

**A Latent Class Analysis of Professional Development Opportunities for Special Education  
Teachers in Rural School Districts: Implications for Preventing Attrition**

Jordan Albright

Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University in  
partial fulfillment of the requirements for the degree of

**Doctor of Philosophy**

**In**

**Psychology**

Angela Scarpa, Committee Chair

Rosanna Breaux

Thomas Ollendick

Thomas Williams

May 6, 2022

Blacksburg, Virginia

Keywords: special education, rurality, professional development, job satisfaction, attrition

Copyright © Jordan Albright 2022

# **A Latent Class Analysis of Professional Development Opportunities for Special Education Teachers in Rural School Districts: Implications for Preventing Attrition**

Jordan Albright, M.S.

## **ACADEMIC ABSTRACT**

Although every state in the United States is experiencing a shortage of special education teachers, projections indicate that rural communities are disproportionately impacted (Levin et al., 2015). Despite professional development being widely identified in the literature as a possible method for improving teacher quality and readiness in rural schools, and thereby preventing teacher attrition, few studies have empirically examined the relationship between special education professional development experiences and attrition in rural schools. This project tested the hypothesis that early career professional development opportunities for rural special educators are related to job satisfaction and attrition. Data for this study came from the 2017-2018 National Teacher and Principal Survey (NTPS). Extraction of data from the NTPS data set isolated early career special education teachers working in rural communities. A latent class analysis (LCA) was used to identify a teacher typology concerning early career professional development, resulting in a two-class model, 'Greater Access to Professional Development' (Latent Class 1) and 'Less Access to Professional Development' (Latent Class 2). These two classes had similar access to a variety of professional development opportunities; however, those in the Greater Access to Professional Development class had greater access overall. Additional analyses examined whether LCA groups differed on measures of job satisfaction and attrition and found that teachers with greater access to professional development experiences report higher levels of job satisfaction than teachers with less access to professional development opportunities. Implications for these findings are described in detail.

# **A Latent Class Analysis of Professional Development Opportunities for Special Education Teachers in Rural School Districts: Implications for Preventing Attrition**

Jordan Albright, M.S.

## **GENERAL AUDIENCE ABSTRACT**

Every state in the United States is experiencing a shortage of special education teachers. Rural school districts are disproportionately impacted, meaning they are at greater risk for hiring underqualified special education teachers in an effort to address these shortages. Professional development is one way that school districts can improve teacher quality and readiness. This will help prevent turnover, because teachers will be better prepared to handle the challenges associated with their job. However, it is not clear which professional development opportunities are most impactful in terms of improving job satisfaction and preventing attrition. This project examined the relationship between professional development opportunities of special education teachers working in rural communities, job satisfaction, and attrition using data from a nationally representative data set. Results found that special education teachers fell into two groups, those with ‘Greater Access to Professional Development’ and those with ‘Less Access to Professional Development.’ These groups had similar access to various professional development opportunities; however, those in the ‘Greater Access to Professional Development’ group had greater access to professional development overall, and especially on preparing students to take annual assessments and analyzing and interpreting student achievement data. Results also found that teachers in the ‘Greater Access to Professional Development’ group reported higher levels of job satisfaction. These findings suggest that certain professional development opportunities can result in greater job satisfaction amongst rural special education teachers.

## **ACKNOWLEDGEMENTS**

I would like to acknowledge and thank the network of strong, brilliant women in academia who have provided me with much needed guidance, encouragement, and inspiration over the years. From my time at Northwest Missouri State University, I would like to thank Elizabeth Dimmitt and Drs. Carla Edwards and Alisha Francis. The foundational education they afforded me inspired a passion for psychology that started me off on this journey. From my time at Southern Illinois University, Edwardsville, I want to thank Dr. Elizabeth McKenney who helped foster my interest in school-based research. From my time working at the University of California, Los Angeles I would like to thank Dr. Elizabeth Laugeson. Her confidence in me and encouragement came at a critical time in my professional career and her mentorship was crucial to my development both as a clinician and research working with autistic youth. From my time at Virginia Tech, I would like to thank my mentor, Dr. Angela Scarpa. She has inspired my passion for community-based work, shared my enthusiasm for the intersection of clinical work, research, and service, and taught me the importance of kindness and empathy. I would like to thank the members of my lab for fostering a sense of community that always felt like a home away from home. I would like to thank my graduate cohort members from over the years, including Devin Barlaan M.S., Mia Tankersley M.S., Tyler McFayden M.S., and Dr. Ashley Muskett. There are not enough pages in this dissertation document to detail how much these women mean to me. I am a better clinician, researcher, and human being for having known each of them.

I would also like to thank the members of my doctoral dissertation committee, Drs. Rosanna Breaux, Thomas Ollendick, and Thomas Williams, for their support through the final

years of my graduate career. Their patience and guidance were so helpful to me throughout this process.

Last, but certainly not least, I am incredibly lucky and grateful to have a family who has supported me despite not always understanding what I was doing or where my professional pursuits were taking me. Without the love and encouragement from my parents, stepfather, and brothers, I would not have made it this far. I would specifically like to thank my mother, Connie Brinkmann, who has always pushed me to follow my passions and work hard for what I want. She is a shining example of this in her own work and an inspiration to me as I enter my post-graduate career.

## Table of Contents

|                                                                                    |             |
|------------------------------------------------------------------------------------|-------------|
| <b>Academic Abstract .....</b>                                                     | <b>ii</b>   |
| <b>General Audience Abstract .....</b>                                             | <b>iii</b>  |
| <b>Acknowledgements.....</b>                                                       | <b>iv</b>   |
| <b>List of Figures.....</b>                                                        | <b>viii</b> |
| <b>List of Tables .....</b>                                                        | <b>ix</b>   |
| <b>Chapter 1: Introduction .....</b>                                               | <b>1</b>    |
| 1.1 Effects of Federal Legislation on Special Education Teacher Preparedness ..... | 4           |
| 1.2 The Importance of Qualified Special Education Teachers.....                    | 6           |
| 1.3 Attrition Concerns in the Field of Special Education .....                     | 8           |
| 1.4 A Theoretical Examination of Teacher Attrition .....                           | 10          |
| 1.5 Challenges Faced by Rural School Districts .....                               | 15          |
| 1.6 Present Study.....                                                             | 17          |
| <b>Chapter 2: Method.....</b>                                                      | <b>19</b>   |
| 2.1 Participants.....                                                              | 19          |
| 2.2 Measures.....                                                                  | 20          |
| 2.3 Procedures .....                                                               | 23          |
| 2.4 Analytic Plan .....                                                            | 23          |
| <b>Chapter 3: Results.....</b>                                                     | <b>27</b>   |
| 3.1 Latent Class Analysis.....                                                     | 27          |
| 3.2 BCH 3-Step Approach .....                                                      | 29          |
| <b>Chapter 4: Discussion .....</b>                                                 | <b>30</b>   |
| 4.1 Limitations .....                                                              | 34          |

|                                    |           |
|------------------------------------|-----------|
| <b>Chapter 5: Conclusion .....</b> | <b>36</b> |
| <b>References .....</b>            | <b>37</b> |

## List of Figures

|                                  |    |
|----------------------------------|----|
| <a href="#"><u>Figure 1.</u></a> | 48 |
| <a href="#"><u>Figure 2.</u></a> | 49 |
| <a href="#"><u>Figure 3.</u></a> | 50 |
| <a href="#"><u>Figure 4.</u></a> | 51 |

**List of Tables**

[Table 1](#) ..... 52

[Table 2](#) ..... 54

[Table 3](#) ..... 61

[Table 4](#) ..... 62

[Table 5](#) ..... 63

[Table 6](#) ..... 64

## **Chapter 1**

### **I. Introduction**

In 1975, the Education for All Handicapped Children Act (EAHCA) was signed into law, providing federal financial aid to all states in an effort to ensure that students, age 3 to 21 years, with disabilities receive a “free appropriate public education” (Yell et al., 2011). As a result, the public-school system has emerged as one of the primary service delivery institutions for children with disabilities in the United States (Costello et al., 2014). In 2019, 7.1 million children received special education services, accounting for 14% of total enrollment (United States Department of Education, 2019). Within school settings, special education teachers are at the forefront of service delivery efforts, responsible for identification and articulation of student goals, organization and coordination of services for students with disabilities, assessment of student progress, communication with other service providers and family members, and provision of academic instruction. Given their critical role and potential impact on student achievement, the qualification standards of special education teachers are widely debated. Past federal legislation (i.e., No Child Left Behind, 2001) has articulated the need for teachers who are “highly qualified;” however, the Every Student Succeeds Act (2015) removed this specification, leaving the determination of teacher readiness up to states and local districts to decide. While studies have indicated the negative impact that underqualified teachers can have on student achievement (Scheuermann et al., 2003), a growing special education teachers shortage threatens the services that students with disabilities receive.

In the U.S., 49 states report special education teacher shortages (National Coalition on Personnel Shortages in Special Education and Related Services, 2016), teacher preparation program enrollment is at an all-time low (National Center for Education Statistics, 2016), and

employment rates for teachers have decreased substantially (Dewey et al., 2017). As a result, many states permit the hiring of unlicensed teachers in the event that qualified teachers are not available (Billingsley & Bettini, 2019). Although this attempt to address teacher shortages may appear effective in the short term, unlicensed special education teachers report less professional commitment and greater dissatisfaction with their jobs (Stempien & Loeb, 2002), resulting in higher rates of attrition (i.e., the rate at which teachers leave the profession; Conley & You, 2017).

Recent estimates suggest that the special education teacher attrition rate is at 17.1% nationwide; slightly higher than that of teacher attrition rates overall (16%; Carver-Thomas & Darling-Hammond, 2017; Goldring et al., 2014). The effects of teacher attrition are far reaching. Recent estimates suggest that states spend up to \$2.2 billion annually on teacher turnover (Haynes, 2014), as districts are forced to redirect financial resources away from long term retention efforts and towards recruitment and hiring initiatives (McLeskey & Billingsley, 2008). In addition to the economic impact, teacher attrition has also been found to negatively impact student achievement, the collaborative effectiveness of remaining teachers (Ronfeldt et al., 2013), and institutional knowledge about students and the school community (McLeskey & Billingsley, 2008).

Whereas special education teacher shortages are a concern nationwide, projections indicate that these shortages are growing in rural communities (Levin et al., 2015). Research has indicated that administrators in rural schools face greater challenges recruiting and retaining special education teachers with adequate qualifications than administrators in urban and suburban districts (Berry et al., 2011; Johnson & Strange, 2007; Purcell et al., 2005). These challenges are often attributed to the unique barriers faced by rural districts, including

remoteness (Antezana et al., 2017), a dearth of professional development resources (Mueller & Brewer, 2013), funding deficits (Harmon et al., 2007; Kosser et al., 2005), as well as the variability and complexity of teachers' caseload, which is a result of the lower incidence of disability categories in rural districts (Berry et al., 2011). In an effort to understand factors related to teacher retention in rural communities, Marrs (1984) identified the prospective types of teacher who choose to teach in rural communities, which include: individuals who grew up in rural communities and thus are familiar with and acclimated to the culture, individuals who are "place bound" and forced to teach in rural areas due to personal circumstance, and individuals who accepted teaching assignments in rural areas, but are ill-prepared for the realities of working in such a setting. Of these individuals, those in the first category (i.e., individuals who grew up in rural communities/familiar with rural culture) are the most likely to stay and teach long term. Thus, "grow your own" teacher preparation models have emerged as potential solutions to the issue of special education teacher shortages in hard-to-staff rural communities (Barrett et al., 2015; Carver-Thomas & Darling-Hammond, 2017; McCleskey & Billingsley, 2008).

The prevailing solution to ensuring that these "home grown" teachers are adequately qualified is found in accessible professional development (Barrett et al., 2015; Rude & Brewer, 2003). Although ongoing professional development has been widely identified in the literature as a possible method for improving teacher quality and readiness in rural schools, and thereby preventing teacher attrition, few studies have empirically examined whether special education professional development experiences are related to attrition in rural schools. Utilizing data from the 2015-16 National Teacher and Principal Survey Teacher Questionnaire (NTPS TQ; Appendix A), this study will seek to fill this crucial gap by: 1) classifying rural special education teachers based on their early career professional development experiences using latent class

analysis (LCA), and 2) comparing across identified groups on measures of professional satisfaction, including intent to remain in the teaching profession.

### **1.1 Effects of Federal Legislation on Special Education Teacher Preparedness**

Federal legislation has mandated the provision of special education services to students with disabilities for over 45 years, starting with the passage of the Elementary and Secondary Education Act (ESEA) of 1965, which was the first law to deliver federal funding to states for educational purposes. The first law to exclusively focus on addressing the needs of students with disabilities was the Education of the Handicapped Act (EHA), which was passed in 1970 and expanded federal support from the ESEA in order to fund teacher preparation programs for students with disabilities. In 1974, the EHA was amended, requiring states who received federal funding to provide “full educational opportunities” for students with disabilities (Yell, 2011). In 1975, the EHA was further amended to the Education for All Handicapped Children Act (EAHCA), which represented the most significant federal effort to ensure funding for special education services that the nation had seen. The EAHCA ensured that students with disabilities receive a free appropriate public education and that states and districts could receive federal financial aid in their effort to do so. In 1990, the EAHCA was reauthorized and renamed the Individuals with Disabilities Education Act (IDEA). With this change came the mandate that students with disabilities were to be educated alongside their non-disabled peers to the greatest extent possible (i.e., educated in the “least restrictive environment” suitable for needs). As a result of these federal policies, the public-school system in the United States grew to become one of the primary service providers for children with disabilities (Costello et al., 2014). Of the students with disabilities who were admitted to public schools at the time, nearly 3 million of them were not receiving services that appropriately met their needs (Zettel & Ballard, 1982).

Now, over 7 million children receive special education services through the public-school system, 64% of whom spend the majority of their time in general education classes (U.S. Department of Education, 2019).

In addition to targeting inclusion efforts, federal legislation has attempted to address concerns related to teacher preparedness and qualification in order to ensure high quality instruction for students with disabilities. One of the most notable pieces of federal legislation that attempted to do so was the No Child Left Behind Act (NCLB, 2002). While the main focus of NCLB was to improve student academic performance, a major specification of the law was that all teachers must be “highly qualified.” This requirement resulted in additional challenges for special education teacher preparation programs, as teachers now had to demonstrate content mastery of all subjects taught. Another unintended consequence of this requirement was the effect on special education teacher shortages.

There has been a documented dearth of qualified special educators since EAHCA was signed into law in the 1970’s (Dewey et al., 2017) and the NCLB requirement exacerbated this scarcity (Boe et al., 2006), resulting in the majority of states reporting special education teacher shortages (National Coalition on Personnel Shortages in Special Education and Related Services, 2016). In addition to existing shortages, estimates of enrollment in teacher preparation programs declined steadily over time (National Center for Education Statistics, 2016) and employment rates for special educations decreased, as well (Dewey et al., 2017). In 2015, the Every Student Succeeds Act (ESSA) was passed, removing the requirement for “highly qualified” teachers. However, the problem of teacher shortages persisted, with many states choosing to employ teachers with provisional licenses (i.e., who are not fully credentialled or licensed) in an effort to fill teaching positions (Billingsley & Bettini, 2019; Mastropieri et al., 2011). This is of

significant concern given the negative impact that underqualified special education teachers can have on a variety of student outcomes.

## **1.2 The Importance of Qualified Special Education Teachers**

In an effort to determine whether or not a teacher is “qualified,” states often use teacher licensure as a proxy. Licensure requirements are determined at the state level and are linked to teacher education and preparation programs, such that the approval and accreditation standards of these programs necessitate that they prepare their graduates to meet requirements for licensure (Sindelar et al., 2019). The Council for Exceptional Children (CEC; 2009) has provided standards for special education teacher preparation programs, which include mastering foundational knowledge, learner characteristics, and individual differences; instructional planning, strategies, and learning environments; assessment, communication, and collaboration; and professional ethics (CEC, 2009). Although these standards exist in order to ensure preparedness for licensure, there remains great variability in state-level approaches to the licensure process.

State licensure structures can traditionally be categorized into one of three classifications: categorical, generalist, or mixed model (Sindelar et al., 2019). In the early 1970’s, the categorical approach was most common (Sindelar et al., 2019). Within the categorical licensing structure, special education teachers received certification in distinct disability categories (i.e., learning disabilities, autism, etc.). By the 1980’s trends had shifted with many states retaining distinct disability categories but adding a noncategorical special education license option, as well (Sindelar et al., 2019). Other states eliminated categorical certifications altogether in an effort to replace this structure with a more “generalist” approach. The “mixed model” licensure structure eventually emerged as the most common approach, which involved offering a generic form of

licensure with some distinct categorical areas, as well. Regardless of the approach chosen, it is clear that identifying effective methods for preparing and retaining qualified teachers is of utmost importance to the field of special education. Sindelar and colleagues (2019) examined licensure policy documentation for all fifty states in an effort to identify the most recent trends in licensing structures in the U.S. Results of this review suggest that few states are offering a purely categorical approach. Similarly, there are few states offering “restricted” licenses with respect to grade bands, meaning that most states are trending towards full K-12 and generic licenses. When examining differences between licensure structures, results found no discernible impact on student outcomes. However, this is not the case for teachers who enter the profession unlicensed and thus underqualified.

Teachers who lack full certification are often granted provisional licensure, with the understanding that they will fulfill state licensure requirements in a pre-determined amount of time (Mastropieri et al., 2011). As a result, teachers enter the field who are not fully credentialed, with very limited teaching experience, and possibly no familiarity with special education at all. Recent estimates suggest that the percentage of teachers nationwide who lack full certification has increased gradually over the last decade (National Center for Education Statistics [NCES] & U.S. Department of Education, 2012; NCES & U.S. Department of Education, 2016).

The effects of under-qualified teachers on student outcomes are noteworthy. After controlling for students’ entry-level achievement, Sanders and colleagues (1996, 1998) found that students who were assigned to more qualified teachers showed significant gains on achievement measures when compared to students who were assigned to the least qualified teachers. More recent studies have indicated that teachers with greater experience and who are licensed, are more effective at improving student outcomes than those with less experience and

those who are unlicensed (Clotfelter et al., 2010; Goldhaber, 2007; Henry et al., 2014; Ladd & Sorensen, 2017; Papay & Kraft, 2015; Wiswall, 2013). In addition to having effects on student outcomes, unlicensed special education teachers are less likely to report commitment to their positions and more likely to report job dissatisfaction (Stempien & Loeb, 2002). In sum, while attempting to address special education teacher shortages by filling positions with underqualified personnel, this solution is contributing to poorer student outcomes and may also be contributing to higher rates of teacher attrition (Conley & You, 2017).

### **1.3 Attrition Concerns in the Field of Special Education**

Whereas the overall attrition rate for teachers in the U.S. is relatively high, it is even higher for special education teachers (17.1%; Carver-Thomas & Darling-Hammond, 2017; Goldring et al., 2014). Special education teacher attrition impacts nearly every aspect of the school setting, ranging from student achievement to collaborative professional relationships to global teacher effectiveness (Billingsley & Bettini, 2019). Drawing on data from the New York City Education Department, Ronfeldt, Loeb, and Wyckoff (2013) examined the effects of special education teacher turnover on student achievement and found that students do worse academically on years where there are higher turnover rates compared to years where there is less attrition. The negative effects of teacher turnover on student achievement were larger in schools with higher numbers of low-achieving and black students, thus indicating that teacher turnover is most harmful to students from historically underserved populations.

Teacher attrition can be broken down into three distinct types: those who leave the teaching profession, those who leave one school and migrate to another, and those who leave special education to move to general education. Several possible mechanisms have been proposed to explain the effects of teacher attrition on student achievement; however, a primary

focus of the literature has been on the “compositional explanation,” which posits that the effect of attrition is driven by the relative effectiveness of teachers who leave compared to those who remain teaching in the schools. This turnover impacts the global effectiveness of teachers in schools which in turn affects student outcomes. Using teacher experience and teacher migration as proxies for teacher quality, Ronfeldt et al. (2013) empirically examined this theory in order to determine whether changes in these metrics explained the harmful effects of turnover on student achievement. Examining the effects of turnover separately for teachers who were “stayers,” “movers,” and “rookies,” enabled them to examine the extent to which students of these groups experienced turnover differently. Results indicated that students of teachers who stayed (“stayers”) performed significantly worse when teacher attrition rates were higher. These findings provide evidence in support of the compositional explanation for attritions’ effect on student achievement and thereby illustrate the widespread negative effects of teacher attrition.

In addition to the noteworthy effects on student achievement, McLeskey and Billingsley (2008) highlight how the loss of experienced special education teachers can have lasting negative effects on collaborative partnerships amongst educators in schools. For example, when a qualified special education teacher leaves, either to go to a new school or to leave the field altogether, they take with them the trust, respect, and productivity that they worked to develop. While new teachers often work hard to establish similar collaborative relationships, remaining teachers are forced to start from scratch, which can be an exhaustive barrier to progress and problem solving. A study by Sindelar et al. (2006) found that teacher attrition majorly interfered with attempts to sustainably target inclusive school reform; as key members of the reform efforts left, they were replaced with less experienced educators who expressed less acceptance of inclusion.

High levels of attrition also come with an incredible economic cost. Recent estimates suggest that states spend over \$2 billion annually on teacher turnover (Haynes, 2014), as districts are forced to redirect financial resources away from long term retention efforts and towards recruitment and hiring initiatives (McLeskey & Billingsley, 2008). In an effort to identify the economic cost of teacher attrition, Milanowski and Odden (2007) collected cost of turnover data from a large urban school district in the Midwest, focusing on several components of cost of turnover, including cost of separation, replacement pay, and training of new hires. Results suggest that the average cost of severance in this district was \$3,200, the cost of replacement staffing was \$2,588 for the school, the cost of induction training was \$4,518, and the cost of ongoing training was \$3,940 per vacancy. Altogether, the total cost per teacher vacancy came to over \$15,000. Given the increasing attrition rates, these costs are notable and may exacerbate the negative effects of attrition on under-resourced school districts.

#### **1.4 A Theoretical Examination of Teacher Attrition**

Given the many negative effects of teacher attrition, several theoretical frameworks have been proposed in order to study and understand the phenomenon of special education teacher attrition. One of the primary causal mechanisms for teacher turnover is through burnout. Burnout occurs as the result of prolonged exhaustion and can lead to increased anxiety, depression, substance abuse, and health problems, as well as decreased self-esteem and work-related performance (Maslach et al., 2001; Melamed et al., 2006; Taris, 2008). According to conservation of resources theory, people work to acquire and retain resources in a work environment as this makes them more effective and successful at their job (Hobfoll & Shirom, 1993). When there are fewer resources available and higher demands placed on the individual, this leads to emotional exhaustion and cynicism (Hobfoll & Shirom, 1993). These ineffective

coping mechanisms contribute to a lack of personal accomplishment, which ultimately leads to burnout (Hobfoll & Shirom, 1993). While the cycle of burnout is critical to understanding teacher attrition; there are distinctive aspects of working in educational environments that uniquely contribute to this cycle that should be considered.

Brownell and Smith (1993) proposed a conceptual framework for teacher attrition and retention (see Figure 1). This model heavily incorporates Bronfenbrenner's (1976) ecological systems theory, as well as historical and external factors, in order to understand teachers' decision to stay in or leave their profession. According to Brownell and Smith's conceptual model, there are four interrelated 'systems,' including the microsystem, mesosystem, exosystem, and macrosystem. The microsystem is comprised of the teacher's immediate setting (i.e., classroom) and interactions between teachers and students. The mesosystem is comprised of broader workplace factors, including administrative support and coworker collegiality. The exosystem includes formal and informal structures, such as the socioeconomic status of the community and the characteristics of the broader school district. The macrosystem encompasses the cultural beliefs and ideologies of the culture, as well as broader economic conditions that impact schools. These systemic factors influence teacher's job satisfaction and commitment, which will in turn impact their decision to remain in the field or pivot elsewhere. In addition to these systemic influences, there are several historical factors (e.g., a teacher's commitment to teaching, teacher characteristics, training), and external factors (e.g., structure and characteristics of the labor market, economic or familial characteristics) that can impact the successful integration and retention of teachers, as well. Brownell and Smith (1993) also emphasize the importance of understanding the nested and transactional effect of many of these factors on teacher retention. For example, attempting to address the teacher retention problem is not as

simple as enacting federal legislation that results in increased funding for teachers, as other factors (e.g., individual teacher preparedness, school characteristics) may continue to have sustained effects.

In applying both the conservation of resources theory and Brownell and Smith's conceptual framework, there are several factors that emerge across system levels that influence teacher retention, ranging from individual factors (e.g., teacher preparation, affective coping) to workplace conditions (e.g., access to resources, nonteaching responsibilities, mentorship, compensation, school culture, administrative support). With respect to individual factors, studies suggest that those who received more extensive, high quality pre-teaching educational experiences remained in the field for longer (Burstein et al., 2009; Connelly & Graham, 2009). Additionally, teacher coping has also been associated with professional commitment to teaching assignment, commitment to their school, and overall levels of burnout (Bettini et al., 2017; Jones & Young, 2012). However, these individual characteristics are only part of the prevention and intervention picture. As Brownell and Smith (1993) indicated in their conceptual model for understanding teacher attrition, broader system-level factors can also significantly impact teacher job satisfaction and commitment, thereby effecting their decision to remain in the field.

Within this broader literature, factors such as school culture and administrative and collegial support have been examined as relevant contributors to special education teacher attrition (Billingsley & Bettini, 2019). School culture encompasses the social norms and values of a school, as well as assumptions and expectations about student, teacher, and administrator behavior (Jones et al., 2013). Jones and colleagues (2013) examined early career special education teachers' intent to stay in their profession as a function of perceived school-level "collective responsibility." Collective responsibility was measured by asking survey respondents

to indicate the proportion of teachers in their school who set high expectations for academic work, help maintain discipline in the school, and take responsibility for helping other teachers succeed, for improving teacher quality in the school, helping students develop self-control, and for ensuring all students learn. The presence of collective responsibility is especially important to early career special education teacher retention, as it is often what leads to more advanced teachers reaching out and providing support to novice teachers. This supportive school culture was hypothesized to be a contributing factor to early career teacher retention, and in fact, results indicated that collective responsibility was a significant predictor of early career special education teachers' commitment to the grade they were currently teaching. A similar study conducted by Conley and You (2017) used the 2007 – 2008 Schools and Staffing Survey data set to examine the influence of perceived collective responsibility and teacher team efficacy on special education teacher retention. Results suggested that special education teachers who rated higher on perceived collective responsibility indicated a greater work and career commitment, higher job satisfaction, and intent to remain in their current position than those who rated the perceived school culture as less collectively responsible.

One aspect of collective responsibility that has received increased attention in the literature is that of teacher support. Teacher support, whether it be from other teachers, administrators, or school staff, has also been linked to special education teacher retention (Berry, 2012; Kaff, 2004), with unique relations emerging depending on where the support is emanating from. For example, collegial support (i.e., the support between teachers), has been identified in the literature as a source of ongoing teacher education, as well as a source of emotional support. In Albrecht and colleagues' (2009) survey of over 700 teachers, results indicated that teachers who remained in their position for longer than two years reported greater access to collegial

support than those who left their positions. Similarly, Jones and colleagues (2013) found that collegial support is particularly important in early career special education teachers, such that it predicted intention to stay.

In addition to collegial support, administrative support has also been identified as a critical contributing factor to special education teacher retention (Berry, 2012; Cancio et al., 2013). This is due to the role that administrators play in facilitating a positive environment by supporting inclusivity, collaboration, and resource availability (Billingsley et al., 2017). Berry and colleagues' (2011) survey of rural special education administrators and teachers found a significant positive correlation between rural special education teachers' perceptions of administrator helpfulness and their intent to stay in the teaching profession. In a similar study conducted by Cancio, Albrecht, & Johns (2013), over 400 special education teachers were surveyed in an effort to define the role that administrative support plays in contributing to teacher attrition. Results indicated that administrator provided guidance and feedback, opportunities for growth, expressed appreciation, and trust were all moderately positively correlated with special education teacher job satisfaction. These characteristics of administrative support were also rated significantly higher in special education teachers who intended to stay in their position for longer. Similarly, in Berry and colleagues' (2011) survey of rural special education administrators and special educators, significant correlations were found between special education teacher perceptions of administrative helpfulness and intent to stay in the position.

Although administrator "helpfulness" can be measured in a number of ways, one metric that researchers use to illustrate this support is via provision of professional development opportunities (i.e., workshops, opportunities to learn). Professional development opportunities

are particularly important to consider when discussing teacher attrition, as teacher knowledge and skill are critical to feeling prepared to interface with students with special needs. For teachers who did not receive adequate pre-service training, professional development opportunities provide on-the-job preparedness and thus are highly valued by those in the field of special education (Gehrke & McCoy, 2007; Hagaman & Casey, 2018). The availability of professional development opportunities is therefore an important contributing factor to special education teacher retention efforts. Using group differences tests, several studies have indicated that special education teachers who intend to stay in their positions rated professional development opportunities as more important than teachers who have the intention to leave (Albrecht et al., 2009; Cancio et al., 2013). Unfortunately, few studies have empirically examined the link between specific professional development opportunities and teacher retention, thus illustrating an important area for future research. This is of particular relevance to rural school districts, where special education teachers face continuous challenges addressing the needs of students with low-incidence disabilities.

### **1.5 Challenges Faced by Rural School Districts**

In recent years there has been a substantial increase in research on rural education. Unfortunately, despite comprising a significant portion of the nation's school districts (Johnson & Strange, 2007), the sheer volume of urban- and suburban-focused research has tended to overshadow the concerns of rural communities (Wuthnow, 2013). As a result, rural school districts have remained under-examined relative to their urban and suburban counterparts across a variety of educational reform dimensions (Barrett et al., 2015), including the teacher attrition literature. This is concerning given that special education teacher shortages in rural districts are reported to be as high as 35%, which is over double the nation-wide turnover rate of 17.1% (Boe,

2006; Brownell et al., 2005; Carver-Thomas & Darling-Hammond, 2017; Goldring, Taie, & Riddles, 2014; Johnson & Strange, 2007).

Special education teacher attrition rates in rural school districts have been attributed to a number of factors. One primary concern is the difficult time that administrators in rural school districts have recruiting and retaining qualified special education teachers (Berry et al., 2011; Johnson & Strange, 2007; Purcell et al., 2005). While rural school districts present with several unique and appealing characteristics that would make teaching in these regions a viable option for many, there exists an equal or greater number of factors inimitable to rural districts that counter administrative hiring efforts. These factors include physical remoteness (Antezana et al., 2017), a dearth of resources and inability to access professional development (Mueller & Brewer, 2013), funding deficits (Harmon et al., 2007; Kosser et al., 2005), variability and complexity of special education teachers' caseloads (Berry et al., 2011; Harmon et al., 2007), and higher costs for providing care (Harmon et al., 2007; Hoppey, 2016). As a result, administrators in rural school districts are at risk for hiring greater numbers of underqualified special education teachers to their students' detriment (Mason-Williams et al., 2019).

In an effort to understand factors related to teacher retention in rural communities, Marrs (1984) identified the prospective types of special education teachers who would be amenable to working in rural settings, which include: individuals who are "place bound" and forced to teach in rural areas due to personal circumstance, individuals who accepted teaching assignments in rural areas but are ill-prepared for the realities of working in such a setting, and individuals who grew up in rural communities and thus are familiar with and acclimated to the culture. Of these groups, those in the final category (i.e., individuals who grew up in rural communities/familiar with rural culture) are the most likely to stay and teach long term. In fact, several studies

examining teacher placement patterns indicate that teachers end up within close geographical proximity to where they attended high school or college (Boyd et al., 2005; Fowles et al., 2014; Miller, 2012; Reininger, 2012). This is a particularly acute phenomenon in rural areas (Barrett et al., 2015). For example, a study by Fowles and colleagues (2014) found that teachers who received their baccalaureate degree from an academic institution in Appalachia were more likely to obtain first employment in that region. The prevailing solution to ensuring that these “home grown” teachers are adequately qualified is found in accessible professional development (Barrett et al., 2015; Rude & Brewer, 2003). Unfortunately, although ongoing professional development has been widely identified in the literature as a possible method for improving teacher quality and readiness in rural schools, and thereby theoretically preventing teacher attrition, few studies have empirically examined the relationship between professional development efforts and special education teacher attrition in rural school districts (Cegelka & Alvarado, 2000).

## **1.6 Present Study**

Utilizing a nationally representative data set (i.e., the 2017-18 NTPS TQ), the proposed study aims to address this gap in the literature by classifying rural special education teachers based on their early career (i.e., in their first 3 years of employment) professional development experiences using LCA. A focus will be placed on early career professional development opportunities as many studies have indicated that special education teachers have the highest likelihood of turnover within their first 5 years of teaching (Berry, 2012; Rude & Miller, 2018). Latent classes will then be compared on measures of job satisfaction and dissatisfaction. This project proposes to test the hypothesis that early career professional development opportunities for rural special educators are related to job satisfaction and intent to leave the teaching field.

Specifically, it is hypothesized that rural special educators who report exposure to more early career professional development opportunities will report greater professional satisfaction and a greater likelihood of remaining in the teaching field. These findings will provide a necessary first step in identifying which types of professional development opportunities are associated with professional satisfaction, professional dissatisfaction, and intent to leave their current position for novice rural special education teachers. These results will be useful in informing the development of teacher retention efforts that are unique to special education teachers working in rural communities.

## **Chapter 2**

### **2 Method**

#### **2.1 Participants**

The total sample included data from 190 novice special education teachers working in rural schools. The sample was primarily female (85.5%) and consisted of 94.3% White, 3.6% Black, 1.0% Asian, 0.5 % Native Hawaiian/Pacific Islander, and 3.1% American Indian/Alaska Native participants. The sample was 5.2% Hispanic. The sample had primarily an undergraduate degree (62.2%), a regular, standard, or advanced professional teaching certificate (72%), and were dispersed across primary, middle, high school, and combined schools, with slightly greater numbers of teachers in primary schools. See Table 1 for all descriptive statistics.

Data for this study came from the 2017-2018 National Teacher and Principal Survey (NTPS), further described below. Schools from the 2014-2015 Common Core of Data (CCD) Nonfiscal School Universe data file were sampled for the 2017-2018 NTPS (NCES, n.d.). In order to meet eligibility criteria, schools were defined as, “an institution or part of an institution that provides classroom instruction to students, has one or more teachers to provide instruction, serves students in one or more grades 1-12 or the ungraded equivalent, and is located in one or more buildings apart from a private home” (Taie & Goldring, 2017). Schools outside of the U.S., schools that teach only prekindergarten, kindergarten, or postsecondary students, and schools that do not offer teacher-provided classroom instruction were not included in sampling for the NTPS (NCES, n.d.). In addition to demographic variables (i.e., gender, race, age, employment status, level of education), several other variables were extracted from the larger NTPS data set in order to address the aforementioned research aims. Special education status, defined as teachers who teach students in any IDEA-recognized disability group, was extracted first.

Special education status is separate from the general education class codes and was extracted as a ‘content area.’ From there, teachers working in rural communities was extracted using the 4-level (i.e., cities, towns, suburbs, rural areas) urbanicity variable. Locale codes identify the geographic status of the school based on the school’s address (NCES, 2008). The assignment of locale codes is done by the U.S. Census Bureau’s Population Division (NCES, 2008). For this study, a rural designation was included data from schools that were identified as either rural fringe, rural distant, or rural remote by the Census Bureau (NCES, 2008). Rural fringe is defined as, “a census-defined territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory less than 2.5 miles from an urban cluster.” Rural distant is defined as, “a census-defined territory that is more than 5 miles but less than 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than 10 miles from an urban cluster.” Rural remote is defined as, “a census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster.”

Finally, ‘new teachers’ (i.e., teachers with three or fewer years of teaching experience) were extracted from the data set. The final sample included all early career special education teachers working in rural areas.

## **2.2 Measures**

### ***2017-2018 The National Teacher and Principal Survey Teacher Questionnaire***

The NTPS is a survey of public K-12 teachers and principals developed by the NCES and the Institute of Education Sciences (IES) within the U.S. Department of Education and was conducted by the U.S. Census Bureau. The NTPS is comprised of three questionnaires (i.e., the principal questionnaire, school questionnaire, and teacher questionnaire) that provide descriptive data on the conditions of elementary and secondary education in the U.S. Rotating modules are

also administered on a variety of other relevant topics, such as professional development, working conditions, and evaluations. The NTPS provides national and state level estimates and can support analyses of various subgroups including groups defined by strata (i.e., primary, middle, high, and combined schools), geographical location (i.e., urban, suburban, rural), and type (i.e., traditional public, charter). All data were imputed using IES procedures found in Taie and Goldring (2017). Data were not weighted for these analyses.

From this sample pool, fifteen variables from the ‘Early Career Experiences’ section of the NTPS were extracted and used as indicator variables for the latent classes of professional development experiences. The specific survey items that were selected inquired as to whether the teacher had participated in various professional development activities in the past 12 months, including planning lessons or courses with other teachers, consulting with other teachers about individual students, collaborating with other teachers on issues of instruction, receiving coaching or mentoring from other teachers or staff, participating in online professional development, participating in workshops, and attending conferences. For these survey items, responses were originally provided using a 4-point Likert scale with 1 indicating ‘Did not participate,’ 2 indicating, ‘Once or a few times a year,’ 3 indicating ‘Once or a few times a month,’ and 4 indicating ‘Once or a few times a week.’ Responses were recoded with 0 indicating ‘Did not participate,’ and 1 indicating ‘Did participate’ (i.e., original responses of 2 – 4). Additional survey items, including whether the teacher had participated in professional development related to their teaching assignment, on using technology to support instruction, teaching STEM, classroom and behavior management, instruction strategies to teach students with disabilities or IEPs, differentiated instruction, preparing students to take annual assignments, and on analyzing and interpreting student achievement data were also used as indicator variables. For these items,

responses were originally provided using a 5-point Likert scale with 1 indicating ‘Did not participate,’ 2 indicating, ‘8 hours or less,’ 3 indicating ‘9-16 hours,’ 4 indicating ‘17-32 hours,’ and 5 indicating ‘33+ hours.’ Responses were recoded with 0 indicating ‘Did not participate,’ and 1 indicating ‘Did participate’ (i.e., original responses of 2 – 5). The recoded dichotomous variables were used as indicators in the LCA. One noted limitation of the present study was the inability to account for all workplace and individual factors that may contribute to job satisfaction, dissatisfaction, and intention to leave their current position. Introducing additional indicator variables into the model beyond the fifteen focused on professional development opportunities would have substantially increased the number of model parameters, beyond what is appropriate given this study’s sample. However, this is a noted area for future study.

Several variables from the ‘School Climate and Teacher Attitudes’ section of the NTPS were extracted in order to gain insight into rural special education teachers’ professional satisfaction and dissatisfaction/intent to leave their current position. Specifically, teachers were asked to what extent they agreed or disagreed with statements using a 4-point Likert scale with 1 indicating ‘Strongly Disagree,’ 2 indicating ‘Somewhat Disagree,’ 3 indicating ‘Somewhat Agree,’ and 4 indicating ‘Strongly Agree.’ A total score for Job Satisfaction was calculated based on teacher responses on the following items: “The teachers at this school like being here; I would describe us as a satisfied group,” and “I like the way things are run at this school.” A total score for Job Dissatisfaction/Intent to Leave Position was calculated based on teacher responses to the following items: “The stress and disappointments involved in teaching at this school aren’t really worth it,” “If I could get a higher paying job I’d leave teaching as soon as possible,” “I think about transferring to another school,” “I don’t seem to have as much enthusiasm now as I

did when I began teaching,” and “I think about staying home from school because I’m just too tired to go.” For a full list of variables extracted from the full data set, see Table 2.

## **2.3 Procedures**

According to the NCES (n.d.), Teacher Listing Forms (TLF), which included the names of teachers, their full- or part-time teaching status, and subject(s) taught, were collected from sample schools. The teacher questionnaires (NTPS TQ) recruited teachers (defined as, “any staff who taught a regularly scheduled class to students in grades K-12 or comparable ungraded levels”) who worked at sampled schools who had been selected for the NTPS sample and had completed a TLF.

Mail- and internet-based reporting and telephone and in-person follow-up were used to collect NTPS data. In the summer of 2017, letters were mailed to sampled schools to verify eligibility, after which a package containing surveys and explanatory information was provided. The Census telephone center called sampled schools to verify school information, identify a survey coordinator, and follow up on the TLFs. Teachers were then mailed the NTPS TQs on a “flow basis.” The Census telephone centers would follow-up with the survey coordinator to ensure that all staff completed and returned the questionnaires. For teachers and principals who did not return their questionnaires, the Census telephone centers would follow-up with phone calls and in-person field visits as needed.

## **2.4 Analytic Plan**

### ***Data Editing***

According to methods published by the NCES (n.d.), each questionnaire within the NTPS was coded according to response (i.e., whether the questionnaire included a completed interview, respondent refused to complete, school closed) and interview status (i.e., whether it was an

interview, a non-interview, or if the respondent was ineligible). After compiling all data, a series of quality control checks were conducted, including range checks, consistency edits (i.e., identified inconsistent entries within each case and corrected them or deleted them if unable to correct), blanking edits (i.e., deleted answers to questions that should not have been filled in), and a logic edit (i.e., filled in some items where data were missing or incomplete by using other information from the same questionnaire or from other related data sources). After quality control checks were completed, eligibility of each case was determined. If eligible, cases were re-assessed to determine whether there were sufficient data to be classified as an interview and a final interview status recode value was assigned. For cases with “not-answered” items, values were imputed using two approaches. First, donor respondent methods (i.e., hot-deck imputation) were used to impute data. If no donor case could be matched, the remaining items with missing data were imputed using mean or mode from groups of similar cases. In cases for which imputed values were inconsistent with existing data or out of range of acceptable values, the Census Bureau analysts looked at the items and determined an appropriate value.

### ***LCA of Professional Development***

The primary research question was addressed using LCA (Hagenaars & McCutcheon, 2002), which assumes the presence of discrete, mutually exclusive latent groups or ‘classes’ based on input from dichotomous indicator variables. Latent class membership is determined by examining participant responses to the identified indicator variables, such that participants who respond to items in a similar fashion are grouped together. In this study, LCA was used to identify a teacher typology concerning early career professional development. The LCA drew on teacher response patterns on the 2017-2018 NTPS TQ to questions from the ‘Early Career Experiences’ section, which were specified above. The emerging latent classes were named

according to these responses and provided justification for further statistical analyses. To determine the accuracy of the classification of participants into latent classes, several model fit indices were used, including the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the sample size adjusted BIC (SABIC). First, a two-class model was attempted, and additional classes were added in a sequential fashion until arriving at the best model solution (i.e., the model with the lowest value for each fit index). In an effort to avoid concerns related to local maxima, the models were estimated with 200 random starts (Goodman, 1974). The results of the bootstrap likelihood ratio test (BLRT) were used to statistically test the appropriate number of latent classes. The BLRT (Dziak et al., 2014) provides a p-value, which if significant, indicates that a k-class model fits the data better than the k-1 class model. Classification quality was determined by examining the entropy values, which range from 0 to 1, with 0 indicating randomness and 1 indicating perfect classification (Collins & Lanza, 2010). The interpretability of the classes was also examined by evaluating the number of teachers assigned to each latent class (Nasiopoulou et al., 2017). This analysis was conducted using MPlus Version 8.7 statistical package (Muthén & Muthén, 1998-2019).

### ***Analyses of Job Satisfaction and Retention***

With latent class membership serving as the independent variable, job satisfaction and dissatisfaction were examined as dependent variables in a follow-up analysis. A total score for Job Satisfaction was calculated, with possible scores ranging from 2 to 8 ( $M=6.05$ ,  $SD=1.58$ ) and higher scores being indicative of greater satisfaction. A total score for Job Dissatisfaction was calculated, with scores ranging from 5 to 20 ( $M=9.41$ ,  $SD=3.84$ ) and higher scores being indicative of great dissatisfaction and intent to leave their current position. The total scores were calculated using IBM SPSS Statistics 28.0 statistical package.

A 3-step method proposed by Bolck, Croon, and Haenaars (2004) was then used to model class predictor effects. The BCH 3-step approach prevents shifting in latent classes during the final analytic stage, which other methods for estimating effects of latent classes on distal outcomes are susceptible to. Additionally, the BCH 3-step approach has shown better performance when classes are used to predict outcomes compared to other estimators. Using the BCH 3-step approach, first, a model was defined as described above. Then, the data were reweighted using weights that reflect measurement error of the latent class variable to correct for bias due to classification error and the means of the outcome variable were evaluated across classes. This analysis was conducted using MPlus Version 8.7 statistical package (Muthén & Muthén, 1998-2019).

## Chapter 3

### 3 Results

#### 3.1 Latent Class Analysis

The LCA model was fit to classify novice rural special education teachers into possible latent classes based on endorsement of professional development opportunities. In total, six models were estimated. Table 3 presents the model fit indices associated with each of the tested LCA models. Unfortunately, each model fit index indicated a different class model solutions. For example, the lowest value for the BIC indicates a two-class model solution, the SABIC indicates a four-class model solution, and the AIC suggests a five-class model solution. The p-value for BLRT was significant for the two- and three-class solution, but nonsignificant for the four-class model solution, thus suggesting that the three-class solution indicated the best classification of participants. Entropy values for all class solutions were high; however, the highest entropy score was also found for the three-class model. The interpretability of classes was also examined by evaluating the number of teachers assigned to each latent class. Generally, classes comprised of less than 10% of the total sample may suggest model instability. Table 4 presents final class counts and proportions for the latent classes. Results indicate that the three-, four-, and five-class models each have one class with less than 10% of the total sample. The two-class model was the only model with class sizes that suggested model stability. Ultimately, the two-class model was chosen as the model of best fit, as it had the lowest BIC value, a significant BLRT p-value, and a high entropy score.

Table 5 presents the probabilities of belonging to the two classes. Greater probability estimates on the diagonal suggest high probability of latent class membership, and thereby provide information regarding the accuracy of class assignment for participants. Results suggest

that the mean probability of teachers in Class 1 belonging to Class 1 is 0.958, whereas the estimated mean probability of belonging to Class 2 was very low, at only 0.042. Similarly, the mean probability of teachers in Class 2 belonging to Class 2 is 0.911, whereas the estimated mean probability of those same teachers belonging to Class 1 is also low, at 0.089. These probability estimates suggest that the two-class model provides accurate classification with minimal misclassification errors.

Table 6 provides the conditional probabilities for each professional development experience as estimated by the two-class model. Novice, rural special education teachers in latent Class 1 were most likely to have planned lessons or courses with other teachers (0.982), consulted with other teachers about individual students (1.00), collaborated with other teachers on issues of instruction (0.980), participated in online or web-based professional development (0.874), participated in a workshop (0.969), attended a conference (0.854), and received professional development on using technology to support instruction (0.973), classroom and behavior management (0.950), instruction strategies to teach students with disabilities or IEPs (1.00), and on differentiated instruction for all students (0.985). The indicators that most clearly distinguish the two classes are related to professional development on preparing students to take annual assessments and analyzing and interpreting student achievement data; however, a general theme when differentiating between the two classes is that Class 1 had higher conditional probability levels on all indicators, with the exception of professional development directly related to teaching assignment (Class 1 = 0.749, Class 2 = 0.874), the difference of which was negligible. As such, the two classes can be termed ‘Greater Access to Professional Development’ (Latent Class 1) and ‘Less Access to Professional Development’ (Latent Class 2). The profiles of

novice special education teachers working in rural communities are graphically depicted in Figure 2.

### **3.2 BCH 3-Step Approach**

To assess whether the ‘Greater Access to Professional Development’ and ‘Less Access to Professional Development’ groups differed in self-reported job satisfaction and job dissatisfaction/intent to leave their current position, classes were compared using the BCH 3-step approach. The groups differed in self-reported job satisfaction ( $\chi^2(1) = 4.379, p = 0.036$ ), such that teachers in the Greater Access to Professional Development class had higher total scores ( $M=6.267, SD=0.146$ ) than teachers in the Less Access to Professional Development class ( $M=5.706, SD=0.206$ ). The two groups did not differ in self-reports of job dissatisfaction and intent to leave their current position ( $\chi^2(1) = 0.984, p = 0.321$ ), as teachers in the Greater Access to Professional Development class had comparable total scores ( $M=9.66, SD=0.373$ ) to teachers in the Less Access to Professional Development class ( $M=9.024, SD=0.482$ ). Graphical depictions of these group differences are depicted in Figures 3 and 4, respectively.

## Chapter 4

### 4 Discussion

The aim of the current study was to empirically examine the relation between professional development opportunities and job satisfaction, professional dissatisfaction and intent to leave their current position. In an effort to do so, this study identified latent classes of rural special education teachers based on their early career professional development experiences. Understanding the typology of novice rural special education teachers' professional development experiences is a critical step to developing and evaluating targeted teacher retention efforts in rural communities. The findings from this study revealed two subgroups, namely the Greater Access to Professional Development (Class 1; higher conditional probability levels on nearly all indicators) group and the Less Access to Professional Development (Class 2) group. Teachers in the Greater Access to Professional Development group reported higher probabilities of participating in professional development that involved lesson planning with other teachers, consulting with other teachers about individual students, collaborating with other teachers on issues of instruction, receiving coaching/mentoring from other teachers, participating in online professional development opportunities, participating in a workshop, using technology to support instruction, classroom and behavior management, instruction strategies for students with IEPs/disabilities, differentiated instruction, preparing students to take annual assessments, and analyzing and interpreting student achievement data. Despite the decreased likelihood of participating in professional development opportunities overall, teachers in Class 2 have a greater probability of participating in professional development that is directly related to their teaching assignments than teachers in Class 1; however, the difference is negligible (i.e., difference in conditional probabilities of 0.125).

It is important to consider the entire profile of professional development opportunities when reflecting on how these experiences may contribute to the observed significant difference in self-reported job satisfaction. Results suggest that teachers who report high levels of job satisfaction have greater access to professional development experiences, overall. However, the indicators that most clearly distinguish between the classes are related to professional development on preparing students to take annual assessments and analyzing and interpreting student achievement data. In recent decades, test-based accountability policies have been enacted to address concern regarding education quality (Ryan et al., 2017). Student scores on state and national tests have been used as a metric for evaluating schools and as an indicator of teacher effectiveness (Baker et al., 2010). Indeed, many states have enacted policies in which teachers are punished or rewarded based on student test scores. This includes student test scores dictating teacher bonuses, tenure decisions, teacher evaluation guidelines, professional evaluation scores, and decisions to dismiss teachers due to ineffectiveness (Ryan et al., 2017; von der Embse et al., 2016). As a result, preparing students for annual assessments and analyzing and interpreting student achievement data are aspects of teaching that are often cited as causing increased stress (Saeki et al., 2018; von der Embse et al., 2016), and intent to leave the teaching field (Ryan et al., 2017). This is because these tasks come with limited decision making power and increased responsibilities (Bakker & Demerouti, 2007). Findings from the present study further contribute to this body of literature, such that there appears to be discrepant access to professional development experiences that are specifically focused on preparing teachers for the additional responsibilities of annual testing and assessments of student achievement. When considering where to intervene in order to address concerns related to teacher burnout and attrition, the Brownell and Smith (1993) framework suggests that exosystemic factors, including national

policy surrounding education, can have downstream effects on teacher satisfaction and willingness to remain in the profession. As such, states that currently utilize test-based accountability policies may choose to reconsider the use of student test performance as a metric of teacher quality and effectiveness, given the demonstrated impact on job satisfaction. This may be a particularly important consideration for states with more rural school districts, which are at disproportionate risk for special education teacher turnover (Boe, 2006; Brownell et al., 2005; Carver-Thomas & Darling-Hammond, 2017; Goldring, Taie, & Riddles, 2014; Johnson & Strange, 2007; Levin et al., 2015).

While attention to factors that drive class differences is critical to understand the reported differences in job satisfaction, it is also important to consider what type of professional development opportunities teachers have in common, as these experiences can be considered foundational experiences for novice teachers. Teachers across both classes are similar in their reported probability (i.e., differences in conditional probabilities less than 0.100) of participating in professional development that involves consultation with other teachers about individual students, coaching/mentoring from other teachers, and collaborating with other teachers on issues of instruction. These indicators are suggestive of professional development experiences that provide novice teachers with collegial support and reinforce the notion of collective responsibility. Collegial support, which provides both ongoing teacher education and a source for emotional support, is a social resource that has been examined as a relevant contributor to novice special education teacher attrition (Albrecht et al., 2009; Billingsley & Bettini, 2019; Jones et al., 2013). Similarly, collective responsibility is defined as a facet of school culture in which teachers share responsibility for student learning which they exemplify through collective efforts to improve instruction (Bettini et al., 2018). Collective responsibility has been associated both with

novice teachers' plans to remain in the field and with how manageable they perceive their workload to be (Jones et al., 2013). In some ways it is unsurprising that both classes report comparable probabilities of access to professional development opportunities that emphasize collegial support and collective responsibility. Unlike other forms of professional development that may require material or temporal resources that districts may not have access to, these experiences capitalize on social resources that are fiscally free (Bettini et al., 2018). As such, one low-cost way administrators can attempt to improve novice special education teachers' job satisfaction and commitment to their position is to create a culture where social resources and support are emphasized and reinforced. Per the Brownell and Smith (1993) framework, this would mean intervening at the mesosystemic and microsystemic level to create a school and classroom environment where teachers felt supported and connected to their colleagues.

An additional aim was to examine whether early career professional development opportunities for rural special educators were related to job dissatisfaction and intent to leave their current position. While results suggest that novice rural special education teachers have greater access to professional development opportunities report greater job satisfaction, there was no difference in self-reported job dissatisfaction and intent to leave their current position between teachers in the two classes. In fact, ratings of job dissatisfaction and intent to leave their current position were notably low across the two classes, with average scores of 9 on a scale with possible scores ranging from 5 to 20. This finding suggests that on average this sample was generally not dissatisfied and did not have great desire to leave their current position. There are several possible explanations for the lack of relationship between professional development opportunities, job dissatisfaction, and intent to leave their current position. An examination of class profiles indicates that, while teachers in Class 2 were less likely to access professional

development opportunities, conditional probabilities were not zero. In fact, many of the model indicators that reflected aspects of collegial support and collective responsibility had relatively high endorsements across both classes. It is therefore possible that these types of professional development experiences are protective against feelings of job dissatisfaction and intent to leave their teaching position. Additionally, while teachers in Class 2 were much less likely to access professional development on preparing students to take annual assessments and analyzing and interpreting student achievement data, it is possible that the lack of access to these types of professional development does not cause such significant dissatisfaction that it drives teachers to want to leave their current position.

#### **4.1 Limitations**

There are a number of limitations in the present study that deserve recognition when considering the interpretability of findings. The cross-sectional nature of data collection is one noted weakness of the present study. All data were collected at a single point in time, which limits the true predictive takeaways regarding the impact of professional development experiences on job satisfaction, dissatisfaction, and intent to remain in the teaching field. Future studies that utilize a longitudinal study design are needed to truly determine the effect that professional development opportunities can have on downstream job satisfaction, dissatisfaction, and intent to leave teaching positions. Additionally, the present study did not include a variety of individual factors (e.g., preteaching experiences, affective coping styles) and workplace conditions (e.g., nonteaching responsibilities, compensation, discal support, administrative trust) that have been tied to teacher attrition rates in the broader literature (Billingsley & Bettini, 2019), in an effort to limit the number of model parameters given the sample size. Future studies are needed to consider the impact of all factors that may impact teacher attrition rates, as this was

beyond the scope of the present study. It is also worth noting that all model indicators were recoded as dichotomous variables, such that responses were either ‘yes,’ teachers had experienced that professional development experience in the last year, or ‘no,’ they had not. This was also done to limit the number of model parameters given the sample size; however, it is possible that rich findings regarding the dosage of professional development opportunities was lost in the process. Future studies with larger samples may benefit from exploring these quantitative dimensions to determine not only whether certain types of professional development experiences are critical to improving job satisfaction and retention efforts, but what dosage of professional development opportunities are needed, as well. An additional limitation of the present study was the inability to compare across urban and suburban locales. It is possible that these findings are in fact not unique to rural communities and may be shared experiences of special education teachers working in other geographic regions. In fact, it is likely that experiences related to the need for professional development on preparing for preparing students to take annual assessments and analyzing and interpreting student achievement data are shared experiences regardless of geographical location of schools. However, it is possible that special education teachers working in rural schools may uniquely benefit from professional development opportunities that emphasize collegial support and collective responsibility, given the geographic isolation of rural schools. Unfortunately, exploring comparisons across rural, suburban, and urban schools was outside of the scope of this project; however, further research is needed in order to determine whether similar profiles of professional development across other geographical locales. Finally, data used for the present were not weighted due to discordance between the statistical software and the use of sampling weights, thereby limiting the sample size and interpretability of these findings.

## Chapter 5

### 5 Conclusion

Despite these limitations, this study provides several important findings with notable implications. Results suggest that there are heterogeneous typologies regarding the professional development experiences of novice rural special education teachers. Specifically, two classes emerged, suggesting that there are teachers who receive either greater access to professional development or less access to professional development, broadly. Notably, teachers across classes report comparable probabilities of accessing professional development experiences that emphasize collegial support and collective responsibility. This is likely due to the affordable and feasible nature of providing such professional development opportunities to novice teachers. The professional development experiences that most clearly distinguished between the classes are related to preparing students to take annual assessments and analyzing and interpreting student achievement data. Future efforts to improve job satisfaction and attrition rates in rural special education should thereby focus on providing access to professional development opportunities focused on enabling teachers to prepare students for annual assessments and to collect and interpret achievement data. In addition to elucidating a teacher typology concerning early career professional development, the present study confirmed that greater access to professional development opportunities is related to greater job satisfaction for novice rural special education teachers. These findings are necessary to informing future studies focused on developing and evaluating the efficacy and feasibility of targeted teacher retention efforts in rural communities, which remains an area of critical need.

## References

- Alarcon, G. M. (2011). A meta-analysis of burnout with job demands, resources, and attitudes. *Journal of Vocational Behavior*, 79(2), 549-562.
- Albrecht, S. F., Johns, B. H., Mounsteven, J., & Olorunda, O. (2009). Working conditions as risk or resiliency factors for teachers of students with emotional and behavioral disabilities. *Psychology in the Schools*, 46(10), 1006-1022.
- Antezana, L., Scarpa, A., Valdespino, A., Albright, J., & Richey, J. A. (2017). Rural trends in diagnosis and services for autism spectrum disorder. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.00590>
- Baker, E. L., Barton, P. E., Darling-Hammond, L., Haertel, E., Ladd, H. F., Linn, R. L., ... & Shepard, L. A. (2010). Problems with the Use of Student Test Scores to Evaluate szTeachers. EPI Briefing Paper# 278. *Economic Policy Institute*.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*.
- Barrett, N., Cowen, J., Toma, E., & Troske, S. (2015). Working with what they have: Professional development as a reform strategy in rural schools. *Journal of Research in Rural Education (Online)*, 30(10), 1.
- Berry, A. B., Petrin, R. A., Gravelle, M. L., & Farmer, T. W. (2011). Issues in special education teacher recruitment, retention, and professional development: Considerations in supporting rural teachers. *Rural Special Education Quarterly*, 30(4), 3-11.
- Berry, A. B. (2012). The relationship of perceived support to satisfaction and commitment for special education teachers in rural areas. *Rural Special Education Quarterly*, 31(1), 3-14.
- Bettini, E., Jones, N., Brownell, M., Conroy, M., Park, Y., Leite, W., ... & Benedict, A. (2017).

- Workload manageability among novice special and general educators: Relationships with emotional exhaustion and career intentions. *Remedial and Special Education*, 38(4), 246-256.
- Bettini, E. A., Jones, N. D., Brownell, M. T., Conroy, M. A., & Leite, W. L. (2018). Relationships between novice teachers' social resources and workload manageability. *The Journal of Special Education*, 52(2), 113-126.
- Billingsley, B. (2007). A case study of special education teacher attrition in an urban district. *Journal of Special Education Leadership*, 10, 11–20.
- Billingsley, B., & Bettini, E. (2019). Special education teacher attrition and retention: A review of the literature. *Review of Educational Research*, 89(5), 697-744.
- Billingsley, B. S. (1993). Teacher retention and attrition-in special and general education: A critical review of the literature. *The Journal of Special Education*, 27(2), 137-174.
- Boe, E.E., & Cook, L.H. (2006). The chronic and increasing shortage of fully certified teachers in special and general education. *Exceptional Children*, 72(4), 443-460.
- Bolck, A., Croon, M., & Hagenars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political analysis*, 12(1), 3-27.
- Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in schools with low-performing students. *American Economic Review*, 95(2), 166-171. doi:10.1257/000282805774669628
- Brownell, M. T., & Smith, S. W. (1993). Understanding special education teacher attrition: A conceptual model and implications for teacher educators. *Teacher Education and Special Education*, 16(3), 270-282.

- Burstein, N., Czech, M., Kretschmer, D., Lombardi, J., & Smith, C. (2009). Providing qualified teachers for urban schools: The effectiveness of the accelerated collaborative teacher preparation program in recruiting, preparing, and retaining teachers. *Action in Teacher Education*, 31, 24–37. doi:10.1080/01626620.2009.10463508
- Cancio, E. J., Albrecht, S. F., & Johns, B. H. (2013). Defining administrative support and its relationship to the attrition of teachers of students with emotional and behavioral disorders. *Education and Treatment of Children*, 71-94.
- Carver-Thomas, D., & Darling-Hammond, L. (2017). Teacher turnover: Why it matters and what we can do about it.
- Cegelka, P. A., & Alvarado, J. L. (2000). A best practices model for preparation of rural special education teachers. *Rural Special Education Quarterly*, 19(3-4), 15-29.
- Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects. *Journal of Human Resources*, 45(3), 655–681. <https://doi.org/10.1353/jhr.2010.0023>
- Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. New York, NY: Wiley.
- Connelly, V., & Graham, S. (2009). Student teaching and teacher attrition in special education. *Teacher Education and Special Education*, 32, 257–269. doi:10.1177/0888406409339472
- Conley, S., & You, S. (2017). Key influences on special education teachers' intention to leave: The effects of administrative support and teacher team efficacy in a mediational model. *Educational Management Administration, & Leadership*, 45, 521-540. doi:10.1177/1741143215608859
- Costello, E. J., He, J. P., Sampson, N. A., Kessler, R. C., & Merikangas, K. R. (2014). Services

- for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey–Adolescent. *Psychiatric Services*, 65(3), 359-366.
- Council for Exceptional Children. (2009). *What every special educator must know: ethics, standards, and guidelines for special education*. Council Exceptional Children.
- Dewey, J., Sindelar, P. T., Bettini, E., Boe, E. E., Rosenberg, M. S., & Leko, C. (2017). Explaining the decline in special education teacher employment from 2005 to 2012. *Exceptional Children*, 83(3), 315-329.
- Drossel, K., & Eickelmann, B. (2017). Teachers' participation in professional development concerning the implementation of new technologies in class: a latent class analysis of teachers and the relationship with the use of computers, ICT self-efficacy and emphasis on teaching ICT skills. *Large-scale Assessments in Education*, 5(1), 1-13.
- Dziak, J. J., Lanza, S. T., & Tan, X. (2014). Effect size, statistical power, and sample size requirements for the bootstrap likelihood ratio test in latent class analysis. *Structural Equation Modeling: A Multidisciplinary Journal*, 21(4), 534-552.
- Every Student Succeeds Act, 20 U.S.C. § 6301 (2015).
- Fowles, J., Butler, J. S., Cowen, J. M., Streams, M. E., & Toma, E. F. (2014). Public employee quality in a geographic context a study of rural teachers. *The American Review of Public Administration*, 44, 503- 521. doi:10.1177/0275074012474714
- Gehrke, R. S., & McCoy, K. (2007). Considering the context: Differences between the environments of beginning special educators who stay and those who leave. *Rural Special Education Quarterly*, 26(3), 32–40. doi:10.1177/875687050702600305
- Goldhaber, D. (2007). Teachers matter, but effective teacher quality policies are elusive. In H. F. Ladd, & E. B. Fiske (Eds.), *Handbook of research in education finance and policy* (pp.

- 146–165). Routledge.
- Goldring, R., Taie, S., & Riddles, M. (2014). *Teacher attrition and mobility: Results from the 2012-13 Teacher Follow-up Survey* (NCES 2014-077; National Center for Education Statistics, U.S. Department of Education). Washington, DC: Government Printing Office.
- Goodman, L. A. (1974). Exploratory latent structure analysis using both identifiable and unidentifiable models. *Biometrika*, 61(2), 215–231.
- Hagaman, J. L., & Casey, K. J. (2018). Teacher attrition in special education: Perspectives from the field. *Teacher Education and Special Education*, 41, 277–291.  
doi:10.1177/0888406417725797
- Hagenaars, J. A., & McCutcheon, A. L. (Eds.). (2002). *Applied latent class analysis*. Cambridge: Cambridge University Press.
- Harmon, H. L., Gordanier, J., Henry, L., & George, A. (2007). Changing teaching practices in rural schools. *The Rural Educator*, 28(2). <https://doi.org/10.35608/ruraled.v28i2.480>
- Haynes, M. (2014). On the path to equity: Improving the effectiveness of beginning teachers. *Alliance for Excellent Education*.
- Henry, G. T., Purtell, K. M., Bastian, K. C., Fortner, C. K., Thompson, C. L., Campbell, S. L., & Patterson, K. M. (2014). The effects of teacher entry portals on student achievement. *Journal of Teacher Education*, 65(1), 7–23. <https://doi.org/10.1177/0022487113503871>
- Hobfoll, S. E., & Shirom, A. (1993). Stress and burnout in the workplace: Conservation of resources. *Handbook of organizational behavior*, 1, 41-61.
- Hoppey, D. (2016). Developing educators for inclusive classrooms through a rural school-university partnership. *Rural Special Education Quarterly*, 35(1), 13–22.  
<https://doi.org/10.1177/875687051603500103>

- Johnson, J., & Strange, M. (2007). *Why rural matters 2007: The realities of rural education growth*. Rural School and Community Trust.
- Jones, N. D., & Youngs, P. (2012). Attitudes and affect: Daily emotions and their association with the commitment and burnout of beginning teachers. *Teachers College Record*, 114, 1–36.
- Kaff, M. S. (2004). Multitasking is multitaxing: Why special educators are leaving the field. *Preventing School Failure*, 48(2), 10-17.
- Kline, R. B. (2011). Convergence of structural equation modeling and multilevel modeling. In M. Williams & W.P. Vogt (Eds.), *The SAGE Handbook of Innovation in Social Research Methods* (pp.11-12). SAGE Publications Ltd.  
<https://dx.doi.org/10.4135/9781446268261.n31>
- Kosser, K., Mitchem, K., & Ludlow, B. (2005). No Child Left Behind: A national study of its impact on special education in rural schools. *Special Education Quarterly*, 24(1), 3-8.
- Ladd, H.F., & Sorensen, L.C. (2017). Returns to teacher experience: Student achievement and motivation in middle school. *Education Finance and Policy*, 12(2), 241-279.  
[https://doi.org/10.1162/EDFP\\_a\\_00194](https://doi.org/10.1162/EDFP_a_00194)
- Levin, J., Berg-Jacobson, A., Atchison, D., Lee, K., & Vontsolos, E. (2015). Massachusetts Study of Teacher Supply and Demand: Trends and Projections. *American Institutes for Research*. Retrieved from <https://www.air.org/resource/massachusetts-study-teacher-supply-and-demand-trends-and-projections>
- Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, 88, 767– 778.
- Marrs, L.W. (1984). A bandwagon without music: Preparing rural special educators. *Exceptional*

*Children*, 50, 334-342.

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397-422.

Mason-Williams, L., Bettini, E., Peyton, D., Harvey, A., Rosenberg, M., & Sindelar, P. T. (2019). Rethinking shortages in special education: Making good on the promise of an equal opportunity for students with disabilities. *Teacher Education and Special Education*. <https://doi.org/10.1177/0888406419880352>

Mastropieri, M. A., Scruggs, T. E., & Mills, S. (2011). Special education teacher preparation. *Handbook of special education*, 47-58.

McLeskey, J., & Billingsley, B. S. (2008). How does the quality and stability of the teaching force influence the research-to-practice gap? A perspective on the teacher shortage in special education. *Remedial and Special Education*, 29(5), 293-305.

Melamed, S., Shirom, A., Toker, S., Berliner, S., & Shapira, I. (2006). Burnout and risk of cardiovascular disease: evidence, possible causal paths, and promising research directions. *Psychological bulletin*, 132(3), 327.

Milanowski, A., & Odden, A. (2007). A new approach to the cost of teacher turnover (Working Paper 13; School Finance Redesign Project). Retrieved from [https://www.crpe.org/sites/default/files/wp\\_sfrp13\\_milanowskiodden\\_aug08\\_0.pdf](https://www.crpe.org/sites/default/files/wp_sfrp13_milanowskiodden_aug08_0.pdf)

Miller, L. (2012). Situating the rural teacher labor market in the broader context: A descriptive analysis of the market dynamics in New York state. *Journal of Research in Rural Education*, 27(13), 1-31. Retrieved from <http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/27-13.pdf>

Mueller, T. G., & Brewer, R. D. (2013). Rethinking professional development in rural

- communities for students with autism spectrum disorder. *Rural Special Education Quarterly*, 32(3), 11-19.
- Muthén, L. K., & Muthén, B. O. (1998-2019). Mplus users guide. 8th ed. Los Angeles, CA: Muthén & Muthén.
- Nasiopoulou, P., Williams, P., Sheridan, S., & Hansen, K. Y. (2017). Exploring preschool teachers' professional profiles in Swedish preschool: a latent class analysis. *Early Child Development and Care*.
- National Center for Education Statistics, & U.S. Department of Education. 2017–2018. Licensed microdata from the 2017-2018 National Teacher and Principal Survey (NTPS).
- National Center for Education Statistics. (n.d.) National Teacher and Principal Survey [Website]. Retrieved from <https://nces.ed.gov/surveys/ntps/methods-procedures1516.asp>
- National Center for Education Statistics (NCES) (U.S. Department of Education). 2011–2012. Licensed microdata from the 2011–2012 Schools and Staffing Survey (SASS).
- National Center for Education Statistics (NCES) (U.S. Department of Education). (2008). Documentation to the NCES Common Core of Data Public Elementary/Secondary School Locale Code File: School Year 2005-06. Retrieved from: <https://nces.ed.gov/ccd/pdf/sl051bgen.pdf>
- National Coalition on Personnel Shortages in Special Education and Related Services. (2016). Retrieved from <https://specialedshortages.org/>
- No Child Left Behind Act, Public Law No. 107-110, 20 U.S.C. § 6319 (2001).
- Papay, J. P., & Kraft, M. A. (2015). Productivity returns to experience in the teacher labor market: Methodological challenges and new evidence on long-term career improvement. *Journal of Public Economics*, 130, 105–119. <https://doi.org/10.1016/j>.

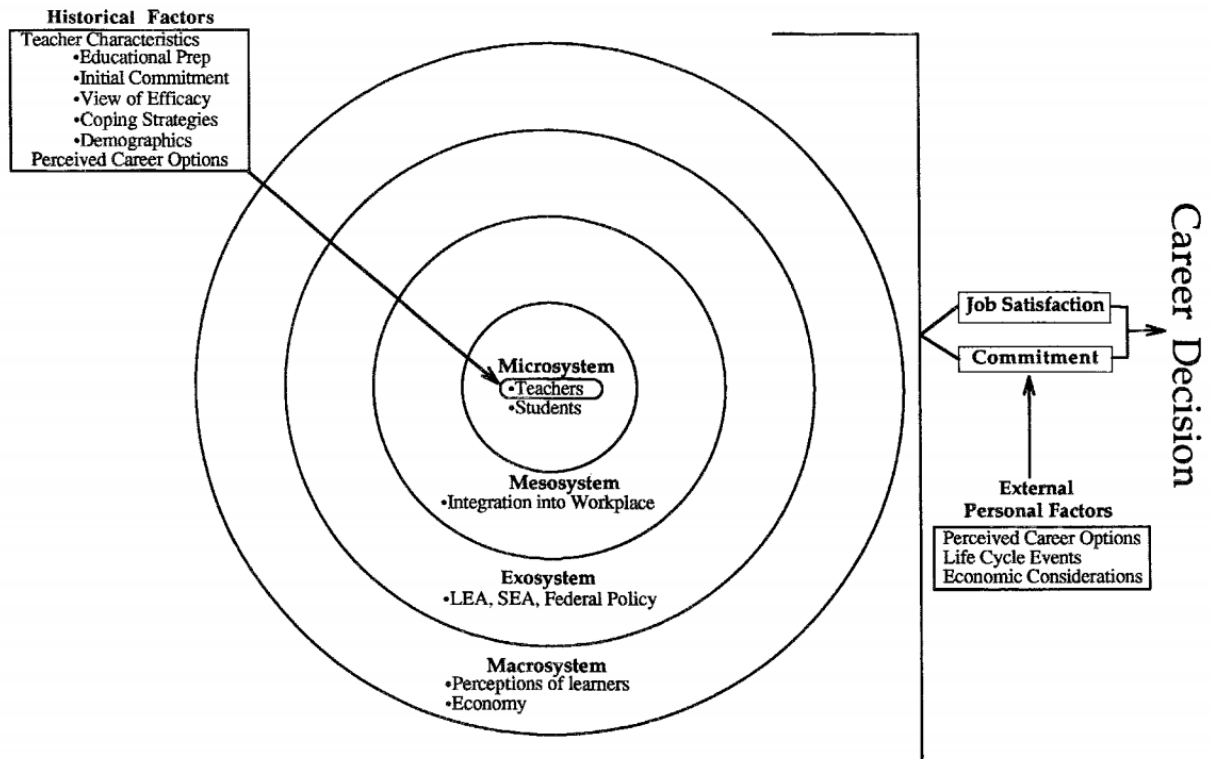
- Purcell, L. L., East, B., & Rude, H. A. (2005). Administrative perspectives on the No Child Left behind Act (NCLBA) for students with disabilities in rural settings. *Rural Special Education Quarterly*, 24(1), 27–31. <https://doi.org/10.1177/875687050502400106>
- Reininger, M. (2012). Hometown disadvantage? It depends on where you're from: Teachers' location preferences and the implications for staffing schools. *Educational Evaluation and Policy Analysis*, 34, 127-145. doi:10.3102/0162373711420864
- Ronfeldt, M., Loeb, S., & Wyckoff, J. (2013). How teacher turnover harms student achievement. *American Educational Research Journal*, 50, 4-36. doi:10.3102/0002831212463813
- Rude, H. A., & Brewer, R. D. (2003). Assessment of professional development systems: Improving rural special education services. *Rural Special Education Quarterly*, 22(4), 20-28.
- Rude, H., & Miller, K. J. (2018). Policy challenges and opportunities for rural special education. *Rural Special Education Quarterly*, 37(1), 21-29.
- Ryan, S. V., Nathaniel, P., Pendergast, L. L., Saeki, E., Segool, N., & Schwing, S. (2017). Leaving the teaching profession: The role of teacher stress and educational accountability policies on turnover intent. *Teaching and Teacher Education*, 66, 1-11.
- Saeki, E., Segool, N., Pendergast, L., & von der Embse, N. (2018). The influence of test-based accountability policies on early elementary teachers: School climate, environmental stress, and teacher stress. *Psychology in the Schools*, 55(4), 391-403.
- Sanders, W., & Horn, S. (1998). Research findings from the Tennessee Value-Added Assessment System (TVAAS) database: Implications for educational evaluation and research. *Journal of Personnel Evaluation in Education*, 12(3), 247-256.

- Sanders, W., & Rivers, J. (1996). Cumulative and residual effects of teachers on future student academic achievement. *Research Progress Report*. Knoxville: University of Tennessee Value-Added Research and Assessment Center.
- Scheuermann, B., Webber, J., Boutot, E. A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 18(3), 197–206. <https://doi.org/10.1177/10883576030180030801>
- Showalter, D., Klein, R., Johnson, J., & Hartman, S. L. (2017). Why Rural Matters 2015-2016: Understanding the Changing Landscape. A Report of the Rural School and Community Trust. *Rural School and Community Trust*.
- Sindelar, P. T., Fisher, T. L., & Myers, J. A. (2019). The landscape of special education licensure, 2016. *Teacher Education and Special Education*, 42(2), 101-116.
- Sindelar, P., Shearer, D. K., Yendol-Hoppey, D., & Liebert, T. W. (2006). The sustainability of inclusive school reform. *Exceptional Children*, 72(3), 317-331.
- Stempien, L. R., & Loeb, R. C. (2002). Differences in job satisfaction between general education and special education teachers: Implications for retention. *Remedial and Special Education*, 23(5), 258–267. <https://doi.org/10.1177/07419325020230050101>
- Taie, S., and Goldring, R. (2017). *Characteristics of public elementary and secondary schools in the United States: Results from the 2015–16 National Teacher and Principal Survey First Look* (NCES 2017-071). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved September 12, 2020 from: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017071>.
- Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress*, 20(4), 316-334.

- U.S. Department of Education, Office of Special Education Programs, Individuals with Disabilities Education Act (IDEA) database, retrieved February 20, 2020, from <https://www2.ed.gov/programs/osepidea/618-data/state-level-data-files/index.html#bcc>
- von der Embse, N.P, Sandilos, L.E., Pendergast, L., & Mankin, A. (2016). Teacher stress, teaching-efficacy, and job satisfaction in response to test-based educational accountability policies. *Learning and Individual Differences*, 50, 308-317.
- Wiswall, M. (2013). The dynamics of teacher quality. *Journal of Public Economics*, 100, 61–78. <https://doi.org/10.1016/j.jpubeco.2013.01.006>
- Wuthnow, R. (2013). *Small-town America: Finding community, shaping the future*. Princeton, NJ: Princeton University Press.
- Yell, M. L., Crockett, J. B., Shriner, J. G., & Rozalski, M. (2011). Free appropriate public education. *Handbook of special education*, 77-90.
- Zettel, J.J. & Ballard, J. (1982). The Education for All Handicapped Children Act of 1975 (P.L. 94-142): It's history, origins, and concepts. In J. Ballard, B. Ramirez, & F. Weintraub (Eds.), *Special education in America: Its legal and governmental foundations* (pp. 11-22). Reston, VA: Council for Exceptional Children.

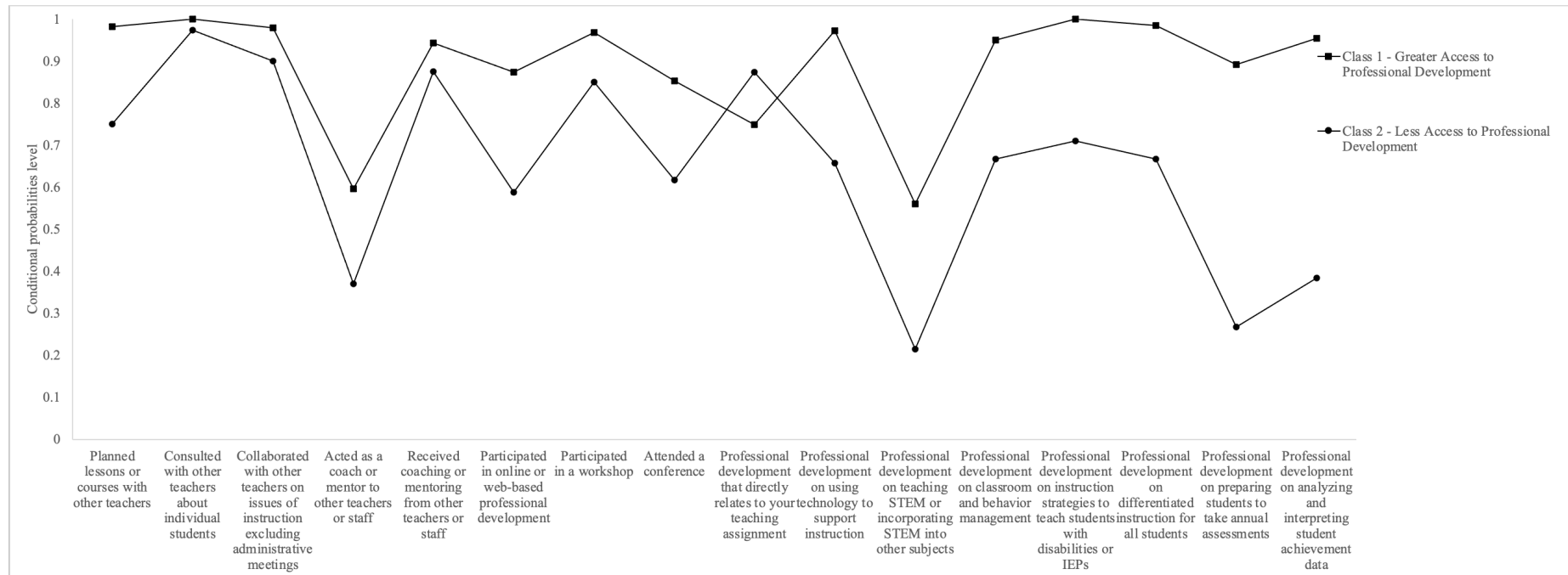
**Figure 1.**

*Conceptual Framework for Understanding Teacher Attrition/Retention (Brownell & Smith, 1993)*



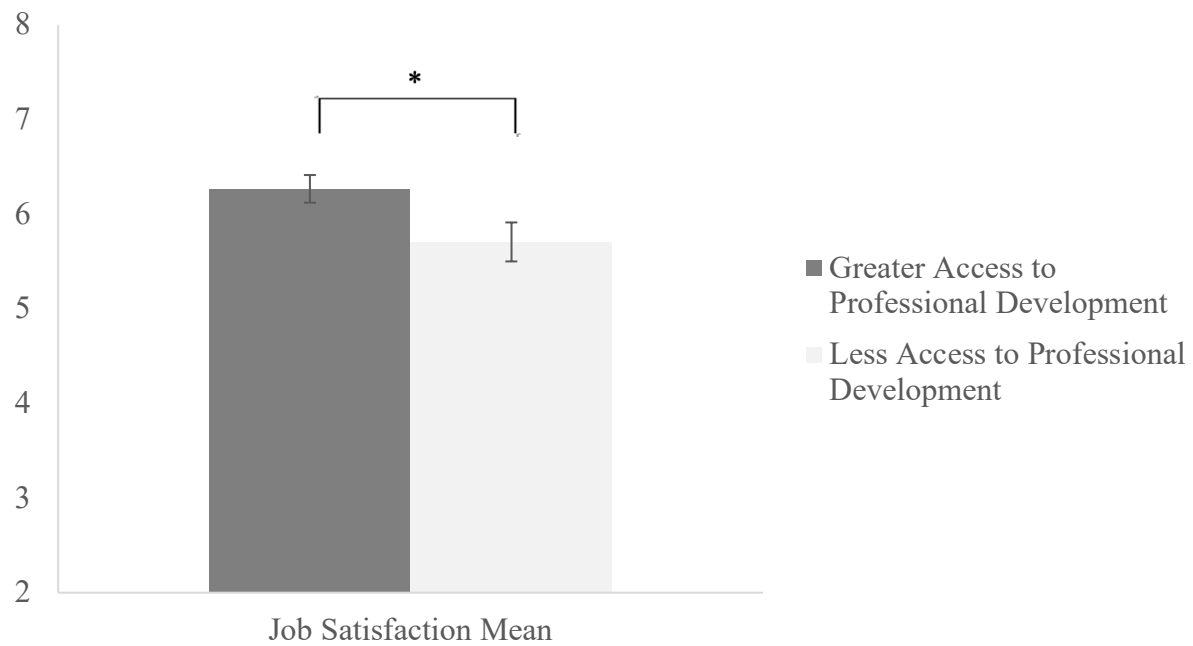
**Figure 2.**

*Graphical depiction of the latent classes according to conditional probability level by the two-class model solution*



**Figure 3.**

*Mean measure of job satisfaction across latent classes*



**Note.** Fig. 3 shows mean differences in job satisfaction total scores for the two latent classes.

\* Significant difference at the  $p < 0.05$  level

**Figure 4.**

*Mean measure of job dissatisfaction across latent classes*



**Note.** Fig. 4 shows mean differences in job dissatisfaction total scores for the two latent classes.

**Table 1***Descriptive Statistics (N = 190)*

|                                  |                   |
|----------------------------------|-------------------|
| <b>Age M(SD)</b>                 | 33.38 (10.61)     |
| <b>Gender</b>                    | <b>Percentage</b> |
| Male                             | 14.5              |
| Female                           | 85.5              |
| <b>Race</b>                      |                   |
| White                            | 94.3              |
| Black                            | 3.6               |
| Asian                            | 1                 |
| Native Hawaiian/Pacific Islander | 0.5               |
| American Indian/Alaska Native    | 3.1               |
| <b>Ethnicity</b>                 |                   |
| Hispanic                         | 5.2               |
| Non-Hispanic                     | 94.8              |
| <b>School Level</b>              |                   |
| Primary School                   | 37.3              |
| Middle School                    | 19.7              |
| High School                      | 20.7              |
| Combined                         | 22.3              |
| <b>Degree Earned</b>             |                   |
| Associate's degree or No degree  | 1.0               |
| Bachelor's degree                | 62.2              |

|                 |      |
|-----------------|------|
| Master's degree | 31.1 |
|-----------------|------|

|                                                                  |     |
|------------------------------------------------------------------|-----|
| Education Specialist or Certificate of Advanced Graduate Studies | 5.7 |
|------------------------------------------------------------------|-----|

**Certification**

|                                                                |      |
|----------------------------------------------------------------|------|
| Regular or Standard State Certificate or Advanced Professional | 72.0 |
|----------------------------------------------------------------|------|

|             |  |
|-------------|--|
| Certificate |  |
|-------------|--|

|                          |     |
|--------------------------|-----|
| Probationary Certificate | 9.3 |
|--------------------------|-----|

|                                   |      |
|-----------------------------------|------|
| Temporary/Provisional Certificate | 13.5 |
|-----------------------------------|------|

|                              |     |
|------------------------------|-----|
| Waiver/Emergency Certificate | 3.1 |
|------------------------------|-----|

|       |     |
|-------|-----|
| Other | 2.1 |
|-------|-----|

---

**Table 2***Variable Specification Chart*

| Measure                  | Questionnaire Items (VARIABLE NAME)                                                                    | Response Options                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Full/Part Time           | NCES/IES created variable (FTPT)                                                                       | 1 = Regular full-time teacher<br>2 = Not full-time teachers |
| Main Teaching Assignment | NCES/IES created variable (ASSIGN03)                                                                   | 2 = Special Education                                       |
| Experience               | NCES/IES created variable (NEWTCH)                                                                     | 1 = $\leq$ 3 years experience<br>2 = $>$ 3 years experience |
| Gender                   | Are you male or female? (t0924)                                                                        | 0 = Male<br>1 = Female                                      |
| Age                      | NCES/IES created variable (AGE_T)                                                                      |                                                             |
| School Level             | NCES/IES created variable (TEALEV)                                                                     | 1 = Elementary<br>2 = Secondary<br>3 = High<br>4 = Combined |
| Race/Ethnicity           | NCES/IES created variable (RACETH_T)                                                                   |                                                             |
|                          | Combines the following:                                                                                |                                                             |
|                          | <ul style="list-style-type: none"> <li>Are you of Hispanic or Latino origin? (0928; yes/no)</li> </ul> |                                                             |

- What is your race? (0929-0933; White, Black or African-American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native)

|                   |                                                                                                                                |                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Degree Attainment | NCES/IES created variable (HIDEGR)                                                                                             | <p>1 = Associate's degree or no college degree</p> <p>2 = Bachelor's degree</p> <p>3 = Master's degree</p> <p>4 = Education specialist or Certificate of Advanced Graduate Studies</p> <p>5 = Doctorate or Professional degree</p> |
| Certification     | Which of the following describe the teaching certificate you currently hold that certified you to teach in THIS state? (t0401) | <p>1 = Regular or standard state certificate or advanced professional certificate</p> <p>2 = Probationary certificate</p> <p>3 = Temporary/Provisional Certificate</p> <p>4 = Waiver/Emergency Certificate</p>                     |

|                                     |                                                                                                                                                  |                                                          |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Alternative certification           | <i>Did you enter teaching through an alternative route to certification program? (t0400)</i>                                                     | 0 = No<br>1 = Yes                                        |
| Urban-Centric Local Code – District | NCES/IES created variable (URBAND12)                                                                                                             | 1 = City<br>2 = Suburb<br>3 = Town<br>4 = Rural          |
| Urban-Centric Local Code – School   | NCES/IES created variable (URBANS12)                                                                                                             | 1 = City<br>2 = Suburb<br>3 = Town<br>4 = Rural          |
| Teacher professional development    | <i>During the past 12 months, how frequently, if at all, did you participate in each of the following professional development activities...</i> |                                                          |
|                                     | <i>Planned lessons or courses with other teachers (t2600)</i>                                                                                    | Recoded as<br>0 Did not participate<br>1 Did participate |
|                                     | <i>Consulted with other teachers about individual students (t2601)</i>                                                                           | Recoded as<br>0 Did not participate<br>1 Did participate |

|                                                                                                                                                  |                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <i>Collaborated with other teachers on issues of instruction excluding administrative meetings (t2602)</i>                                       | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>Acted as a coach or mentor to other teachers or staff (t2603)</i>                                                                             | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>Received coaching or mentoring from other teachers or staff (t2604)</i>                                                                       | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>Participated in online or web-based professional development (t2605)</i>                                                                      | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>Participated in a workshop (t2606)</i>                                                                                                        | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>Attended a conference (t2607)</i>                                                                                                             | Recoded as<br>0 Did not participate<br>1 Did participate |
| <i>During the past 12 months, how many HOURS, if any, did you spend participating in any of the following types of professional development?</i> |                                                          |
| <i>Professional development that directly relates to your teaching assignment (t2608)</i>                                                        | Recoded as<br>0 Did not participate                      |

|                                                                                                               |                                     |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------|
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on using technology to support instruction (t2609)</i>                            | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on teaching STEM or incorporating STEM into other subjects (t2610)</i>            | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on classroom and behavior management (t2611)</i>                                  | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on instruction strategies to teach students with disabilities or IEPs (t2612)</i> | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on differentiated instruction for all students (t2613)</i>                        | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on preparing students to take annual assessments (t2614)</i>                      | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |
| <i>Professional development on analyzing and interpreting student achievement data (t2615)</i>                | Recoded as<br>0 Did not participate |
|                                                                                                               | 1 Did participate                   |

|            |                                                                                                           |                                                                              |
|------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Teacher    | <i>To what extent do you agree or disagree with the</i>                                                   |                                                                              |
| Engagement | <i>following statements about your work at this school?</i>                                               |                                                                              |
|            | <i>The stress and disappointments involved in teaching at this school aren't really worth it. (t2700)</i> | 1 Strongly Disagree; 2 Somewhat Disagree; 3 Somewhat Agree; 4 Strongly Agree |
|            | <i>The teachers at this school like being here; I would describe us as a satisfied group. (t2701)</i>     | 1 Strongly Disagree; 2 Somewhat Disagree; 3 Somewhat Agree; 4 Strongly Agree |
|            | <i>I like the way things are run at this school. (t2702)</i>                                              | 1 Strongly Disagree; 2 Somewhat Disagree; 3 Somewhat Agree; 4 Strongly Agree |
|            | <i>If I could get a higher paying job I'd leave teaching as soon as possible. (t2703)</i>                 | 1 Strongly Disagree; 2 Somewhat Disagree; 3 Somewhat Agree; 4 Strongly Agree |
|            | <i>I think about transferring to another school. (t2704)</i>                                              | 1 Strongly Disagree; 2 Somewhat Disagree; 3 Somewhat Agree; 4 Strongly Agree |

|                                                         |                            |
|---------------------------------------------------------|----------------------------|
| <i>I don't seem to have as much enthusiasm now as I</i> | 1 Strongly Disagree; 2     |
| <i>did when I began teaching. (t2705)</i>               | Somewhat Disagree; 3       |
|                                                         | Somewhat Agree; 4 Strongly |
|                                                         | Agree                      |
| <i>I think about staying home from school because</i>   | 1 Strongly Disagree; 2     |
| <i>I'm just too tired to go. (t2706)</i>                | Somewhat Disagree; 3       |
|                                                         | Somewhat Agree; 4 Strongly |
|                                                         | Agree                      |

---

*Note.* NCES = National Center for Education Statistics; IES = Institute for Education Statistics

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey, "Public School Teacher Data File," 2017-2018.

**Table 3.***Fit indices for LCA with different numbers of latent classes*

| Classes     | No. of Free<br>Parameters | BIC     | SABIC   | AIC     | Entropy | BLRT<br>( <i>p</i> -value) |
|-------------|---------------------------|---------|---------|---------|---------|----------------------------|
| Two-class   | 33                        | 2641.16 | 2536.63 | 2533.50 | 0.794   | 0.000                      |
| Three-class | 50                        | 2673.74 | 2515.35 | 2510.60 | 0.854   | 0.000                      |
| Four-class  | 67                        | 2722.54 | 2510.31 | 2503.94 | 0.833   | 0.095                      |
| Five-class  | 84                        | 2777.89 | 2511.80 | 2503.83 | 0.832   | 0.333                      |
| Six-class   | 101                       | 2842.15 | 2522.21 | 2512.62 | 0.848   | -                          |

**Table 4.***Final class counts and proportions for the latent classes**based on the estimated model (N=190)*

| <b>Model</b>  | <b>Classes</b> | <b>Percentage</b> |
|---------------|----------------|-------------------|
| 2 Class Model | Class 1        | 60.75             |
|               | Class 2        | 39.25             |
| 3 Class Model | Class 1        | 38.26             |
|               | Class 2        | 54.13             |
|               | Class 3        | 7.61              |
| 4 Class Model | Class 1        | 53.65             |
|               | Class 2        | 3.20              |
|               | Class 3        | 28.89             |
|               | Class 4        | 14.26             |
| 5 Class Model | Class 1        | 18.63             |
|               | Class 2        | 51.82             |
|               | Class 3        | 14.96             |
|               | Class 4        | 3.21              |
|               | Class 5        | 11.37             |

**Table 5.**

*Average probabilities for most likely latent class*

*membership (row) by latent class (column)*

| Probability of being in | Class 1 | Class 2 |
|-------------------------|---------|---------|
| Class 1                 | 0.958   | 0.042   |
| Class 2                 | 0.089   | 0.911   |

**Table 6.**

*Conditional probability of answering ‘Yes’ of the PD indicators estimated by the four-class LCA measurement models*

| <b>Variables</b> | <b>Label</b>                                                                                                   | <b>Class 1</b> | <b>Class 2</b> | <b>Differences in Conditional<br/>Probability (Class 1 – Class 2)</b> |
|------------------|----------------------------------------------------------------------------------------------------------------|----------------|----------------|-----------------------------------------------------------------------|
| T2600            | <i>Planned lessons or<br/>courses with other<br/>teachers</i>                                                  | 0.982          | 0.75           | 0.232                                                                 |
| T2601            | <i>Consulted with other<br/>teachers about individual<br/>students</i>                                         | 1              | 0.974          | 0.026                                                                 |
| T2602            | <i>Collaborated with other<br/>teachers on issues of<br/>instruction excluding<br/>administrative meetings</i> | 0.980          | 0.900          | 0.08                                                                  |
| T2603            | <i>Acted as a coach or<br/>mentor to other teachers<br/>or staff</i>                                           | 0.597          | 0.370          | 0.227                                                                 |
| T2604            | <i>Received coaching or<br/>mentoring from other<br/>teachers or staff</i>                                     | 0.944          | 0.876          | 0.068                                                                 |

|       |                                                                                                                   |       |       |        |
|-------|-------------------------------------------------------------------------------------------------------------------|-------|-------|--------|
| T2605 | <i>Participated in online or<br/>web-based professional<br/>development</i>                                       | 0.874 | 0.588 | 0.286  |
| T2606 | <i>Participated in a<br/>workshop</i>                                                                             | 0.969 | 0.850 | 0.119  |
| T2607 | <i>Attended a conference</i>                                                                                      | 0.854 | 0.618 | 0.236  |
| T2608 | <i>Professional development<br/>that directly relates to<br/>your teaching assignment</i>                         | 0.749 | 0.874 | -0.125 |
| T2609 | <i>Professional development<br/>on using technology to<br/>support instruction</i>                                | 0.973 | 0.658 | 0.315  |
| T2610 | <i>Professional development<br/>on teaching STEM or<br/>incorporating STEM into<br/>other subjects</i>            | 0.561 | 0.214 | 0.347  |
| T2611 | <i>Professional development<br/>on classroom and<br/>behavior management</i>                                      | 0.950 | 0.668 | 0.282  |
| T2612 | <i>Professional development<br/>on instruction strategies to<br/>teach students with<br/>disabilities or IEPs</i> | 1     | 0.710 | 0.290  |

|       |                                                                                                                      |       |       |       |
|-------|----------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
| T2613 | <i>Professional development</i><br><i>on differentiated</i><br><i>instruction for all students</i>                   | 0.985 | 0.667 | 0.318 |
| T2614 | <i>Professional development</i><br><i>on preparing students to</i><br><i>take annual assessments</i>                 | 0.893 | 0.267 | 0.626 |
| T2615 | <i>Professional development</i><br><i>on analyzing and</i><br><i>interpreting student</i><br><i>achievement data</i> | 0.955 | 0.384 | 0.571 |

---