THE ROLE OF TEACHER TRAINING IN BEGINNING TEACHERS' SELF-EFFICACY, JOB SATISFACTION, AND TURNOVER MOTIVATION: FINDINGS FROM THE 2011-2012 SCHOOLS AND STAFFING SURVEY

A Dissertation

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ABSTRACT

Providing high-quality education to students is always the ultimate goal of public schools in the United States. However, the high ratio of teacher turnover has always been the barrier that impedes the achievement of that goal. The turnover ratio is particularly high among beginning teachers due to the unique characteristics of this population. For instance, beginning teachers' self-efficacy usually sharply declines during the first year of teaching. Therefore, research on this population could be critical, as the success of beginning teachers is important. Using the 2011-2012 Schools and Staffing Survey, the dissertation included three studies to investigate beginning teachers' training profiles and the relationships among teacher training, self-efficacy, job satisfaction, and turnover motivation. The three studies relied on latent mixture modeling, which enabled the examination to be conducted at the individual levels. Results suggested that beginning teachers' preservice training profiles were differentiated by the undergraduate majors and the completion of teacher education. Meanwhile, their in-service training profiles were featured by several types of developmental activities, especially common planning time. The association between preservice and in-service training was not statistically significant. Beginning teachers' training profiles predicted the classification of their teacher self-efficacy profiles, which included three distinctive classes. In addition, teachers from urban schools were more likely to have low-level self-efficacy. Finally, beginning teachers' self-efficacy profiles were significantly related to their job satisfaction and turnover motivation. At the individual level, beginning teachers who were better supported by teacher training and worked in urban settings were more likely to be associated with high-level self-efficacy, high-level job satisfaction, and low-level turnover motivation.

DEDICATION

To my mother, my husband, and my grandfather.

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TABLE OF CONTENTS

	Page
ABSTRACT	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
CONTRIBUTORS AND FUNDING SOURCES	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	viii
LIST OF TABLES	ix
CHAPTER I INTRODUCTION AND LITERATURE REVIEW ….	1
Statement of the Problem	3
CHAPTER II THEORETICAL FRAMEWORK	6
Review of the Literature	6
CHAPTER III METHODOLOGY	30
Research Purposes	30
Data Description	35
Person-centered Analysis	40
Analytic Plan	44
CHAPTER IV RESULTS	58
Study 1	58
Study 2	70
Study 3	87
CHAPTER V CONCLUSIONS	96
Discussion	97
Limitations	101

Conclusions 103

REFERENCES 104

LIST OF FIGURES

Page

Figure 1 The Analytic Model of Teacher Training 33

Figure 2 The Analytic Model of Teacher Self-efficacy with Covariates 34

Figure 3 The Analytic Model of Teacher Self-efficacy with Distal Outcomes 34

Figure 4 Conditional Probability Plot of Preservice Training Profiles 62

Figure 5 Conditional Probability Plot of In-service Training Profiles 67

Figure 6 Conditional Probability Plots of Teacher Self-efficacy Profiles 75

LIST OF TABLES

Page

Table 1 Summary of Public School Characteristics ……..... 24

Table 2 Research Purpose, Analysis Methods, and Research Questions 32

Table 3 Survey Items of Selection Criteria ……..... 46

Table 4 Descriptive Information of the Sample 48

Table 5 Survey Items by Measures ……..... 51

Table 6 Model Comparisons of Preservice Training 60

Table 7 Model Classification of Preservice Training (Response=Yes) 61

Table 8 Model Comparisons of In-service Training 65

Table 9 Model Classification of In-service Training (Response=Yes) 66

Table 10 Cross Tabulation of Beginning Teachers' Training Profiles …..... 69

Table 11 Model Comparisons of Teacher Self-efficacy 71

Table 12 Model Classification of Teacher Self-efficacy 73

Table 13 Parameter Estimates of Latent Class Regression Analyses on Teacher Training 78

Table 14 Estimated Probabilities by Classes on Teacher Training 84

Table 15 Parameter Estimates of Latent Class Regression Analyses on School Location 86

Table 16 Estimated Probabilities by Classes on School Location 87

Table 17 Equality Tests of Probabilities across Classes on Job Satisfaction 89

Table 18 Equality Tests of Probabilities across Classes on Moving Motivation 91

Table 19 Equality Tests of Probabilities across Classes on Leaving Motivation 94

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Public schools in the United States aim to provide high-quality education to all the school-aged population. One critical means to achieve this goal is to maintain an adequate supply of high-quality teachers, because teacher excellence is vital to improvement in student learning (Nye, Konstantopoulos, & Hedges, 2004; Rowan, Correnti, & Miller, 2002). However, the shortage of high-quality teachers has continuously been the major concern for schools and districts (Ingersoll, 2001; Loeb, Darling-Hammond, & Luczak, 2005). To resolve this issue, there are two general approaches: to prepare and recruit capable new teachers and to retain those who are effective experienced ones. Recruitment of qualified teachers involves considering multiple factors, such as teacher characteristics, subject matter knowledge, and pedagogical coursework, while retention is related to additional factors, like job satisfaction, school climate, and student behaviors. Considering both approaches leads to a concentration on beginning teachers, who are at the entry level of career as well as at the transition stage growing from apprentices to veterans. Beginning teachers are supposed to be equipped with adequate content and pedagogical knowledge while receiving professional guidance from their experienced colleagues. After they succeed through this initial stage, they will be expected to serve as mentors for the next generation of teachers. Therefore, the success of beginning teachers is of great importance for teacher retention as well as student success.

However, research has indicated that the majority of beginning teachers frequently struggle with multiple challenges. They hesitate to ask for help (Fantilli & McDougall, 2009), exhibit decreasing self-efficacy (Castro, Kelly, & Shih, 2010; Chester & Beaudin, 1996), and

have more concerns about class management, academic preparation (Meister, & Melnick, 2003) and job security (Stallions, Murrill, & Earp, 2012). Meanwhile, they also face with immense teaching assignments, insufficient administrative supports (Flores, 2006), limited resources (Stallions et al., 2012), and inadequate communication skills (Meister, & Melnick, 2003). Experiencing such challenges places beginning teachers at risk of burnout since their first year of teaching (Gavish & Friedman, 2010). As a result, a U-shape curve is found when examining the relationship between teaching years in the field and teacher turnover (Ingersoll, 2001). Many teachers choose to leave or transfer within their first five years, and the estimated turnover-rate ranges from one third to one half in the United States (Chang, 2009; Darling-Hammond, 2003; Hargreaves & Fullan, 2012; Ingersoll, 2001; Konanc, 1996). This estimate among beginning teachers is more alarming, ranging from one fifth to one fourth, which indicates they are the most at-risk group to leave the profession (Gray & Taie, 2015; Kirby & Grissmer, 1993; Schlechty & Vance, 1981).

Awareness of the critical role of beginning teachers along with their enduring struggles reveals the significance of research on this particular group. During the past decades, a variety of studies on beginning teachers concentrated on their perceptions of self-efficacy, demographics, emotional status, teaching philosophy, job satisfaction, and turnover. Among these studies, the important impact of teacher self-efficacy has been widely identified. With strong self-efficacy, teachers showed high-level planning, organization, and enthusiasm (Allinder, 1994), and devoted more time teaching subjects for which they felt prepared (Riggs & Enochs, 1990). As a result, they were usually associated with high-level job engagement and satisfaction as well as low-level emotional exhaustion and low-level motivation to leave the profession (Skaalvik & Skaalvik, 2014). Therefore, research on how to promote beginning teachers' self-efficacy and to

strengthen its long-lasting influences provides important insights to accommodate the challenges of teacher shortage.

Statement of the Problem

Many research studies on the relationship between self-efficacy, job satisfaction, and commitment have suggested that strong self-efficacy is an essential component among teachers with high job satisfaction and retention willingness (e.g., Høigaard, Giske, & Sundsli, 2012; Skaalvik & Skaalvik, 2014; Viel-Ruma, Houchins, Jolivette, & Benson, 2010). However, some research gaps have to be acknowledged. First, teacher self-efficacy is often measured as a single and composite construct in modeling. Bandura (1977, 1997) suggested four major sources of efficacy expectations, including mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional reactions. That is, the structure of the self-efficacy construct is complex and multidimensional. Therefore, teachers with the same composite score in an assessment (e.g., Likert scale questionnaire) could actually exhibit different patterns and manners on teaching, class management, emotion, exhaustion, and so on. So far, limited efforts have been devoted to research each specific dimension of this general construct.

Emphases on beginning teachers with strong self-efficacy should be traced back to the examination on the factors that help them feel prepared. Research found that teacher education and developmental activities serve as a solid foundation for the development of teacher self-efficacy (e.g., Appleton, 1995; Mulholland & Wallace, 2001; Palmer, 2001; Robardey, Allard, & Brown, 1994; Ross & Bruce, 2007). However, there is a lack of research concerning whether teacher education and developmental activities further impact teacher retention. Moreover, variation exists between teacher education and developmental activities. Teacher preparation programs by colleges and universities are not the only means for entering the teaching

profession. Alternative certificate program offers another avenue to become a teacher. Meanwhile, due to educational policies and financial budgets, the amount of developmental activities offered by different states and districts varies. Therefore, it is worthwhile to examine the training profiles of teacher education and developmental activities and how they are related to teacher self-efficacy, job satisfaction, and turnover interactively.

Furthermore, research on beginning teachers often considers them as a large homogeneous group. Few studies have been conducted regarding teachers who taught particular subjects. Considering the structure of school education in the United States, teachers of early elementary grades (e.g., Kindergarten, Grades 1, 2 and 3) are usually assigned to teach general education as a generalist. However, teachers in higher grades are more likely to be assigned to concentrate on particular subjects. Through reviewing several empirical studies, Guarino, Santibanez, and Daley (2006) found the attrition rate of teaching profession was higher than other occupations and varied across teachers specialized in different subjects. For example, STEM fields struggled with teacher retention greatly (Borman & Dowling, 2017). Therefore, combining teachers with distinctive characteristics like teaching assignments, working conditions, and leaving risks as one group could be problematic.

Finally, the vast majority of research on teachers relies on a variable-centered approach (e.g., regression models, hierarchical linear models), which focuses on the interrelations among factors. However, conclusions drawn from variable-oriented studies are not always applicable to the individual cases (von Eye & Wiedermann, 2015). Little has been researched on teachers through a person-centered approach.

To address these issues, the purposes of the present dissertation on beginning teachers are to explore their training profiles of teacher education and developmental activities and examine

how the training profiles impact their self-efficacy, job satisfaction, and motivation to leave the profession. Teacher education refers to the training that teacher candidates receive before they enter the field, such as content coursework and pedagogical coursework. Developmental activities refer to the training that teachers participate in after they start to teach in classrooms, such as professional development, induction, and mentorship. These two are both critical components of teacher training, but they differ based on when teachers can have access to. This dissertation project uses the 2011-2012 Schools and Staffing Survey along with a person-centered analytic approach, and consists of three studies as follows:

Study 1: identifies the preservice and in-service training profiles of teacher education as well as developmental activities among beginning teachers;

Study 2: identifies the profiles of beginning teachers' self-efficacy and investigate the relationship between teacher training profiles and self-efficacy profiles as well as between school location and self-efficacy profiles;

And Study 3: examines the relationships between beginning teachers' self-efficacy profile and job satisfaction as well as turnover motivation, after controlling for their training profiles and school location.

CHAPTER II

THEORETICAL FRAMEWORK

Using large-scale secondary data, this dissertation sought to understand beginning teachers' self-efficacy profiles through a person-centered analytic approach. The rationale came from two sources: (a) the lack of literacy knowledge among preservice and in-service teachers and (b) the interrelations between teacher training, self-efficacy, job satisfaction and turnover. The purposes of this chapter include: (a) explaining the challenges faced by reading education and teachers; (b) synthesizing relevant research; (c) demonstrating operational definitions of the key constructs; and (d) reviewing related theoretical frameworks.

Review of the Literature

Reading Education and Student Reading Achievements

From *No Child Left Behind Act* (Bush, 2001) to *Every Student Succeeds Act* (Obama, 2015), literacy remains an essential and fundamental component of school education, especially for students who are at the elementary grade levels as they transit from "learning to read" to "reading to learn" (Chall, 1983; Chall & Jacob, 2003). The ability of proficient reading is invaluable to students, because reading serves as the foundation of learning other content areas, such as mathematics, social studies, and science (Gaddy, 2003). For instance, students who have reading comprehension deficits would be less likely to achieve in a timed math assessment, since they need additional time to comprehend the written questions. Integrating literacy into the content areas effectively promotes content learning (Cantrell & Hughes, 2008). Therefore, considerable efforts have been made to produce good readers through funded programs and research, curriculum design, professional seminars, and standardized assessments.

However, the up-to-date results from the 2015 NAEP (i.e., Nation's Report Card, National Assessment of Educational Progress) showed that no statistically significant increase has been found among the fourth, eighth, and twelfth graders' average reading performance across the nation for the past two decades. Only around one third of the school-aged population could achieve the proficient level in reading. Similarly, results from the 2015 PISA (i.e., the Organization for Economic Co-operation and Development, Program for International Student Assessment), which internationally measures the academic performance of 15-year-old students, indicated that almost one fifth of US students scored below the baseline of reading proficiency. Thus, insufficient reading abilities remains a challenge for the majority of the school-aged population and potentially impedes their academic achievements in other content areas.

To improve students' reading performances, a variety of approaches could be made, among which an adequate supply of teachers with abundant knowledge of literacy would be an important contributor. The influential role of teachers is irreplaceable (Duffy-Hester, 1999). Effective teachers could structure their instruction in an explicit and systematic manner to scaffold students' learning. Besides, students tend to increase behavioral and emotional engagement in classrooms when they have a supportive relationship with teachers, thereby gaining more in academic achievements (Hughes & Kwok, 2007; Skinner & Belmont, 1993).

Peter Effect and Teacher Knowledge of Literacy

The critical role of teachers deserves further examination. Measuring teacher quality consists of multiple dimensions, including content and pedagogical knowledge. One of the reasons that sufficient teacher knowledge is important may be due to the Peter Effect (Applegate & Applegate, 2004), which suggests that one cannot give if one does not have the knowledge. In the instructional context, this means that teachers can hardly help students develop either reading

proficiency or intrinsic motivation to read, if teachers do not have literacy knowledge. In contrast, teachers with more literacy knowledge are more likely to include it in their instruction and teach it to their students. Therefore, ineffective instruction, a leading contributor to academic failure (Bos, Mather, Dickson, Podhajski, & Chard, 2011; Moats, 1994, 2000), was related to the lack of teacher knowledge as well as poor teacher preparation (Brady & Moats, 1998).

In fact, the Peter Effect exists beyond the school classrooms. Binks-Cantrell, Washburn, Joshi, and Hougen (2012) validated it within a teacher preparation program. They found that in the knowledge assessments of basic language constructs, the teacher educators who participated in development programs aiming on research-based and effective reading instruction performed better than those who did not participate. Meanwhile, results of the same assessments among their teacher candidates varied respectively. The teacher candidates who were taught by teacher educators from the programs that emphasized evidence-based reading instruction had higher scores on average than their peers who were taught by teacher educators who had not undergone such professional development. Such findings highlighted the importance of sufficient training and literacy knowledge on both teacher educators and preservice teachers, since they are the source of future effective instruction, students' reading success, and learning foundation. Teachers who are academically prepared can better scaffold student learning (Darling-Hammond & Richardson, 2009; Olson, 2000).

Recent studies provided evidence that teachers benefited from increasing literacy knowledge. Appropriate usage of literacy strategies helps math and science teachers to achieve their instructional goals through encouraging student thinking, reasoning, and inferencing (Banilower, Cohen, Pasley, & Weiss, 2008). In a case study, Spitler (2011) tracked the changing attitude of a first-year math teacher to content literacy. Although having rich knowledge of

mathematics, the participant reported a lack of strategies to transfer the knowledge to students at first. Through completing undergraduate content literacy courses and preparing literacy instruction for a math classroom, the participant gradually reflected upon the entire teaching procedure, integrated strategies learned from literacy instruction into math content, and finally developed a teacher literacy identity. As a result, a growing body of metacognitive practices was identified in this classroom on both the teacher and his students.

Although research suggested the importance of teachers' acquisition on literacy knowledge, transferring this message to preservice and in-service teachers takes time. This problem can be more serious among teachers whose major teaching assignments are not directly related to reading, because they are very likely to assume that "literacy instruction was not their responsibility" (Cantrell & Hughes, 2008, p.103). Moreau (2014) interviewed 35 in-service generalist teachers about their perceptions and attitudes toward struggling readers. Although teachers were aware of students' reading difficulties, they did not attribute teaching specific reading skills to their responsibilities when they were not assigned to teach literacy. They also reported a lack of knowledge and instructional strategies to help struggling readers. Such findings are consistent with previous research, which suggested that in many content areas, teachers did not feel prepared to provide instruction based on students' literacy needs (Bintz, 1997; Greenleaf et al., 2001; Mallette, Henk, Waggoner, & DeLaney, 2005). Therefore, literacy strategies were rarely employed in content courses (Fisher & Ivey, 2005).

Unfortunately, even among reading teachers, accumulating research evidence has revealed a widespread existence of lack of literacy knowledge. One of the first influential studies was conducted by Moats (1994). She assessed preexisting literacy knowledge with a diverse teaching group, which included a broad range from beginning teachers (i.e., in the first year of

teaching) to experienced teachers (i.e., in the 20th or later years of teaching) and found that they had in common a limited understanding of spoken and written language structures, although these skills were requested by direct and explicit instruction. In-service reading teachers struggled with a variety of concepts, such as: (a) conceptual terminology in the reading field; (b) phoneme manipulation; (c) recognition on letter-sound correspondences within specific spelling patterns; (d) knowledge of functional letter clusters and syllable types; (e) word analyses at the morpheme level; and (f) understanding of children's reading difficulty and related interventions (Bos et al., 2001; Carreker, Joshi, & Boulware-Gooden, 2010; Moats, 1994; Moats & Foorman, 2003). Similar findings were reported among preservice reading teachers as well (Binks, Joshi, & Washburn, 2009; Cheesman, McGuire, Shankweler, & Coyne, 2009; Spear-Swerling & Brucker, 2003; Washburn, Joshi, & Binks-Cantrell, 2011).

This problem is not prevalent in the United States alone. Fielding-Barnsley and Purdie (2005) demonstrated that in-service teachers in Australia were poor at recognizing the contribution of metalinguistic awareness to reading development. The recent special issue by *Annals of Dyslexia*, *Teacher Knowledge from an International Perspective*, reported several studies relating to literacy knowledge among teachers from different countries and language backgrounds. For instance, Aro and Björn (2016) reported the existence of limited knowledge of basic phonological constructs and phonemic awareness skills among preservice and in-service teachers in Finland. After examining the knowledge among teacher candidates in Canada, England, New Zealand, and the United States, Washburn and colleagues (2016) found that these preservice teachers did not have sufficient knowledge of certain literacy constructs that were needed to instruct beginning readers. In addition, similar findings have been identified among those EFL (English as a foreign language) teachers as well (Zhao, Joshi, Dixon, & Huang, 2016).

To sum up, not all teachers, including both preservice and in-service, are well prepared with literacy knowledge. Many of them are constrained by limited professional training and have limited literacy knowledge, although the Peter Effect demonstrates a necessity that teachers should be knowledgeable. Things could get progressively worse among beginning teachers, since they have to face challenges from multiple sources aside from content areas and have increasing contacts with students.

Teacher Training and Continuous Development (Preservice and In-service Phases)

Teacher Education. The history of teacher education in the United States could be traced back to the eighteenth century. Not until the 1950s did teacher colleges become the leading force to prepare teacher candidates, and by the 1980s, many of these colleges emerged as colleges of education in universities (Borman, Mueninghoff, Cotner, & Frederick, 2009). Colleges of education serve as the main force of teacher preparation and provide traditional four- or five-year certification programs (Steadman & Simmons, 2007).

Although different institutions do not set up the same executive plans for their teacher education programs, there are three essential components shared among almost all these programs. The first component is subject matter knowledge, which enable teachers to understand and explain the professional content-based concepts thoroughly (Shulman, 1986). Subject matter knowledge differs from research from academic fields and common knowledge grounded in daily life (Krauss et al., 2008). Through receiving training on subject matter knowledge, teacher candidates are supposed to understand that "school subjects consist of more than the facts and rules they themselves learned as students" (Hattie, 2009, p. 110). The completion of content coursework helps teachers build up subject matter knowledge. Schmidt et al. (2007) suggested that in the United States, preservice teachers who registered in programs that included

demanding mathematics coursework obtained more math knowledge than peers from other programs. Teachers' gaining subject matter knowledge potentially influences teachers' teaching behaviors and thus promotes student achievement. For instance, in a meta-analysis on teacher effectiveness of math teachers, Ahn and Choi (2004) identified a positive relationship between students' mathematics achievements and their teachers' knowledge of mathematics. The effect sizes were relatively small, but consistent and statistically significant at both elementary (d=0.11, p<0.05) and secondary (d=0.10, p<0.05) grade levels. Even for in-service teachers, the completion of the content coursework offered in the traditional programs makes a difference. Swackhamer (2009) interviewed 88 experienced in-service middle-school teachers. Results indicated an increase on self-efficacy if teachers recently completed four or more college-level content courses.

The second component consists of pedagogical content knowledge, which helps teachers make subject matter knowledge accessible to pass onto students (Shulman, 1986). Preservice teachers acquire instructional theories and frameworks of teaching and learning through accredited courses, professional workshops, and seminars. Shulman (1986) described pedagogical content knowledge as "the ways of representing and formulating the subject that makes it comprehensible for others" (p. 9). Through efforts to modify Shulman's definition to better identify pedagogical content knowledge, research suggested that the development of pedagogical content knowledge relied on the transformation process of adapting the respective subject matter knowledge to a great extent (Ball, Lubienski, & Mewborn, 2011; Baumert et al., 2010; Friedriechsen et al., 2009). Through coursework on content and pedagogical knowledge, the traditional programs are expected to help preservice teachers understand student thinking, curriculum landscape, instructional strategies, and how to build on students' existing knowledge

(Loucks-Horsley, Stiles, Mundry, & Hewson, 2009). Acquisition of pedagogical content knowledge is associated with teacher self-efficacy, as pedagogical content knowledge facilitates teaching, and successful teaching strengthens teacher self-efficacy through accumulating mastery experiences (Park & Oliver, 2008).

The last component includes field experiences. Usually during the junior and senior years, preservice teachers are under supervision by either a departmental supervisor or a mentor teacher and begin class observation and student teaching practices. Anhorn (2008) recommended this component as a critical part of teacher education programs, which should be provided earlier and in a realistic manner. Through student teaching, preservice teachers get increasing exposure to the schools, classrooms and students and obtain knowledge that can hardly be explicitly delivered by college faculty in traditional education programs. For instance, Jones, Baek and Wyant (2017) investigated preservice physical education teachers' technology use during student teaching and suggested the necessity of integrating field-based technology experience to develop preservice teachers' technological pedagogical content knowledge. Additionally, experience from student teaching helps preservice teachers reflect on what they have learned on campus and maintain high-level efficacy. Research by Flores (2015) followed a group of preservice teachers who practiced student teaching after receiving ten-week training on content and pedagogical knowledge. The finding of a significant self-efficacy increase was consistent with previous work (e.g., Davis, Petish, & Smithy, 2006), which supported the positive relationship between preservice teachers' efficacy and field experiences. However, as the author suggested, other factors embedded with student teaching impacted the change of teacher self-efficacy as well. One example of such contributors was preservice teachers' collaborative work in planning discrepant events.

Little consensus has been achieved on how to strategically distribute these three components within the teacher education programs, but the majority of traditional teacher education programs focused on the latter two components (Darling-Hammond, 2010). Research has suggested that exposure to all the three components showed their significant contributions to the development of teachers (e.g., Abell, 2008; Loewenberg Ball, Thames, & Phelps, 2008). Andrew (1990) compared graduates from four- and five-year programs and found that the latter led to greater academic qualification and teaching commitment, due not only to higher entry standards but also to additional student teaching practices and more interactions with peers and supervisors. In addition, Jimenez-Silva, Olson, and Hernandez (2012) reported an increasing efficacy about instructing English language learners among preservice teachers, after they completed the endorsement courses that addressed the specific needs of English language learners. Organized in a pedagogical framework, these courses provided the foundational information that pertained to the specific student population. Preservice teaches exhibited a growing level of confidence on multiple aspects, such as instructional strategies, professional knowledge, and teaching methods.

However, due to the continuously growing teacher demand, formal teacher preparation programs by universities are not the only means to enter this field. Alternative teacher certification programs become another predominant approach to prepare qualified teacher candidates over the past decades (Blake, 2008; Zeichner & Paige, 2007). These programs offer teacher training to ensure candidates through this routine are similarly qualified as those through a traditional routine (Darling-Hammond, Berry, & Thoreson, 2001). The organization of these programs is not always consistent. Darling-Hammond, Chung, and Frelow (2002) pointed out that the programs varied from short summer teaching practices to yearlong professional

trainings, which included coursework and mentoring as well. Qu and Becker (2003) provided one example of the alternate programs in Mississippi, which instructed teacher candidate for three weeks in summer. A later work by Walsh and Jacobs (2007) reported an increase in classes and training time on educational coursework in alternate programs. To sum up, great variation exists among teacher candidates from alternative teacher certification programs, even though they go through all the requested components of teacher education.

Debate on which training routine could make teachers better prepared is ongoing, and the findings are mixed. Evidence that little difference was found leads to some argument that traditional teacher preparation programs were associated with little unique value (Gatlin, 2009; Wilson, Floden, & Ferrini-Mundy, 2002). Teachers from alternate routines are quite effective and have a high level of preservice preparation (Sass, 2008). Lowery, Roberts, and Roberts (2012) interviewed several in-service teachers trained through different routines and suggested that both routines were effective regarding teacher preparation. Even within the same training routine, the structure of education programs varies. Barnes and Smagorinski (2016) compared preservice teachers from three different programs. A comparison across the programs showed that different teacher education programs had different focuses on their program designs (e.g., curriculum, student pathways), coursework (e.g., teaching principles), and field experiences (e.g., setting, mentor teachers). Their results indicated that preservice teachers reported similar learning outcomes regardless of the variation of program structures. Additionally, through examining a group of first-year teachers, Fox and Peters (2013) found evidence that teachers from different training routines failed to yield significantly different levels of self-efficacy, which further indicated the effectiveness of both training routines.

In contrast, Darling-Hammond and colleagues (2002) suggested that beginning teachers from distinctive preparation routines had different feelings of preparedness. Teachers from traditional education programs showed stronger self-efficacy than those who selectively completed some university courses, although the latter reported being better prepared than those from alternative programs or even without prior education-related experience. Laczko-Kerr and Berliner (2002) claimed similar findings as they noticed that students of certified teachers achieved higher academic growth than peers of under-certified teachers from the alternative program, *Teaching for America*. Maloch and colleagues (2003) found that high-quality teacher preparation shaped beginning teachers' perceptions and understandings of reading instruction. Moffett and Davis (2014) reported that around one fourth of their sampled teachers were certified through an alternate route. Their findings demonstrated that teachers certified through a traditional route received statistically significant mentor support than peers certified through an alternate route, which impacted their efficacy of teaching preparedness. However, teacher preparation programs are also criticized for inadequate preparation and faculty commitment (Borman et al., 2009; Shulman, 2005). In summary, strengths and shortcomings of both types of teacher preparation programs and alternative teacher certification programs have to be acknowledged, instead of one-size-fits-all evaluations on programs. The teacher preparation program is not the only means of preservice training responsible for teacher education.

Professional Development. When teachers join the profession, they have access to various in-service developmental activities, among which professional development plays an important role. Professional development refers to in-service "teachers' opportunities to learn" (Cohen & Hill, 2000), which enables teachers to participate in a variety of developmental activities. Different districts and schools offer different types of professional development

programs, such as observational visits, workshops, and seminars. Every school year, the professional development activities by one district or school may also vary slightly. Besides, federal and state grants and funding could be one additional constraint on the supply of professional development. Although variations among professional development programs widely exist, high-quality professional development is always required. Griffin (1983) suggested that the goal of professional development was to "alter the professional practices, beliefs, and understanding of school persons toward an articulated end" (p. 2). According to the model of teacher change (Guskey, 1986, 2002), good professional development can help teachers gain knowledge and skills and adjust their teaching, which coincides with increasing of student achievement and strengthens teachers' attitudes and self-efficacy in turn. In contrast, if teachers receive poor support from professional development, their teaching behaviors are less likely to be modified. Therefore, it is more difficult for students in these classrooms to advance their learning. As a result, since student achievements also impact teacher efficacy, these teachers are more likely to lose confidence in teaching and then leave the profession (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010).

Professional development benefits both teachers and students. Research has shown that professional development could change teachers' behaviors (Dennis & Horn, 2014), encourage increasing implementation of strategies, and strengthen teachers' self-efficacy for instruction (Tschannen-Moran & McMaster, 2009). Meanwhile, students in classrooms with teachers who receive professional development are more likely to have greater academic achievement than their peers whose teachers did not receive the developmental training. The estimate of average standardized mean difference, as the index of the expected change in percentile rank, was 0.53 (Yoon et al., 2007).

Rather than repetitively participating in professional development programs, the effectiveness of the programs should be carefully considered to avoid wasting of time and money. Research on professional development summarized some important features on improving the effectiveness of training. For instance, Garet and colleagues (2001) compared the effects of several features of professional development on mathematics and science teachers. They found that to receive better outcomes on teachers' acquisition on knowledge and skills and change their in-class behaviors, professional development should concentrate on subject matter knowledge, provide practices of hands-on work, and keep coherent with school life. In addition, the form and duration mattered. Penuel, Fishman, Yamaguchi, and Gallagher (2007) reported that professional development with relatively longer duration and collective participation could be more helpful. In fact, such findings also address the common critiques of professional development, such as short duration (e.g., single-shot one-day workshops, Yoon, Duncan, Lee, Scarloss, & Shapley, 2007) and weak in-depth curriculum connections (Ball & Cohen, 1999), and suggest adjustments should be considered when designing professional development programs.

Additional Developmental Activities. In order to better support in-service teachers, aside from professional development, there are additional types of developmental activities provided to teachers. Ingersoll and Strong (2011) distinguished these developmental activities from teacher education and professional development through a theoretical approach. They suggested that teacher education consisted of "education and preparation candidates receive before employment (including clinical training, such as student teaching)" and professional development focused on "periodic upgrading and additional professional development received on the job, during employment" (p. 203). Examples of these additional developmental activities

included individual and collaborative research, mentoring and peer observation, and informal dialogue to improve teaching (Peña-López, 2009).

Research suggested a positive impact on teacher self-efficacy, job satisfaction, and teacher retention, when teachers had increasing access to various developmental activities. A selection of these developmental activities include induction programs (Ingersoll & Strong, 2011), mentorship from the same subject field (Smith & Ingersoll, 2004), beginning teacher seminars (Kang & Berliner, 2012), extra classroom assistance (Kang & Berliner, 2012), common planning time (Drolet, 2009; Kang & Berliner, 2012; Warren & Muth, 1995), and collaboration (Ingersoll & Strong, 2011; Smith & Ingersoll, 2004). However, similar to professional development, simply participating in these developmental activities is only halfway through the journey. The quality of these activities should be considered seriously. Teachers who receive high-quality developmental support are more likely to stay than those who receive weak or fair support. Kapadia, Coca, and Easton (2007) found that the intensity and perceived helpfulness yielded a significant difference in regards to teacher retention. Ingersoll (2012) reported an association between teachers' participation in induction programs and teacher retention. However, he also pointed out that the strength of the link relied on the types and amount of professional support. Convergent with previous research, DeAngelis, Wall, and Che (2013) identified a relationship between the quality and comprehensiveness of induction and mentoring and teachers' willingness to leave. Considering the quality issue of developmental activities helps to understand why some research did not find the effect of induction on teacher retention and teaching performances (e.g., Glazerman et al., 2010). Smith and Ingersoll (2004) indicated that teachers usually received multiple types of developmental support as "packages" or "bundles", which increased the likelihood of their retention (Ingersoll, 2012).

Teacher Self-efficacy

Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986, p. 391). More precisely, teacher self-efficacy refers to "individual beliefs in their capabilities to perform specific teaching tasks at a specified level of quality in a specified situation" (Dellinger, Bobbett, Olivier, & Ellett, 2008). The construct of self-efficacy originates from social cognitive theory (Bandura, 1977, 1986). Based on the social cognitive theory, three modes of agency within beliefs, including individual, proxy, and collective agencies, are in charge of individuals' actions, and this brings about the belief that individuals can "influence the course of events by their actions" (Bandura, 2006, p. 4),. Individual agency emphasizes the role of individuals, since they are the major carrier of actions and then impact on others and outer environment. However, individuals may lack direct control over social conditions and institutional practices of daily lives. Therefore, they have to rely on other means of professionalism or expertise through proxy agency, in search of personal well-being, security, and valued outcomes. Finally, individuals live with relations and interactions. Therefore, individuals "pool their knowledge, skills, and resources, provide mutual support, form alliances, and work together to secure what they cannot accomplish on their own" (Bandura, 2006, p. 5). Collective agency is based on the shared beliefs that cooperation can lead to desired changes in lives.

Bandura (1977, 1986, 1997) postulated four major sources of self-efficacy: mastery experiences, vicarious experiences, physiological reactions, and verbal persuasion. Mastery experiences are the dominant source of self-efficacy (Bong & Skaalvik, 2003; Pajares, 1997), especially for beginning teachers (Mulholland & Wallace, 2001). That is to say, the increase of teachers' perception of self-efficacy is subject to their recognition of adequate preparation and

successful teaching practices. Teacher training on content knowledge, pedagogical knowledge, and developmental activities serves as a foundation to promote efficacy in this perspective (Czerniak & Chiarelott, 1990; Posnanski, 2002). Vicarious experiences are those acquired from others' modeling processes. Bandura (1977) indicated that an observation of successful teaching modeling raised the observer's efficacy expectations. This source of self-efficacy can be particularly predominant given the situations that people have limited prior experience within the field or feel uncertain of their abilities (Schunk, 1987). Physiological reactions are related to intrinsic and immanent feelings. For example, anxiety adds to the concern about incompetence, and excitement adds to the expectation of mastery, which coincides with changes in efficacy expectations respectively. Verbal persuasion is associated with self-efficacy by feedback received from supervisors, colleagues, and students. It promotes efficacy expectations when individuals hold self-doubt and hesitation. Beginning teachers can gain self-efficacy from students' engagement and experienced colleagues' encouragement and suggestions (Mulholland & Wallace, 2001). Teachers' self-efficacy can be particularly high if their students maintain high academic achievement and good behaviors (Raudenbush, Rowan, & Cheong, 1992; Ross, 1998). Integration of these four sources produces efficacious beginning teachers, who indicate greater sustainability in the professional field (Hall, Burley, Villeme, & Brockmeier, 1992).

In classrooms, teachers behave differently according to their efficacy levels. With a strong sense of self-efficacy, teachers are more likely to: (a) use various classroom management strategies and manage classroom problems (Chacon, 2005; Guskey, 1988); (b) be committed to their teaching duties (Coladarci, 1992; Evans & Tribble, 1986); (c) be considerate of students with mistakes (Ashton & Webb, 1986); (d) invest time in teaching subjects that they are confident about (Riggs & Enoch, 1990) and working with struggling students (Gibson & Dembo,

1984); (e) keep students engaged in tasks (Podell & Soodak, 1993); (f) learn and implement innovative teaching strategies and methods (Allinder, 1994; Ross, 1994, 1998); and (g) take responsibility to instruct struggling students instead of referring them to special education (Allinder, 1994; Meijer & Foster, 1988; Soodak & Podell, 1993). In fact, teacher self-efficacy has been found among the few teacher characteristics that are associated with student achievement (Armor et al., 1976; Tschannen-Moran, Hoy, & Hoy, 1998; Tsouloupas et al., 2010). Therefore, preparing efficacious teachers and teacher candidates is vital. Research has shown that the first year of teaching is a critical determinant of the long-term development of teacher self-efficacy. However, a significant decline has been found during the first year of teaching (Hoy & Spero, 2013).

As previously discussed, one limitation of research on teacher self-efficacy is that this construct is often measured as a one-dimensional construct (Schwarzer, Schmitz, & Daytner, 1999), regardless of its multiple dimensions (Ashton & Webb, 1982). Therefore, Skaalvik and Skaalvik (2007) examined the structure of teacher self-efficacy and conceptualized six separate but interrelated dimensions. The present dissertation is designed based on these findings and focuses on beginning teachers.

School Context and Teacher Self-efficacy. Because of its importance for teachers, teacher self-efficacy is associated with several internal and external factors, such as teacher training, student behavior, collaborative relationships (Caprara, Barbaranelli, Steca, & Malone, 2006). Among these influential factors, many are classified as school context. Measurement of school context includes multiple indicators. For instance, Hallinger, Bickman, and Davis (1996) considered four factors (student socioeconomic status, parental involvement, principal gender, and teaching experience). Research on school context by Klusmann and colleagues (2008)

concentrated on other six factors (principal support, teacher morale, cooperation with colleagues, student discipline, students' cognitive ability, and socioeconomic background). When examining the impact of school context on teacher turnover and job satisfaction, Skaalvik and Skaalvik measured four factors (supervisory support, time pressure, relationships with parents, and autonomy) in their 2009 work, but six (supervisory support, time pressure, relations with parents, relations with colleagues, value consonance, and discipline problems) in their 2011 study. Muller (2016) reviewed the several National Center for Education Statistics programs and found that when measuring school context, different programs and studies chose to employ different indicators, such as school climate, curriculum, and so on.

In the network of all these significant indicators, a critical one, which is the primary interest in this dissertation, is school location, whether the schools are located in an urban, suburban or rural setting. Including this indicator is critical for teacher self-efficacy research (Klassen, Tze, Betts, & Gordon, 2011; Pajares, 2007) because teachers who work in different school settings may face different challenges. Review of recent national reports on public schools (Goldring, Gray, Bitterman, & Broughman, 2013; Taie, Goldring, & Spiegelman, 2017, see Table 1 for a summary) showed that the features of students and schools varied upon locations and thus teachers working in different settings would face different challenges. Teaching in urban schools is not an easy job (Groulx, 2001; Smith & Smith, 2006), and teachers in urban schools exhibited a relatively higher attrition probability (Borman & Dowling, 2008). The majority of students enrolled in urban schools were minority students (33.5% Hispanic and 23.4% African American students in Goldring et al., 2013) and participated in the free or reduced-priced lunch program (60.6% in Goldring et al., 2013 and 58.8% in Taie et al., 2017). Additionally, compared to students enrolled in other settings, a higher percentage of students in

urban schools were English language learners or struggled with limited English proficiency (15.1% in Goldring et al., 2013). On the other side, urban schools were less likely to offer online courses (16.8% in Taie et al., 2017), but more likely to provide individualized courses for developing (67.8% in Taie et al., 2017) and advanced students (54.1% in Taie et al., 2017). Therefore, compared to peers in other school settings, teachers in urban schools are probably in need of different types of professional support (Gaikhorst, Beishuizen, Roosenboom, & Volman, 2017) and thus are associated with different levels of efficacy, job satisfaction and turnover motivation in the same circumstance. For instance, Siwatu (2011) compared preservice teachers' efficacy in urban and suburban settings and found preservice teachers were more prepared and confident to teach in a suburban school rather than an urban school. Therefore, to extend the findings from existing research, this dissertation includes school location and investigates its impact on beginning teachers' self-efficacy profiles.

Table 1

Summary of Public School Characteristics upon School Location from National Reports

Public School Characteristics	Location			
	Urban	Suburban	Town	Rural
2011-2012 Schools and Staffing Survey				
Schools that participated the federal free or reduced-price lunch program	96.7%	97.1%	96.4%	95.4%
Schools with at least one student on an IEP	98.9%	97.6%	98.3%	97.5%

Table 1 Continued

Public School Characteristics	Location			
	Urban	Suburban	Town	Rural
Schools with instruction specifically designed for the needs of ELL or LEP	83.2%	84.1%	71.6%	59.2%
White, non-Hispanic students	32.6%	55.6%	66.3%	70.8%
Hispanic students	33.5%	21.3%	17.6%	13.5%
African American, non-Hispanic students	23.4%	13.4%	10.5%	9.5%
Students that received Type I service	49.5%	29.1%	41.5%	32.8%
Students who were approved for free or reduced-price lunches	60.6%	37.5%	49.9%	44.6%
Students with an IEP	11.6%	11.6%	12.5%	11.5%
Students who were ELL or LEP	15.1%	8.6%	6.5%	4.8%
2015-2016 National Teacher and Principal Survey				
Schools that participated the federal free or reduced-price lunch program	95.0%	95.2%	93.7%	93.6%
Schools with at least one student on an IEP	98.7%	99.3%	98.4%	98.8%
Schools with instruction specifically designed for the needs of ELL or LEP	80.3%	85.5%	73.4%	62.7%
Schools that offered courses entirely online	16.8%	16.4%	22.4%	30.2%
Schools where instruction beyond the normal school day were provided for students who need academic assistance	67.8%	55.2%	58.9%	55.0%

Table 1 Continued

Public School Characteristics	Location			
	Urban	Suburban	Town	Rural
Schools where instruction beyond the normal school day were provided for students who need academic advancement	54.1%	40.5%	39.9%	36.6%
Students that received Type I service	52.7%	32.8%	48.2%	42.7%
Students who were approved for free or reduced-price lunches	58.8%	42.7%	54.9%	49.4%
Students with an IEP	11.8%	11.5%	12.4%	12.5%

Note. Descriptive sources are adapted from Goldring et al. (2013) and Taie et al. (2017). IEP, Individual Education Plan; ELL, English language learners; LEP, limited-English proficient students.

Job Satisfaction

Job satisfaction is an employee's positive evaluative state from their job position (Locke, 1976). In the context of education, Skaalvik and Skaalvik (2011) specified teachers' job satisfaction as "teachers' affective reactions to their work or to their teaching role" (p. 1030). Dinham and Scott (1998, 2000) suggested that there are three domains of sources of teacher job satisfaction. Satisfaction relates to intrinsic rewards of teaching (e.g., student achievement, teacher advancement), which is the main source (Scott, Stone, & Dinham, 2001). Meanwhile, dissatisfaction is associated with extrinsic challenges (e.g., working conditions, supervision, compensation, policies). For instance, a decline in satisfaction is found when teachers experience limited autonomy in classrooms (Crocco & Costigan, 2007; Hall, Pearson, & Carroll, 1992). In

addition, the third domain consists of school-based factors, such as teacher status and educational change.

In general, research has consistently demonstrated a significantly positive relationship between job satisfaction and job performance (Harrison, Newman & Roth, 2006; Judge, Bono, Thoresen, & Patton, 2001). More specifically, teachers who tended to leave or transfer exhibited less job satisfaction and more negative attitudes toward their teaching profession as well as the school administration (Hall et al., 1992). Liu and Ramsey (2008) examined the 2000-2001 Schools and Staffing Survey and found that teachers' dissatisfaction originated from limited time for planning and preparation, overloaded teaching assignments, and low compensation. For beginning teachers, they complained about lack of instructional support and then being left alone to survive in the classroom. Although they observed that teachers' job satisfaction increased along with their years of teaching, a generalized relationship should be concluded with caution because dissatisfied teachers could already leave during their early years.

One limitation of research on teacher job satisfaction, mentioned by Skaalvik and Skaalvik (2009, 2010), is the inconsistent approach to measure this construct. Job satisfaction could be considered either through the extent that teachers feel satisfied with some specific aspects of their occupation or as a comprehensive index of the job. In the present dissertation, teachers' job satisfaction is recognized as an overall sense of teaching, which is consistent with Skaalvik and Skaalvik (2011), because the former facet-specific approach underestimates the variation of the importance of particular circumstances to certain individual teacher (Skaalvik & Skaalvik, 2010).

Teacher Turnover

When teachers join the field, the probability of their turnover exists. Teacher turnover

refers to “the departure of teachers from their teaching jobs” (Ingersoll, 2001, p. 500). Teachers may either transfer to another school (i.e., movers) or leave the profession to pursue other career opportunities (i.e., leavers). According to the review by Skaalvik and Skaalvik (2009), teachers’ choice of turnover is attributed to “a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment” (p. 518). Emotional exhaustion refers to the pressure teachers undertake because of teaching. Depersonalization is about negative attitudes towards students, colleagues, and administration. Reduced personal accomplishment relates to negative self-evaluation and depressed motivation because of the occupation itself. These three factors cannot be treated as one single measure (Bryne, 1994). On the other hand, teachers choose to enter and continue their teaching due to the labor market theory of supply and demand (Ehrenberg & Smith, 2011). Guarino, Santibañez, and Daley (2006) defined the demand and supply for teachers with their pursuit of overall compensation, which includes not only monetary compensation and benefit packages, but also specific rewards derived from teaching.

It is important to notice that multiple factors influence teachers’ choice of turnover. For instance, research has achieved a consensus of the predictability of teacher self-efficacy and job satisfaction on teacher turnover (Muhangi, 2017; Skaalvik & Skaalvik, 2007, 2010; Tiplic, Brandmo, & Elstad, 2015). When teachers are associated with high self-efficacy and high job satisfaction, their probability of turnover tends to decrease. However, some controversy should also be highlighted. One example is related to school and teacher characteristics. Using the 1999-2000 Schools and Staffing Survey (SASS), Hahs-Vaughn and Scherff (2008) suggested that salary was a significant indicator of beginning reading teachers’ turnover, while school and teacher characteristics were not. Using the same data but including all the beginning teachers, Smith and Ingersoll (2004) suggested that the turnover rates varied upon school types (i.e.,

public, charter, and private schools), school size, poverty, and school characteristics (e.g., religious affiliation). Hancock and Scherff (2010) examined the 2003-2004 SASS and reported that full-time secondary reading teachers were less likely to choose turnover if they were minority, worked for five or more years, kept enthusiasm with their work, and received peer and administrative support. In a meta-analysis, Borman and Dowling (2017) suggested that both school and teacher characteristics were important moderators to teacher turnover. Teachers who were (a) female, (b) white, (c) young, and (d) married with one child had a high probability of turnover. Meanwhile, schools were more likely to lose their teachers, if they were (a) in urban and suburban settings, (b) private, and (c) elementary level and lacked (a) collaboration, (b) teacher networking and (c) administrative support. Therefore, depending on the teacher group of interest and the analytic methods, findings of influential factors on teacher turnover are likely to be changed slightly.

The trend of teacher turnover, including both movers and leavers, followed a U-shaped plot (Guarino et al., 2006). It underscored the fact that the ratio of leaving among beginning teachers is particularly high. It was estimated that about 14% of beginning teachers chose to leave the field while 15% moved to other schools and districts (Smith & Ingersoll, 2004).

To sum up, reviewing the existing literature leads to the central interest of the present dissertation, which examines the fragile group, beginning teachers, in the entire teacher population. The interrelations among their acquired teacher training, self-efficacy, job satisfaction, and turnover motivation are supposed to be explored from an individual-based (i.e., teachers) perspective.

CHAPTER III

METHODOLOGY

This chapter includes the methodological components used in the present dissertation. First, the research purposes of the dissertation are clarified. The research questions as well as a brief summary of analyses are provided. Second, the 2011-2012 SASS data is introduced and the selection criteria to establish the sample for this dissertation were demonstrated. Third, the measures and survey items included are listed in details and their descriptive information was provided. Finally, the methods and the analytic plan are explained. The overall goal of this chapter is to specify how the study results were generated.

Research Purposes

The present dissertation consisted of three related studies. The general goal was to examine the hierarchical conceptualization at the individual level (i.e., a person-oriented approach), regarding the relationships among beginning teachers' training profiles, self-efficacy profiles, and job satisfaction and turnover motivation. Overall, the hypothesis was that at the individual level, beginning teachers, who acquired adequate teacher education experiences as well as developmental activities and did not work in urban schools, would exhibit a high level of self-efficacy along with a high level of job satisfaction and a low level of turnover motivation than their peers.

The first study sought to identify beginning teachers' training profiles. First, their profiles of teacher education (i.e., during preservice phase) as well as developmental activities (i.e., during in-service phase) were established and examined separately. Additionally, the association of their preservice and in-service training profiles was investigated. Because, hypothetically, it is

possible that beginning teachers with strong education background choose to leave due to inadequate professional development and support. On the other hand, those who received strong professional development as well as additional support might retain regardless of their preservice education background. Through the first study, the characteristics of the training that beginning teachers received were expected to be presented.

The second study concentrated on teacher self-efficacy and its relationship with beginning teachers' training profiles. Since self-efficacy is complex and multi-faceted, multiple SASS questionnaire items in regards to teacher self-efficacy were included as indicators of the latent construct. Then the profiles of teacher self-efficacy were examined and the interpretations on the features of each latent class were provided through the comparisons with the distinctive classes. Additionally, the classification of beginning teachers' self-efficacy profiles was examined after controlling for the variation of their training profiles. It is expected that beginning teachers with strong training profiles had a higher probability to be grouped with high self-efficacy profiles. Finally, the association between the self-efficacy profiles and school context was investigated. According to previous research, it is anticipated that beginning teachers in urban schools tended to exhibit low-level self-efficacy.

The third study examined the relationships of beginning teachers' self-efficacy, job satisfaction and turnover motivation. Using the information acquired from the previous studies, job satisfaction and leaving motivation were included as independent distal outcomes during the modeling stages, in order to examine the direct impacts of teacher training, school context and self-efficacy status. The expectation was that beginning teachers who had high self-efficacy profiles were associated with high-level job satisfaction and low-level turnover motivation, after controlling for their training profiles and school context.

To sum up, the detailed research questions and their relevant analytic methods are presented in Table 2. In addition, the visualized representations of the analytic models of the three studies are provided in Figures 1, 2, and 3.

Table 2

Research Purpose, Analysis Methods, and Research Questions

Purpose of the Study	Analysis Method	Research Question
Study 1: to identify the training profiles of teacher education as well as developmental activities among beginning teachers	Latent Class Analysis; Chi-square Independence Test	1.1 What are the profiles of beginning teachers' preservice training (i.e., teacher education)? 1.2 What are the profiles of beginning teachers' in-service training (i.e., developmental activities)? 1.3 Are beginning teachers' preservice training profiles associated with their in-service training profiles?
Study 2: to identify the profiles of teacher self-efficacy and to investigate how training profiles and school context are associated with beginning teachers' self-efficacy profiles	Latent Class Analysis; Latent Class Regression Analysis	2.1 What are the profiles of beginning teachers' self-efficacy? 2.2 Do their self-efficacy profiles vary upon their training profiles? 2.3 Do their self-efficacy profiles vary upon school locations?

Table 2 Continued

Purpose of the Study	Analysis Method	Research Question
Study 3: to examine the relationship between self-efficacy profiles and beginning teachers' job satisfaction as well as turnover motivation	Latent Class Analysis with Distal Outcomes	3.1 Is beginning teachers' job satisfaction associated with their self-efficacy profiles controlling for their training profiles and school locations? 3.2 Is their moving motivation associated with their self-efficacy profiles controlling for their training profiles and school locations? 3.3 Is their leaving motivation associated with their self-efficacy profiles controlling for their training profiles and school locations?

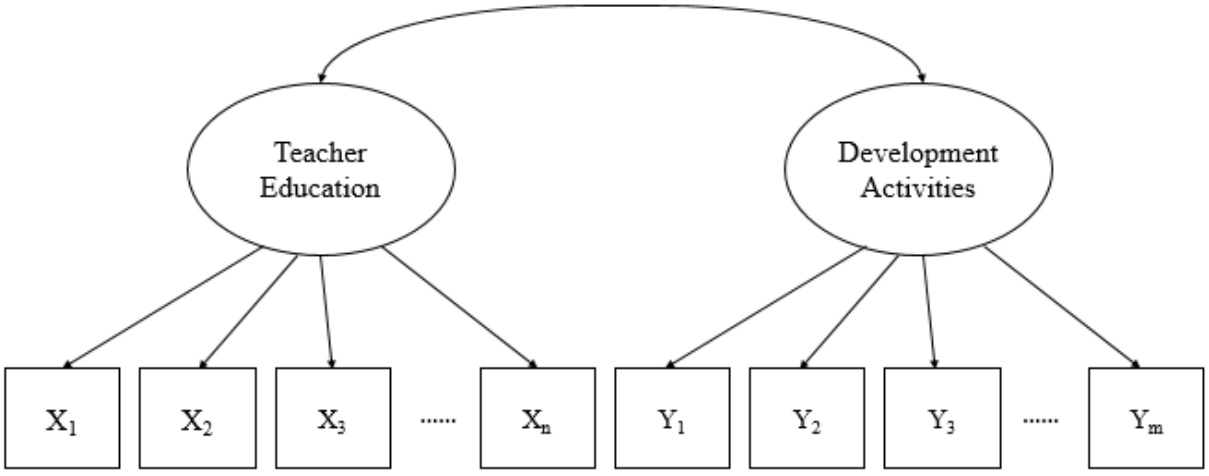

Figure 1. The analytic model of teacher training.

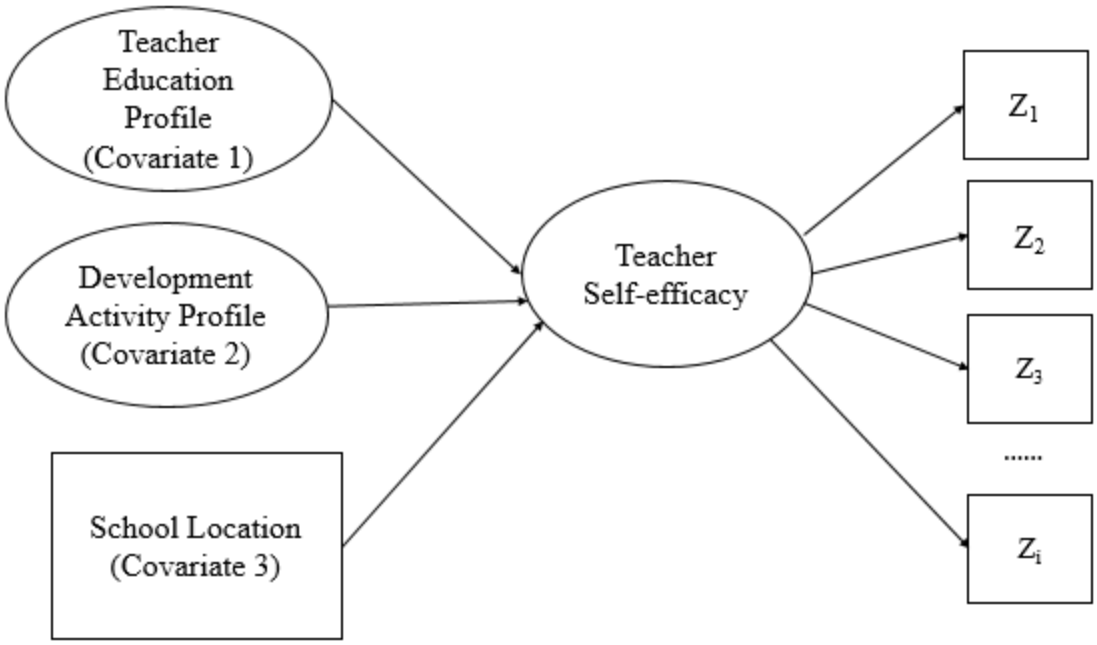

Figure 2. The analytic model of teacher self-efficacy with covariates.

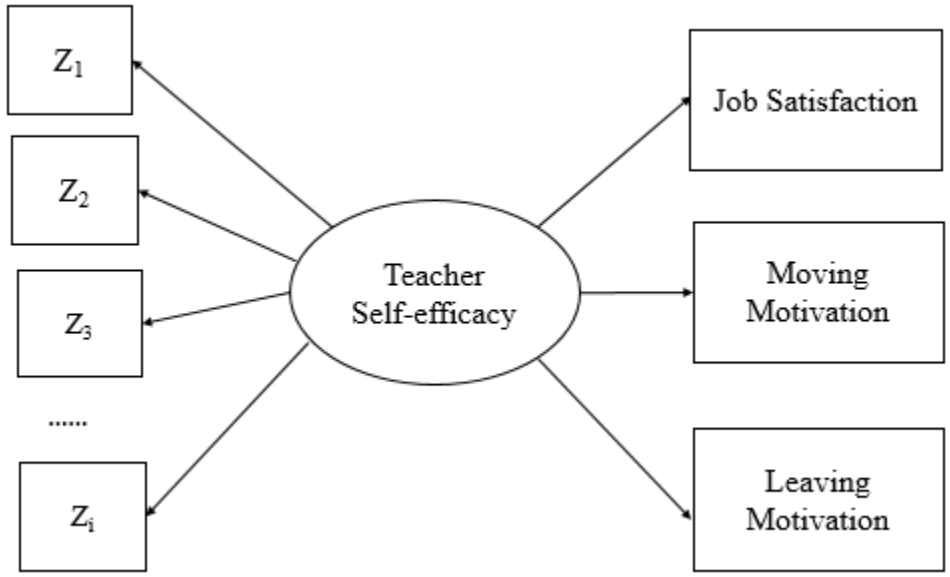

Figure 3. The analytic model of teacher self-efficacy with distal outcomes.

Data Description

Schools and Staffing Survey, sponsored by the National Center for Education Statistics (NCES) of the Institute of Education Science (IES), has been conducted several times during the last three decades. It is a nationally representative sample survey about public and private schools, which carry grade levels from Kindergarten to Grade 12. For public schools, SASS constructs its sample using a stratified, probability proportionate to size approach. That is to say, schools were first sampled by school type (i.e., the first level of stratification including public charter schools, traditional public schools, and some where counties are defined as school districts), and then linked to their corresponding districts and states (i.e., the second level of stratification). Finally, teachers were stratified based on their years of teaching and randomly selected within each stratum from the school sampling. SASS selected no more than 20 teachers per school in order to avoid schools being overburdened (see Appendix B in Goldring, Gray, & Bitterman, 2013 for more information about SASS methodological notes). Similar sampling process was applied within private schools, but stratums were quite different.

The dissertation used Teacher Questionnaire of the 2011-2012 SASS, which consisted of comprehensive measures of public school teachers regarding their background information, working conditions, school climate, and attitudes. A selection of survey items were employed in order to address the research questions in this dissertation. Because the dissertation included the information from the data, which is secondary and restricted-use based on NCES IES policies, the relevant IRB application was submitted and approved (IRB2017-0154).

Sample Selection

The sample in this dissertation was pulled from the entire 2011-2012 SASS sampling

pool, which includes around 37,000 participants in total. The selection criteria on participants of this sample were listed as following:

1. the participants were teachers who worked in public schools during the 2011-2012 school year (i.e., survey time) and first started teaching since the 2011-2012 school year (i.e. T0040=201112);

2. their years of teaching (excluding time on leave and student teaching while including the 2011-2012 school year) were no more than one school year (i.e., T0042≤1);

3. the participants were identified as regular full-time teachers (i.e., T0026=1) and the participants who were identified as regular part-time/itinerant/long-term substitute teachers were excluded;

4. they taught grade levels ranging from Kindergarten to Grade 12 during the 2011-2012 school year (i.e., responses from T0071 to T0083=1 while T0070 and T0084=2).

Detailed information of all survey items is given in Table 3. Based on criteria listed above, the final sample size is 1,364. According to the selection criteria, the sample of this dissertation includes all beginning teachers (i.e. first-year of teaching) who taught the grade levels from Kindergarten to Grade 12 in the 2011-2012 SASS dataset. The rationale of this research was related to the examination of teacher knowledge of literacy in general. Therefore, the participants consisted of both beginning teachers who identified themselves as reading teachers (i.e., T0090=101/102/151/152/153/154/155/158/159) and those whose main teaching assignments were other than English and Language Arts (e.g., mathematics and computer science, social sciences). The classification of reading teachers was based on the report by National Center for Education Statistics (2004), which considered both general elementary

teachers and teachers assigned specifically to teach English and Language Arts as reading teachers.

Descriptive information of the sample, including demographics, education background, teaching assignments and additional assistance, is provided in Table 4. Results indicated the characteristics of beginning teachers in United States that most of them were: 1) female, 2) white, and 3) around 20 to 30 years old. The majority of the participants had Bachelor degrees but only a few of them also hold Master degrees. They were assigned to teach a variety of subject areas and at all the grade levels. In addition, although most of them had regular supportive communication with the administrators, they lacked reduced teaching schedules and extra classroom assistance.

Measures

Teacher Education (Preservice Training). To investigate the profiles of beginning teachers' preservice training, the selection of indicators of teacher education considered several perspectives: degree status, undergraduate majors, coursework completion, and field experiences. Each indicator was coded as binary (i.e., yes=1 and no=0). Some indicators were recoded because of two reasons. First, a single indicator was expected to represent both degree status and undergraduate majors. Results from screening the sample indicated that some participants had two major fields in their undergraduate programs. Thus, the indicator "undergraduate major" was created to identify whether the participants majored in general education and/or English as Language Arts, considering the research interest in the completion of reading coursework. There were 42.7% (*n*=582) of the participants coded as 1 (i.e., majoring in general education and/or English as Language Arts in their first and/or second major fields) and 57.3% (*n*=782) coded as 0. Second, the responses to some survey items were greatly biased and

simply coding as “yes” and “no” could not provide a meaningful cutoff value. An example was the indicator, “field experiences”. Only around 10% of the participants did not have any field experience before they entered the field. The new coded cutoff was set as “12 weeks or more” instead. Therefore, there were 70.3% (*n*=959) of the participants coded as 1 and 29.7% (*n*=405) coded as 0. Overall, the four indicators of teacher education were modified to undergraduate major, reading coursework, teaching method coursework, and field experiences. Detailed information of the survey items on teacher education is given in Table 5.

Developmental Activities (In-service Training). To demonstrate the profiles of beginning teachers’ in-service training, the measure of developmental activities consisted of five indicators: induction program, common planning time, seminars for beginning teachers, discipline-specific mentorship, and instructional collaboration. Each item was coded as binary (i.e., yes=1 and no=0). The indicator “discipline-specific mentorship” was established through two steps. First, whether the participants received mentorship and the frequencies of meetings between mentors and mentees were considered. If the participants reported that they never met their mentors during the first year of teaching, these cases were coded as the equivalent of those who did not receive any mentorship. Second, among participants who did receive mentorship, whether their mentors ever instructed the same subject area was coded. It is worthwhile to notice that discipline-specific mentorship was examined rather than general mentorship. Research suggested that beginning teachers tended to have low self-efficacy if they were assigned to teach a subject area different from their certification area (Fox & Peters, 2013). Thus, the inclusion of discipline-specific mentorship aimed on exploring the impacts of mentorship and teaching assignment fields as an integration. There were 49.6% (*n*=677) of the participants receiving

mentorship in the same subject area and 50.4% (*n*=687) who did not. Detailed information of the survey items on developmental activities is given in Table 5.

Teacher Self-efficacy. SASS evaluated teacher self-efficacy in teachers' first year of teaching. Therefore, for beginning teachers, the information was collected based on their experience during the 2011-2012 school year. The indicators of teacher self-efficacy included beginning teachers' feelings of preparedness on eight aspects: classroom management, instructional method usage, subject matter, computer usage, student assessment, differentiated instruction, informed instruction, and state content standards. Each item was coded as categorical (i.e., not at all prepared=1, somewhat prepared=2, well prepared=3, very well prepared=4). Detailed information of the survey items on teacher self-efficacy is given in Table 5.

School Context. The teacher questionnaire did not have survey items directly related to school context. Instead, teachers reported their employment information including the school names, locations and zip codes. Therefore, school location was included as an alternative. The entire SASS data reported the school location for each participant. Based on previous research, the original coding of school location was transcribed as a binary observed variable (i.e., urban school setting=1, non-urban school setting=0). The non-urban school settings included schools in suburban, rural areas and towns. Detailed information of the survey item on school location is given in Table 5.

Job Satisfaction. Measurement on teacher job satisfaction is under debate, since this construct could be identified as facet-specific as well as comprehensive (Skaalvik & Skaalvik, 2009, 2010). In the present dissertation, job satisfaction has been considered as an overall construct. There is one survey item in SASS directly measuring teachers' overall job satisfaction (i.e., T0451). Therefore, the variable was coded as categorical and valued in a reversed order

(i.e., strongly agree=4, somewhat agree=3, somewhat disagree=2, strongly disagree=1). A higher value indicated an increasing level of job satisfaction for participants. Detailed information of the survey item on job satisfaction is given in Table 5.

Turnover Motivation. There were two survey items measuring teachers' turnover motivation (i.e., T0468 and T0469). These items ask whether teachers would like to leave after achieving certain conditions and whether they would like to transfer to another school. Since teacher turnover considers both transferring and leaving, the two types of motivation were examined separately. The two survey items were coded as categorical and valued in their original order (i.e., strongly agree=1, somewhat agree=2, somewhat disagree=3, strongly disagree=4). A higher value indicated a decreasing probability of participants' turnover motivation. Detailed information of the two survey items on turnover motivation was given in Table 5.

Person-centered Analysis

The majority of quantitative research on teachers employs variable-centered approaches. Typical results are concerned with the interrelations among factors at the level of raw data and draw the conclusions based on, for instance, correlation and regression analysis (von Eye & Wiedermann, 2015). However, such variable-oriented statements can rarely validly describe processes of changes and relationships among factors at the level of the individual (von Eye & Bergman, 2003), since they simply assume the existence of a homogeneous sample and ignore the fact that the average individual may never exist (Walls & Schafer, 2006). As a result, descriptions of single cases are less likely to be validly presented. In contrast, person-oriented research aims at identifying the underlying heterogeneity within a population and uncovering subgroups that share similarities within responses (Muthén, 2004). The main purpose of person-centered analyses is to classify the individuals and group those who share particular similar

attributes within a specific group. Overall, these two analytic methods are employed to address different research purposes and thus answer different research questions.

The goals of the present dissertation included examining the profiles of teacher training and self-efficacy for beginning teachers and investigating how the profiles are associated with job satisfaction and turnover motivation. Therefore, it relied on the person-centered approach, more specifically using one of mixture modeling techniques, latent class analysis (McCutcheon, 1987), in order to better understand beginning teachers and their challenges.

Latent Class Analysis

Latent class analysis (LCA) is one of the analytic methods of latent mixture modeling. In LCA, a latent construct is identified through classifying one or more observed indicators rather than being directly measured (Collins & Lanza, 2010). The entire population is partitioned by the patterns of indicators and generates subgroups which share similarities within a particular group and distinguish between groups. The indicators and latent constructs are all categorical variables.

To explain the results of LCA modeling, two types of parameters are used (Larose, Harel, Kordas, & Dey, 2016), latent class probabilities (i.e., the prevalence of each participant of latent classes) and conditional probabilities (i.e., the conditional response probabilities for each combination of latent class, indicator and response level for the indicator). LCA captures the uncertainty of measurement (Berlin, Williams, & Parra, 2014). Each latent class is mutually exclusive and the sums of the probabilities that one participant belongs to a certain latent class and that an indicator distributes to a specific latent class are both one (Collins & Lanza, 2010).

The model building procedure of LCA should be based on previous research and theoretical frameworks. However, if such information is inadequate, the number of latent classes can be freely estimated first as long as the models can be statistically identified and technically

interpreted (Berlin et al., 2014). The repetition of adding one additional latent class into a specific LCA model stops until the posterior model cannot be converged and/or statistically differ from the previous one. Then all the candidate models are compared and evaluated based on model selection criteria. The estimated latent classes can be used as moderators and/or mediators in the follow-up research (e.g., Asparouhov & Muthén, 2014).

To decide the selected number of classes in mixture modeling, a variety of criteria should be considered in regard to both statistical and theoretical perspectives (Nylund, Asparouhov, & Muthén, 2007). First, the absolute model fit is identified by the likelihood ratio model (LRT) chi-square goodness-of-fit. The test of the absolute model fit focuses on the consistency between the model and the real data. A statistically non-significant test result is expected, as the model is anticipated to specify the data.

Second, indices of statistical information criteria (IC) are evaluated (e.g., AIC, Akaike's Information Criterion, Akaike, 1987; BIC, Bayesian Information Criterion, Schwartz, 1978). Lower numerical values of IC indices are preferred because a smaller estimate indicates a better relative model fit. The relative model fit demonstrates whether a specific model describes the real data better than another model does. Among all the IC indices, BIC and adjusted BIC (Sclove, 1987) have been suggested as good indicators for class enumeration over others, because correct models could consistently be chosen (Collins, Fidler, Wugalter, & Long, 1993; Hagenaars & McCutcheon, 2002; Jedidi, Jagpal, & DeSarbo, 1997; Magidson & Vermunt, 2004; Yang, 2006).

Third, likelihood-based techniques are used to compare nested LCA models. The commonly used log likelihood difference test is not applicable (Nylund et al., 2007) in LCA, because the assumptions are not met. Instead, Lo-Mendell-Rubin likelihood ratio test (LMR, Lo,

Mendell, & Rubin, 2001) and parametric bootstrap likelihood ratio test (BLRT, McLachlan & Peel, 2000) are applicable for LCA. Comparing to its neighbors, a model specification significantly differs from others, if the test results are statistically significant at α=0.05 level (Berlin et al., 2014).

Fourth, one important index to measure the classification quality is entropy, the value of which ranges from zero to one. If the value of entropy approaches one, this indicates clear delineation of latent classes (Celeux & Soromenho, 1996). A larger value of entropy is usually recommended, but the interpretation of the classification quality can vary upon research settings. With a poor entropy, the analysis results may still be able to distinguish latent classes clearly. In this dissertation, a high entropy value was preferred, because the latent class memberships of beginning teachers' preservice and in-service training would be used for further analysis.

Finally, in this dissertation, the results of classification that are representative and meaningful for further interpretations would be preferred. In other words, if adding one additional class covers only a tiny proportion of a population, such nested model may not be the first choice. Bauer and Curran (2003) suggested that researchers should consider the model fit indices along with their research questions and accumulated research findings during the procedure of selecting the optimal model.

Latent Class Analysis with Auxiliary Variables

Two types of LCA with auxiliary variables are employed in the dissertation. First, covariates are included into LCA models to predict the specification of latent classes. Such analyses are called latent class regression analysis (Asparouhov & Muthén, 2014). Traditionally, the classical procedure of latent class regression analyses includes three steps: 1) establishing multiple LCA candidate models; 2) comparing the model fit indices to select the optimal model,

recoding the conditional probabilities and assigning the class membership to each participant based on the estimates of likelihood; 3) using the assigned classes as outcomes and conducting t-tests. However, this approach often provides a downward-biased estimate of the relationship between the latent classes and the covariates, as it ignores the classification errors (Bolck, Croon, & Hagenaars, 2004; Vermunt, 2010). In addition, the classification results can be modified given the inclusion of covariates during the model building. Therefore, the dissertation used the BCH method as a correction (see Asparouhov & Muthén, 2015). The covariates are included in the AUXILIARY option and followed by the R3STEP setting, which specifies the leading variables as covariates. The covariates can be either continuous or binary. Categorical covariates are required to be recoded following a binary manner.

Second, the identified latent construct can be used as a predictor of observed variables. Asparouhov and Muthén (2014) named these observed variables as distal outcomes. The properties of distal outcomes can be either continuous or categorical. In this dissertation, given the BCH method, the distal outcomes are included in the AUXILIARY option and followed by the DCAT setting, which is a preferred method for categorical distal outcomes (Asparouhov & Muthén, 2015). All the analyses (i.e., LCA, latent class regression analyses, LCA with distal outcomes) were run using Mplus 8 (Muthén & Muthén, 2017).

Analytic Plan

Study 1: Training Profiles

The first study included three research questions. For the first two research questions, two sorts of nested LCA models were constructed in order to identify beginning teachers' preservice and in-service training profiles independently. Then the correlation between the two profiles was

examined to see whether one individual with strong teacher education background tends to have sufficient professional development and supports as well.

Study 2: Self-efficacy Profiles

The second study focused on teacher self-efficacy. Since self-efficacy is a multi-facet construct, LCA analysis would be more suitable to demonstrate various efficacy aspects that beginning teachers may feel more or less competent. LCA models on teacher self-efficacy were first constructed and compared. After that, information of training profiles obtained from the previous study were included as covariates to see whether the classification of teacher self-efficacy varies upon training and how they were associated with teacher self-efficacy profiles. Finally, school location was included as another observed covariate into the selected model. Similarly, the relationship between the self-efficacy profiles and school location was examined. The two groups of covariates (i.e., teacher training and school context) were included in the model hierarchically because they had different properties. The variables of teacher training were generated based on previous study results and they were latent constructs in Study 1. School location was directly reported in SASS data and identified as an observed variable.

Study 3: Job Satisfaction and Turnover Motivation

The third study focused on job satisfaction as well as turnover motivation. After controlling for the training profiles and school location as covariates, the LCA model of teacher self-efficacy included the three distal outcomes hierarchically. That is to say, job satisfaction was examined first and then two types of turnover motivation were included separately. The overall hypothesis was that beginning teachers with adequate preservice and in-service training would exhibit higher self-efficacy along with higher job satisfaction and lower turnover motivation.

This hypothesis was expected to be supported at the individual level (i.e., the teacher level) at last.

Table 3

Survey Items of Selection Criteria

	ID	Description	Response
1	T0025	How do you classify your position at THIS school, that is, the activity at which you spend most of your time during this school year?	1=Regular full-time teacher (in any of grades Kindergarten-12 or comparable ungraded levels) 2=Regular part-time teacher (in any of grades Kindergarten-12 or comparable ungraded levels) 3=Itinerant teacher (i.e., your assignment requires you to provide instruction at more than one school) 4=Long-term substitute (i.e., your assignment requires that you fill the role of a regular teacher on a long-term basis, but you are still considered a substitute)
2	T0026	Which box did you mark in item 1 above?	1=Box 1 2=Box 2, 3, or 4
9	T0040	In what school year did you FIRST begin teaching, either full-time or part-time, at the elementary or secondary level? (do not include time spent as a student teacher)	
11	T0042	Excluding time spent on maternity/paternity leave or sabbatical, how many school years	

Table 3 Continued

	ID	Description	Response
		have you worked as an elementary- or secondary-level teacher in public, public charter or private schools?	
11	T0042	(include the current school year; do not include time spent as a student teacher; record whole years, not fractions or months)	
13		Do you currently teach students in any of these grades at THIS school?	
	T0070	Prekindergarten	1=Yes
	T0071	Kindergarten	2=No
	T0072	1st	
	T0073	2nd	
	T0074	3rd	
	T0075	4th	
	T0076	5th	
	T0077	6th	
	T0078	7th	
	T0079	8th	
	T0080	9th	
	T0081	10th	
	T0082	11th	
	T0083	12th	
	T0084	Ungraded	

Table 4

Descriptive Information of the Sample

		n	Percent
Demographics Information			
Gender	Male	454	33.3%
	Female	910	66.7%
Race	White	1,252	91.8%
	African American	86	6.3%
	Asian	33	2.4%
	Other	30	2.2%
Age (by 2011-2012)	20s	995	72.9%
	30s	211	15.5%
	40s	115	8.4%
	50s and above	43	3.2%
Education Background			
Bachelor Degree	Yes	1295	94.9%
	No	69	5.1%
Master Degree	Yes	282	20.7%
	No	1082	79.3%

Table 4 Continued

		n	Percent
Teaching Assignments			
Grade Levels	Kindergarten	76	5.6%
	Grade 1	78	5.7%
	Grade 2	85	6.2%
	Grade 3	88	6.5%
	Grade 4	80	5.9%
	Grade 5	106	7.8%
	Grade 6	283	20.8%
	Grade 7	395	29.0%
	Grade 8	398	29.2%
	Grade 9	546	40.0%
	Grade 10	578	42.4%
	Grade 11	567	41.6%
	Grade 12	534	39.2%
Main Teaching Assignment Fields	Elementary Education	188	13.8%
	Special Education	182	13.3%
	Arts and Music	70	5.1%
	ELA	203	14.9%
	ESL	10	0.7%

Table 4 Continued

		n	Percent
	Foreign Languages	65	4.8%
	Health Education	57	4.2%
	Mathematics and Computer Science	214	15.7%
	Natural Sciences	141	10.3%
	Social Sciences	119	8.7%
	Career or Technical Education	98	7.2%
	Other	17	1.2%
Additional Assistances			
Reduced Teaching Schedules	Yes	161	11.8%
	No	1203	88.2%
Extra Classroom Assistance (e.g., teacher aides)	Yes	413	30.3%
	No	951	69.7%
Regular Supportive Communication (e.g., with principals,	Yes	1103	80.9%
administrators, or department chairs)	No	261	19.1%

Note. ELA: English and Language Arts. ESL: English as a Second Language.
The participants' responses to race information are not mutually exclusive. One participant can mark two or more races as what they considered themselves to be.
The participants' responses to grade levels are also not mutually exclusive. One participant is likely to teach more than one grade levels in their first year of teaching.

Table 5

Survey Items by Measures

ID		Item Description	Response	*n*	Percent
Teacher Education (Preservice Training)					
25a	T0160	Do you have a bachelor's degree?	1=Yes	1295	94.9%
			2=No	69	5.1%
25d	T0163	What was your major field of study?	General Education	386	28.3%
			ELA	150	11.0%
			Other	759	55.6%
25e	T0164	Did you have a second major field of study?	1=Yes	268	19.6%
			2=No	1027	75.3%
25f	T0165	What was your second major field of study? (do NOT report academic minors or concentrations)	General Education	89	6.5%
			ELA	30	2.2%
			Other	149	10.9%
29	T0205	Did any of your coursework result in a concentration or specialization in READING?	1=Yes	211	15.5%
			2=No	1153	94.5%
30	T0206	Have you ever taken any graduate or undergraduate courses that focused solely on teaching methods or teaching strategies?	1=Yes	1178	86.4%
			2=No	186	13.6%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
30	T0206	(include courses you have taken to earn a degree and courses taken outside a degree program; do NOT include practice or student teaching)			
	T0207	How many courses?	1=1 or 2 courses	245	18.0%
			2=3 or 4 courses	409	30.0%
			3=5 to 9 courses	352	25.8%
			4=10 or more courses	172	12.6%
31a	T0208	Did you have any practice or student teaching?	1=Yes	1220	89.4%
			2=No	144	10.6%
	T0209	How long did your practice or student teaching last?	1=4 weeks or less	40	2.9%
			2=5-7 weeks	53	3.9%
			3=8-11 weeks	168	12.3%
			4=12 weeks or more	959	70.3%
Professional Development and Supports (In-service Training)					
34	T0220	In your FIRST year of teaching, did you participate in a teacher induction program? (If you are in your first year of teaching, please answer for THIS school year)	1=Yes	1119	82.0%
			2=No	245	18.0%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
35b	T0222	Did you have common planning time with teachers in your subject during your first year of teaching?	1=Yes	161	11.8%
			2=No	1203	88.2%
		Did you participate in seminars or classes for beginning teachers during your first year of teaching?	2=No	1203	88.2%
			2=No	542	39.7%
36a	T0230	In your FIRST year of teaching, did you work closely with a master or mentor teacher who was assigned by your school or district? (If you are in your first year of teaching, please answer for THIS school year)	1=Yes	970	71.1%
			2=No	394	28.9%
36b	T0231	How frequently did you work with your master or mentor teacher during your first year of teaching?	1=At least once a week	558	40.9%
			2=Once or twice a month	306	22.4%
			3=A few times a year	99	7.3%
			4=Never	7	0.5%
36c	T0232	Has your master or mentor teacher ever instructed students in the same subject area(s) as yours?	1=Yes		
			2=No		
53b	T0365	In the past 12 months, did you participate in regularly scheduled collaboration with other teachers on issues of instruction? (Exclude administrative meetings)	1=Yes	1011	74.1%
			2=No	353	25.9%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
Teacher Self-efficacy					
33		In your FIRST year of teaching, how well prepared were you to			
33a	T0211	Handle a range of classroom management or discipline situations?	1=Not at all prepared	56	4.1%
			2=Somewhat prepared	500	36.7%
			3=Well prepared	559	41.0%
			4=Very well prepared	249	18.3%
33b	T0212	Use a variety of instructional methods?	1=Not at all prepared	26	1.9%
			2=Somewhat prepared	324	23.8%
			3=Well prepared	689	50.5%
			4=Very well prepared	325	23.8%
33c	T0213	Teach your subject matter?	1=Not at all prepared	23	1.7%
			2=Somewhat prepared	190	13.9%
			3=Well prepared	570	41.8%
			4=Very well prepared	581	42.6%
33d	T0214	Use computers in classroom instruction?	1=Not at all prepared	48	3.5%
			2=Somewhat prepared	328	24.1%
			3=Well prepared	525	38.5%
			4=Very well prepared	463	33.9%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
33e	T0215	Assess students?	1=Not at all prepared	33	2.4%
			2=Somewhat prepared	316	23.2%
			3=Well prepared	715	52.4%
			4=Very well prepared	300	22.0%
33f	T0216	Differentiate instruction in the classroom?	1=Not at all prepared	66	4.8%
			2=Somewhat prepared	457	33.5%
			3=Well prepared	578	42.4%
			4=Very well prepared	263	19.3%
33g	T0217	Use data from student assessments to inform instruction?	1=Not at all prepared	71	5.2%
			2=Somewhat prepared	462	33.9%
			3=Well prepared	576	42.2%
			4=Very well prepared	255	18.7%
33h	T0218	Meet state content standards?	1=Not at all prepared	39	2.9%
			2=Somewhat prepared	269	19.7%
			3=Well prepared	617	45.2%
			4=Very well prepared	439	32.2%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
School Context					
	URBANS12	Collapsed urban-centric school locale code	1=City	365	26.8%
			2=Suburban	297	21.8%
			3=Town	237	17.4%
			4=Rural	465	34.1%
Job Satisfaction					
63q	T0451	I am generally satisfied with being a teacher at this school.	1=Strongly agree	773	56.7%
			2=Somewhat agree	425	31.2%
			3=Somewhat disagree	122	8.9%
			4=Strongly disagree	44	3.2%
Turnover Motivation					
65d	T0468	If I could get a higher paying job I'd leave teaching as soon as possible.	1=Strongly agree	89	6.5%
			2=Somewhat agree	194	14.2%
			3=Somewhat disagree	457	33.5%
			4=Strongly disagree	624	45.8%

Table 5 Continued

	ID	Item Description	Response	*n*	Percent
65e	T0469	I think about transferring to another school.	1=Strongly agree	141	10.3%
			2=Somewhat agree	346	25.4%
			3=Somewhat disagree	301	22.1%
			4=Strongly disagree	576	42.2%

Note. ELA: English and Language Arts.
General education includes majors in elementary education, secondary education, special education and other non-subject-matter-specific education.

CHAPTER IV

RESULTS

The purpose of this chapter is to present and explain the study results. The chapter includes three sections, one for each study. The first section reports beginning teachers' preservice and in-service training profiles and then examines the association between the two types of training profiles. The second section reports beginning teachers' self-efficacy profiles and results from latent class regression analyses. Training profiles from the first study are retrieved to use as covariates in order to examine their association with efficacy profiles. School context (i.e., school location) is also included as one covariate. The third section reports how beginning teachers' self-efficacy profiles predicted their job satisfaction and turnover motivation. The results are generated based on the extracted sampling from the 2011-2012 SASS data.

Study 1

Descriptive information of all the indicators, including those for both preservice and in-service training, is presented in Table 5. As for preservice training, results showed that: (a) less than half of beginning teachers majored in general education and/or English and Language Arts; (b) only a small percentage of beginning teachers had coursework in reading; (c) most beginning teachers completed pedagogical courses, and around half of them took around three to nine courses; and (d) the majority of them practiced student teaching and the practices in the field ran over 12 weeks. As for in-service training, results suggested that: (a) most beginning teachers participated in induction programs; (b) only a few of them had common planning time with colleagues; (c) over 60% of them attended beginning teacher seminars; (d) around half of

beginning teachers received discipline-specific mentorship; and (e) only one fourth of them lacked regularly scheduled collaborations on instructional issues.

Profiles of Preservice Training (Teacher Education)

To resolve the first research question, multiple LCA models with increasing numbers of latent classes were constructed. The model building included four indicators: EDRT (whether beginning teachers majored in general education and/or English and Language Arts), RDNG (the completion of reading coursework), TMSC (teaching method or teaching strategy courses), and STFE (student teaching or field experience for 12 weeks or more). Model fit information of all the models is provided in Table 6. Since there were only four indicators, the 4-class model had a negative degree freedom value for the Pearson Chi-square test. Therefore, the model building procedure did not go beyond the 4-class model.

After conducting a series of model comparisons, the 3-class model and its results were recorded for further analyses. This model was selected for several reasons. First, the model difference between the 2-class and 3-class models was statistically significant, while the difference between the 3-class and 4-class models was not. Second, despite of the BIC value, the values of AIC and adjusted BIC in the 3-class model were smaller than those in the 2-class model. In all four models, the 3-class model had the smallest AIC as well as adjusted BIC values. Third, the 3-class model had adequate model fit based on the Pearson Chi-square test. Finally, the 3-class model reported the largest entropy value, which indicated a high classification quality.

Table 6

Model Comparisons of Preservice Training

	Models of LCA			
	1-Class	2-Class	3-Class	4-Class
n-Par	4	9	14	19
Log Likelihood H_0	-2891.217	-2815.662	-2804.345	-2802.450
AIC	5790.434	5649.324	5636.690	5642.900
BIC	5811.307	5696.288	5709.745	5742.045
Adjusted BIC	5798.601	5667.698	5665.273	5681.690
Pearson Chi-square Test	206.510	25.116	2.610	-
df	11	6	1	-
p-value	<0.05	<0.05	>0.05	-
Entropy	-	0.400	0.974	0.718
n-1- vs. n-class models				
VLMLR Test				
p-value	-	<0.01	<0.01	>0.05
LMR-LRT Test				
p-value	-	<0.01	<0.01	>0.05
PB- LRT Test				
H_0	-	-2891.217	-2815.662	-2804.345
Difference of n-Par	-	5	5	5
p-value	-	<0.01	<0.01	>0.05

Note. n-Par: number of free parameters; VLMLR: Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR-LRT: Lo-Mendell-Rubin Adjusted likelihood ratio test; PB-LRT: parametric bootstrapped likelihood ratio test.

The model classification results, including the latent class prevalence and conditional probabilities, are provided in Table 7. Additionally, Figure 4 provides a summary of the three patterns of preservice training profiles. The three latent classes were named as "strong preservice training" (SPT), "moderate preservice training" (MPT) and "weak preservice training" (WPT) groups. There were 41.5% of the participants who were identified as SPT (*n*=566), 47.3% identified as MPT (*n*=645), and 11.2% identified as WPT (*n*=153). The estimates of average latent class probabilities and classification probabilities per class indicated that the model classification was quite accurate for the majority of the participants.

Table 7

Model Classification of Preservice Training (Response=Yes)

	Class 1 (SPT)	Class 2 (MPT)	Class 3 (WPT)
n	566	645	153
Percent	41.5%	47.3%	11.2%
Average Latent Class Probabilities	0.979	0.998	0.979
Classification Probabilities	0.992	1.000	0.927
Conditional Probability			
EDRT	0.998	0.000	0.153
RDNG	0.238	0.113	0.032

Table 7 Continued

	Class 1 (SPT)	Class 2 (MPT)	Class 3 (WPT)
TMSC	0.956	1.000	0.000
STFE	0.820	0.673	0.153

Note. SPT: strong preservice training; MPT: moderate preservice training WPT: weak preservice training.

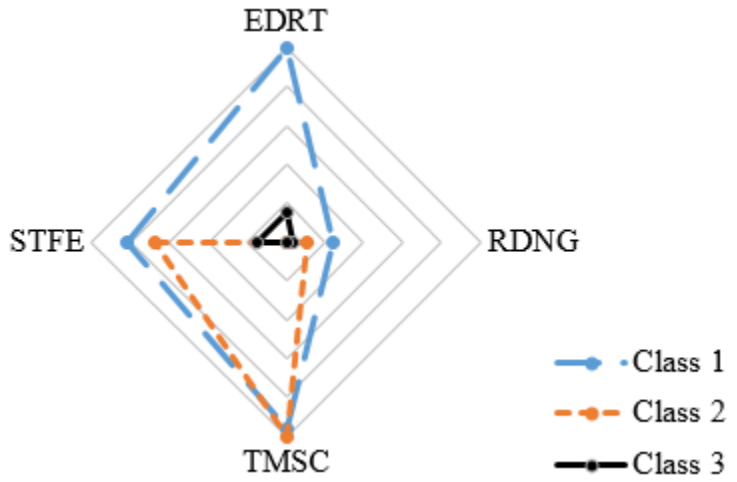

Figure 4. Conditional probability plot of preservice training profiles.

Several characteristics of beginning teachers who were classified as SPT could be identified. First, all of SPT participants majored in general education and/or English and Language Arts in their undergraduate programs. Second, almost all SPT participants took courses on teaching methods or teaching strategies before. The estimated probability was 95.6%. Third, although the estimated probability of SPT participants who practiced student teaching for 12 weeks or more was not very high, it was much higher than that of either MPT or WPT

participants. Finally, only around one fourth of SPT participants completed reading coursework. Comparing to the probabilities of TMSC and STFE, the estimated RDNG probability was very low. However, this class of beginning teachers still maintained the highest estimated probability among all the three latent classes. In other words, if a participant was classified as MPT or WPT, the probability of the completion of reading coursework would be extremely low.

The most obvious difference between SPT and MPT beginning teachers was that no MPT participants graduated with general education and/or English and Language Arts as their major areas. Instead, their education background was quite diverse. For instance, some participants did not have undergraduate degrees. Some majored in programs such as arts, foreign languages, mathematics, and social sciences. Additionally, some MPT participants majored in technical content areas, such as business and mechanics. Although all of them reported that they had student teaching for 12 weeks or more, only 67.3% of MPT participants completed pedagogical coursework, while 11.3% completed reading coursework. Consequently, both estimated probabilities were much lower than those for SPT participants.

The last class consisted of WPT participants who were most likely to be poorly prepared for their teaching profession during their preservice phase. Although a small proportion of WPT participants majored in general education and/or English and Language Arts, only 15.3% of them had field experience for 12 weeks or more before they entered the field. No WPT participants took any pedagogical courses, and only 3.2% of them had coursework in reading.

To sum up, the three types of profiles of beginning teachers' preservice training were different in regard to their majors, coursework completed, and the length of field experience. Although the first and second classes exhibited different profiles of preservice training, the words "strong" and "moderate" were used to differentiate the two classes by membership titles,

rather than by the quality of their preservice training profiles. It is possible that SPT and MPT participants were similarly well prepared for instructing in classrooms due to their completion of pedagogical courses and relatively long-term student teaching experiences.

Profiles of In-service Training (Developmental Activities)

To address the second research question, several LCA models with increasing numbers of latent classes were established. The model building included five indicators: INDT (teacher induction programs), COPT (common planning time with teachers in the same subject), BTSM (seminars for beginning teachers), DSMT (discipline-specific mentorship) and SCII (regularly scheduled collaboration on issues of instruction). Model fit information of all the models is provided in Table 8. The model building procedure did not surpass the 4-class model for two reasons. First, the result of the parametric bootstrapped likelihood ratio test suggested that the 3- and 4-class models were not statistically significantly different. Second, although the results of Vuong-Lo-Mendell-Rubin and Lo-Mendell-Rubin adjusted likelihood ratio tests were statistically significant at α=0.05 level, there was one latent class that included less than 3% of the participants in the 4-class model, which was not a preferred classification result.

According to the results from model comparisons, the 3-class model and its results were recorded for further analyses. There were several reasons leading to the selection of this model. First, compared to the adjacent LCA models, the 3-class model was statistically significantly different from the 2-class model, but not from the 4-class model. Second, the 3-class model provided the smallest values of AIC, BIC and adjusted BIC indices among all four models. Third, the 3-class model had adequate model fit based on the Pearson Chi-square test. Finally, the 3-class model reported the largest entropy value, which indicated a fairly high classification quality.

Table 8

Model Comparisons of In-service Training

	Models of LCA			
	1-Class	2-Class	3-Class	4-Class
n-Par	5	11	17	23
Log Likelihood H_0	-4228.506	-4028.174	-3978.991	-3974.342
AIC	8467.013	8078.347	7991.983	7994.683
BIC	8493.104	8135.747	8080.692	8114.702
Adjusted BIC	8477.221	8100.805	8026.690	8041.640
Pearson Chi-square Test	720.705	115.676	19.125	12.086
df	26	20	14	8
p-value	<0.05	<0.05	>0.05	>0.05
Entropy	-	0.560	0.870	0.816
n-1- vs. n-class models				
VLMLR Test				
p-value	-	<0.01	<0.01	<0.05
LMR-LRT Test				
p-value	-	<0.01	<0.01	<0.05
PB- LRT Test				
H_0	-	-4228.506	-4028.174	-3978.991
Difference of n-Par	-	6	6	6
p-value	-	<0.01	<0.01	>0.05

Note. n-Par: number of free parameters; VLMLR: Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR-LRT: Lo-Mendell-Rubin Adjusted likelihood ratio test; PB-LRT: parametric bootstrapped likelihood ratio test.

The model classification results, including the latent class prevalence and conditional probabilities, are provided in Table 9. Additionally, Figure 5 provides a summary of the three patterns of in-service training profiles. The three latent classes were named as "strong in-service training" (SIT), "moderate in-service training" (MIT) and "weak in-service training" (WIT) groups. About 46.0% of the participants were grouped as SIT (*n*=627), 36.9% grouped as MIT (*n*=503), and 17.2% grouped as WIT (*n*=234). The estimates of average latent class probabilities and classification probabilities per class indicated that the model classification was quite accurate for the majority of the participants.

Table 9

Model Classification of In-service Training (Response=Yes)

	Class 1 (SIT)	Class 2 (MIT)	Class 3 (WIT)
n	627	503	234
Percent	46.0%	36.9%	17.2%
Average Latent Class Probabilities	0.981	0.936	0.944
Classification Probabilities	0.966	1.000	0.861
Conditional Probability			
INDT	0.964	1.000	0.134
COPT	0.986	0.000	0.312

Table 9 Continued

	Class 1 (SIT)	Class 2 (MIT)	Class 3 (WIT)
BTSM	0.762	0.607	0.199
DSMT	0.673	0.448	0.148
SCII	0.867	0.648	0.602

Note. SIT: strong in-service training; MIT: moderate in-service training WIT: weak in-service training.

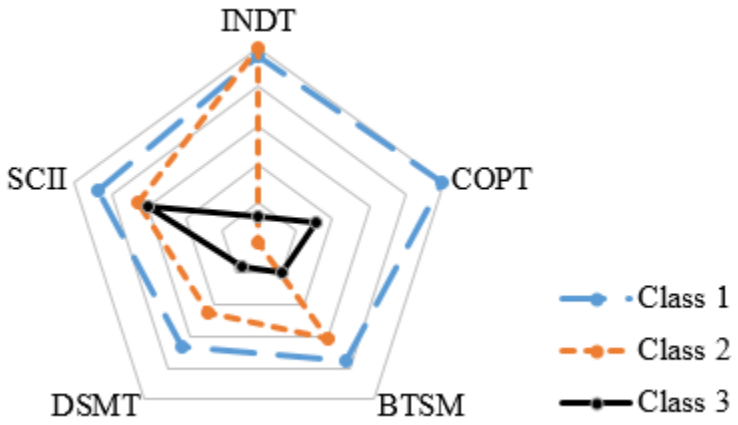

Figure 5. Conditional probability plot of in-service training profiles.

Beginning teachers who were classified into the SIT latent class were highly likely to participate in a variety of developmental activities. For SIT participants, the estimated probabilities of receiving induction programs, common planning time and collaboration on issues of instruction were 96.4%, 98.6% and 86.7% respectively. On the other hand, the estimated probabilities suggested that only 76.2% of SIT participants attended seminars for beginning

teachers and 67.3% of them received discipline-specific mentorship. Although the estimated values of the probabilities of these two types of developmental activities were relatively low, these values remained the highest among all three latent classes.

Compared to SIT participants, all MIT participants participated in induction programs, but did not have any common planning time with colleagues. In addition, the estimated probability of having collaboration on instructional issues was much lower for MIT participants than for SIT peers. Along with the fact that less than half of MIT participants received discipline-specific mentorship, these characteristics indicated that MIT participants lacked an effective connection with their colleagues in regard to face and resolve the problems together and learn from each other. In other words, MIT participants were more likely to work independently, when they met challenges like instruction in content areas, classroom management, and communication with students and parents.

WIT participants were poorly prepared through participating in developmental activities. The estimated probabilities of joining induction programs, attending seminars for beginning teachers and receiving discipline-specific mentorship were all below one fifth for WIT participants. In addition, only 31.2% of WIT participants were likely to have common planning time, and 60.2% of them had regularly scheduled collaboration on instructional issues. Overall, except experiencing common planning, WIT participants were less likely to participate in any one of the other four types of developmental activities than their SIT and MIT peers did.

To sum up, LCA results suggested three distinctive latent classes to differentiate beginning teachers' in-service training profiles. Comparing to SIT and even WIT participants, a lack of common planning time was an important characteristic to identify MIT participants.

The Association between Preservice and In-service Training Profiles

As all the participants were assigned to latent classes of both preservice and in-service training profiles, an examination of the association between the two types of training profiles was conducted. Using Chi-square tests, no statistically significant association between preservice and in-service training profiles was identified ($\chi^2_{(4)}$=6.40, p=0.17). In other words, the participants with different preservice training profiles were equally likely to receive a similar pattern of in-service training. In addition, Phi and Cramer's V tests were conducted to examine the strength of the association. Results indicated that the association between the two types of training profiles was weak (Phi=0.07, Cramer's V=0.05, p=0.17). Detailed information of the cross tabulation of beginning teachers' training profiles is provided in Table 10.

Table 10

Cross Tabulation of Beginning Teachers' Training Profiles

		Preservice Training (Teacher Education)			
		SPT	MPT	WPT	Row Total
In-service Training (Developmental Activities)	SIT	281	280	66	627
	MIT	188	255	60	503
	WIT	97	110	27	234
	Column Total	566	645	153	1364

Study 2

Descriptive information of all the indicators of teacher self-efficacy was provided in Table 5. There were four types of responses to the eight survey items on teacher self-efficacy. The majority of beginning teachers felt well prepared on all the survey items, except the one in regards to teaching subject matter. The count of beginning teachers who reported that they felt very well prepared (n=581) on teaching subject matter was a little bit more than that of beginning teachers who responded as well prepared (n=570). Additionally, results indicated that beginning teachers felt less prepared on handling classroom management issues, assessing students, and providing differentiated instruction.

Profiles of Teacher Self-efficacy

Based on the recent simulation study by Nylund-Gibson and Masyn (2016), class enumeration was recommended to be conducted before including covariates, because an unconditional latent class model could reliably determine the number of classes. Therefore, beginning teachers' efficacy profiles were examined using multiple LCA models at first. The model building included eight indicators: CM (handling classroom management or discipline situations), IM (using instructional methods), SM (teaching subject matter), CU (using computers in classroom instruction), AM (assessing students), DI (differentiating instruction), IF (using data from student assessments to inform instruction), and CS (meeting state content standards). Model fit information of all the four models is given in Table 11. The model building procedure paused at the 4-class model, because one latent class in this model contained only around 5% of the participants, which did not meet the selection criteria.

To investigate teacher self-efficacy profiles, the 3-class model and its results were recorded for further analyses. The model selection was decided based on several reasons. First,

the result of the model difference tests suggested that the 3-class model was significantly different from the 2-class model. Although it also suggested that the difference between the 3- and 4-class models was statistically significant, the 4-class model was excluded, because one of its latent classes contained a small proportion of the sample. Second, compared to its neighbors, the 3-class model provided the smallest IC indices, which indicated that it had better model fit. Third, the 3-class model had good model fit based on the Pearson Chi-square test. Finally, among all the LCA models, the selected one had the largest entropy value, which represented an adequate classification quality.

Table 11

Model Comparisons of Teacher Self-efficacy

	Models of LCA			
	1-Class	2-Class	3-Class	4-Class
n-Par	24	49	74	99
Log Likelihood H_0	-12525.860	-11292.154	-10780.321	-10643.908
AIC	25099.720	22682.307	21708.642	21485.817
BIC	25224.957	22937.998	22094.787	22002.416
Adjusted BIC	25148.718	22782.345	21859.719	21687.934
Pearson Chi-square Test	143848.458	11412.898	9000.175	8399.112
df	65414	65396	65388	65372
p-value	<0.05	>0.99	>0.99	>0.99
Entropy	-	0.829	0.835	0.804

Table 11 Continued

	1-Class	2-Class	3-Class	4-Class
n-1- vs. n-class models				
VLMLR Test				
p-value	-	<0.01	<0.01	<0.05
LMR-LRT Test				
p-value	-	<0.01	<0.01	<0.05
PB- LRT Test				
H_0	-	-12525.860	-11292.154	-10780.321
Difference of n-Par	-	25	25	25
p-value	-	<0.01	<0.01	<0.01

Note. n-Par: number of free parameters; VLMLR: Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR-LRT: Lo-Mendell-Rubin Adjusted likelihood ratio test; PB-LRT: parametric bootstrapped likelihood ratio test.

The model classification results, including the latent class prevalence and conditional probabilities, are provided in Table 12. In addition, Figure 6 provides a visualized summary of the three patterns of teacher self-efficacy profiles in regard to four responses. The three latent classes were named as “high self-efficacy” (HSE), “moderately-high self-efficacy” (MSE), and “low self-efficacy” (LSE) groups, respectively. There were 30.8% of the participants who were labeled as HSE (*n*=420), 52.0% labeled as MSE (*n*=709), and 17.2% labeled as LSE (*n*=235). The model classification was adequately accurate, based on the estimates of average latent class probabilities and classification probabilities per class.

Table 12

Model Classification of Teacher Self-efficacy

		Class 1 (HSE)	Class 2 (MSE)	Class 3 (LSE)
n		420	709	235
Percent		30.8%	52.0%	17.2%
Average Latent Class Probabilities		0.936	0.923	0.909
Classification Probabilities		0.932	0.933	0.891
Conditional Probability				
Response=Very well prepared				
	CM	0.461	0.065	0.038
	IM	0.639	0.079	0.000
	SM	0.741	0.327	0.161
	CU	0.606	0.249	0.135
	AM	0.632	0.047	0.000
	DI	0.541	0.048	0.005
	IF	0.539	0.032	0.021
	CS	0.758	0.153	0.050
Response=Well prepared				
	CM	0.351	0.546	0.117
	IM	0.325	0.739	0.136
	SM	0.222	0.549	0.380
	CU	0.289	0.488	0.252

Table 12 Continued

	Class 1 (HSE)	Class 2 (MSE)	Class 3 (LSE)
AM	0.352	0.742	0.192
DI	0.376	0.579	0.052
IF	0.384	0.571	0.054
CS	0.219	0.647	0.293
Response=Somewhat prepared			
CM	0.176	0.374	0.681
IM	0.035	0.182	0.755
SM	0.037	0.116	0.386
CU	0.105	0.248	0.455
AM	0.013	0.209	0.681
DI	0.074	0.368	0.697
IF	0.077	0.377	0.687
CS	0.020	0.193	0.520
Response=Not at all prepared			
CM	0.013	0.016	0.164
IM	0.000	0.000	0.108
SM	0.000	0.008	0.073
CU	0.000	0.014	0.158
AM	0.003	0.002	0.127
DI	0.009	0.004	0.246

Table 12 Continued

	Class 1 (HSE)	Class 2 (MSE)	Class 3 (LSE)
IF	0.000	0.020	0.238
CS	0.003	0.007	0.137

Note. HSE: high self-efficacy; MSE: moderately-high self-efficacy; LSE: low self-efficacy.

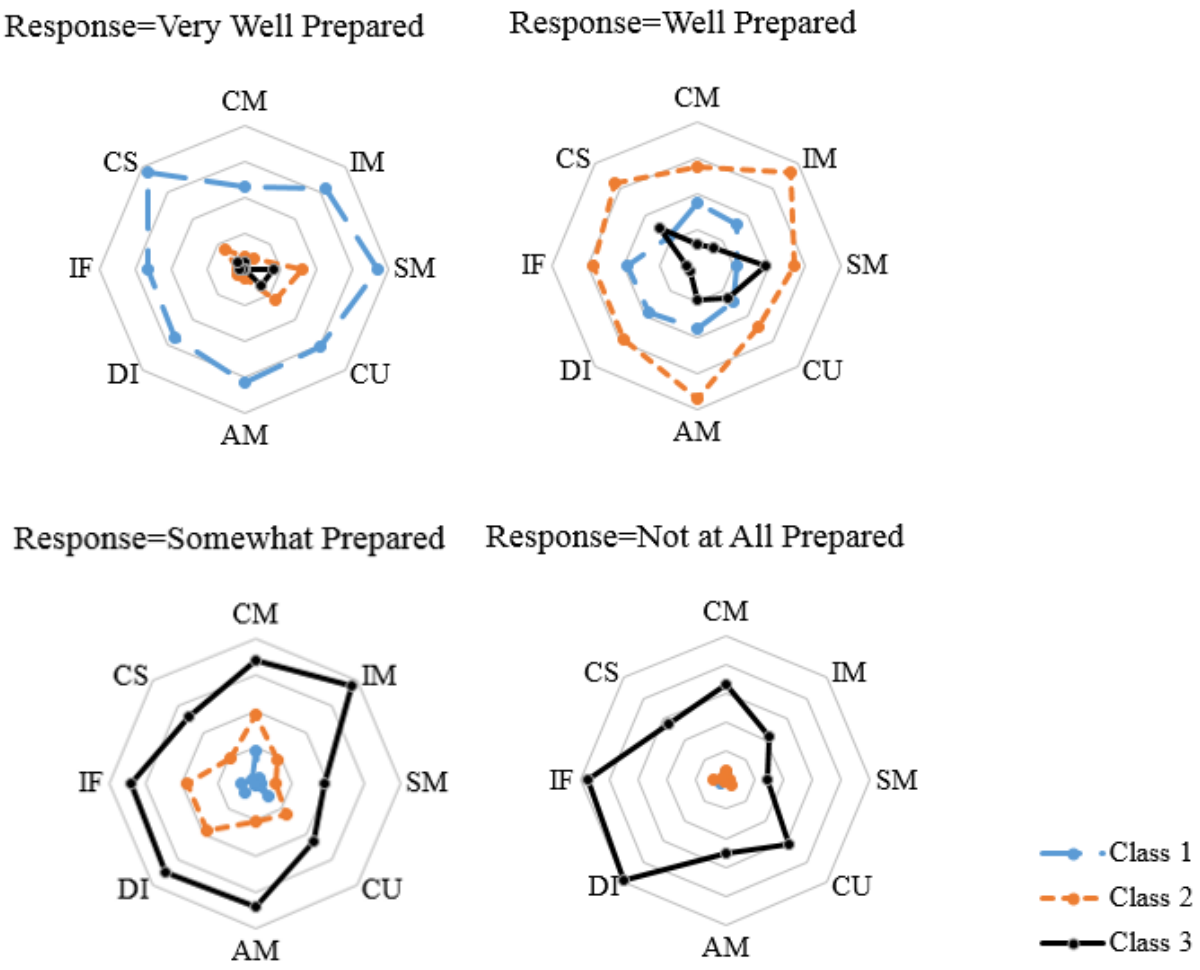

Figure 6. Conditional probability plots of teacher self-efficacy profiles.

Comparisons across three latent classes indicated that HSE participants were most likely to feel very well prepared on all the teacher self-efficacy perspectives measured in the 2011-2012 SASS. The estimated probabilities of feeling very well prepared for HSE participants were much higher than those for either MSE or LSE participants regarding all the survey items. The only survey item on which less than half of HSE participants felt very well prepared was CM. Considering the fact that all three classes reported relatively low probabilities of feeling very well or well prepared, this indicated that beginning teachers were commonly in need of more support and guidance on classroom management to maintain high-level efficacy.

Compared to HSE peers, MSE participants were more likely to respond as well prepared to all the survey items of teacher self-efficacy. They were confident with their teaching performances and skills, but the confidence was not as high as that of HSE participants. Besides CM, MSE participants were less likely to feel very well or well prepared on DI and IF as well. The sums of the estimated probabilities of feeling very well or well prepared on the three survey items were all around 60%.

Results indicated that LSE participants struggled and exhibited low-level self-efficacy on almost all the self-efficacy perspectives. The only exception was their reported efficacy on SM. Over half of LSE participants reported that they felt very well or well prepared in regards to teach subject matter that they were assigned to. However, considering the relatively high probabilities of HSE and MSE participants whose responses were “very well prepared” or “well prepared”, this estimation was still quite low. The majority of LSE participants reported they only felt somewhat prepared on all the survey items. Additionally, the estimated probabilities that LSE participants did not feel prepared in regard to all eight survey items ranged from 10% to 25%, while these estimates of HSE and MSE participants were all below 2%.

To sum up, beginning teachers' self-efficacy profiles were classified into three latent classes. Although most of them reported relatively high-level self-efficacy on almost all the survey items, it is critical to notice that around one fifth of the participants have already begun to struggle to maintain high-level self-efficacy since their first year of teaching.

The Association between Training Profiles and Teacher Self-efficacy Profiles

The class memberships of teacher training profiles were recalled from the first study, since the models achieved high entropy values. Although the entropy value of LCA on in-service training profiles was a little lower than the expected value 0.9, the membership information was still included based on the model's high average latent class probabilities as well as classification probabilities. Mplus requires that categorical covariates should be transformed to dummy variables. Therefore, the class memberships were recoded as binary. For preservice training profiles, the WPT class was selected as the reference group. If a participant's responses to the two binary covariates, the preservice training membership as SPT and the preservice training membership as MPT, were both zero, this indicated that the participant's membership of the preservice training profiles was WPT. The same recoding procedure applied for the in-service training profiles. Similarly, the WIT class was selected as the reference group.

Based on the results of the first research question in Study 2, the adjusted 3-step analyses were conducted based on the 3-class LCA model. Three latent class regression analyses were examined as the covariates were included in sequence. In all the three LCA regression models, the classification of teacher self-efficacy profiles was consistent. Including covariates did not change the specification of latent classes in regards to teacher self-efficacy. The parameter estimates of all three models are presented in Table 13.

Table 13

Parameter Estimates of Latent Class Regression Analyses on Teacher Training

Estimate (log odds)		*SE*	LM	UM	*p*	OR	LM_{OR}	UM_{OR}
Teacher Education								
HSE/LSE								
Intercept	-0.787	0.238	-1.253	-0.321	<0.01			
SPT	1.747	0.287	1.184	2.310	<0.01	5.737	3.269	10.070
MPT	1.487	0.271	0.956	2.018	<0.01	4.424	2.601	7.524
MSE/LSE								
Intercept	-0.123	0.215	-0.544	0.298	0.566			
SPT	1.682	0.267	1.159	2.205	<0.01	5.376	3.186	9.073
MPT	1.228	0.251	0.736	1.720	<0.01	3.414	2.088	5.584
HSE/MSE								
Intercept	-0.664	0.261	-1.176	-0.152	<0.05			
SPT	0.066	0.282	-0.487	0.619	0.815	1.068	0.615	1.857
MPT	0.259	0.279	-0.288	0.806	0.354	1.296	0.750	2.239
Developmental Activities								
HSE/LSE								
Intercept	-0.064	0.202	-0.460	0.332	0.753			
SIT	1.065	0.246	0.583	1.547	<0.01	2.901	1.791	4.698
MIT	0.411	0.250	-0.079	0.901	0.099	1.508	0.924	2.462

Table 13 Continued

	Estimate (log odds)	*SE*	LM	UM	*p*	OR	LM_{OR}	UM_{OR}
MSE/LSE								
Intercept	0.673	0.185	0.310	1.036	<0.01			
SIT	0.627	0.234	0.168	1.086	<0.01	1.872	1.183	2.961
MIT	0.381	0.231	-0.072	0.834	0.099	1.464	0.931	2.302
HSE/MSE								
Intercept	-0.737	0.185	-1.100	-0.374	<0.01			
SIT	0.437	0.210	0.025	0.849	<0.05	1.548	1.026	2.336
MIT	0.030	0.220	-0.401	0.461	0.890	1.030	0.670	1.586
Teacher Training (including Teacher Education and Developmental Activities)								
HSE/LSE								
Intercept	-1.460	0.320	-2.087	-0.833	<0.01			
SPT	1.751	0.297	1.169	2.333	<0.01	5.760	3.218	10.310
MPT	1.519	0.278	0.974	2.064	<0.01	4.568	2.649	7.876
SIT	1.090	0.253	0.594	1.586	<0.01	2.974	1.811	4.884
MIT	0.460	0.260	-0.050	0.970	0.078	1.584	0.952	2.637
MSE/LSE								
Intercept	-0.557	0.278	-1.102	-0.012	<0.01			
SPT	1.691	0.271	1.160	2.222	<0.01	5.425	3.189	9.227
MPT	1.236	0.252	0.742	1.730	<0.01	3.442	2.100	5.640
SIT	0.641	0.239	0.173	1.109	<0.01	1.898	1.188	3.033

Table 13 Continued

	Estimate (log odds)	*SE*	LM	UM	*p*	OR	LM_{OR}	UM_{OR}
MIT	0.436	0.242	-0.038	0.910	0.072	1.547	0.962	2.485
HSE/MSE								
Intercept	-0.904	0.321	-1.533	-0.275	<0.01			
SPT	0.059	0.284	-0.498	0.616	0.834	1.061	0.608	1.851
MPT	0.283	0.282	-0.270	0.836	0.315	1.327	0.764	2.306
SIT	0.449	0.211	0.035	0.863	<0.05	1.567	1.036	2.369
MIT	0.023	0.221	-0.410	0.456	0.916	1.023	0.664	1.578

Note. SE: standard error; OR: odds ratio; LM: 95% confidence interval lower limit of log odds; UM: 95% confidence interval upper limit of log odds; LM_{OR}: 95% confidence interval lower limit of odds ratio; UM_{OR}: 95% confidence interval upper limit of odds ratio.

LCA Regression Model with Teacher Education. Beginning teachers' preservice training profiles were included in the LCA model of teacher self-efficacy first. Results of the model estimates indicated the membership of preservice training profiles was a statistically significant contributor to the differences between HSE and LSE participants as well as between MSE and LSE participants (all *p*-values<0.01). However, the dummy covariates failed to differentiate HSE from MSE participants (both *p*-values>0.05).

The information of odds ratio tests (see Table 13) suggested that: 1) the odds of SPT participants with HSE rather than LSE was 5.737 times of the odds of WPT participants; 2) the odds of MPT participants with HSE rather than LSE was 4.424 times of the odds of WPT participants; 3) the odds of SPT participants with MSE rather than LSE was 5.376 times of the odds of WPT participants; and 4) the odds of MPT participants with MSE rather than LSE was

3.414 times of the odds of WPT participants. In Table 14, the estimated probabilities of each self-efficacy class showed that SPT participants had a probability of 31.2% of being in HSE, 56.8% of being in MSE, and 12.0% of being in LSE. Similarly, MPT participants were very likely to be in HSE or MSE. Their estimated probabilities were 33.4% of being in HSE, 50.0% of being in MSE, and only 16.6% of being in LSE. In contrast, the probabilities of WPT participants to be in HSE and MSE were much smaller. For WPT participants, the estimated probabilities were 19.5% of being in HSE, 37.8% of being in MSE, and 42.7% of being in LSE respectively. These results suggested that they were likely to maintain high-level or moderately-high-level self-efficacy, if their preservice training demonstrated a pattern which was similar to either SPT or MPT. In contrast, almost one half of the participants whose preservice training followed the WPT pattern were very likely to have low-level self-efficacy since their first year of teaching.

LCA Regression Model with Developmental Activities. The second model included beginning teachers' in-service profiles instead of their preservice profiles. Results suggested that only the SIT membership significantly differentiated beginning teachers' self-efficacy profiles (all p-values<0.05). In other words, compared to MIT and WIT peers, SIT participants were more likely to report a higher level of self-efficacy. Neither the MIT nor WIT memberships could yield significant differences across the three classes of self-efficacy profiles (all p-values>0.05).

The information of odds ratio tests (see Table 13) suggested that: 1) the odds of SIT participants with HSE rather than LSE was 1.548 times of the odds of WIT participants; 2) the odds of SIT participants with HSE rather than MSE was 2.901 times of the odds of WIT participants; and 3) the odds of SIT participants with MSE rather than LSE was 1.872 times of

the odds of WIT participants. Alternatively, SIT participants had a probability of 36.8% of being in HSE, 49.7% of being in MSE, and 13.5% of being in LSE. On the other hand, MIT and WIT participants shared a similar distribution of the estimated probabilities for each self-efficacy class. The estimated probabilities were 26.8% of being in HSE, 54.3% of being in MSE, and 18.9% of being in LSE for MIT participants, while those were 24.1%, 50.3%, and 25.7% for WIT participants respectively. Therefore, only SIT participants were likely to maintain a higher level of self-efficacy. Insufficient in-service training like MIT and WIT would not help beginning teachers being equipped with high-level self-efficacy. Considering the characteristics of in-service training profiles, these results also indicated the potential necessity of common planning time for beginning teachers, as MIT and WIT participants demonstrated a common lack of COPT experiences.

LCA Regression Model with Teacher Training (Including Teacher Education and Developmental Activities). The two covariates that explained beginning teachers' training profiles were included simultaneously in the last model. Results were similar to those of the previous two models. The memberships of SPT, MPT, and SIT statistically significantly contributed to the differences between HSE and LSE as well as between MSE and LSE (all *p*-values <0.01). In addition, the membership of SIT was the only significant predictor to differentiate participants with high-level self-efficacy from peers with moderately-high-level self-efficacy (*p*-value<0.05).

According to Table 10, there were nine types of teacher training profiles that pertained to beginning teachers, since their preservice and in-service profiles were exclusive to each other. Therefore, the terms which combined both preservice and in-service training were used to refer to the nine types of teacher training profiles. For instance, SPT×SIT participants received strong

preservice training like SPT as well as strong in-service training like SIT. The estimates of conditional odds ratios were provided in Table 13. Controlling for the in-service training profiles, SPT participants were 5.760 times as likely to be classified with HSE and 5.425 times as much with MSE rather than LSE, compared to WPT peers. Similarly, MPT participants were 4.568 times as likely to be classified with HSE and 3.442 times as much with MSE compared to WPT peers. On the other hand, controlling for the preservice training profiles, SIT participants were 2.974 times as likely to be grouped as HSE and 1.898 times as much grouped as MSE rather than LSE, compared to WPT participants. Additionally, SPT participants were 1.567 times likely to be labeled as HSE instead of MSE when compared to WPT participants.

For each type of teacher training profiles, the estimated probabilities of being classified into different self-efficacy profiles were given in Table 14. Results indicated that compared to their peers, beginning teachers who received either SPT×SIT or MPT×SIT training were more likely to be associated with HSE. Furthermore, regardless of the in-service training profiles, WPT participants reported a high probability of experiencing LSE. If a participant received WPT×WIT training, the estimated probability of the association with LSE was 55.4%. Additionally, insufficient in-service training like WIT led to a relatively higher estimated probability of being in LSE among SPT and MPT participants as well. It implied that WPT participants were less likely to be classified in LSE, if they received MIT (22.6%) rather than SIT (36.0%) training. However, considering the extremely low probability that WPT×MIT participants were grouped as HSE (8.3%), the seemingly superior of MIT over SIT among WPT participants should be reevaluated, as the ultimate goal was to help beginning teachers maintain high-level self-efficacy.

Overall, results of LCA regression models suggested that given the association with a specific class of in-service training profiles, regardless of undergraduate majors, beginning teachers were likely to report a higher level of self-efficacy, as long as they received adequate preservice training in regards to reading coursework, pedagogical courses, and field experience. In addition, controlling for their preservice training profiles, beginning teachers were likely to maintain high-level self-efficacy only when they actively participated in all of the selected developmental activities. In the present sample, if the participants completely lacked common planning time, they were likely to have the similar estimated probabilities of being classified into a particular class of self-efficacy as their peers who did not actively join any types of developmental activities.

Table 14

Estimated Probabilities by Classes on Teacher Training

	HSE	MSE	LSE
Teacher Education			
SPT	0.312	0.568	0.120
MPT	0.334	0.500	0.166
WPT	0.195	0.378	0.427
Developmental Activities			
SIT	0.368	0.497	0.135
MIT	0.268	0.543	0.189
WIT	0.241	0.503	0.257

Table 14 Continued

	HSE	MSE	LSE
Teacher Training (including Teacher Education and Developmental Activities)			
SPT×SIT	0.366	0.542	0.092
SPT×MIT	0.267	0.606	0.126
SPT×WIT	0.246	0.571	0.184
MPT×SIT	0.399	0.474	0.127
MPT×MIT	0.293	0.532	0.175
MPT×WIT	0.263	0.489	0.248
WPT×SIT	0.249	0.391	0.360
WPT×MIT	0.083	0.690	0.226
WPT×WIT	0.129	0.317	0.554

The Association between School Location and Teacher Self-efficacy Profiles

School context information, school location, was included in the LCA regression model related to self-efficacy. This covariate was examined aside from teacher training, because it was directly reported in the 2011-2012 SASS data. Results suggested that including school location as a covariate did not alter the specification of the LCA model on self-efficacy. School location contributed to the differences between HSE and LSE as well as between MSE and LSE profiles (both p-values<0.05). However, the association between school location and self-efficacy profiles was not statistically significant in regards to the difference between HSE and MSE (p-value>0.05).

The parameter estimates are provided in Table 15. The information of odds ratios showed that: 1) the odds of participants from urban schools was 0.575 times of the odds of participants from non-urban schools to be in HSE rather than LSE; and 2) the odds of participants from urban schools was 0.684 times of the odds of participants from non-urban schools to be in MSE rather than LSE. The estimated probabilities of participants from urban schools were 26.7% of being in HSE, 50.7% of being in MSE, and 22.6% of being in LSE (see Table 16). In contrast, these estimates of participants from non-urban schools were 32.5%, 51.8%, and 15.8% respectively. These results indicated that beginning teachers who worked in non-urban schools were more likely to maintain high-level or moderately-high-level self-efficacy during their first year of teaching.

Table 15

Parameter Estimates of Latent Class Regression Analyses on School Location

Estimate (log odds)		*SE*	LM	UM	*p*	OR	LM_{OR}	UM_{OR}
HSE/LSE								
Intercept	0.722	0.107	0.512	0.932	<0.01			
Urban	-0.553	0.195	-0.935	-0.171	<0.01	0.575	0.393	0.843
MSE/LSE								
Intercept	1.188	0.107	0.978	1.398	<0.01			
Urban	-0.380	0.187	-0.747	-0.013	<0.05	0.684	0.474	0.987
HSE/MSE								
Intercept	-0.466	0.080	-0.623	-0.309	<0.05			

Table 15 Continued

	Estimate (log odds)	*SE*	LM	UM	*p*	OR	LM_{OR}	UM_{OR}
Urban	-0.174	0.164	-0.495	0.147	0.289	0.840	0.609	1.159

Note. SE: standard error; OR: odds ratio; LM: 95% confidence interval lower limit of log odds; UM: 95% confidence interval upper limit of log odds; LM_{OR}: 95% confidence interval lower limit of odds ratio; UM_{OR}: 95% confidence interval upper limit of odds ratio.

Table 16

Estimated Probabilities by Classes on School Location

	HSE	MSE	LSE
Urban	0.267	0.507	0.226
Non-urban	0.325	0.518	0.158

Study 3

Descriptive information of beginning teachers' job satisfaction and turnover motivation was provided in Table 5. Almost 90% of participants reported that they were satisfied with being a teacher based on their first-year-teaching experience. However, statistics in regards to their turnover motivation also called attention to future teacher attrition. Over one third of participants implied their potential moving to other schools. In addition, around one fifth of participants indicated to leave teaching if they got higher payment by other positions. Although it should be acknowledged that the factors resulting in teacher turnover were complicated, the third study sought to explain why beginning teachers chose to leave by examining the relationships among teacher turnover motivation, self-efficacy, and teacher training. Since including covariates like

teacher training and school location did not change the classification of teacher self-efficacy profiles, the three models in this study were all established as LCA with distal outcomes.

LCA with Job Satisfaction

Results of LCA with job satisfaction as a distal outcome are provided in Table 17. Chi-square test results suggested that teacher self-efficacy profiles statistically significantly differentiated beginning teachers' job satisfaction levels (p-value<0.01). More specifically, the difference of job satisfaction was statistically significant between HSE and LSE participants. Similar results were also reported between MSE and LSE participants as well as between HSE and MSE participants (all p-values<0.05).

Tests of the odds ratios used Category=1 (beginning teachers strongly disagreed that they were generally satisfied with being a teacher at this school) as the reference to generate the odds and used the LSE class as the reference to calculate the odds ratios. Therefore, the odds ratios in Table 17 were conditional to each comparison. For instance, the odds of HSE participants who responded as strongly satisfied rather than as strongly dissatisfied with being a teacher at certain schools was 9.636 times of the odds of LSE participants.

The estimated probabilities suggested that compared to MSE peers, HSE participants were slightly more likely to be increasingly satisfied with being a teacher in general. Around 70% of HSE participants and 60% of MSE participants strongly agreed that they were satisfied with their job. However, this estimate was only 26.5% for LSE participants. Additionally, while the sum of the estimates of feeling somewhat and strongly dissatisfied with being a teacher were below 10% for both HSE and MSE participants, this summed estimate was almost triple for LSE participants. Overall, these results indicated that beginning teachers with a higher level of self-efficacy were more likely to be associated with a high level of job satisfaction.

Table 17

Equality Tests of Probabilities across Classes on Job Satisfaction

	Probability	*SE*	LM	UM	OR	SE_{OR}	LM_{OR}	UM_{OR}
HSE (reference=LSE)								
Category=4	0.691	0.024	0.644	0.738	9.636	4.711	3.696	25.124
Category=3	0.225	0.022	0.182	0.268	1.829	0.891	0.704	4.753
Category=2	0.064	0.013	0.039	0.089	1.157	0.603	0.417	3.213
Category=1	0.019	0.007	0.005	0.033	1.000	0.000	1.000	1.000
MSE (reference=LSE)								
Category=4	0.603	0.024	0.556	0.650	6.465	2.636	2.907	14.374
Category=3	0.311	0.021	0.270	0.352	1.938	0.803	0.860	4.367
Category=2	0.061	0.011	0.039	0.083	0.848	0.386	0.348	2.070
Category=1	0.025	0.007	0.011	0.039	1.000	0.000	1.000	1.000
LSE								
Category=4	0.265	0.031	0.204	0.326	1.000	0.000	1.000	1.000
Category=3	0.456	0.035	0.387	0.525	1.000	0.000	1.000	1.000
Category=2	0.206	0.028	0.151	0.261	1.000	0.000	1.000	1.000
Category=1	0.072	0.018	0.037	0.107	1.000	0.000	1.000	1.000
HSE (reference=MSE)								
Category=4					1.491	0.754	0.553	4.018
Category=3					0.944	0.487	0.343	2.593
Category=2					1.363	0.781	0.443	4.192

Table 17 Continued

	Probability	*SE*	LM	UM	OR	SE_{OR}	LM_{OR}	UM_{OR}
Category=1					1.000	0.000	1.000	1.000
		Chi-square		*p*	*df*			
Overall Test		128.913		<0.01	6			
HSE vs. LSE		117.592		<0.01	3			
MSE vs. LSE		82.522		<0.01	3			
HSE vs. MSE		7.881		<0.05	3			

Note. Category=4 means beginning teachers strongly agreed that they were generally satisfied with being a teacher at this school; Category=3 means beginning teachers agreed that they were generally satisfied with being a teacher at this school; Category=2 means beginning teachers somewhat agreed that they were generally satisfied with being a teacher at this school; Category=1 means beginning teachers strongly disagreed that they were generally satisfied with being a teacher at this school.
SE: standard error; OR: odds ratio; LM: 95% confidence interval lower limit of log odds; UM: 95% confidence interval upper limit of log odds; LM_{OR}: 95% confidence interval lower limit of odds ratio; UM_{OR}: 95% confidence interval upper limit of odds ratio.

LCA with Moving Motivation

The second model included moving motivation as a distal outcome. In Table 18, Chi-square test results suggested that teacher self-efficacy profiles statistically significantly differentiated beginning teachers' moving motivation levels (*p*-value<0.01), and the differences across all classes of self-efficacy profiles were statistically significant (all *p*-values<0.01).

Results of the odds ratio tests are reported in Table 18. Category=4 (beginning teachers strongly disagreed that they thought about transferring to another school) was used as the reference to generate the odds and LSE class was employed to calculate the odds ratios. An example of the interpretations of the odds ratios was that the odds of HSE participants who

responded as strongly agreeing rather than as strongly disagreeing the consideration of transferring was 0.254 time of the odds of LSE participants. In other words, beginning teachers with a lower level of self-efficacy were more likely to think about transferring during their first year of teaching.

Table 18

Equality Tests of Probabilities across Classes on Moving Motivation

	Probability	*SE*	LM	UM	OR	SE_{OR}	LM_{OR}	UM_{OR}
HSE (reference=LSE)								
Category=4	0.527	0.027	0.474	0.580	1.000	0.000	1.000	1.000
Category=3	0.160	0.021	0.119	0.201	0.376	0.096	0.229	0.619
Category=2	0.222	0.022	0.179	0.265	0.382	0.086	0.245	0.596
Category=1	0.090	0.015	0.061	0.119	0.254	0.074	0.144	0.448
MSE (reference=LSE)								
Category=4	0.410	0.021	0.369	0.451	1.000	0.000	1.000	1.000
Category=3	0.255	0.018	0.220	0.290	0.767	0.181	0.483	1.219
Category=2	0.253	0.019	0.216	0.290	0.560	0.126	0.360	0.872
Category=1	0.082	0.012	0.058	0.106	0.295	0.084	0.169	0.515
LSE								
Category=4	0.279	0.032	0.216	0.342	1.000	0.000	1.000	1.000
Category=3	0.226	0.030	0.167	0.285	1.000	0.000	1.000	1.000
Category=2	0.307	0.033	0.242	0.372	1.000	0.000	1.000	1.000

Table 18 Continued

	Probability	*SE*	LM	UM	OR	SE_{OR}	LM_{OR}	UM_{OR}
Category=1	0.188	0.029	0.131	0.245	1.000	0.000	1.000	1.000
HSE (reference=MSE)								
Category=4					1.000	0.000	1.000	1.000
Category=3					0.490	0.098	0.332	0.725
Category=2					0.682	0.123	0.479	0.972
Category=1					0.860	0.225	0.515	1.437

	Chi-square	*p*	*df*
Overall Test	44.767	<0.01	6
HSE vs. LSE	36.985	<0.01	3
MSE vs. LSE	19.209	<0.01	3
HSE vs. MSE	15.290	<0.01	3

Note. Category=4 means beginning teachers strongly disagreed that they thought about transferring to another school; Category=3 means beginning teachers somewhat disagreed that they thought about transferring to another school; Category=2 means beginning teachers somewhat agreed that they thought about transferring to another school; Category=1 means beginning teachers strongly agreed that they thought about transferring to another school.
SE: standard error; OR: odds ratio; LM: 95% confidence interval lower limit of log odds; UM: 95% confidence interval upper limit of log odds; LM_{OR}: 95% confidence interval lower limit of odds ratio; UM_{OR}: 95% confidence interval upper limit of odds ratio.

The estimated probabilities suggested that around 70% of HSE as well as MSE participants did not consider moving to other schools. On the other hand, this estimation for LSE participants was only around half. For LSE participants, the probabilities of thinking about transferring increased almost twice as much as HSE or MSE peers. Overall, it was found that

beginning teachers with an increasing level of self-efficacy were less likely to consider moving to another school.

LCA with Leaving Motivation

Leaving motivation was examined as a distal outcome in the last model. In Table 19, Chi-square tests indicated that teacher self-efficacy profiles statistically significantly differentiated beginning teachers' leaving motivation levels (p-value<0.01), and the differences across all classes of self-efficacy profiles were statistically significant (all p-values<0.05).

Results of the odds ratio tests are given in Table 19. Category=4 (beginning teachers strongly disagreed that they would leave teaching as soon as possible if they could get a higher paying job) was used as the reference to generate the odds and LSE class was employed to calculate the odds ratios. An example of the interpretations of the odds ratios was that the odds of HSE participants who responded as strongly agreeing rather than as strongly disagreeing the consideration of leaving for higher payment was 0.104 time of the odds of LSE participants. In other words, beginning teachers with a lower level of self-efficacy were more likely to think about leaving to pursue a high paying position during their first year of teaching.

The estimated probabilities suggested that around 80% of HSE as well as MSE participants did not consider leaving. In contrast, this estimation for LSE participants was lower and less than 70%. For LSE participants, the sum of the probabilities of thinking about leaving to different extents were over 30%, which was 1.5 times of that for either HSE or MSE participants. Overall, beginning teachers with an increasing level of self-efficacy were less likely to consider leaving for higher payment.

Table 19

Equality Tests of Probabilities across Classes on Leaving Motivation

	Probability	*SE*	LM	UP	OR	SE_{OR}	LM_{OR}	UM_{OR}
HSE (reference=LSE)								
Category=4	0.541	0.026	0.490	0.592	1.000	0.000	1.000	1.000
Category=3	0.264	0.023	0.219	0.309	0.319	0.069	0.208	0.489
Category=2	0.129	0.018	0.094	0.164	0.343	0.094	0.200	0.587
Category=1	0.066	0.013	0.041	0.091	0.291	0.104	0.145	0.587
MSE (reference=LSE)								
Category=4	0.471	0.022	0.428	0.514	1.000	0.000	1.000	1.000
Category=3	0.348	0.021	0.307	0.389	0.483	0.103	0.318	0.734
Category=2	0.134	0.014	0.107	0.161	0.408	0.108	0.243	0.684
Category=1	0.048	0.009	0.030	0.066	0.240	0.082	0.123	0.469
LSE								
Category=4	0.274	0.034	0.207	0.341	1.000	0.000	1.000	1.000
Category=3	0.420	0.036	0.349	0.491	1.000	0.000	1.000	1.000
Category=2	0.191	0.028	0.136	0.246	1.000	0.000	1.000	1.000
Category=1	0.115	0.025	0.066	0.164	1.000	0.000	1.000	1.000
HSE (reference=MSE)								
Category=4					1.000	0.000	1.000	1.000
Category=3					0.660	0.110	0.476	0.915
Category=2					0.839	0.184	0.546	1.291

Table 19 Continued

	Probability	*SE*	LM	UP	OR	SE_{OR}	LM_{OR}	UM_{OR}
Category=1					1.213	0.361	0.677	2.172
		Chi-square	*p*	*df*				
Overall Test		46.075	<0.01	6				
HSE vs. LSE		39.357	<0.01	3				
MSE vs. LSE		26.740	<0.01	3				
HSE vs. MSE		8.038	<0.05	3				

Note. Category=4 means beginning teachers strongly disagreed that they would leave teaching as soon as possible if they could get a higher paying job; Category=3 means beginning teachers somewhat disagreed that they would leave teaching as soon as possible if they could get a higher paying job; Category=2 means beginning teachers somewhat agreed that they would leave teaching as soon as possible if they could get a higher paying job; Category=1 means beginning teachers strongly agreed that they would leave teaching as soon as possible if they could get a higher paying job.
SE: standard error; OR: odds ratio; LM: 95% confidence interval lower limit of log odds; UM: 95% confidence interval upper limit of log odds; LM_{OR}: 95% confidence interval lower limit of odds ratio; UM_{OR}: 95% confidence interval upper limit of odds ratio.

CHAPTER V

CONCLUSIONS

The purposes of this dissertation are: (a) to investigate beginning teachers' preservice as well as in-service training profiles; and (b) to examine the relationships among teacher training, teacher self-efficacy, job satisfaction, and turnover motivation at the individual level. Many research studies have explained how these factors were interrelated to each other using a variable-centered approach to analyze data. Based on different research purposes, results from these studies contribute to understanding the prediction of interested outcomes, such as self-efficacy and job satisfaction, and develop the clarification of the associations between the factors in structural equations. Recently, researchers have started to use a person-centered approach to conduct studies on teachers (e.g., Drossel & Eickelmann, 2017; Eddy & Easton-Brooks, 2011). Generating the homogeneous subgroups not only resolved the concern about violating analytic assumptions faced by the classical variable-centered models, but also provided more insights to better understand the population. Bámaca-Colbert and Gayles (2010) conducted their research using both variable-centered and person-centered approaches. They found that although the findings from different analytic models were similar, their latent mixture models given in the person-centered approach were more informative. Therefore, this dissertation used the analytic models within a person-centered approach to research beginning teachers in the 2011-2012 SASS data. Using these models, the classes of beginning teachers who shared a similar pattern of attributes were classified, and the probabilities of particular class memberships were related to a set of indicators. Overall, results of this dissertation suggested that beginning teachers had different profiles of teacher training and self-efficacy. In addition, beginning teachers who were

better prepared by their preservice and in-service training were more likely to maintain high-level self-efficacy, which further resulted in their high-level job satisfaction and low-level turnover motivation during the first year of teaching.

Discussion

The first study examines beginning teachers' training profiles. Few studies examined educators' profiles using latent class analyses. The most relevant example was the examination of different types of principals by Urick and Bowers (2014) using the 1999-2000 SASS data. Their study found that the profiles of principals were related to the degree of principal and teacher leadership. The present study sought to provide additional contributions to this field by examining beginning teachers' training profiles. The results indicated that beginning teachers received different patterns of preservice as well as in-service training, and their preservice training was not significantly associated with the in-service training.

Beginning teachers' preservice training was differentiated by two perspectives, the completion of various teacher education components and the undergraduate majors. One commonality shared in the three distinctive preservice training profiles was a lack of completing reading coursework. Considering the Peter Effect, this finding helped to explain why teachers, no matter which subject area they focused on, struggled with literacy instruction as well as why a large proportion of students failed to read proficiently. Encouraging teacher candidates to complete more reading coursework could be an important piece of the puzzle to resolve the challenge of illiteracy faced by the entire education system.

Among a variety of developmental activities accessible to in-service teachers, the present study examined a selection of them to establish beginning teachers' in-service training profiles. The results suggested that having common planning time was important for beginning teachers,

because it significantly contributed to the differences across the three profiles. Research described common planning time as: (a) participants could be teachers from different subjects; (b) these teachers either plan and work together or teach the same students; and (c) the meeting was regularly scheduled (Flowers, Mertens, & Mulhall, 2003; Kellough & Kellough; 2008). Considering the SASS survey item, more specifically, the result of the present study emphasized the significance of common time with colleagues in the same subject area. Future studies could research whether the experience of instructing the same subject would better meet beginning teachers' needs for further development than the instructional experience across disciplines would.

The second study explores beginning teachers' self-efficacy profiles. Using multiple indicators constructed self-efficacy as a multifaceted factor and examined whether the reported levels of preparedness varied upon different perspectives of self-efficacy. Results indicated that there were three distinctive classes of beginning teachers' self-efficacy profiles. Around one fifth of the participants in this study struggled with maintaining high-level self-efficacy and reported that they felt less prepared on all the efficacy perspectives measured by SASS.

The association between teacher training and self-efficacy profiles is examined. The results showed that including teacher training did not change the classification of beginning teachers' self-efficacy profiles, and both preservice and in-service training significantly contributed to differentiating beginning teachers' self-efficacy. In general, the hypothesis was supported that at the individual level, sufficient teacher training led to high-level teacher self-efficacy during the first year of teaching. Furthermore, the results suggested that if beginning teachers received adequate preservice training, they were likely to have high-level self-efficacy regardless of their undergraduate majors. Meanwhile, beginning teachers who lacked common

planning time but had access to other types of developmental activities were likely to have a similar classification of teacher self-efficacy profiles as their peers without adequate participation in all developmental activities did.

In this study, the findings indicated that the completion of their coursework and field experience, rather than undergraduate major, were more inferential to teacher preparation. Therefore, school hiring committees may want to consider the quality of teacher preparation as an important index to evaluate candidates' readiness to instruct in classrooms. In addition, the findings showed the unique contribution of common planning time with colleagues in the same subject field to maintain high-level self-efficacy. Previous research suggested that common planning time was implemented to support inclusive environments and thus make teachers keep positive attitudes to their working environment (Hunter, Jasper, & Williamson, 2014; Warren & Muth, 1995). Legters, Adams, and Williams (2010) suggested that common planning time helped teachers center student needs and progress as their major responsibility, keep their instruction consistent while adjusted to in-class diversity, and establish a community for peer leaning and continuous progress. Common planning time contributed to reducing teacher turnover probabilities (Ingersoll & Smith, 2004) as well as promoting students' academic gains (Flowers, Mertens, & Mulhall, 2000). Therefore, McEwin and Greene (2010) recommended that teachers should be "provided at least one daily common planning period" (p. 52). Consistently, the findings of the present dissertation emphasized the necessity of common planning time to beginning teachers. Additionally, these findings extended previous research by indicating that without common planning time, beginning teachers struggled with maintaining their self-efficacy regardless of their participation in other types of developmental activities.

The association between school location and self-efficacy is also examined. According to the results using the binary coding of school location, the hypothesis that beginning teachers from urban schools struggled with high-level self-efficacy was supported. This finding was consistent with that of Siwatu (2011). Using the Teachers' Sense of Efficacy Scale data, Chang and Engelhard Jr. (2016) reported that the measurement quality of self-efficacy survey items was invariant in regards to school location. Therefore, the differences of reported teacher self-efficacy across school locations were less likely to be due to how the survey items were generated and selected, which further supported the relationship between school location and teacher self-efficacy. Overall, the findings from this dissertation and previous research called for attention to helping teachers maintain self-efficacy, especially for teachers in urban schools, which could be significant to be considered and implemented by policy makers and stakeholders.

The third study investigates beginning teachers' job satisfaction and turnover motivation. As expected, the results suggested that beginning teachers with a higher level of self-efficacy were more likely to have high-level job satisfaction and low-level turnover motivation. Many research studies examined the relationships among teacher self-efficacy, job satisfaction, and turnover (Caprara, Barbaranelli, Borgogni, Petitta, & Rubinacci, 2003; Caprara et al., 2006; Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2010; Viel-Ruma, Houchins, Jolivette, & Benson). Using variable-centered methods like regression, factor analysis, and structural equation modeling, their results have continuously reported a positive association between teacher self-efficacy and job satisfaction as well as a negative association between teacher self-efficacy and teacher turnover. The findings from the study in the present dissertation were consistent with previous research but further explained the relationships among three factors, teacher self-efficacy, job satisfaction, and turnover motivation, at the individual level. In other words, the

examination was conducted controlling for the homogeneity of teacher self-efficacy. In addition, the distribution of the likelihood that beginning teachers with distinctive self-efficacy profiles experienced a particular level of job satisfaction and turnover motivation was presented to better understand the outcomes associated with poor teacher training and low self-efficacy. Future research could examine the similar research questions using data that include teachers from different contexts and compare whether a shift would exist if teachers had more diverse self-efficacy profiles and if teachers transferred from one particular class of self-efficacy profiles to another.

Overall, considering the results of three studies in this dissertation as an integrated piece, support is provided to the overall hypothesis that beginning teachers who received better teacher training and did not work in urban schools tended to exhibit a high level of self-efficacy and a high level of job satisfaction as well as a low level of turnover motivation. All examinations are conducted at the individual level, which enables this dissertation to extend previous research and to contribute its unique significance.

Limitations

The three studies in the present dissertation relied on latent mixture modeling, which was innovative in the field of teacher education research. Although the results were informative, some limitations of the studies should be acknowledged. First, due to the features of the SASS survey items, all indicators were manipulated as binary variables. As a result, for latent constructs like profiles of teacher education and developmental activities, quantitative information of their related indicators was not accessible. For instance, among teacher candidates who completed some reading courses, it is impossible to know whether the distribution of the number of completed courses could be skewed. That is, whether the majority of teacher

candidates completed one or more reading courses is unpredictable. Similarly, a concrete number of how many teaching method courses should be completed as a baseline could not be generated for future recommendations. In other words, results of this dissertation serve as a general guideline and emphasize the necessity of a full coverage of teacher training.

Second, the categorical responses to the extents of feeling prepared, being satisfied, and planning for turnover could be arbitrary. The specific distance and difference between two adjacent categories could be subjective and variant. Meanwhile, response bias could be a challenge that is inevitable when using self-reported data for research because "the respondent wants to 'look good' in the survey, even if the survey is anonymous" (Rosenman, Tennekoon, & Hill, 2011, p. 321). Therefore, it should be cautious when referring to the results of probabilities as they were based on the specific sample in this dissertation.

Third, the study on self-efficacy included two types of covariates, teacher training and school context. It is important to notice that there are many other internal and external factors, which could be influential to the change of teacher self-efficacy. As reviewed before, a list of examples of these factors includes student behaviors, student academic achievements, personal issues, school climate, parental relationships, and so on. The substantial relationships between these impactors and the covariates included in this dissertation deserve further research. For instance, some additional factors may work as a mediator or a moderator on the relationships among the included covariates and teacher self-efficacy profiles.

Finally, the index of turnover motivation was not equivalent to beginning teachers' turnover ratio after their first year of teaching, which is beyond the research interest in the present dissertation. Multiple reasons aside from poor preparation and decreasing confidence could lead to teacher turnover. For example, teachers may have to transfer to another school or

permanently leave teaching because of family relocation or personal issues. The goal of this dissertation is to help educators understand the significance of adequate teacher training, since better-prepared teachers are likely to keep confident and satisfied with their jobs and stay in the field.

Conclusions

Through examinations with person-centered models, the dissertation supported the overall hypothesis that was proposed based on existing research using variable-centered models. Beginning teachers with adequate teacher training are more likely to be associated with high-level self-efficacy and thus have high job satisfaction and low turnover motivation. These conclusions were achieved at the individual level, which enabled beginning teachers to be classified into homogeneous subgroups sharing similar patterns of teacher training and self-efficacy. Presenting these profiles and their relationships with job satisfaction and turnover motivation indicates the important role of teacher training to prepare qualified teacher candidates as well as to keep teachers staying in the profession with sufficient confidence and satisfaction.

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