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**THE RELATIONSHIP BETWEEN TEACHERS' PERCEPTIONS OF SCHOOL  
CLIMATE AND TEACHER JOB SATISFACTION: A MULTILEVEL ANALYSIS**

A Thesis in  
Educational Theory and Policy

by

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## **ABSTRACT**

The high rate of teacher attrition has been an enduring problem that needs to be resolved for educational policymakers. Studies have demonstrated that teacher job satisfaction is associated with teachers' decisions on whether to leave their profession. The purpose of this research is to examine the relationship between teachers' perceptions of school climate and teacher job satisfaction. This study used data from Teaching and Learning International Survey (TALIS) 2013 database. Multilevel modeling results indicated that teachers' perceptions of school climate have a significantly positive relationship with teacher job satisfaction. Older teachers are more satisfied than younger teachers. Teachers with more working experience have higher levels of job satisfaction than those with less experience. No significant relationship was found between school characteristics (i.e., school location, school type and school socioeconomic status) and teacher job satisfaction. The findings highlighted the importance of building a positive and sustained school climate for all teachers in order to improve teacher job satisfaction.

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## Chapter 1

### Introduction

In recent decades, growing teacher shortages have been a severe problem in elementary and secondary schools (Aragon, 2016; Howard, 2003; Ingersoll, 2002; Ingersoll, Merrill & Stuckey, 2014). This educational problem has been attributed to two demographic trends. On the one hand, teacher demand has been growing. According to estimates from National Center for Education Statistics (NCES), for primary to secondary education, the total enrollment in public schools is projected to increase by 3% to 51.4 million between 2013–14 and 2025–26. Moreover, the teacher attrition rate has remained near 8 percent since 2005. To put it into perspective, at least 250,000 classroom teachers left their professions during 2004–05 to 2012–13. On the other hand, teacher supply has been falling in recent years. Total teacher preparation program enrollments have dropped by 10 percent from 2004 to 2012 (Sawchuk, 2015). Of 175,000 to 300,000 teachers who have finished teacher preparation programs between 1987 to 2011, only between 60,000 to 140,000 of these have entered in teaching professions (Cowan et al., 2016).

Policymakers have been focusing on teacher recruitment programs when there are severe teacher shortages. However, literature suggests that the excess demand of new teachers depends substantially on how many teachers leave the profession (Haggstrom, Darling-Hammond, & Grissmer, 1988; Ingersoll, 2002; Sutchter et al., 2016). In other words, the key is to retain the teachers. The teacher shortage problem will not be resolved if the government policy experts ignore the high teacher attrition rate in elementary and secondary schools. The cost of high attrition rate is considerable. The National Commission on Teaching and America's Future (2007) estimated that the cost of teacher attrition was \$7.3 billion a year. Reducing teacher attrition rate would not only greatly eliminate the teacher shortages but also would save enormous amount of money for the teacher development.

Teacher job satisfaction is one of the primary factors that influence teachers' decisions on whether to depart their professions (Ingersoll, 2002). Empirical research has shown that teacher job satisfaction has a significant association with teacher attrition (Ingersoll 2002; Shen, 1997). Teachers who experience job satisfaction tend to remain in their jobs. Yet, very few of teacher background variables (e.g., age, gender, teaching experience, etc.) or school demographic characteristics (e.g., school type, school location, etc.) were associated with teacher job satisfaction (Perie & Baker, 1997). Workplace conditions have accounted for the largest part of shaping teacher job satisfaction. Therefore, focusing on improving school conditions is a policy-reachable way to improve teacher job satisfaction and alternately reduce teacher attrition rate. This study attempts to examine factors associated with teacher job satisfaction. Specifically, in this study I explore the relationship between school climate and teacher job satisfaction. The findings extend the existing literature on improving teacher job satisfaction and alleviating the problems of teacher attrition and teacher shortage.

## Chapter 2

### Literature Review

#### 2.1 Teacher Attrition and Teacher Job Satisfaction

Macdonald (1999) attributed teacher attrition to either a problem for labor force planning and resources or an indicator of the relatively poor quality of school conditions and teacher morale. According to results from the 2012–13 Teacher Follow-up Survey (TFS), leavers accounted for approximately 8 percent of public school teachers during 2012–13 school year, which equals 259,400 teachers. Some 7 percent of teachers with one to three years' experience in public schools left the teaching profession in the 2012–13 school year (Goldring, Taie, & Riddles, 2014). When teachers depart their profession, it not only aggravates the shortages but also imposes a burden on the school districts. It would take at least \$4,400 for a small rural district and \$18,000 for a large urban district to replace a teaching position a decade ago (Sutcher et al., 2016). A more recent estimate for replacement cost is \$50,000 from the National Education Association (Vail, 2005).

Teacher job satisfaction has been demonstrated to be a significant factor that influences teachers' decisions on whether to leave their profession. For instance, Gonzalez (1995) found that teacher dissatisfaction with the working environment such as large class size and unsupportive administration was the critical factor that influences teacher attrition. Shen (1997) indicated that there are significant differences in teachers' perceptions of school or profession related issues including school administration knowing teachers' problems, teachers' influence over policies, and the match between expertise and assignment. Ingersoll (2001) reported that teacher job dissatisfaction with workplace conditions (e.g., inadequate administrative support, student discipline problems and lack of faculty influence) has a significant relationship with teacher attrition using data from the 1990-1991 School and Staffing Survey (SASS) and its supplement the 1991-1992 Teacher Follow-up Survey (TFS). Ingersoll (2002) then

confirmed this result through a more recent sample from 1999-2000 SASS and TFS that teachers' dissatisfaction with school conditions such as lack of principal support and classroom discipline problems, was the principal factor associated with movers and leavers. Using the most recent TFS data of 2013, Goldring, Taie, and Riddles (2014) found that teacher dissatisfaction with the working environment has played the dominant role in accounting for teacher attrition.

Therefore, teacher job satisfaction is an essential predictor for teacher attrition. Understanding teacher job satisfaction is important for administrations and policy-makers to retain teachers in their profession. In the next section, I review the literature on teacher job satisfaction.

## **2.2 Teacher and School Characteristics and Teacher Job Satisfaction**

There is no universal definition of teacher job satisfaction in the exiting literature. However, Taylor and Tashakkori (1995) found that teachers commonly indicate job satisfaction includes looking forward to coming to work (school) every day and feeling good when their students succeed in school work. Similarly, Evans (1997) conceptualized teacher job satisfaction as job fulfillment (i.e., how well the job is performed) and job comfort (i.e., under what conditions the job is performed). A substantial body of empirical research has explored factors associated with teacher job satisfaction. A meta-analysis from Kim and Loadman (1994) suggested that 1,715 articles discussed teacher job satisfaction in the Education Resources Information Center (ERIC) 1982 through 1994 databases. They selected 350 articles of these to identify variables related to teacher job satisfaction. These variables included salary, interaction with the principal, interaction with students, professional autonomy, class size, school climate, professional achievement, age, self-motivation, interaction with colleagues, self-evaluation, and working condition.

Contrary to common sense, teacher characteristics were not strongly associated with teacher job satisfaction. For instance, Heller, Clay, and Perkins (1992) conducted a study on predictors of teacher job satisfaction using a sample of K-12 teachers in North Carolina. Their regression results indicated that teacher job satisfaction did not differ by teachers' gender and years of experience. Klecker and Loadman (1997) had the similar conclusion based on a sample of classroom teachers working in Ohio. It was found that teachers' satisfaction with salary, school conditions or interaction with students is not significantly related to years of working experience. Using a sample of teachers in New York State public secondary schools, Baughman (1996) found that teachers' gender, years of experience, age and level of education were not significantly related to teacher job satisfaction. However, the representativeness of those results is limited as they employed samples from public schools at the state level. A nationally representative data analysis yielded different results. In public schools, younger teachers and those with less working experience have more job satisfaction than older teachers and those with more working experience. In

private schools, the very youngest and very oldest teachers had the highest levels of satisfaction (Perie & Baker, 1997). Although many studies have investigated the relationship between different elements of teacher characteristics and teacher job satisfaction, most of the literature is based on the state level sample. The representativeness of the results is limited. Furthermore, data used in the majority of this research is outdated. They may not accurately reflect the present picture of the relationship between teacher characteristics and teacher job satisfaction. Therefore, this study analyzed nationally representative data from the most recent cycle of the Teaching and Learning International Survey (TALIS) 2013 database to reexamine the current trend.

There is little in the literature on the relationship between school characteristics and teacher job satisfaction. Perie and Baker (1997) found that teacher job satisfaction differed by school location and school size. Teachers at suburban schools have the highest level of job satisfaction, whereas teachers at urban schools have the lowest level of job satisfaction, with teachers at rural schools positioned in between. They also found that teachers at small schools have a higher level of job satisfaction than those at large schools. In contrast, Henke et al. (1996) reported no relationship between school size and teacher job satisfaction.

The current study also includes school characteristics (i.e., school location, school type and school socioeconomic status) in the analysis. The findings concerning the relationship between teacher and school characteristics and teacher job satisfaction are compared with the previous literature in the discussion section.

### 2.3 School Climate and Teacher Job Satisfaction

In recent decades, school climate has been the target of educational policies and the subject of considerable empirical research. Cohen et al. (2009) defines school climate as

School climate is based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures. (p.182)

Abundant studies have shown that school climate was positively related to teacher job satisfaction (Aldridge & Fraser, 2016; Ghavifekr & Pillai, 2016; Taylor & Tashakkori, 1995). Building a favorable school climate would potentially increase teacher job satisfaction and hence reducing the teacher attrition rate. In general, teachers are more satisfied when they feel supported by the principals and colleagues, obtain more opportunities for participating in the school decision-making process and have a positive teacher-student relationship (Brown & Medway, 2007; Henke et al., 1996; Leithwood & McAdie, 2007; Petty, 2007; Taylor & Tashakkori, 1995). Taylor and Tashakkori (1995) found that six dimensions of school climate: decision participation, principal leadership, student discipline, faculty collegiality, lack of obstacles to teaching and faculty communication were significantly positively related to teacher job satisfaction using the 1990 follow-up of the National Educational Longitudinal Study (NELS). Among these aspects of school climate, decision-making participation of teachers and principal leadership were the strongest predictors of teacher job satisfaction. Perie and Baker (1997) indicated that working conditions were associated with teacher satisfaction after other important factors, such as gender, years of experience, and school composition were taken into account. More administrative support and leadership, good student behavior, a positive school atmosphere, and teacher autonomy were associated with higher teacher satisfaction. Shen et al. (2012) used a sample from SASS 2003-2004 to examine whether principal background and school processes were related to teacher job satisfaction. Their multilevel analysis results suggested that 17 % of the total variance in teacher job satisfaction is between schools, a statistically

significant amount that indicates schools can make a difference in teacher job satisfaction. The authors found that school processes--particularly career and working conditions, staff collegiality, administrative support, and to a lesser extent, positive student behavior and teacher-empowerment are positively associated with teacher job satisfaction.

Although a substantial body of literature has examined the relationship between various dimensions of school climate and teacher job satisfaction, most of these studies relied on data from the 1990s. The findings may not be reflective of the current trend. Moreover, little has touched on the multilevel modeling approach regarding analytic strategy. Teachers are nested within schools. Their perceptions of school climate are correlated within a school as they share some common characteristics in the same context (Liu & Meyer, 2005; Shen et al., 2012). This makes multilevel analysis more appropriate than multiple regression to examine the relationship between school climate and teacher job satisfaction. Six scales were selected from TALIS 2013 based on their potential relationship with teacher job satisfaction as indicated in the literature. They are participation among stakeholders, teacher-student relations, classroom disciplinary climate, teacher co-operation and effective professional development. Using multilevel modeling, this study aims to address the following questions:

1. To what extent, does the school-level variance accounted for the variance in teacher job satisfaction based on the results from TALIS 2013?
2. What are the relationships between teachers' perceptions of five dimensions of school climate (i.e., participation among stakeholders, teacher-student relations, classroom disciplinary climate, teacher co-operation and effective professional development) and teacher job satisfaction based on the results from TALIS 2013?

## Chapter 3

### Methods

#### 3.1 Data and Sample

To examine how school climate relates to teacher job satisfaction, this study used data from TALIS 2013 international database. TALIS aims to collect data about the learning environment and working conditions of teachers in schools. The first cycle of TALIS was conducted in 2008 with 23 participating countries: Australia, Austria, Belgium (Flemish), Brazil, Bulgaria, Denmark, Estonia, Hungary, Iceland, Ireland, Italy, Republic of Korea, Lithuania, Malaysia, Malta, Mexico, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, and Turkey (OECD, 2010). TALIS 2013 is the second and the most recent cycle.

TALIS implemented a stratified, two-stage sampling design. Two hundred schools were sampled from the population of schools within each country. Twenty teachers were then randomly selected from those sampled schools. The international target population of TALIS 2008 was teachers and principals from lower secondary schools (ISCED level 2) of 23 countries. TALIS 2013 additionally included surveys of teachers and principals in primary (ISCED level 1) and upper secondary (ISCED level 3) schools of 33 nations and economies (OECD, 2014). TALIS utilized the teacher questionnaire and the principal questionnaire to collect data from sampled teachers and principals. This analysis used the United States dataset in TALIS 2013. The sample size was 1926 respondents in lower secondary schools.

## 3.2 Measures

### 3.2.1 Dependent Variable

In this study, teacher job satisfaction is the dependent variable. The teacher job satisfaction variable is ready in the TALIS 2013 database. It is a composite of two scales including satisfaction with current work environment and satisfaction with profession. Both scales were measured by a set of four items described in table 3-1. All items were in a four-point scale. Teachers responded to these questions using following categories: 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. Items TT2G46C, TT2G46D and TT2G46F were reverse coded due to their negative statements about teacher job satisfaction, so they would have the same direction as the rest of the items. To compute teacher job satisfaction scale, the values of satisfaction with current work environment and satisfaction with profession were averaged as composite scores with a mid-point of 10. The higher score of this variable suggests greater job satisfaction.

**Table 3-1** Measured items for teacher job satisfaction

How strongly do you agree or disagree with the following statements?		
Scale	Variable	Item Wording
Satisfaction with Current Work Environment	†TT2G46C	I would like to change to another school if that were possible
	TT2G46E	I enjoy working at this school
	TT2G46G	I would recommend my school as a good place to work
	TT2G46J	All in all, I am satisfied with my job
Satisfaction with Profession	TT2G46A	The advantages of being a teacher clearly outweigh the disadvantages
	TT2G46B	If I could decide again, I would still choose to work as a teacher
	†TT2G46D	I regret that I decided to become a teacher
	†TT2G46F	I wonder whether it would have been better to choose another profession

Source: OECD, TALIS Database

Note. †Item was reverse coded.

### 3.2.2 Independent Variables

Five scales measuring different dimensions of school climate were selected as the independent variables in this analysis: participation among stakeholders, teacher-student relations, classroom disciplinary climate, teacher co-operation and effective professional development.

In order to provide a description of the participation among stakeholders scale, teachers were asked to answer five questions described in table 3-2. The items were administered on a four-point scale. Teachers used following response categories: 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. The values of all items were averaged into composite scores to represent participation among stakeholders scale with a mid-point of 10.

**Table 3-2** Measured items for participation among stakeholders

How strongly do you agree or disagree with these statements as applied to this school?		
Scale	Variable	Item Wording
Participation among Stakeholders	TT2G44A	This school provides staff with opportunities to actively participate in school decisions
	TT2G44B	This school provides parents or guardians with opportunities to actively participate in school decisions
	TT2G44C	This school provides students with opportunities to actively participate in school decisions
	TT2G44D	This school has a culture of shared responsibility for school issues
	TT2G44E	There is a collaborative school culture which is characterized by mutual support

Source: OECD, TALIS Database

The teacher-student relations scale was measured by four items described in Table 3-3. All items were on a four-point scale. Teachers answered these questions with the following categories: 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. The values of all items were averaged into composite scores to represent teacher-student relations scale with a mid-point of 10.

**Table 3-3** Measured items for teacher-student relations

How strongly do you agree or disagree with the following statements about what happens in this school?		
Scale	Variable	Item Wording
Teacher-Student Relations	TT2G45A	In this school, teachers and students usually get on well with each other
	TT2G45B	Most teachers in this school believe that the students' well-being is important
	TT2G45C	Most teachers in this school are interested in what students have to say
	TT2G45D	This school has a culture of shared responsibility for school issues
	TT2G44E	If a student from this school needs extra assistance, the school provides it

Source: OECD, TALIS Database

Classroom disciplinary climate was measured by a set of four items described in Table 3-4. All items were on a four-point scale. Each item had four response categories: 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. It was worth noting that Items TT2G41A, TT2G41C and TT2G41D were reverse coded due to their negative statement about classroom disciplinary climate and to ensure they had the same direction as the rest of the items. The scores of four items were averaged up as composite values to represent the index of classroom disciplinary climate with a mid-point of 10.

Teacher co-operation was defined from two scales: exchange and coordination for teaching and professional collaboration. Both scales were measured by eight items described in Table 3-5. All items were in a six-point scale. The response categories were 1 for “never”, 2 for “once a year or less”, 3 for “2-4 times a year”, 4 for “5-10 times a year”, 5 for “1-3 times a month”, and 6 for “once a week or more”. The values of two scales were averaged into composite scores to represent the index of co-operation among teaching staff scale with a mid-point of 10.

**Table 3-4** Measured items for classroom discipline climate

How strongly do you agree or disagree with the following statements about this?		
Scale	Variable	Item Wording
Classroom Disciplinary Climate	†TT2G41A	When the lesson begins, I have to wait quite a long time for students to quiet down
	†TT2G41B	Students in this class take care to create a pleasant learning atmosphere
	†TT2G41C	I lose quite a lot of time because of students interrupting the lesson
	†TT2G41D	There is much disruptive noise in this classroom

Source: OECD, TALIS Database

Note. †Items were reverse coded.

**Table 3-5** Measured items for teacher co-operation

On average, how often do you do the following in this school?		
Scale	Variable	Item Wording
Exchange and Coordination for Teaching	TT2G33D	Exchange teaching materials with colleagues
	TT2G33E	Engage in discussions about the learning development of specific students
	TT2G33F	Work with other teachers in my school to ensure common standards in evaluations for assessing student progress
	TT2G33G	Attend team conferences
Professional Collaboration	TT2G33A	Teach jointly as a team in the same class
	TT2G33B	Observe other teachers' classes and provide feedback
	TT2G33C	Engage in joint activities across different classes and age groups (e.g. projects)
	TT2G33H	Take part in collaborative professional learning

Source: OECD, TALIS Database

Note. †Item was reverse coded.

Effective professional development was measured by a set of four items displayed in Table 3-6. All items were on a four-point scale. Teachers responded to these items using following categories: 1 for “not in any activities”, 2 for “yes, in some activities”, 3 for “yes, in most activities” and 4 for “yes, in all

activities”. The values of four items were averaged into composite scores to represent the index of the effectiveness of professional development scale with a mid-point of 10.

**Table 3-6** Measured items for effective professional development

Considering the professional development activities, you took part in during the last 12 months, to what extent have they included the following?		
Scale	Variable	Item Wording
Effective Professional Development	TT2G25A	A group of colleagues from my school or subject group
	TT2G25B	Opportunities for active learning methods (not only listening to a lecturer)
	TT2G25C	Collaborative learning activities or research with other teachers
	TT2G25D	An extended time-period (several occasions spread out over several weeks or months)

Source: OECD, TALIS Database

### 3.2.3 Control Variables

Four variables serve as controls in terms of teacher characteristics: gender (TT2G01, female=1, male=0), current employment status (TT2G03, part-time=1, full-time=0), age (TT2G02, a continuous variable) and years of working as a teacher in total (TT2G05B, a continuous variable).

Three variables consist of control variables in terms of school demographic characteristics: school location (TC2G09, city=1, non-city=0), school type (TC2G10, private=1, public=0) and school socioeconomic status (SES) (TC2G15C, a continuous variable). School SES was defined from the item “Percentage of students with following characteristics/ Students from disadvantaged homes.” Teachers were asked to indicate their responses with 1 for “none”, 2 for “1% - 10%”, 3 for “11% - 30%”, 4 for “31% - 60%”, or 5 for “more than 60%”. Schools with higher SES scored lower in this scale.

### 3.2.4 Missing Variables

All the missing data in the current study were treated with multiple imputation to ensure the maximum use of the sample. The specific missing rate of each variable was as follows:

**Table 3-7** Missing Rate of Variables

Variables	Frequencies	Percentage
Dependent Variable		
Teacher Job Satisfaction	72	0.04
Teacher-level variables		
Age	15	0.01
Gender (Female=1)	1	0.001
Years of Work Experience in total	13	0.01
Current Employment Status (Part-time=1)	3	0.002
School-level variables for control purpose		
School Location (City=1)	307	0.16
School Type (Private=1)	324	0.17
School SES	324	0.17
School-level variables of interest		
Participation among Stakeholders	75	0.04
Teacher-Student Relations	75	0.04
Classroom Discipline	422	0.22
Teacher Co-Operation	67	0.03
Effective Professional Development	155	0.08

Note. N=1,926

### 3.3 Analytical Strategies

Teachers are nested within schools. Teachers who work in the same school tend to have some commonalities on the answers to the survey. In other words, teachers' response to the questionnaire are correlated within the same school. Multilevel modeling is an appropriate approach to handle this hierarchical data structure. There are two levels in this study: teacher-level and school-level. Three models are developed to address the research question. Model 1 is an unconditional model. This model

provides the variance that accounted for each level. Intraclass correlation (ICC) is calculated based on the random effect estimate in the unconditional model. The unconditional model is shown as follows:

Level-1 (Teacher-level):

$$Y_{ij} = \beta_{0j} + r_{ij}, \quad r_{ij} \sim N(0, \sigma^2)$$

Level-2 (School-level):

$$\beta_{0j} = \gamma_{00} + u_{0j}, \quad u_{0j} \sim N(0, \tau_{00})$$

Where  $Y_{ij}$  is the dependent variable for teacher  $i$  in school  $j$ ;  $\beta_{0j}$  is the mean of the dependent variable in school  $j$ ;  $\gamma_{00}$  the average of school means;  $r_{ij}$  the teacher-level random error; and  $u_{0j}$  the random effect associated with school  $j$ .  $\sigma^2$  the variation within schools;  $\tau_{00}$  the variation between schools.

Model 2 is the control model that adjusts for teacher characteristics at the teacher level and school characteristics at the school level. The equation is shown below:

Level-1 (Teacher-level):

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{AGE}) + \beta_{2j}(\text{FEMALE}) + \beta_{3j}(\text{EXP}) + \beta_{4j}(\text{PART}) + \beta_{5j}(\text{EFFI}) + r_{ij}$$

$$r_{ij} \sim N(0, \sigma^2)$$

Level-2 (School-level):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{CITY}) + \gamma_{02}(\text{PRIVATE}) + \gamma_{03}(\text{SES}) + u_{0j}$$

$$u_{0j} \sim N(0, \tau_{00})$$

where  $\beta_{1j} - \beta_{5j}$  are the coefficients (effects) of the covariates on  $Y$  with other parameters remaining the same as in the unconditional model.  $\gamma_{01} - \gamma_{03}$  are the coefficients (effects) of the covariates on the intercept with other parameters remaining the same as in model 1.

Model 3 includes all variables at both levels and the school climate variables at the school level.

The equation is shown as follows:

Level-1 (Teacher-level):

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{AGE}) + \beta_{2j}(\text{FEMALE}) + \beta_{3j}(\text{EXPERIENCE}) + \beta_{4j}(\text{PART}) + r_{ij}$$

$$r_{ij} \sim N(0, \sigma^2)$$

Level-2 (School-level):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(CITY) + \gamma_{02}(PRIVATE) + \gamma_{03}(SES) + \gamma_{04}(DECISION) + \gamma_{05}(RELATION) \\ + \gamma_{06}(DISCIPLINE) + \gamma_{07}(COOPERATION) + \gamma_{08}(DEVELOP) + u_{0j}$$

$$u_{0j} \sim N(0, \tau_{00})$$

where  $\beta_{1j} - \beta_{4j}$  are the coefficients (effects) of the covariates on Y with other parameters remaining the same as in the unconditional model.  $\gamma_{01} - \gamma_{08}$  are the coefficients (effects) of the covariates on the intercept with other parameters remaining the same as in Model 2.

## Chapter 4

### Results

#### 4.1 Descriptive Results

Table 4-1 represents the descriptive statistics about all variables selected in the analysis. The average point of teacher job satisfaction is 12.28, which is larger than 10, the mid-point of this scale. This indicates that overall, teachers experience job satisfaction in the lower secondary schools. Among five dimensions of school climate, teachers have the highest level of job satisfaction on teacher-student relations (Mean=13.72, SD=2.06). Participation among stakeholders (Mean=10.54 SD=2.40), teacher-student relations and teacher co-operation (Mean=11.16, SD=2.12) are greater than 10, the mid-point of these scales. However, classroom discipline and effective professional development score lower than the mid-point of ten of both scales. This suggests that teachers in lower secondary schools are less satisfied with the classroom discipline and professional development provided by schools.

The correlation between all variables at teacher-level and school-level and teacher job satisfaction is presented in Table 4-2. Regarding the teacher-level variables, gender and years of working experience are not significantly correlated to teacher job satisfaction. Older teachers are more satisfied than younger teachers. Teachers who work part-time in schools have higher level of job satisfaction than teachers who work full-time. Among school-level variables, only school type has significant correlation with teacher job satisfaction. Teachers working in private schools are more satisfied than teachers working in public schools. All five variables measuring different aspects of school climate have significantly positive correlation with teacher job satisfaction. Among them, participation among stakeholders ( $r=0.48$ ) has the highest correlation with teacher job satisfaction; teacher cooperation ( $r=0.16$ ) has the lowest correlation with teacher job satisfaction.

**Table 4-1** Descriptive Statistics (Multiple Imputed, unweighted)

Variable	Obs	Mean	Std. Dev.	Min	Max
Teacher-level variables					
Age	1,926	42.15	11.37	22.00	75.00
Gender (Female = 1)	1,926	0.66	0.47	0.00	1.00
Years of Work Experience in total	1,926	13.81	9.60	0.00	47.00
Current Employment Status (Part-time = 1)	1,926	0.03	0.17	0.00	1.00
School-level variables for control purpose					
School Location (City = 1)	1,926	0.37	0.48	0.00	1.00
School Type (Private = 1)	1,926	0.05	0.23	0.00	1.00
School SES	1,926	3.86	1.01	0.00	1.00
School-level variables of interest					
Participation among Stakeholders	1,926	10.54	2.40	4.11	15.59
Teacher-Student Relations	1,926	13.72	2.06	3.36	16.62
Classroom Discipline	1,926	9.91	2.03	5.72	14.35
Teacher Co-Operation	1,926	11.16	2.12	4.69	14.95
Effective Professional Development	1,926	9.91	2.18	5.60	14.82
Dependent variable					
Teacher Job Satisfaction	1,926	12.28	2.01	4.88	15.18

**Table 4-2** Correlation Among Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Teacher Job Satisfaction	1												
2. Age	0.06**	1											
3. Gender (Female=1)	0.01	-0.01	1										
4. Years of Work Experience	0.03	0.76***	0.05*	1									
5. Employment Status Part-time=1	0.08***	0.04	0.08***	0.04	1								
6. School Location (City=1)	-0.04	-0.01	0.00	-0.03	0.07**	1							
7. School Type (Private=1)	0.07*	0.06*	0.01	0.03	0.22***	0.08**	1						
8. School SES	0.12***	0.02	0.01	-0.02	0.12***	0.20***	0.32***	1					
9. Participation among Stakeholders	0.48***	-0.02	-0.05*	-0.03	0.07**	0.03	0.01	-0.07**	1				
10. Teacher-Student Relations	0.32***	0.09***	0.04	0.08***	0.02	-0.03	0.04	0.13***	0.33***	1			
11. Classroom Discipline	0.31***	0.08**	0.00	0.13***	0.06*	-0.08**	-0.01	0.15***	0.12***	0.18***	1		
12. Teacher Co-Operation	0.16***	0.09***	0.04	-0.05*	-0.07**	0.12***	0.14***	0.04	0.27***	0.16***	0.04	1	
13. Effective Professional Development	0.17***	0.04	0.08**	0.01	0.00	0.00	-0.07*	0.04	0.22***	0.15***	0.04	0.26***	1

Note. \* $p < 0.05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## 4.2 Multilevel Modeling Results

### 4.2.1 Variance of Teacher Job Satisfaction

Table 4-3 presents the random effects estimates of the unconditional model. The variance of between-group is 0.43331 and the variance of within-group is 3.50724. Both are statistically significant. The intraclass correlation coefficient (ICC) is the total variance in outcome (i.e., teacher job satisfaction) divided by the variance of between-group. The calculation is as follows:

$$ICC = \frac{0.43331}{0.43331 + 3.50724} = 0.11$$

This indicates that 11% of the variance in teacher job satisfaction is explained by the between-group variance (i.e., school-level variance).

**Table 4-3** Random Effects of Unconditional Model

Random Effects	Variance	<i>P</i>
Between-school	0.43331	<.0001
Within-school	3.50724	<.0001

### 4.2.2 Teacher and School Characteristics and Teacher Job Satisfaction

Table 4-4 shows the results of the fixed and random effects of three models in this analysis. In the unconditional model, it was found that on average, the score of teacher job satisfaction is 12.23 across schools which is above the mid-point of 10 of this scale. The control model (i.e. Model 2) provides the coefficient of the relationship between teacher and school characteristics and teacher job satisfaction. Older teachers are more satisfied than younger teachers. However, teachers with more working experience have lower level of job satisfaction than teachers with less working experience. Part-time teachers are more satisfied than teachers who work full-time. Teachers' gender and all three school

characteristics are not significantly associated with teacher job satisfaction. The percentage of variance in teacher job satisfaction explained by school-level variance is 10%, which is slightly lower than that in unconditional model. This suggests that more school-level variables are needed to be added to the model to explain the variation in teacher job satisfaction.

### **4.2.3 School Climate and Teacher Job Satisfaction**

In the final step, five variables measuring various aspects of school climate in school-level were included in Model 3. In contrast with the results of model 2, the direction of relationship between teachers' years of working experience and teacher job satisfaction reversed. Those with more working experience are more satisfied than teachers with less working experience. The significant relationship between teachers' current employment status and teacher job satisfaction no longer existed. The association between teachers' age and teacher job satisfaction remained the same. Older teachers tend to have more job satisfaction than younger teachers. Three school characteristics variables are still not significantly related to teacher job satisfaction.

All school climate variables have significantly positive association with teacher job satisfaction. Teachers are more satisfied when there are more opportunities for them to participate in the school-decision process. Teachers with positive relationship with students have higher level of job satisfaction. Teachers are more satisfied when there are fewer student behavior problems in the classroom. Teachers with positive professional collaboration have more job satisfaction. Teachers are more satisfied when schools provide more effective professional development.

In contrast, after adding the school climate variables to the model, the percentage of variance in teacher job satisfaction explained by the school-level structure dropped to 6%. This indicates that roughly half of variation in teacher job satisfaction explained by the school-level variance is explained by the

variance of five school climate variables. Therefore, school climate could make a significant difference in improving teacher job satisfaction.

**Table 4-4** Multilevel Modeling Results of Relationships between Predictors and Outcome (Teacher Job Satisfaction) Multiple Imputed, weighted

	Unconditional Model			Model 2			Model 3		
	Coef.	Std. Err.	<i>P</i>	Coef.	Std. Err.	<i>P</i>	Coef.	Std. Err.	<i>P</i>
Fixed Effects									
Intercept	12.30	0.08	.000	12.23	0.36	.000	3.51	0.51	.000
Teacher-level variables									
Age				0.02	0.01	.000	0.02	0.01	.001
Gender (Female = 1)				0.67	0.1	.484	0.09	0.08	.295
Years of Working Experience in total				-0.02	0.01	.011	0.01	0.01	.007
Current Employment Status (Part-time = 1)				0.27	0.27	.008	0.33	0.23	.152
School-level variables for control purpose									
School Location (City = 1)				-0.09	0.18	.614	-0.17	0.14	.227
School Type (Private = 1)				0.01	0.31	.965	0.45	0.25	.072
School SES				-0.18	0.08	.024	-0.01	0.06	.855
School-level variables of interest									
Participation among Stakeholders							0.31	0.02	.000
Teacher-Student Relations							0.13	0.02	.000
Classroom Discipline							0.2	0.02	.000
Teacher Co-Operation							0.04	0.02	.040
Effective Professional Development							0.06	0.02	.001
Random Effects									
Between-school Variance		0.43331			0.38594			0.17476	
Within-school Variance		3.50724			3.46712			2.54392	
Proportion of variance in outcome explained by the school-level variance		0.11			0.10			0.06	

Note. N=1,926

## Chapter 5

### Discussion

#### 5.1 Key Findings

This study aims to examine the relationship between teachers' perceptions of school climate and teacher job satisfaction. The multilevel modeling approach is employed to create three models to reach the goal. The multilevel modeling technique well captured the nested structure of the data. The results based on TALIS 2013 dataset are reflective of the recent national picture of the relationship between teachers' perceptions of school climate and teacher job satisfaction.

Although variance of within-school factors accounted for the majority of variance in outcome variable, literature suggested that 10% to 38% variation in dependent variable is explained by the school-level predictors (e.g., Barnett, McCormick, & Conners, 2000; Newmann, Rutter, & Smith, 1989). Consistent with the previous findings, 11% of the variance in teacher job satisfaction is explained by the school-level structure. Holding the teacher and school characteristics constant, five variables measuring various dimensions of school climate have a significantly positive association with teacher job satisfaction. Specifically, teachers are more satisfied when schools provide more opportunities to participate in the school-decision process, when teachers have a positive relationship with their colleges and students, when there are fewer student behavior problems in the classroom and when schools offer more professional development for teachers. The findings are consistent with the results from previous literature (e.g., Perie & Baker, 1997; Shen et al., 2012). Among five school climate variables, participation among stakeholders ( $\gamma_{04} = 0.31$ ) and classroom disciplinary climate ( $\gamma_{06} = 0.20$ ) play a stronger role in predicting teacher job satisfaction.

This study also includes teacher and school characteristics factors in the model. Results in this study confirm a few findings from the existing literature and contribute a new finding to the literature.

Based on the final model, it was found that older teachers tend to have more job satisfaction than younger teachers. Teachers with more working experience are more satisfied than those with less working experience. This is consistent with the previous studies (e.g., Liu & Ramsey, 2008). Additionally, the present study includes teachers' current employment status in the model, which has not been done before in the literature. It was found that controlling for other variables in teacher-level and school-level, there is no significant difference in teacher job satisfaction between part-time teachers and full-time teachers. Regarding school characteristics, Perie and Baker (1997) found that teacher job satisfaction differed by school location using a nationally representative data 1993-94 SASS. Teachers at suburban schools have the highest level of job satisfaction, whereas teachers at urban schools have the lowest level of job satisfaction, with teachers at rural schools are positioned in between. However, in this study, it was found that three school characteristics variables including school location, school type, and school socioeconomic status are not significantly related to teacher job satisfaction.

## 5.2 Policy Implications

Reducing teacher attrition has been a long-lasting subject of educational policies. There are many factors that influence teachers' decisions about whether to leave the teaching profession. Teacher job satisfaction has been cited as one of the determinants. Based on the results of the present study, there are a series of policy implications. First of all, policy administration should provide initiatives and programs for beginning teachers. The results have shown that older teachers have more job satisfaction than younger teachers, and those with more teaching experience are more satisfied than teachers with less experience. This might be partly because dissatisfied teachers depart their profession in the early stage of their teaching career (Liu & Ramsey, 2008). Thus, policy-makers should take measures to help beginning teachers go through their early stage of career and to improve their job satisfaction as new teachers are the largest a great share of those who leave the teaching profession. Second, it was found that there is no significant relationship between school characteristics (i.e., school location, school type and school SES) and teacher job satisfaction. In other words, there is no significant difference in teacher job satisfaction between teachers working in schools in the city area and those who work in schools in the rural district, between teachers in public schools and those in private schools, between teachers in high SES schools and those in low SES schools. Therefore, policymakers could focus on making comprehensive policies or programs for all teachers regardless of demographic features of their schools have. Last but not the least, schools do make a difference. All five variables measuring school climate have a positive relationship with teacher job satisfaction. This has an important implication, namely that education policymakers should focus on building a favorable school environment for all teachers. Teachers should be provided more opportunities to participate actively in the school decision-making process. Teachers could make an effort to build a positive relationship with students and colleges. The school should provide more effective professional development programs for all teachers.

### **5.3 Limitations and Future Research**

Although this study has examined the relationship between school climate and teacher job satisfaction using data from TALIS 2013, the measurement of school climate in the assessment is based on teachers' subjective perceptions. Teachers responding to the survey are subject to their feelings or other situations when they complete the questionnaire. Future research could make an effort to develop an assessment that employs objective sources or mixed measurement. Due to the availability of data from TALIS 2013, five dimensions of school climate have been used to predict teacher job satisfaction. Many other dimensions of school climate, such as principal leadership and teacher autonomy, need to be investigated in future studies. Most of the studies on teacher job satisfaction included teacher-student or teacher-teacher relations in the analysis. More effort is needed to help understand the relationship between teacher-parent relations and teacher job satisfaction. As the target population of this study is teachers of lower secondary schools in the United States, research on teacher job satisfaction in other grade levels and other countries is needed.

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