughout Pakistan. Based on Cronbach's alpha, the instrument has high reliability; thus, this instrument can serve as a consistent tool in evaluating collegiality among school teachers.

Table 3.3

Internal Reliability of Teacher Collegiality Subscales

Factors	**Name of Subscales**	**No. of Items**	**Cronbach's Alpha**
1	Demonstrating Mutual Support & Trust	7	.89
2	Observing One Another Teaching	6	.84
3	Joint Planning & Assessment	7	.85
4	Sharing Ideas & Expertise	6	.83
5	Teaching Each Other	5	.83
6	Developing Curriculum Together	4	.77
7	Sharing Resources	3	.74

3.6.2 Measurement of Organizational Commitment

Organizational commitment was measured using 18-item TCM Employee Commitment Survey (Meyer, Allen, & Smith, 1993) which is the revised version of Meyer and Allen (1991) Organizational Commitment Questionnaire. This scale measures three forms of employee commitment to an organization: desire-based (affective commitment), cost-based (continuance commitment), and obligation-based (normative commitment). Each scale consists of six items. Four items are negatively phrased and will be reversed scored. A Likert scale ranges from 1 to 7 (1 = strongly disagree; 7 = strongly agree) was used. Following the advice of the survey authors, the items from the three scales were presented in random order in the final questionnaire.

Examples of items from the Organizational Commitment Questionnaire (OCQ) include: (a) *Affective Organizational Commitment* - I would be very happy to spend the rest of my career with this organization; (b) *Continuance Organizational Commitment* - It would be very hard for me to leave my organization right now, even if I wanted to; and (c) *Normative Organizational Commitment* - This organization deserves my loyalty.

3.6.2.1 Reliability and Validity of Organizational Commitment Measure

The evidence for reliability and validity of OCQ accumulated through years of research (see Allen & Meyer, 1996, 2000).

Several studies have examined the reliability (alphas) of the OCQ. Allen and Meyer (1990) reported .87 for affective, .75 for continuance, and .79 for normative. Dunham, Grube, and Castaneda (1994) found alpha ranges of .74 to .87 for affective, .73 to .81 for continuance, and .67 to .78 for normative. Cohen (1996) discovered alphas of .79 for affective, .69 for continuance, and .65 for normative.

This model was basically developed in North America but taking the cue from Allen and Meyer (1996) which revealed satisfactory construct validity and internal reliability, Meyer and his colleagues (2002) performed a meta-analysis of studies using both the 6-item (revised version) and 8-item (original version) OCQ. They collected data from people who had sought permission to use the OCQ during the last 15 years as well as from computer databases dating back to 1985. The mean reliability from all the studies was .82 for affective, .73 for continuance, and .76 for normative. The authors concluded that the model seems to be the most suitable conceptualization of organizational commitment and may indeed be applicable in other countries and cultures outside North America.

This model and scale has also been used in Pakistan by different researchers (Alvi & Ahmed, 1987; Tayyab, 2006) and showed a consistent reliability. Alvi and Ahmed (1987) in their study revealed that North American models and explanations are relevant for a developing country like Pakistan. A study conducted by Tayyab (2006) using Meyer and Allen (1991) OCQ on a sample of large public sector organization of Islamabad shows the reliability of items ranging from .52 to .78. The alpha coefficient for Affective Commitment Scale was .73, Continuance Commitment Scale was .78, and Normative Commitment Scale was .52.

3.6.3 Measurement of Professional Commitment

Professional commitment was measured using Meyer, Allen, and Smith (1993) Occupational Commitment Scale comprising of 18-items. This scale is also consisted of three dimensions of affective, continuance, and normative occupational commitment (six items in each scale). Responses to these items were also made on 7-point scales ranging from 1 (strongly disagree) to 7 (strongly agree). Five items in this measure were negatively phrased, and were reverse scored.

While Meyer, Allen, and Smith (1993) named the measure the Occupational Commitment Scale, they identified that the term ‘occupational’ commitment was used to enable the measure to be inclusive of both occupations and professions

arguing that both professionals and non-professionals may be committed to the work they do (Meyer, Allen, & Smith, 1993). The items were modified to apply to the teaching profession as Meyer et al.'s (1993) items of original questionnaire were written specifically for a sample of nurses. Since then the instrument has been used in several reported studies which have included a number of occupational groups which included professionals and non-professionals (Irving, Coleman, & Cooper, 1997; Stinglhamber, Bentein, & Vandenberghe, 2002) or homogeneous groups of professionals (Snape & Redman, 2003).

Examples of items from the Occupational Commitment Scale (for this study, it is termed as Professional Commitment Scale) include: (a) *Affective Professional Commitment* - I am proud to be in the teaching profession; (b) *Continuance Professional Commitment* - It would be costly for me to change my profession now; and (c) *Normative Professional Commitment* - I am in teaching because of my sense of loyalty to it.

3.6.3.1 Reliability and Validity of Professional Commitment Measure

In the Meyer et al. (1993) study, coefficient alphas for the three scales of Professional Commitment Scale ranged from .73 to .87. In Irving and his colleagues' (1997) assessment of these scales, the coefficient alphas were .79, .83, and .83 for affective, continuance, and normative commitment respectively.

3.7 Data Analysis

In order to investigate how the independent variable (teacher collegiality) influences dependent variables (organizational commitment and professional commitment) among public secondary school teachers, Structural Equation Modeling (SEM) using Analysis of Moment Structures (AMOS) version 16.0 was used as a primary data analysis method.

Structural Equation Modeling (SEM) was chosen for the current inquiry as it effectively deals with latent variables. Latent variables are those variables that are not directly observable. Thus, it is common to use multiple measurements to capture the meanings of such variables. Latent variables are quite common in social sciences, and the main variables of this study were also latent variables with multiple dimensions. In measuring latent variables, SEM explicitly incorporates measurement errors in the observed variables (Raykov & Marcoulides, 2000) more effectively than regression analysis and takes account of complete information in the conceptual model. Maximum Likelihood Estimation (MLE), which is widely used as an estimate technique, was applied in this SEM analysis. According to Hair et al. (2006), “MLE is the most efficient and unbiased estimation method, when the assumption of multivariate normality is met” (p. 743).

Other multivariate analytical techniques chosen to analyze data in the current study were multiple-group SEM analysis, latent mean structure analysis, and multivariate analysis of variance (MANOVA).

However, all the data were initially screened by the Statistical Package for the Social Sciences (SPSS) version 17.0. The study involved multivariate analytical techniques, therefore, preliminary analysis was conducted to check for missing values, outliers, univariate and multivariate normality, and homoscedasticity (homogeneity of variances and covariances).

Simple descriptive analysis such as frequencies, percentages, means, and standard deviations were calculated in order to understand teachers' perceptions of collegiality, organizational commitment, and professional commitment. The internal consistency (Cronbach's alpha) of each instrument's subscale was estimated. Alpha coefficients greater than .70 are assumed to be adequate for internal consistency in the field of social science (Nunnally & Bernstein, 1994).

In order to describe the respondents' demographic information, the statistical techniques such as frequency and percentage were used. Multivariate analysis of variance (MANOVA) was used to determine whether independent variables (here demographic variables such as gender, educational attainment, and professional experience acted as independent variables) had an impact on the dependent variables (i.e., teacher collegiality, organizational commitment, and professional

commitment). MANOVA was selected as it is the best statistical technique that can accommodate more than one dependent variable and can simultaneously explore the relationships between several categorical (non-metric) independent variables and two or more metric dependent variables (Hair et al., 2006). It also controls for inflated Type I error which becomes a concern when doing multiple tests for each dependent variable separately.

3.8 Summary

This chapter describes the conceptual framework of the study. Fourteen research hypotheses were formulated for investigation. The current study uses a quantitative research design where survey is used as the major source of data collection. The procedures of collecting data and sample selection techniques are described in detail. The instruments to measure organizational commitment and professional commitment among school teachers are adapted from Meyer, Allen, and Smith (1993). Teacher collegiality scale (TCS), a self-developed tool is piloted on a sample of 118 public secondary school teachers using an exploratory factor analysis (EFA) and the internal consistency (reliability) analysis. This chapter further describes the analytical techniques chosen to answer the four main research questions. Structural equation modeling (SEM) is used as a primary data analysis method. Other multivariate analytical techniques chosen to analyze data are multiple-group SEM analysis, latent mean structure analysis, and multivariate analysis of variance (MANOVA).