

SPECIAL EDUCATORS' PREPARATION AND
INTENT TO STAY IN TEACHING

BY

SUZANNE LEE

DISSERTATION

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Doctoral Committee:

Professor Michaelene M. Ostrosky, Chair
Teaching Assistant Professor Kim W. Fisher
Research Associate Professor Nancy Latham
Professor Emerita Adelle Renzaglia

Abstract

Frequent media reports suggest our nation is facing a shortage of qualified teachers, making teacher recruitment, retention, and attrition a significant issue facing schools today. This study examined whether there is a reliable link between completion of a student teaching experience of 8 weeks or more and first, second, and third year educators' intent to remain in the teaching profession. Using data from the National Center for Education Statistics' 2011-12 Schools and Staffing Survey, logistic regression models were used to identify the impact of 8 weeks or more of student teaching on educators' intent to remain in teaching. An exploration of whether the impact varied across teaching field (general versus special education) or changed over time (from first year of teaching to third year of teaching) also was conducted. Overall, results indicated that for general education teachers, completion of a student teaching experience of at least 8 weeks was strongly associated with an increased commitment to stay in teaching, as expressed during their first and second year of teaching. No link was identified for the third-year general education teachers. For first, second, and third year special education teachers, however, no association was identified between stated intent to stay in teaching and completion of at least 8 weeks or more of student teaching. Additional research is needed to confirm the findings of the present study and explore differential effects of preservice preparation on teachers across teaching fields.

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Chapter 1 - Introduction

Media reports of teacher shortages are commonplace in most areas of the United States. Data from the U.S. Department of Education Office of Postsecondary Education (as cited in Viadero, 2018) reveal that all 50 states and most territories report statewide shortages in one or more teaching areas. Teaching fields with the most widespread shortages include special education (54 states/territories), math (51 states/territories), computer science (50 states/territories), science (48 states/territories), and foreign languages (45 states/territories). (Viadero, 2018). Billingsley and Bettini (2019) suggest that shortages of special education teachers across states, paired with the lowest enrollment in teacher preparation programs recorded by the federal government, have combined to seriously compromise the quality of special education services received by students with disabilities. Some authors (e.g., Aragon, 2016; Sutchter, Darling-Hammond, & Carver-Thomas, 2016; Ujifusa, 2018) posit that rather than a nationwide across-the-board shortage of teachers, teacher supply problems occur primarily in certain geographic areas, in specific subject areas, and in schools with specific characteristics. For special education, however, teacher shortages are ubiquitous. In a review of research regarding shortages of special education teachers, McLeskey, Tyler, and Flippin (2004) suggested that multiple data sources consistently report that the shortage of fully certified special educators is chronic and long-term, persists across geographic regions, and is greater than teacher shortages in any other areas, including mathematics and science.

Demand

Factors contributing to the demand for teachers are varied and complex. One factor influencing the demand for teachers is student enrollment. Nationally, student enrollment in public and private elementary and secondary schools increased by 3% between fall 2001 and fall

2014. An additional student enrollment increase of 3% is expected between fall 2014 and fall 2026 (Hussar & Bailey, 2018). The number of students ages 6-21 served nationally by special education teachers under the *Individuals with Disabilities Education Act* also has increased each year since 2012 (*41st Annual Report to Congress*, 2019). School districts' interest in reinstating programs eliminated during previous years of budget cuts and returning to pupil: teacher ratios characteristic of the pre-2008 recession also contribute to an increased demand for teachers. According to Sutchter et al. (2016), an additional 145,000 teachers per year need to be hired *on top of* standard hiring needs to return to pre-recession conditions.

Another significant factor affecting the demand for teachers is attrition, which is responsible for the largest portion of the need. Attrition rates for public school teachers as a whole average about 8% (Keigher, 2010). Attrition rates tend to be higher than average for certain subgroups of teachers, such as novice teachers (9.1%) and teachers working in high-poverty schools (9.7%) (Keigher, 2010). However, the attrition rate for special educators has been reported to be about 12.3%, higher than all other disciplines (Keigher, 2010).

Supply

Exacerbating the problem of increased demand is a precipitous drop in the supply of new teachers. In a typical year, new entrants to the profession make up more than half of the teacher supply (Sutchter et al., 2016). Data cited by Will (2018) show that the number of people completing teacher education programs declined by 23% between 2007-08 and 2015-16. This decrease in supply is not likely to subside soon because as Sutchter et al. suggest, the number of students enrolled in the teacher preparation pipeline has continued to drop with a 35% reduction seen between 2009 and 2014. Sutchter et al. also point out that not all individuals completing teacher education programs end up in the classroom. Entry rates into the profession are estimated

to be between 75%-90%. Factors that affect entry rates include labor market conditions as well as state or federal policies affecting the profession (Sutcher et al., 2016).

An additional source of teachers to fill vacancies and thus address the pressing need is re-entrants to teaching. Re-entrants (educators not teaching the previous year, but who have prior teaching experience) represent a reserve pool of credentialed, experienced teachers. The proportion of new hires that are re-entrants varies from year to year based on economic conditions. Sutcher and colleagues have estimated that for the past 10 years, re-entrants have comprised between 37% and 49% of all new hires. Projections by Sutcher et al. suggest that if trends continue in the current labor market, teacher pipeline, and re-entrant hiring, the number of professionals available to teach will decline over the next 10 years.

Balance in Supply and Demand

Imbalances in supply and demand are not experienced equally across schools. At both the local and state levels, schools and districts with the fewest resources and most challenging working conditions tend to have the most vacancies, hire the least prepared teachers, and experience higher attrition rates (Sutcher et al., 2016). More specifically, staff in high need rural and urban schools are more frequently under-prepared and inexperienced (National Coalition on Personnel Shortages in Special Education and Related Services, n.d.). In fact, Sutcher and colleagues reported that high-minority schools have four times more uncertified teachers than non-high-minority schools. According to Aragon (2016), schools with specific characteristics – urban, rural, high-poverty, high-minority, and low achieving – consistently experience teacher shortages, especially in difficult-to-staff positions such as special education.

Policy Responses to Teacher Shortages Across Fields

Federal, state, and local district policy responses to teacher supply and demand problems vary. Recently proposed federal programs to address teacher and principal shortages include: encouraging “Grow Your Own” programs, increasing access to teacher and school leader residency and preparation programs, requiring states to identify and publicize areas of need, and increasing the flow of teachers prepared at historically Black colleges and universities as well as other higher education institutions that serve large proportions of students of color (Ujifusa, 2018). In a report summarizing state-level strategies to address teacher shortages developed by 11 different state task forces or working groups, Aragon (2016) identified four common recommendations: including financial incentives (e.g., diversified pay, loan forgiveness); creating or improving induction and mentoring programs; creating pathways for teacher leadership; and implementing marketing and outreach campaigns aimed at elevating the profession to recruit teacher candidates. Ross (2018) suggests that while states are uniquely positioned to support partnership efforts coordinating educator preparation program enrollment and local district hiring needs, only eight states currently address educator supply and demand by directly linking higher education program preparation data to district-level data on hiring needs.

A common state-level response to imbalances between educator supply and demand is to reduce or ease requirements for becoming a teacher. Utah, for example, recently passed a law that allows individuals with a bachelor’s degree in any field who pass a content-area test to receive licensure without any student teaching or college level education or pedagogy courses (Felton, 2016). A new law in Oklahoma provides licensure to teachers with a bachelor’s degree, at least a 2.5/4.0 cumulative GPA, and two years of any kind of work experience related to the subject area of licensure (Oklahoma State Department of Education, 2018). In Kansas,

individuals with a bachelor's degree in a science, technology, engineering or math field can become licensed to teach in a public school without any educator preparation if they have five years of professional work experience in their area of degree (Kansas State Department of Education, 2019).

Policy Responses to Teacher Shortages-Special Education

Some efforts to ease credential requirements specifically affect special education. For example, Arizona's governor recently signed a law that addresses special educator shortages by allowing teachers with a certificate in any area (general education or special education) to design and deliver special education services required in a student's IEP (Felton, 2017a). In addition, most states offer emergency credentials in special education that require little or no preparation in special education, while others, such as Illinois, offer quick routes or short-cut programs to prepare teachers in high needs areas such as special education (Carver-Thomas, 2017). Also, special education teacher shortages in California have sparked new state policies that have resulted in dramatic increases in the number of temporary credentials issued. Felton (2017b) reported that the number of temporary special education credentials issued in California more than doubled between the 2012-13 school year and 2015-16, resulting in 64% of newly hired special education teachers having temporary rather than full credentials.

Effects of Preservice Preparation

Teacher certification status and degree in the field to be taught are quality indicators that significantly and positively correlate with student outcomes, even after controlling for student socioeconomic status and language background (Darling-Hammond, 2000). State policies that respond to supply and demand imbalances by reducing requirements for teachers put student learning in jeopardy. Data consistently show that special education teachers who are fully

prepared at the preservice level provide better instruction and result in better student achievement than teachers who are not fully prepared (Brownell & Sindelar, 2018). As such, since 2002, federal policy has required states to make efforts to ensure that well-prepared personnel teach children with disabilities and to monitor teachers' success in doing so. Despite this requirement, however, recent data (41st Annual Report to Congress, 2018), illustrate that in the fall of 2016, nearly about 10% of special educators for students ages 6-21 were not considered fully prepared or "highly qualified." The Individuals with Disabilities Education Act (IDEA) (2004) at that time defined "highly qualified" special education teachers as those who had "obtained full State certification as a special education teacher (including certification obtained through alternative routes) or passed the State special education teacher licensing examination" (IDEA, 2004, §1401(10)). This definition categorized teachers working on emergency, temporary, or provisional certifications as "not highly qualified."

In addition to compromising student learning, hiring of underprepared teachers may do little to address shortage situations on a long-term basis. According to Brownell and Sindelar (2018), data suggest that underprepared special education teachers tend to leave teaching more quickly, creating ongoing turnover and further exacerbating shortages. Given that the attrition rate for special educators is already higher than the rate for teachers in other fields (Keigher 2010), filling vacancies with underprepared personnel may result in even higher attrition, more severe personnel shortages, and poor outcomes for students.

Current labor market conditions coupled with state and national policies that make teaching a less attractive profession suggest that the United States will continue to experience a persistent shortage of special education teachers. Policy responses that feature reduced preservice preparation requirements for special educators are intended to increase the supply of licensed

personnel, however there are some indications (i.e., Brownell & Sindelar, 2018) that these efforts may aggravate teacher shortages rather than alleviate them.

Given our current understanding of preservice preparation components associated with teachers' retention in the field, further exploration of the link between preservice professional preparation and special educators' intent to stay in teaching could help policy makers and teacher educators design effective and efficient strategies to address special education teacher shortages. Thus, the purpose of this study was to investigate associations between preservice preparation, as indicated by a student teaching experience of 8 weeks or more and novice teachers' intent to remain in the field. To understand more about the association between preservice preparation and teacher commitment to the profession and job retention, a literature review was conducted and is presented in the next chapter.

Chapter 2 – Literature Review

Initial Literature Search

Multiple search strategies were used to identify relevant literature involving relations between teacher preparation and attrition. First, four research databases were searched for peer-reviewed manuscripts, including journal articles and reports published by research institutes or the federal government (no date limits) using combinations of the following keywords: *teacher preparation, preservice preparation, special education, teacher, attrition, retention, and turnover*. Databases searched included Education Resources Information Center (ERIC), Education Full Text, PsycINFO, and Google Scholar. In reviewing the results of these searches, articles published in languages other than English or involving research from countries other than the United States were omitted.

A second method involved a hand search of the following journals: *Teacher Education and Special Education, Remedial and Special Education, Exceptional Children, Journal of Special Education, American Educational Research Journal, Educational Evaluation and Policy Analysis, Educational Researcher, Review of Educational Research, Review of Research in Education, Journal of Teacher Education, Teaching and Teacher Education, and Teacher Education Quarterly*. The hand search identified articles published from 1999-present with titles and/or abstracts suggesting a focus on any aspect of United States teacher preparation and attrition or retention.

Additional articles and research reports that were cited in reviews of literature on relevant topics or listed in reference lists of any retrieved article also were located and reviewed. These three search strategies together generated a list of 105 articles for consideration.

Inclusion Criteria

To be included in this review, articles needed to have been published during or after 1980 and (a) report an empirical investigation of a relation between some aspect of preservice preparation and teachers' actual or stated intent to remain in teaching, and (b) be a federal report or as a peer-reviewed publication from a journal or research institute. To make this determination, each abstract, purpose, and methods section of the 105 articles was read to determine if the study met the inclusion criteria. This step of the review process eliminated literature reviews, program or model descriptions, program evaluations, conference presentations, and studies that focused primarily on satisfaction with preservice preparation or perceived competence in various aspects of teaching attributable to preparation, but without a measure of actual or stated intent to remain in teaching. A review of the resulting 23 articles follows (see Appendix A for summary table).

Overview of Literature

The articles and research reports reviewed were published between 1982 (Lawrenson & McKinnon, 1982) and 2016 (Redding & Smith 2016; Zhang & Zeller, 2016). A majority (65%) of the articles were published 10 or more years ago. There are only three publications in or after 2015 and none in the most recent two years. Quantitative methods were used in 20 of the 23 studies, while the remaining three articles used mixed methods. Data from 119,267 teacher participants were presented across the 23 research studies. Twelve studies did not differentiate among participants by teaching field or grade level. Three studies focused specifically on special education teachers (Banks & Necco, 1987; Connelly & Graham, 2009; Lawrenson & McKinnon, 1982), while three studies included only elementary education teachers as participants (Fleener & Dahm, 2007; Latham & Vogt, 2007; Paese, 2003). Two studies (Ingersoll, Merrill, & May,

2014; LaTurner, 2002) focused on math and science teachers. Teachers from varied combinations of general education fields (elementary and secondary; early childhood, elementary, middle grades, and bilingual; elementary and middle grades) were participants in three studies (Hunter-Quartz, 2003; Latham, Mertens, & Hamann, 2015; Reynolds, Ross & Rakow, 2002).

Considerable variation existed in the definition of teacher turnover used across studies and in the point in time of the teachers' careers during which data were collected. While some researchers studied participants at all points in their careers (Banks & Necco, 1987; Goldhaber & Cowan, 2014; Lawrenson & McKinnon, 1982), others focused only on first year teachers (Eckert, 2013; Ingersoll, Merrill, & May, 2014; LaTurner, 2002; Paese, 2003; Ronfeldt, 2012). The remaining studies included participants with varying years of experience. Finally, while all the studies involved some aspect of preservice preparation, the components of preparation studied (i.e., program model, coursework, field experience characteristics) varied widely.

Teacher Population

Researchers have selected teacher participants who differ across key variables, including geographic area represented in the sample, teaching field, years of experience, demographic characteristics, and nature of the teaching environment. The following sections describe these aspects of the literature reviewed.

Teacher population-samples studied. Participants in 14 articles were selected to represent one specific geographic area. New York City public school teachers were the focus of four of these studies (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2006; Darling-Hammond, Chung, & Frelow, 2002; Kane, Rockoff, & Staiger, 2008; Ronfeldt, 2012). Of the other 10 articles in which participants were all from one specific geographic area, five studies (Hunter-

Quartz, 2003; Latham, Mertens, & Hamann, 2015; Latham & Vogt, 2007; Paese, 2003; Reynolds, Ross, & Rakow, 2002) identified participants who had completed teacher preparation programs at one specific institution, while the other five (Banks & Necco, 1987; Fleener & Dahm, 2007; Goldhaber & Cowan, 2014; Lawrenson & McKinnon, 1982; Zhang & Zeller, 2016) recruited teachers from either the entire state population of teachers or one specific region of a state.

National data sets sampling teachers and schools across the United States were used in nine of the targeted studies. The Schools and Staffing Survey conducted by the National Center for Education Statistics was the data source for six research reports (Connelly & Graham, 2009; Eckert, 2013; Ingersoll et al., 2014; Redding & Smith, 2016; Ronfeldt, Schwartz, & Jacob, 2014; Shen, 1997). The Schools and Staffing Survey was conducted seven times between 1987 and 2011 to provide descriptive data on a wide range of topics related to the national context of prekindergarten through high school education. Three research reports (Henke, Chen & Geis, 2000; LaTurner, 2002; Shen & Palmer, 2005) were based on national data gathered for the Baccalaureate and Beyond Longitudinal Study. This study, also conducted by the National Center for Education Statistics, examined students' work experiences and education after completing a bachelor's degree, with a special emphasis on new elementary and secondary teachers. Cohorts for this study were drawn from the National Postsecondary Student Aid Study, which collected data from nationally representative samples of postsecondary students and institutions.

Teacher population-special education. The three studies focused on special education teachers (Banks & Necco, 1987; Connelly & Graham, 2009; Lawrenson & McKinnon, 1982) included 404 teachers, 168 from a national database and 236 from specific geographic areas.

Connelly and Graham (2003) used data from the 1999-2000 Schools and Staffing Survey and the linked Teacher Follow-Up Study (National Center on Education Statistics, 2005). Data describing the specific disability categories taught (i.e., autism, deafness, intellectual disability, specific learning disability) by special educators sampled in this research were not reported. Almost half of Banks and Necco's (1987) research participants taught students with learning disabilities while 32% taught students with intellectual disabilities. Sixteen percent taught students with behavior disabilities, and the remaining special educators worked with students with physical, health, or sensory impairments. Finally, teachers of students with emotional and behavioral disabilities teaching in a seven-county area around Cedar Rapids, Iowa ($N = 33$) were surveyed by Lawrenson and McKinnon (1982). No attempt was made in the remaining 20 studies to analyze data in a manner to support conclusions specific to special education teachers.

Teacher population-teaching experience at point of survey. There is great variation across the studies about the point in the teachers' career that attrition or retention was examined. Many studies focused on novice teachers (anywhere from first year through fifth year) while others included all teachers, regardless of the number of years of experience. Table 1 summarizes the number of years of teaching experience of research participants by study.

Table 1

Teachers' Years of Experience

<u>Years of Experience at Time of Study</u>	<u>Number of Studies</u>	<u>Studies</u>
All teachers included as participants regardless of years of experience	3	Banks & Necco (1987); Goldhaber & Cowan (2014); Lawrenson & McKinnon (1982)
≤13 years	1	Latham et al. (2015)
≤10 years	1	Shen (1997)
≤7 years	2	Kane et al. (2008); Latham & Vogt (2007)
≤5 years	2	Fleener & Dahm (2007); Hunter-Quartz (2003)

Table 1 (continued)

≤ 4 years	6	Boyd et al. (2006); Henke et al. (2000); Redding & Smith (2016); Reynolds et al. (2002); Ronfeldt et al. (2014); Shen & Palmer (2005)
≤ 3 years	1	Darling-Hammond et al. (2002)
≤ 2 years	2	Connelly & Graham (2009); Zhang & Zeller (2016)
1 year	5	Eckert (2013); Ingersoll et al. (2014); LaTurner (2002); Paese (2003); Ronfeldt (2012)

Studies suggest that teachers in all disciplines tend to exit the field at the highest rate during their first several years in teaching, prompting many researchers to focus attrition research on this group of participants (Sutcher et al., 2016). In this review, 16 of the 23 studies (Boyd et al., 2006; Connelly & Graham, 2009; Darling-Hammond et al., 2002; Eckert, 2013; Fleener & Dahm, 2007; Henke et al., 2000; Hunter-Quartz, 2003; Ingersoll et al., 2014; La Turner, 2002; Paese, 2003; Redding & Smith, 2016; Reynolds et al., 2002; Ronfeldt, 2012; Ronfeldt et al., 2014; Shen & Palmer, 2005; Zhang & Zeller, 2016) focused on beginning, or novice teachers. As illustrated in Table 1, however, teachers who had taught anywhere from one to five years were considered by researchers of these studies to be novice.

Teacher population-demographics and environments. Reviews of the attrition and retention literature suggest that some characteristics of the teacher and teaching environment influence teacher attrition (Billingsley, 2004; Borman & Dowling, 2008). In a meta-analysis of 34 studies including 63 attrition moderators, Borman and Dowling (2008) concluded that across the profession, female, White, young, married teachers who have a child have greater odds of attrition than other teachers. In terms of personal demographics, Borman and Dowling identified teacher race/ethnicity, gender, and age as having weak but statistically significant effects on teacher attrition. Specifically, the odds of White teachers leaving the profession were 1.36 times

higher than non-White teachers, while women were 1.30 times more likely to leave teaching than men. With regard to the influence of age on attrition, Borman and Dowling (2008) concluded that in general, younger teachers are more likely than older teachers to leave, until a threshold age as retirement nears – teachers who are 51 years or older leave the field at a rate 2.5 times that of younger teachers. Interestingly, Billingsley (2004) reviewed 20 research articles focused on special education teacher attrition and retention and concluded that only teacher age consistently influenced attrition rates of special educators. Her review did not support a reliable link between teacher gender and attrition, nor did it identify patterns in attrition attributable to special educators' race or ethnicity (Billingsley, 2004).

Borman and Dowling's (2008) meta-analysis also included teaching environment characteristics that may function as moderators of attrition. Specifically, they noted that teachers in urban or suburban areas had an odds ratio of leaving teaching 1.13 times that of rural teachers. This finding, calculated from results of six studies is weak, but statistically significant. Other teaching environment moderators analyzed by Borman and Dowling focused on the composition of the student body. Borman and Dowling found statistically significant effects suggesting that teaching in schools with larger percentages of low socioeconomic status students and/or higher rates of participation in free or reduced-price lunch programs were consistently associated with higher teacher attrition rates. Included in Borman and Dowling's meta-analysis were multiple studies of associations between preK-12 student race and ethnicity, and teacher attrition. While the odds ratios of leaving were higher in schools with majority Black and Latinx students, it is unclear whether race and ethnicity effects were teased out by researchers as moderators separate from socioeconomic status and free or reduced-price lunch participation. Sutchter and colleagues (2016) reported that teachers working in high-poverty, high-minority schools tend to have higher

turnover rates. Specifically, these scholars cited research demonstrating that the turnover rate in schools with large concentrations of low-income students is almost 50% higher than in other schools, with even greater turnover occurring in schools in the quartile with the most students of color (64% greater than the quartile of schools with the fewest students of color). Building-based turnover as described by Sutchter et al. (2016) includes teachers staying in teaching but changing districts or buildings as well as those who leave the profession entirely, so the findings may not necessarily be reflected in teachers' stated intent to leave the profession.

Teacher population-summary. In sum, only one article focused on the topic of the current study - attrition rates of a national sample of novice special education teachers (Connelly & Graham, 2009). Fourteen of the 23 studies limited participants to one specific district, geographic region, or personnel preparation program. No distinction in teaching field was made in 12 of the studies, and the point in the *novice* teachers' career at which data were gathered varied from one to five years. Studies suggest that teacher demographics and teaching environment characteristics must be considered as potential influences on teacher attrition. Specifically, the urbanicity of the school along with the percentage of low-income students and students of color in a teachers' environment may affect attrition rates.

Type of Turnover

Researchers have defined and collected data about teacher turnover in a variety of ways. Two general approaches have included a) directly asking participants about their current employment status and/or their intent to remain in teaching, and b) gathering data about teachers' employment via administrative records.

Data gathered in seven studies (Connelly & Graham, 2009; Eckert, 2013; Henke et al., 2000; Ingersoll et al., 2014; Redding & Smith, 2016; Ronfeldt et al., 2014; Shen & Palmer,

2005) involved teacher interview data collected as a part of national data sets from either the Baccalaureate and Beyond Longitudinal Study or the Teacher Follow-Up Survey component of the Schools and Staffing Survey.

Nine other studies involved participant surveys. In five of the studies (Banks, & Necco, 1987; Hunter-Quartz, 2003; Lawrenson & McKinnon, 1982; Paese, 2003; Zhang & Zeller, 2016), participants were asked to report whether they were currently teaching and/or how many years of teaching experience they had accrued at the time of the survey. For the other four studies in this group (Darling-Hammond et al., 2002; LaTurner, 2002; Reynolds et al., 2002; Shen, 1997), the researchers reported results from surveys asking participants to indicate their intent to stay in teaching. Darling-Hammond et al. (2002) asked participants to select whether they intended to a) stay in teaching as long as able, b) stay in teaching until something better comes along, or c) leave teaching as soon as possible. LaTurner (2002) used items from the Baccalaureate and Beyond Surveys that required participants to indicate their intent either to stay in teaching for two more years or to stay in teaching for the long term. Participants in the Reynolds et al. (2002) study were surveyed about whether they intended to remain in or leave teaching, and if they planned to remain in teaching, whether they intended to remain in the same school. Shen (1997) used data from the Schools and Staffing Survey that describe teachers' intent to stay in teaching (as long as able, until retirement, until something better comes along, plan to leave as soon as possible).

State and local employment records provided data on turnover for seven of the studies (Boyd et al., 2006; Fleener & Dahm, 2007; Goldhaber & Cowan, 2014; Kane et al., 2008; Latham et al., 2015; Latham & Vogt, 2007; Ronfeldt, 2012). Participants in these studies worked as classroom teachers in public school districts. Three of these studies (Boyd et al., 2006; Kane

et al., 2008; Ronfeldt, 2012) included only teachers working in New York City public schools. Across this group of seven studies, attrition was defined in a variety of ways; sometimes researchers considered leavers as professionals who either moved schools or left the profession. Other researchers defined attrition more conservatively to include only those teachers leaving the profession. There is no provision in these analyses to identify teachers who left public schools to teach in private schools, left teaching temporarily with an intent to return (i.e., parental or family leave) or stayed in education but changed positions (i.e., moved into administration), from those who left the profession permanently with no desire to return to the education field.

Type of turnover-summary. Across the research reports reviewed, investigators defined teacher turnover in different ways and used various data sources, including employment records and surveys, to identify teachers who stayed in or left a specific teaching position or the teaching field altogether. In some of these studies (cf. Eckert, 2013; Goldhaber & Cowan, 2014; Reynolds et al., 2002), teachers who left a particular school building but who may have continued to teach in a different school were considered to have left teaching. Only a few research teams (Fleener & Dahm, 2007; Henke et al., 2000; Latham et al., 2015; Latham & Vogt, 2007) attempted to account for educators who left teaching temporarily (i.e., parenthood) and later returned to the classroom. Only one researcher (Hunter-Quartz, 2003) accounted for teachers who left the classroom, but continued to work in a school in some other capacity (i.e., librarian, administrator). A final consideration is that a teacher's employment status can change from year-to-year in response to personal or family concerns separate from job-related attrition factors. Studies that categorize teachers either as employed or not employed at particular points in time do not account for temporary stop-outs from teaching with later returns to the classroom. As an alternative to using employment records and survey data, some researchers sought to gain insight

into potential attrition and retention through teachers' stated intent to remain in teaching (Darling-Hammond et al., 2002; LaTurner, 2002; Reynolds et al., 2002; Ronfeldt et al., 2014; Shen, 1997).

Preservice Components

Preparation variables-program pathway or model. In evaluating the relation between preservice preparation and attrition, researchers have focused on either (a) preparation program pathway or model, or (b) composition or amount of student teaching and/or coursework. One of the more frequently studied issues is whether participation in a professional development school (PDS) preparation model affects attrition. PDS models emphasize collaborative partnerships between prekindergarten-grade 12 schools and university teacher education programs. Features of PDS models often involve an extended clinical experience of more than one semester in the partner school paired with on-site and/or more intensive student teaching supervision models. In some PDS models, university courses are offered at the school building and are taught by (or collaboratively with) cooperating teachers. Five studies investigated the relation of PDS models to teacher attrition and retention. Fleener and Dahm (2007) studied turnover of elementary education teachers who graduated from three Texas universities that piloted PDS models. They compared attrition of PDS and non-PDS program completers. Latham et al. (2015) and Latham and Vogt (2007) researched teachers from one Illinois university, also comparing PDS-and non-PDS-prepared teachers' persistence in teaching. Latham and Vogt (2007) focused on elementary education teachers, while Latham et al. (2015) included early childhood, elementary, middle grades, and bilingual teachers prepared via PDS and traditional models. Paese (2003) surveyed first year elementary education teachers from one university to determine the percent of PDS and non-PDS-prepared teachers who reported leaving teaching after their first year. Reynolds and

colleagues (2001) surveyed PDS- and non-PDS-prepared elementary and middle grades from one university after two years of teaching. Participants in this study were asked to indicate whether they intended to continue to teach in their current school building, teach in a different school building, or leave teaching altogether. Findings across this group of five studies generally suggest that PDS preparation has a positive effect on entering and staying in teaching.

Conclusions are limited, however, because study-specific characteristics of PDS versus non-PDS preparation models were not consistent across studies. For example, in Latham et al., Latham and Vogt (2007), and Reynolds et al., the length of student teaching placement defined whether a program was PDS or non-PDS. For Paese (2003), the PDS/non-PDS distinction was made based on the number of student teachers per building and the method of university supervision, while in the study conducted by Fleener and Dahm (2007), the primary difference between PDS and non-PDS was design of early field experiences.

Four studies compared the rate of attrition between teachers prepared in traditional university-based preparation models and alternative preparation models. Alternative preparation models vary widely in depth and intensity, with some involving a single summer of coursework before becoming a full-time teacher of record in a school, while others involve a full year of coursework before taking over classroom responsibilities. Alternative models generally involve early immersion in teaching as a teacher of record, require few theory-based or foundation courses, and emphasize practical field-based preparation with some degree of ongoing mentorship during the first year of teaching. Banks and Necco (1987) surveyed special education teachers from one school district to compare the job longevity of traditionally prepared, fully certified teachers and teachers who had received certification via an alternative route program. Shen (1997) used data from the Schools and Staffing Survey for teachers certified in the previous

10 years. He compared the stated intent to remain in teaching of individuals reporting preparation in traditional versus alternative programs. Redding and Smith (2016) also used data from the Schools and Staffing Survey to investigate attrition. They focused on turnover during the first five years of teaching, comparing rates of teachers who reported entering teaching through traditional versus alternative certification programs. Zhang and Zeller (2016) surveyed novice teachers in eastern North Carolina to identify whether there were differences in attrition rates for those completing traditional university-based programs, lateral-entry alternative routes (e.g., Teach for America), or the NC Teach Program (a state-sponsored alternative program targeting career changers). Results in each of these studies associated an increased rate of turnover with an alternative preparation model.

Three research teams analyzed attrition rates by preparation pathway of New York City public school teachers. Data were available for New York City teachers entering the profession with different paths of preparation: (a) completion of a university-based full preparation program; (b) participation in the Teach for America alternative model; (c) participation in the New York City Teaching Fellow alternative model; (d) completion of requirements verified by individual transcript evaluations – coursework may have been completed across multiple universities and/or online; and (e) receipt of temporary or emergency credentials. Boyd et al. (2006) identified attrition rates for teachers with 1-4 years of experience who became certified to teach by each of these five pathways. A similar analysis conducted by Kane and colleagues (2008) evaluated retention rates (staying as a New York City public school teacher) after five years for teachers entering through each of the preparation pathways. While also using data for New York City public school teachers, Darling-Hammond et al. (2002) took a different approach. In this study, novice teachers were surveyed about their overall feelings of

preparedness and self-efficacy as well as their intent to stay in teaching (as long as able, until something better comes along, leave as soon as possible). The authors identified a strong relation between feelings of preparedness and intent to teach as long as possible, and then linked feelings of preparedness to preparation pathway, comparing means across preparation routes. Taken together, these results suggest a retention advantage for traditional college preparation and the NYC-specific Teaching Fellows program when compared to other pathways, including Teach for America.

Two research teams investigated the extent to which attrition varied based on completion of specific preparation programs. Goldhaber and Cowan (2014) analyzed attrition rates of teachers across teacher preparation programs in the state of Washington. They compared turnover rates (exit teaching in any Washington public school; exit teaching in the same building) of teachers prepared at specific state institutions to each other and to the rate of teachers prepared out-of-state. Attrition of secondary grade level general education teachers in the Los Angeles area who completed an urban education-focused preparation program was studied by Hunter-Quartz (2003). She compared turnover of teachers completing this specific program to national turnover data from the Schools and Staffing Survey. Results from these studies suggest that some individual preparation programs are associated consistently with attrition rates that vary significantly from national averages (some lower than average, others higher than average). Further investigation is needed to identify specific program practices that can explain these differences.

Preparation variables-coursework and student teaching. Four research teams (Connelly & Graham, 2009; Eckert, 2013; Ingersoll et al., 2014; Ronfeldt et al., 2014) considered the relation between attrition and amount of both university coursework and student

teaching using data from the Schools and Staffing Survey. This survey provides data about the self-reported number and topic of teaching methods courses taken as well as the number of weeks of student teaching. Two studies (LaTurner, 2002; Shen & Palmer, 2005) used data from the Baccalaureate and Beyond Longitudinal study. LaTurner (2002) analyzed data about teacher certification and number of credit hours in subject area taught to investigate the relation between preparation to teach and stated intent to stay in teaching for 2 more years or for the long term. Shen and Palmer (2005) used data from month-to-month employment records that are part of the Baccalaureate and Beyond Longitudinal Study to compare attrition rates associated with amount of preparation to teach, including categories of fully prepared (student teaching, full certification, induction program) and less than fully prepared.

Characteristics of the student teaching experience were the focus of two additional studies investigating teacher preparation and turnover. Using data from the Baccalaureate and Beyond Longitudinal Study, Henke and colleagues (2000) identified teachers who taught at least one year and then left without returning to teaching within five years. These researchers analyzed differences between those who reported having a student teaching experience and those who did not. Ronfeldt (2012) examined the effect of field placement characteristics and teacher retention. He calculated a stay-ratio representing the average longevity of teachers working in individual New York City school buildings. Ronfeldt (2012) then determined whether attrition rates of novice teachers varied in relation to the stay-ratio of the building in which they student taught.

In sum, across the eight research studies focusing on coursework and student teaching, consistently lower attrition rates are associated with teachers who completed full certification programs including student teaching experiences and coursework in pedagogy.

Preparation variables-level of degree. Lawrenson and McKinnon (1982) and Banks and Necco (1987) analyzed whether there were differences in job longevity between graduate and undergraduate degree holders. Lawrenson and McKinnon (1982) collected data on 33 teachers from one special education cooperative and found that 50% of teachers with graduate degrees left teaching during the interval of years studied compared to 31% of teachers with undergraduate degrees. Teachers who changed districts or moved into other education positions (i.e., school administration) would have been considered “leavers” in their study, so it is unknown how many teachers left the profession versus left the classroom in one district. Banks and Necco’s (1987) study led to the opposite conclusion. In their research, they found that graduate degree holders spent over three years longer in the classroom than undergraduate degree teachers. Thus, findings on the effect of level of degree on attrition are mixed. It is noteworthy that both studies were done before the significant increase in the number of alternative route models and lateral entry programs that are characteristic of contemporary teacher preparation today.

Preparation variables – summary. Overall, these research findings suggest that various components of teacher preparation programs affect attrition rates. Some preparation programs are associated with higher attrition rates than others (Goldhaber & Cowan, 2014; Hunter-Quartz, 2003). Teacher certification programs and pathways that include extensive student teaching (especially in buildings with lower teacher turnover rates) and pedagogy coursework consistently produce teachers who are more likely to stay in teaching (Boyd et al., 2006; Connelly & Graham, 2009; Darling-Hammond et al., 2002; Henke et al., 2000; Ingersoll et al., 2014; Kane et al., 2008; LaTurner, 2002; Redding & Smith, 2016; Ronfeldt, 2012; Ronfeldt et al., 2014; Shen, 1997; Shen & Palmer, 2005; Zhang & Zeller, 2016). In addition, there is some indication that

packaging pedagogy coursework and student teaching components into a PDS model may further enhance entry into teaching and retention (Fleener & Dahm, 2007; Latham et al., 2015; Latham & Vogt, 2007; Paese, 2003; Reynolds et al., 2002).

Major Findings

Three major findings emerged from this literature. First, teacher preparation models make a difference regarding attrition and retention, with intensive, university-based preparation models associated with reduced teacher turnover. A second finding is that teachers who have a full student teaching experience are likely to persist longer as classroom teachers. Finally, completion of university coursework in methods and pedagogy before teaching also is associated with decreased attrition.

In comparison to teachers completing alternative model programs of teacher licensure, teachers prepared by universities in traditional or PDS models persist longer in teaching (Banks & Necco, 1987; Boyd et al., 2006; Connelly & Graham, 2009; Henke et al., 2000; Ingersoll et al., 2014; Kane et al., 2008; Redding & Smith, 2016; Shen & Palmer, 2005; Zhang & Zeller, 2016). Teachers completing traditional or PDS programs also have career plans that involve teaching as long as possible (Darling-Hammond et al., 2002; LaTurner, 2002; Shen, 1997).

There is some evidence that a PDS approach may have advantages over a traditional model in terms of longer retention rates (Fleener & Dahm, 2007; Latham et al., 2015; Latham & Vogt, 2007; Paese, 2003; Reynolds et al., 2002). These researchers, however, generally compared the attrition rate of teachers prepared in PDS models at specific institutions to the attrition rate of teachers from the same institutions prepared in non-PDS models. Whether the PDS schools across studies shared specific program characteristics and how the university based

PDS and non-PDS models differed from each other in terms of program components and requirements remains unclear due to limited program descriptions.

Regarding specific preparation program components, several studies support the importance of high quality and prolonged engagement in the field during student teaching as a means of reducing teacher turnover. Henke and colleagues (2000) found that 29% of teachers who began teaching without a student teaching experience left the field after five years compared to an attrition rate of 15% for those who student taught before becoming the teacher of record. Shen and Palmer (2005) analyzed data from a national longitudinal study involving 1,702 participants in their first five years of teaching (weighted $N = 181,313$). They found that educators who did not complete student teaching and pedagogy coursework to become certified to teach had a 355% increase in estimated rate for leaving teaching over those who were fully prepared (Shen & Palmer, 2005). After one year, 80% of special educators with 10 or more weeks of student teaching remained in the classroom in comparison with only 65% of those who had no student teaching at all or student taught for less than 10 weeks (Connelly & Graham, 2009). Ingersoll et al. (2014) found that after one year in the classroom, teachers with 12 or more weeks of student teaching were over three times less likely to leave the field. Ronfeldt and colleagues (2014) also found a positive relation between the length of student teaching and intent to remain in teaching. Findings from Ronfeldt (2012) suggest that field placement schools should be selected for student teachers with an eye toward the school's average rate of teacher turnover. He found that teachers who learned to teach in schools with lower turnover rates were themselves 14%-22% less likely to leave teaching within the first five years.

Completion of university coursework also is associated with decreased attrition. Ingersoll et al. (2014) found that after controlling for background characteristics of teachers and their

schools, those with more training in pedagogy and methods were far less likely to leave teaching after their first year in the classroom. Specifically, teachers with three or more methods classes were 36% less likely to leave the field than those with only one or two courses. Similarly, Ronfeldt and colleagues (2014) found a positive relation between methods coursework, perceived preparedness, and intent to remain in teaching. Shen and Palmer (2005) also reported a much greater likelihood of leaving teaching for those educators without full preparation, of which pedagogy coursework was considered a component.

Limitations of This Review

In identifying research reports for this review, only peer-reviewed journal articles and reports published by research institutes or the federal government were included. This selection criterion eliminated other sources of literature such as newspaper articles, conference presentations, dissertations, and book chapters that may have presented information relevant for analysis. In addition, by limiting the review to only research conducted in the United States, international studies with important findings may have been overlooked. One final limitation of this review as it relates to teacher retention and attrition stems from the decision to focus on research reports involving empirical investigations of a relation between some aspect of preservice preparation and teachers' actual or stated intent to remain in teaching. As McLeskey et al. (2004) discuss, there are many factors in addition to preparation that are associated with teacher attrition and retention, including employability, personal and family circumstances, salary, mentoring, decision-making power, administrative support, school climate, and job responsibilities. The focus of this review was on preservice preparation because university-based teacher educators have little or no opportunity to influence directly the other identified factors.

This narrow focus on preservice preparation, however, may create an incomplete impression of the complexity involved in teacher turnover.

Gaps in the Literature and Directions for Future Research

In using this literature to understand the relation between preservice preparation and special education teacher attrition and retention, the most significant gap is the paucity of research focusing on special education teachers. While attrition is of concern in all disciplines, the teacher shortage in special education is chronic, long-term, and greater in degree than in any other area, including math and science (McLeskey et al., 2004). The greater magnitude of shortage in special education suggests that some attrition and retention factors might differentially affect special education teachers. Research conducted with general education teacher populations may not reflect the unique factors and workplace experiences of special education teachers. In addition, given that state policy responses to special education teacher shortages often involve plans that reduce the amount of pre-licensure preparation required, research is needed to evaluate how preservice preparation affects the attrition and retention of special education teachers.

Most of the studies included in this review sampled teachers from one specific geographic area, school district, or teacher preparation program. Several of the studies focused exclusively on teachers in New York City. Results from these studies may not be generalizable for or useful to faculty in teacher preparation programs across the country who prepare special educators for a wide variety of diverse school contexts. While there were several studies conducted with nationally representative samples of teachers, only one (Connelly & Graham, 2009), involved national data specifically focused on special education teachers. Additional

research with a nationwide sample of special education teachers is needed to inform the work of policy makers and teacher educators.

Variations in the definitions and data sources describing teacher turnover make it difficult to compare findings across studies. Some researchers identified as “leavers” those teachers who left teaching in a particular public school building or district (Boyd et al., 2006; Eckert, 2013; Kane et al., 2008; Lawrenson & McKinnon, 1982; Ronfeldt, 2012) while others researchers focused on leaving the teaching professional altogether (Connelly & Graham, 2009; Henke et al., 2000; Ingersoll et al., 2014; Paese, 2003; Redding & Smith, 2016; Ronfeldt et al., 2014; Shen & Palmer, 2005). A challenge in researching turnover is accounting for situations in which teachers left classroom teaching but did not permanently leave the profession. For example, teachers may take short-term breaks from teaching for personal and family reasons and return to teaching later, or they may change from classroom teaching to other education-related positions (e.g., school administration). Teachers in these latter situations would be categorized as “leavers” in most of the studies reviewed. While these teachers did leave classroom teaching at one point in time, classifying them as “leavers” does not present a full picture about their effect on supply and demand of education professionals.

Considering the complexities involved in describing and measuring turnover, some researchers chose to focus on teachers’ intent to stay in teaching as a gauge of retention (Darling-Hammond et al., 2002; LaTurner, 2002; Reynolds et al., 2002; Shen, 1997). Teachers who communicate career plans reflecting an intent to remain in teaching for an extended time may be conveying a commitment and a disposition to persist in the education profession. While teacher educators have no influence over many of the factors associated with attrition, they may be able to affect commitment and disposition to persist in the field through preservice preparation

experiences. Future attrition and retention research should continue to explore links between teachers' preparation experiences and their intent to persist in teaching.

The current study addressed some of these gaps in the literature by focusing on a nationally representative sample of novice educators, their preparation experiences (student teaching length) and their intent to stay in teaching. An understanding of the relation between preparation and professional commitment provides a foundation to support decision-making by policy makers and teacher educators who are under pressure from school administrators and the public to find immediate solutions to the acute and chronic shortages of special educators. To address these concerns, they may support preparation pathways that require abbreviated preparation in favor of getting special educators in the classroom as quickly as possible. This approach, however, may create a "revolving door" of underprepared teachers who end up leaving the classroom at higher rates than traditionally prepared teachers, thus exacerbating the shortage situation. Additionally, by investigating links between length of student teaching and intent to stay in the field, this study provides some insights into the role of student teaching in predicting commitment to the teaching profession.

Chapter 3 - Methods

There is a chronic, nationwide shortage of special education teachers. In response to the teacher shortages, many states are making licensure-related policy decisions that place educators in classrooms as teachers-of-record before they have completed comprehensive preparation programs, including a traditional student teaching experience. This research study was designed to provide insight into associations between completion of a student teaching experience of 8 or more weeks and novice educators' intent to remain in teaching.

Data from the National Center for Education Statistics' (NCES) 2011-12 Schools and Staffing Survey (SASS) study of the context of elementary and secondary education in the United States were used to examine relations between novice teachers' intent to remain in teaching and their preservice preparation. The central question of this study was to see if there was a relation between preservice preparation including traditional student teaching and novice teachers' intent to remain in teaching.

Specific research questions included:

1. To what extent is novice teachers' intent to stay in teaching related to 8 weeks or more of student teaching when controlling for school locale and percentage of students participating in the National School Lunch Program?
2. Holding school locale and percentage of students participating in the National School Lunch Program constant, to what extent does student teaching and novice educators' intent to stay in teaching vary by teaching field (general education or special education)?
3. Holding school locale and percentage of students participating in the National School Lunch Program constant, to what extent does student teaching and general and special educators' intent to stay in teaching vary by year in teaching?

Data Source

The SASS is a large, nationally representative sample survey of United States elementary and secondary teachers, principals, and librarians at both private and public schools. Between its inception in 1987 and the final administration in 2011, it was conducted seven times (National Center for Education Statistics [NCES], 2016). The study's focus was conditions in schools across the United States, including characteristics and qualifications of teachers and principals, teacher hiring and professional development, class size, and educator working conditions (Cox, Parmer, Strizek, & Thomas, 2016). The study consists of a system of related questionnaires: a school district questionnaire, a principal questionnaire, a school questionnaire, and a teacher questionnaire. Other components of the SASS include a Teacher Follow-up Survey that was mailed to a sample of teacher participants and a special survey and other data collection items focused on school library media personnel and programs.

The Teacher Questionnaire from the 2011-12 SASS was the primary data source for this study (Appendix B). These data are the most recent Teacher Questionnaire data available from NCES. This survey has eight content sections: General Information; Class Organization; Education and Training; Certification; Professional Development; Working Conditions; School Climate and Teacher Attitudes; and General Employment and Background Information (Goldring, Tale, Rizzo, Colby & Fraser, 2013). Data collection for the Teacher Questionnaire of the 2011-12 SASS started in November of 2011 and was concluded in June 2012 (Cox et al., 2016).

Participants

SASS participants-schools. SASS researchers selected teacher participants from lists of educators working in sampled U.S. schools. An overall sample size of about 14,000 schools,

including 10,250 traditional public schools, 3,000 private schools, and 750 public charter schools was used for the study (Cox et al. 2016). Data from the 2009-10 Common Core of Data Nonfiscal School Universe data file (CCD, which is the U.S. Department of Education's primary database on public elementary and secondary education) framed the sampling. Although the SASS surveys included private schools, because many states do not require private school teachers to be licensed (U.S. Department of Education, 2009), the Private School Teacher Questionnaires were excluded from the present investigation. In the SASS study, a school was 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 ungraded equivalent); and is located in one or more buildings. The same building could be shared by two or more schools, and if different schools in the same building had different administrators, they were treated as different schools. In addition to public school districts in the 50 states plus the District of Columbia, schools from districts or agencies serving special populations (juvenile corrections facilities, cooperative schools serving students with disabilities, and domestic schools operated under the Department of Defense) were included in the study. Schools that provide only prekindergarten and/or kindergarten were excluded, as were schools funded by the Bureau of Indian Education (Cox et al, 2016). NCES staff used a stratified probability proportionate to size sampling design to support estimates for public schools at the national level. Schools were drawn to support estimates in terms of geography, grade span, and charter status (Cox et al., 2016).

SASS participants-teachers. A Teacher Listing Form (TLF) was collected from sampled schools or districts. Information was collected about the length of the teachers' experience (first year, early career [second or third year] mid-career [4-19 years] and highly

experienced [20 or more years]), full- or part-time status, and subject matter taught (general elementary, special education, math, science, English/language arts, social studies, vocational/technical, or other). Sampling of teachers was stratified by teacher experience, with oversampling of beginning and early career teachers by a factor of 1.5 to improve estimates for this subpopulation. For each experience stratum, teachers were then sorted by subject matter taught. Within each school, teachers were selected with equal probability (Cox et al., 2016). The number of teachers per building varied depending on the school’s grade range and state. To avoid overburdening schools, a maximum of 20 teachers per building was selected, with an average of three to nine teachers sampled per building. Table 2 summarizes the demographic characteristics of the 37,500 participating teachers, while Table 3 includes data describing the schools in which participating teachers were working. Because NCES requires all unweighted sample size numbers to be rounded to the nearest 10, percentages may not total 100 and some totals may not correspond with sum of separate figures (NCES, 2019).

Table 2

Demographics of Respondents to SASS Teacher Questionnaire

Variable	<i>n</i>	%
Gender		
Male	11,750	31.3%
Female	25,750	68.7%
Age		
21-29	6,720	17.9%
30-39	10,260	27.3%
40-49	9,190	24.5%
50-83	11,330	30.2%
Race/Ethnicity^a		
White	34,730	92.6%
Black or African American	2,030	5.4%
Hispanic or Latino origin	1,930	5.1%
Asian	650	1.7%
American Indian or Alaska Native	600	1.6%
Hawaiian Native or Other Pacific Islander	140	0.4%

Table 2 (continued)

Field of main teaching assignment		
English and Language Arts	5,490	14.6%
Elementary Education	5,380	14.3%
Special Education	4,940	13.2%
Mathematics	4,660	12.4%
Natural Sciences	3,580	9.6%
All others	3,390	9.0%
Social Sciences	3,370	9.0%
Arts and Music	2,700	7.9%
Health and Physical Education	2,160	5.8%
Foreign Languages	1,410	3.8%
English as a Second Language or Bilingual	430	1.1%
Teacher's main position at the school		
Regular full-time teacher	34,670	92.1%
Regular part-time teacher	1,260	3.4%
Itinerant teacher	710	1.9%
Other professional staff	560	1.5%
Long-term substitute	160	0.4%
Administrator	140	0.4%
Library media specialist or Librarian	100	0.3%
Support staff	<10	0.0%

^a respondents could select more than one category

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Table 3

Description of teaching environments

Variable	<i>n</i>	%
Census region		
Midwest	11,200	29.6%
South	11,030	29.4%
West	9,160	24.4%
Northeast	6,210	16.6%
School locale		
Rural	12,900	34.4%
Suburb	10,290	27.4%
City	8,140	21.7%
Town	6,180	16.5%
Charter school		
School is not a public charter school	34,960	93.2%
School is a public charter school	2,540	6.8%

Table 3 (continued)

Level of students taught by teacher		
High	14,650	39.0%
Middle	12,190	32.5%
Primary	5,890	15.7%
Combined	4,760	12.7%
Enrollment in school		
Less than 500	14,080	37.5%
500-749	8,130	21.7%
750 or more	15,300	40.8%
Percentage of enrolled students eligible for NSLP		
Less than 35%	8,870	23.6%
35-74%	13,720	36.6%
75% or more	14,910	39.8%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Present study participants. Participants in the present study were novice special and general education teachers. To identify participants, variable T0025 (teacher's main position at the school) with value labels 1 (regular full-time teacher) and 3 (itinerant teacher) was used to sort 35,280 full-time teachers. Participants identifying positions of substitute teacher, student teacher, teacher aide, administrator, school librarian, other professional staff, or support staff were not included because the focus of this study was participants working as classroom teachers. Because part-time teachers may have different personal situations and reasons for leaving or staying in their current position than full-time teachers, they were omitted from the present study as well.

Next, groups of general and special educators were selected using the ASSIGN03 variable to identify teachers by field of teaching. On the survey, participants chose either a specific subject matter code (Arts and Music, English and Language Arts, English as a Second Language, Foreign Languages, Health Education, Mathematics and Computer Science, Natural Sciences, Social Sciences, Career or Technical Education, Miscellaneous); elementary education

(elementary grades, general or early childhood, general); or special education, any. No further categorization of special education teaching assignments was possible. Special education teachers identified using the value code of 110 “special education, any” were labelled with the created variable `spedtch`. General education teachers (assigned created variable `genedtch`) included individuals who selected a value code falling in to one of the following categories: elementary education: general early childhood or elementary; art and music; English and language arts; English as a second language; foreign languages; health education; mathematics and computer science; natural sciences; and social sciences. Because preparation, licensure expectations, and teaching conditions vary for teachers in the Career or Technical Education category (i.e., construction trades, mechanics, healthcare occupations) and the Other/Miscellaneous categories (i.e., military science, library), teachers in these groups were excluded from the present study. This sort yielded 32,100 teachers: 27,460 general education teachers and 4,630 special education teachers. These numbers do not sum due to rounding required by NCES restricted-use data procedures (NCES, 2019). The reported number of general education teachers was rounded, as was the number of special education teachers. The actual number of teachers was summed and rounded.

Novice educators were sorted from this group of 32,100 teachers using variable `T0040` (In what year did you FIRST begin teaching at the elementary or secondary level?). Teachers who selected one of the three most recent years were identified with dummy codes, including `Y1` (began teaching in 2011-12), `Y2` (began teaching in 2010-11) or `Y3` (began teaching in 2009-10). This resulted in a group of 4,410 (rounded to nearest 10) first, second, or third year teachers.

Participants with the `Y1`, `Y2`, and `Y3` codes were then sorted using the created variables of `spedtch` and `genedtch`, yielding rounded numbers of 670 novice special education teachers and

3750 novice general education teachers. The number of participants in each group is detailed in Table 4. Characteristics of the study’s sample groups are described in Table 5, while Table 6 summarizes data describing the schools in which the novice special education teachers worked. In all tables, the unweighted sample size numbers are rounded to the nearest 10 (NCES, 2019), so percentages may not total 100 and some totals may not correspond with sum of separate figures.

Table 4

Number of participants by year and teaching field

	General education teachers		Special education teachers	
	<i>n</i>	% of genedtch	<i>n</i>	% of spedtch
Y1=Year 1	1,140	30%	210	32%
Y2=Year 2	1,360	36%	230	34%
Y3=Year 3	1,250	33%	230	34%
Total	3,750	100%	670	100%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public Teacher Questionnaire,” 2011-12.

Table 5

Demographics of novice teacher samples

Variable	Novice general education teachers		Novice special education teachers	
	<i>n</i>	%	<i>n</i>	%
Gender				
Female	2,520	67%	530	80%
Male	1,230	33%	140	20%
Age				
20-29	2,720	73%	410	62%
30-39	650	17%	130	20%
40-49	260	7%	80	12%
50-65	110	3%	40	6%
Race/Ethnicity^a				
White	3,460	92%	620	93%
Hispanic or Latino origin	290	8%	40	6%
Black or African American	220	6%	40	6%
Asian	80	2%	10	2%

Table 5 (continued)

American Indian or Alaska Native	60	2%	10	2%
Hawaiian Native or Other Pacific Islander	20	1%	<10	1%
Field of main teaching assignment				
English and Language Arts	710	19%	-	-
Mathematics	700	19%	-	-
Elementary Education	670	18%	-	-
Special Education	-	-	670	100%
Natural Sciences	500	13%	-	-
Social Sciences	390	10%	-	-
Arts and Music	310	8%	-	-
Health or Physical Education	230	6%	-	-
Foreign Language	200	5%	-	-
ESL and Bilingual Education	60	1%	-	-

^arespondents could select more than one category

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Table 6

Description of teaching environment of novice teacher sample

Variable	Novice general education teachers		Novice special education teachers	
	<i>n</i>	%	<i>n</i>	%
Census region				
South	1,410	38%	200	30%
Midwest	1,030	27%	210	32%
West	900	24%	150	22%
Northeast	410	11%	110	16%
School locale				
Rural	1,300	35%	200	30%
City	970	26%	160	24%
Suburb	890	24%	180	27%
Town	600	16%	120	19%
Charter school				
School is not a public charter school	3,190	85%	610	92%
School is a public charter school	550	15%	50	8%
Level of students taught by teacher				
High	1,400	37%	180	28%
Middle	1,230	33%	260	40%
Primary	620	16%	110	17%
Combined	500	8%	100	15%

Table 6 (continued)

Enrollment in school				
Less than 500	1,530	41%	290	43%
500-749	830	22%	150	22%
750 or more	1,390	37%	230	34%
Percentage of enrolled students approved for the NSLP				
Less than 35%	730	19%	120	18%
35-74%	1,230	33%	220	34%
75% or more	1,790	48%	320	49%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Measures

SASS measures. For the national SASS survey, sampled teachers were selected from a Teacher Listing Form (TLF) completed either by the school district, building principal or school survey coordinator. Selected teachers were asked to complete the 2011-12 SASS Teacher Questionnaire. This instrument consists of 93 questions across eight sections (General Information, Class Organization, Education and Training, Certification, Professional Development, Working Conditions, School Climate and Teacher Attitudes, and General Employment and Background Information). Respondents provided descriptive information about their current teaching assignment and their preparation for teaching (including degrees, certification, tests taken, coursework, and student teaching). Teachers also were asked to describe and evaluate professional development activities completed in the previous 12 months. Questions focused on teacher working condition surveyed participants about the length of their contracted school day and extra time spent in the evening and weekends preparing for classes, involvement in coaching or sponsoring extra-curricular activities, and participation in districtwide leadership activities. Data regarding teachers' perceptions of the amount of influence they have on school policy were gathered in a subsequent section, as were data describing

participants' perceptions of sources of workplace stress and satisfaction. Questions surveying participants about their responses to workplace stressors and the likelihood of remaining in their current position and teaching in general also were included on the survey.

Present study measures. To respond to this study's research questions, a measure tapping teachers' intent to remain in teaching was analyzed together with data about participation in a student teaching experience of 8 weeks or longer. Demographic characteristics of the teacher were not considered as potential influences on an association between intent to remain in teaching and student teaching length, however, teaching environment characteristics of urbanicity and percentage of students eligible for the National School Lunch Program were considered as control variables.

Demographic characteristics of the teacher. As Borman and Dowling (2008) suggest, demographic characteristics of the teacher and teaching environments may influence attrition. The sample for the present study presents little variability in teacher demographic characteristics. Specifically, 92% of the study participants were White and 69% were female. The study's focus on novice teachers served to limit the effects of age, with 71% of the sampled teachers being under the age of 30. Older teachers nearing retirement (with higher attrition rates) were not represented in the sample population to a meaningful extent. Billingsley's (2004) conclusion that teacher race, ethnicity, and gender have no consistent impact on attrition rates of special educators, paired with the present study's sample homogeneity supported a decision to exclude teacher race/ethnicity, gender, and age as confounding variables in the analyses.

Demographic characteristics of the teaching environments. While the variables of urbanicity of the school and percentage of students eligible for participation in the National School Lunch Program are unlikely to be independent of each other, these teaching environment

characteristics may influence associations between teacher attrition and preservice preparation. As such, the present study included variables serving as control measures accounting for these potentially confounding factors. Data regarding urbanicity of the school (variable *URBANS12* with value labels of rural, town, suburban, urban) were included as control variables. City and suburban were dummy coded, with rural and town combined in a third dummy coded variable. Also included as a control variable was the percentage of enrolled students approved for participation in the NSLP. Variable *NSLAPP_S* is a continuous variable that was converted to categories. For the present study, the category cut-points were selected to align with federal guidelines used for Title I-A grant allocations that provide money to schools serving low income students. Specifically, the guidelines identify that schools with 75% or more students eligible for NSLP are the highest priority for service, followed by schools with 35%-74.9% eligible (Skinner & Aussenberg, 2016). As such, categories used in these analyses included: a) less than 35%; b) 35% to less than 75%, and c) 75% or more.

Student teaching as a preparation variable. Two questions were used to describe participants' student teaching experiences. Participants selected yes or no for variable *T0208* (*Did you have any practice or student teaching?*). Teachers responding "yes" were asked to indicate the length of their student teaching in weeks for variable *T0209* (categories of 4 weeks or less, 5-7 weeks, 8-11 weeks, 12 weeks or more). Most states (39 of 50) set a minimum length for traditional student teaching of at least 10 weeks (Greenberg, Pomerance, & Walsh, 2011). In some of the non-traditional preparation approaches, however, student teaching may be abbreviated or absent. To examine the influence of a typical student teaching experience on intent to stay in teaching, participants were categorized based on student teaching length. Participants completing eight or more weeks of student teaching were grouped in one category.

Participants completing 7 weeks or less (including no) student teaching comprised a second group.

Intent to remain in teaching. To represent intention to leave teaching, teacher responses to *How long do you plan to remain in teaching?* were coded using variable *T0437*. Teachers selected one response from the following categories: as long as able, until I am eligible for retirement benefits from this job, until I am eligible for retirement benefits from a previous job, until I am eligible for Social Security benefits, until a specific life event occurs (e.g., parenthood, marriage, retirement of a spouse or partner), until a more desirable job opportunity comes along, definitely plan to leave as soon as possible, or undecided at this time. Intent to remain in teaching a) as long as able, b) until eligible for retirement benefits from this job, c) until eligible for retirement benefits from a previous job, or d) until eligible for Social Security benefits were grouped and categorized as representing a positive intent to stay in the teaching profession.

Table 7 describes the variables used in the present study.

Table 7

Measures Used for Dependent and Independent Variables

Variables	Variable and description	Value labels	Selected value labels
Dependent variables			
Intent to stay in teaching	<i>T0473</i> Indicates how long teachers plan on remaining teachers	1: As long as I am able 2: Until I am eligible for retirement benefits from this job 3: Until I am eligible for retirement benefits from a previous job 4: Until I am eligible for Social Security benefits 5: Until a specific life event occurs (e.g., parenthood, marriage, retirement of spouse or partner)	Coded 1: value labels 1, 2, 3, 4 Coded 0: value labels 5, 6, 7, 8

Table 7 (continued)

		6: Until a more desirable job opportunity comes along	
		7: Definitely plan to leave as soon as I can	
		8: Undecided at this time	
Independent variables			
	<i>URBANS12</i>		<i>city</i> = value label 1
	School locale	1: city	<i>suburb</i> = value label 2
	Indicates the collapsed urban-centric school locale code	2: suburb	<i>rural</i> – value labels 3 and 4
		3: town	
		4: rural	
Characteristics of Teaching Environments	<i>NSLAPP_S</i>		<i>lowNSLP</i> = ≤35% and no participation
	Of schools that participate in the NSLP, percentage of their K-12 enrollment that was approved for free or reduced-price lunch	Value is continuous unless school does not participate in the NSLP	<i>medNSLP</i> = 35-less than 75%
			<i>high NSLP</i> = 75% or more
Student Teaching	<i>T0209</i>	-8: Valid Skip (did not have a student teaching experience)	Coded 1: value labels 3 and 4 (<i>tradsttch</i>)
	Indicates in weeks how long the practice or student teaching lasted	1: 4 weeks or less	
		2: 5-7 weeks	
		3: 8-11 weeks	Coded 0: value labels 1, 2 and -8
		4: 12 weeks or more	

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Research Design

The present study used a quasi-experimental design. The SASS Teacher Questionnaire data were used in a cross-sectional, correlational design that used logistic regression to examine the stated intent to stay in teaching across groups of novice general and special education teachers who differed in length of preservice student teaching. For all three questions, logistic regression analysis was used to examine whether a student teaching experience of 8 weeks or more predicted intent to stay in teaching, accounting for specific characteristics of the teaching

environment. The first model identified whether there was a reliable link between novice teachers (all first, second, and third year teachers in the sample) and an 8 week or more student teaching experience. Logistic regression modelling was continued in the second and third analyses which investigated how the association varied across fields (general versus special education) and over time (from first to third year of teaching).

Independent and dependent variables. Table 8 summarizes information on the dependent and independent variables as they relate to the research questions. Additional detail about the variables is provided in subsequent sections.

Table 8

Dependent and Independent Variables

Variables	Description	Research questions
Dependent variables		
Intent to stay in teaching	Stated intent to stay in teaching for the long term	1,2,3
Independent variables		
Characteristics of Teaching Environment	School locale Percentage enrolled students approved for NSLP	1,2,3
Student Teaching	Completed 8 weeks or more of student teaching	1,2,3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public Teacher Questionnaire,” 2011-12.

Dependent variables. Across all research questions, the primary dependent variable was the teachers’ response to variable *T1748* about how long they planned to remain teachers. Multiple categorical responses to this question were collapsed into a single dichotomous variable representing “intend to stay in teaching” (coded 1). Categories grouped and coded 1 were those conveying a commitment to the teaching profession or an intent to remain in teaching: a) as long as able, b) until eligible for retirement benefits from this job, c) until eligible for retirement benefits from a previous job, or d) until eligible for Social Security benefits. Other responses

(until a specific life event occurs [e.g., parenthood, marriage, retirement of a spouse or partner], until a more desirable job opportunity comes along, definitely plan to leave as soon as possible, undecided at this time) were grouped and coded 0. These latter categories did not represent a firm commitment or intent to stay in the teaching profession.

Independent variables. Reviewed literature suggests that teachers completing university-based traditional or PDS model preparation that included an extensive (8 weeks or more) student teaching experience were likely to remain in teaching longer than teachers who began with little or no student teaching preparation. To investigate the relation between preservice student teaching and an intent to stay in teaching, analyses were conducted using teaching environment characteristics as potential confounds and student teaching of 8 weeks or more as an independent variable.

Characteristics of teacher and teaching environments. Aspects of the teaching environment were included as part of the model for each analysis. The schools' urbanicity was categorized using a three-category set of dummy variables: *city*, where city = 1 and suburb, town, rural = 0; *suburb*, where suburb = 1 and city, town, rural = 0; and *rural*, where town or rural = 1 and city or suburb = 0. NSLP participation was coded using the following three categories: *lowNSLP*, where 1=eligibility of less than 35% of the student enrollment and 0 = 35% or higher student eligibility; *medNSLP*, where 1=eligibility of 35% to less than 75% of students and 0=less than 35% eligible and 75% or more; and *highNSLP*, where 1=eligibility by 75% or more of students and 0=less than 75%.

Student teaching as a preparation variable. A new variable *tradsttch* was created to represent completion of a student teaching experience of eight or more weeks. This variable was created by combining value label 3 (student teaching 8-11 weeks) and 4 (student teaching 12

weeks or more) for variable *T0349*. For variable *tradsttch*, 1=completion of 8 weeks or more of student teaching and 0=7 or less weeks.

Procedure

SASS procedure. Beginning in November 2011, teacher questionnaires were initially distributed via internet instruments on a rolling basis as the Teacher Listing Forms were returned. Paper questionnaires were sent initially to teachers in Amish or Mennonite schools and also were sent to non-responding teachers later in the data collection process. Researchers conducted multiple mail and telephone follow-up contacts to remind sampled teachers to complete their questionnaires. By January 2012, 7.3% of Teacher Questionnaire recipients had responded. By early June of 2012, about 75% of teachers had responded. By the end of the data collection window in June 2012, the unweighted response rate for public school teachers was 76.8% (weighted response rate of 77.7%). Weighting of response rates for the Teacher Questionnaire was done using the inverse of the probability of selection.

Present study procedure. The University of Illinois's Office for the Protection of Research Subjects reviewed the proposed study and identified that it did not meet the criteria for Human Subjects Research, so no approval was needed to proceed. A copy of this letter documenting this decision is included in Appendix C. A non-disclosure affidavit was sent to and approved by the Institute for Education Sciences Data Security Office to grant access to the restricted use SASS 2011-12 Teacher Questionnaire data file. In accordance with required procedures, the principal project officer provided oversight to ensure data were accessed only on a secure standalone desktop computer located in the locked, licensed site.

SASS missing data and imputation. SASS staff calculate a unit response rate for each survey to reflect the percentage of sampled cases that are complete. NCES has set a threshold

response rate of 85%. Nonresponse bias analysis is required when response rates fall below this level to review whether participants who skip some items vary on key characteristics from respondents who completed those items. If the overall response rate falls below 50%, NCES conducts additional bias analysis and may not publish those estimates. For the 2011-12 Teacher Questionnaire survey, nonresponse adjustments were made to eliminate some, but not all significant bias (Cox et al., 2016). Bias may remain in some estimates from areas including Hawaii, Alaska, the District of Columbia, Maine, Maryland, and Rhode Island. Additional bias analysis was required for public school teachers located in cities because the Teacher Listing Form response rate of 68% combined with a teacher response rate of 71.8% yielded an overall response rate of 48.8%. To mitigate the nonresponse bias, supplemental analyses and adjustments were completed before these data were released. However, caution was urged in analyzing city public school teachers by city size due to remaining nonresponse bias with this group (Cox et al., 2016). Additional nonresponse bias analyses were completed at the survey level. For the public-school Teacher Questionnaire, 17 items had response rate below the 85% threshold. Subsequent analyses revealed no substantial evidence of bias (Cox et al., 2016).

Before survey data were released, SASS data were fully imputed so that all data records contain a response for each questionnaire item. To impute data, Census Bureau analysts first used donor respondent methods, such as hot deck imputation, to replace missing data. If no appropriate donor case could be matched, the mean or mode from groups of similar cases were used to impute a value. In the rare situation in which the imputed values were out of the range of acceptable values or inconsistent with existing data, analysts determined an appropriate value. To identify imputations conducted with a variable, each item from the SASS Teacher Questionnaire

is represented in the data files by two variables (the fully imputed variable and an imputation flag variable).

Missing data and imputation. As mentioned previously, due to SASS data management procedures, no data were missing in the sample used for the present study. As an indication of completeness of the relevant data, for survey variables associated with present study, imputation flag variables were reviewed. Imputation rates for extant variables (those coming from administrative data collections such as the Common Core of Data rather than from SASS surveys) were not reviewed. Out of 4,410 possible cases, for variable *T0209* (weeks of student teaching) imputed data were used for 50 records, representing 1.1% of the data. For variable *T0473* (intent to stay in teaching), the rate of imputation also was very low (80 cases, or 1.8%).

Sample Size

To determine the necessary number of participants in the analyses to detect significant effects, a priori power analyses were completed using G*Power 3.1.9.4 (Faul, Erdfelder, Lang, & Buchner, 2007). Logistic regression was used to address all the research questions. Assumptions made in the a priori power analysis for the logistic regressions included an odds ratio of 1.3, $\alpha = 0.05$, and power (1- β error probability) of 0.80. For specific analyses, the probability options varied based on estimates (proportion of target variable divided by sample total), as did the resulting necessary sample sizes which will all be satisfied with the 670-case sample of novice special educators and 3,750 general educators. Table 9 summarizes a priori sample size analyses for the predictor variables.

Table 9

A priori sample sizes for predictor variables

Variable	G*Power calculation's estimated probability	Necessary Sample Size
Locale		
<i>city</i>	0.25	488
<i>suburb</i>	0.20	568
<i>rural</i>	0.30	438
Percentage of enrolled students approved for the NSLP		
<i>lowNSLP</i> - Less than 35%	0.20	568
<i>medNSLP</i> - 35-74%	0.30	438
<i>highNSLP</i> - 75% or more	0.25	488
<i>tradsttch</i> - 8 or more weeks of student teaching	0.70	438

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

Analysis

For all three research questions, binary logistic regression analyses were conducted using Stata 16 software (StataCorp, 2019) to model the influence of each of the teaching environment variables and the variable representing student teaching of 8 weeks or more as predictors of the dependent variable of intent to stay in teaching. Data were entered in Stata's logistic regression feature using direct logistic regression modeling in which all predictors were introduced into the model simultaneously. Final sampling weights (*TFNLWGT*) were included in all analyses to address unequal probabilities for selection and make statistics computed more representative of the population. Results are presented in odds ratios. Table 10 identifies predictor variables that were used in regression modeling across all research questions. Logistic regression models are appropriate for this analysis because the dependent variables are dichotomous, there is a large sample size with no outliers, and the observations are independent of each other (e.g., one respondent's survey answers do not influence another respondent).

Table 10

Predictor variables for research questions

Predictor	Variable	Description
School locale	Categorical	City, Suburb, Rural
Percentage of students approved for NSLP	Categorical	<35%, 35-74%; 75% or more
Completed student teaching experience of 8 weeks or more	Dichotomous	Yes, no

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public Teacher Questionnaire,” 2011-12.

To respond to individual research questions, the previously described logistic regression analyses were completed using data generated by specific groups of participants. Table 11 identifies participants for each research question.

Table 11

Participant groups for research questions

Research Question	Participant Group	<i>n</i>
1. Is novice teachers’ intent to stay in teaching impacted by 8 weeks or more of student teaching	First, second and third year general and special education teachers analyzed together as one group	4,410
2. Does a relation between intent to stay in teaching and student teaching of 8 weeks or more vary based on teaching field?	First, second- and third-year general education teachers together as a group	3,750
	First, second- and third-year special education teachers together as a group	670
2. Does a relation between intent to stay in teaching and student teaching of 8 weeks or more change over time?	First year general education teachers	1,140
	First year special education teachers	210
	Second year general education teachers	1,360
	Second year special education teachers	230
	Third year general education teachers	1,250
	Third year special education teachers	230

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public Teacher Questionnaire,” 2011-12.

In summary, first, second, and third year teachers in general education ($n=3750$) and special education ($n=670$) were identified from the teacher participant group of the SASS study. A series of logistic regression models were completed to explore the influence of each of the dependent variables on novice educators’ intent to stay in teaching.

Chapter 4 - Results

This study explored whether there is a reliable link between completion of a student teaching experience of 8 weeks or more and novice educators' intent to remain in teaching. Using data from the NCES 2011-12 Schools and Staffing Survey, logistic regression models were used to identify the impact of the 8 weeks or more of student teaching experience on novice special and general educators intent to remain in teaching as well as to explore whether the impact varied across teaching field (general versus special education) or changed over time (from first year of teaching to third year of teaching). Overall, results indicated that for general education teachers, completion of an 8 week or more student teaching experience was strongly associated with increased commitment to stay in teaching expressed during their first and second year of teaching. No link was identified for third-year general education teachers. For first, second, and third year special education teachers, however, no association was identified between stated intent to stay in teaching and the completion of an 8 week or more student teaching experience.

To provide a more detailed examination of the findings, the first part of this chapter includes descriptive information about the teachers whose responses to the SASS Teacher Questionnaire were used in the analyses. Subsequent sections include results from the statistical analyses and a summary of the significant results.

Descriptive Data

Responses to the SASS Teacher Questionnaire from a total of 4,410 teachers in their first, second or third year of teaching were included in the analyses. As described in detail in Table 6 (previous chapter), about half of the teachers worked in rural or town settings, with the other half divided evenly between city and suburban communities. Approximately two thirds of the teachers taught at the middle or high school levels, and about 40% of the educators taught in

buildings enrolling fewer than 500 students. Nearly half of the teachers worked in buildings in which 75% or more of the students were eligible for participation in the NSLP. Regarding the dependent variable of intent to stay in teaching, Table 12 illustrates the number of teachers by field and year of experience expressing a commitment to continue in the field. Numbers in the table have been rounded per NCES restricted-use data procedures (NCES, 2019) so rows and columns may not sum.

Table 12

Number of novice teachers expressing intent to stay in teaching

Experience	Intent to stay in teaching			
	Special education teachers (n=670)		General education teachers (n=3,750)	
	Yes	No	Yes	No
Year 1	160 (77%)	50 (23%)	790 (69%)	350 (31%)
Year 2	180 (78%)	50 (22%)	940 (69%)	430 (31%)
Year 3	180 (79%)	50 (21%)	840 (67%)	410 (33%)
Total	520 (78%)	150 (22%)	2,560 (68%)	1,190 (32%)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

As illustrated in Table 12, within each field (general or special education) the percentage of novice teachers indicating an intent to stay was consistent across time from years one to three. Across all years, a greater percentage of novice special education teachers intended to stay compared to general education teachers.

Intent to stay in teaching – novice teachers

Binary logistic regression was conducted to identify association between novice teachers' intent to stay in teaching and their completion of an 8 week or more student teaching experience. Teaching environment characteristics including the percentage of students participating in the National School Lunch Program and school urbanicity were included in the regression because previous research suggested that these factors may influence novice teacher attrition (Billingsley & Bettini, 2019; Borman & Dowling, 2008). Table 13 summarizes the results of this analysis.

Table 13

Predicting intent to stay in teaching for novice teachers

Model	Predictors	Odds Ratio	SE	z	p> z	[95% Conf Interval]	
Intent to Stay							
	<i>tradsttch</i>	1.81	0.27	3.94	0.000*	1.35	2.43
	<i>high NSLP</i>	0.90	0.13	-0.74	0.461	.67	1.20
	<i>med NSLP</i>	0.82	0.13	-1.24	0.217	.61	1.12
	<i>city</i>	0.78	0.11	-1.77	0.076	.59	1.03
	<i>suburb</i>	0.98	0.15	-0.16	0.876	.73	1.31
	constant	1.48	0.35	3.18	0.001	1.26	2.68

Note. *tradsttch* coded as 1 = 8 weeks or more of student teaching, 0 = 7 weeks or less of student teaching; NSLP levels of high (75% or more students eligible), medium (35%-74% students eligible), low (less than 35% students eligible); city = 1, suburb and rural = 0; suburb = 1, city and rural = 0

Wald chi-square (*df*) = 21.32 (5)

**p* < .001

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

In this analysis, the criterion variable was *intentstay* (coded 1=intend to stay and 0=do not intend to stay). The predictor variables were completion of 8 weeks or more of student teaching (*tradsttch*), percentage of students eligible for National School Lunch Program, and urbanicity. All variables were entered simultaneously into the logistic regression model. For the predictor of primary interest (*tradsttch*) the regression resulted in an odds ratio of 1.81, which was significant at *p*<0.0001. No other predictor variable in the model had a significant effect on intent to stay.

This result suggests that first, second, and third year teachers who student taught for 8 weeks or more were 81% more likely to remain in education, holding all other factors constant.

Intent to stay in teaching – across teaching fields and change over time

Additional analyses were conducted using logistic regression models to explore variations based on teaching field in the relation between commitment to stay in the profession and student teaching. Change over time in association between intent to stay and student teaching of 8 weeks or more also was explored.

In response to the second research question, data from all first, second, and third year general education teachers as a group were compared to those for all first, second, and third year special education teachers. The criterion variable *intentstay* was directly entered a logistic regression model along with the predictor variables of completion of 8 weeks or more of student teaching (*tradsttch*), percentage of students eligible for National School Lunch Program, and urbanicity. One model was completed with the group of general education teacher participants and a second model was calculated for special education teachers. Results are summarized in Table 14.

Table 14

Predicting intent to stay in teaching for novice general and special educators

Model	Predictors	Odds Ratio	SE	z	<i>p</i> > z	[95% Conf Interval]	
Intent to Stay							
All General Ed							
(n=3,750)							
	<i>tradsttch</i>	2.04	0.33	4.44	0.000*	1.49	2.80
	<i>high NSLP</i>	0.85	0.14	-1.01	0.312	0.62	1.17
	<i>med NSLP</i>	0.86	0.14	-0.90	0.368	0.62	1.19
	<i>city</i>	0.80	0.14	-1.50	0.133	0.59	1.07
	<i>suburb</i>	0.90	0.14	-0.66	0.508	0.66	1.23
	constant	1.64	0.34	2.39	0.017	1.09	3.45

Table 14 (continued)

Intent to Stay All Special Ed (n=670)							
<i>tradsttch</i>	1.08	0.49	0.17	0.866	0.44	2.64	
<i>high NSLP</i>	1.08	0.44	0.19	0.851	0.49	2.38	
<i>med NSLP</i>	0.57	0.26	-1.25	0.211	0.26	1.38	
<i>city</i>	0.66	0.28	-0.96	0.336	0.29	1.53	
<i>suburb</i>	1.41	0.60	0.80	0.424	0.61	3.25	
constant	3.69	2.12	2.28	0.023	1.20	11.36	

Note. *tradsttch* coded as 1 = 8 weeks or more of student teaching, 0 = 7 weeks or less of student teaching; NSLP levels of high (75% or more students eligible), medium (35%-74% students eligible), low (less than 35% students eligible); city = 1, suburb and rural = 0; suburb = 1, city and rural = 0

General Ed Wald chi-square (*df*) = 24.60 (5); Special Ed Wald chi-square (*df*) = 7.18 (5)

**p* < .001.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

For novice general education teachers, the regression resulted in an odds ratio of 2.04, which was significant at *p*=0.000. No other predictor variable in the model had a significant effect on intent to stay for general educators. The same model and procedures were completed for the population of novice special education teachers. A non-significant odds ratio of 1.08 was the result for the logistic regression involving the independent variable of *tradsttch*, with no effect related to the control variables.

This result suggests that regardless of the teaching environment characteristics of urbanicity and student NSLP eligibility, novice general education teachers who completed a student teaching experience of 8 weeks or more were twice as likely to express an intent to stay in teaching when compared to those with less weeks of student teaching. For novice special education teachers, no reliable link between intent to stay in the profession and completion of an 8 week or more student teaching experience was identified.

General education teachers, intent to stay, and change over time. Focusing specifically on the population of general education teachers, the results describe highlight a

reliable relationship between intent to stay in teaching and completion of an 8 week or more student teaching experience. The next set of analyses examined changes over time in the relation between intent to stay and completion of an 8 week or more student teaching experience. Table 15 summarizes the results of these analyses.

Table 15

Predicting intent to stay in teaching for novice general education teachers

Model	Predictors	Odds Ratio	SE	z	p> z	[95% Conf Interval]	
Intent to Stay							
Y1 Gen Ed							
(n=1,140)							
	<i>tradsttch</i>	3.28	1.00	3.89	0.000**	1.80	5.97
	<i>high NSLP</i>	1.17	0.36	0.52	0.605	0.64	2.14
	<i>med NSLP</i>	1.04	0.33	0.12	0.904	0.56	1.92
	<i>city</i>	0.67	0.17	-1.58	0.113	0.41	1.10
	<i>suburb</i>	0.85	0.25	-0.56	0.578	0.48	1.51
	constant	0.95	0.37	-0.13	0.896	0.44	2.03
Intent to Stay							
Y2 Gen Ed							
(n=1,360)							
	<i>tradsttch</i>	1.91	0.49	2.56	0.010*	1.17	3.15
	<i>high NSLP</i>	0.76	0.21	-1.02	0.308	0.44	1.29
	<i>med NSLP</i>	0.84	0.23	-0.64	0.523	0.50	1.42
	<i>city</i>	0.95	0.26	-0.17	0.864	0.56	1.63
	<i>suburb</i>	0.94	0.24	-0.24	0.813	0.57	1.56
	constant	1.76	0.57	1.75	0.080	0.93	3.30
Intent to Stay							
Y3 Gen Ed							
(n=1,250)							
	<i>tradsttch</i>	1.55	0.43	1.59	0.112	0.90	2.67
	<i>high NSLP</i>	0.74	0.20	-1.09	0.274	0.43	1.27
	<i>med NSLP</i>	0.79	0.23	-0.83	0.409	0.45	1.39
	<i>city</i>	0.79	0.20	-0.96	0.335	0.48	1.28
	<i>suburb</i>	0.90	0.25	-0.40	0.691	0.52	1.54
	constant	2.24	0.83	2.17	0.030	1.08	4.62

Note. *tradsttch* coded as 1 = 8 weeks or more of student teaching, 0 = 7 weeks or less of student teaching; NSLP levels of high (75% or more students eligible), medium (35%-74% students eligible), low (less than 35% students eligible); city = 1, suburb and rural = 0; suburb = 1, city and rural = 0

Y1 Wald chi-square (*df*) = 18.72 (5); Y2 Wald chi-square (*df*) = 8.65 (5); Y3 Wald chi-square (*df*) = 5.34 (5)

p* < .01. *p* < .001.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

First year general education teachers who completed 8 weeks or more of student teaching were 328% more likely to express an intent to stay compared to those completing 7 weeks or less. This finding was significant at $p < 0.001$. For second year general education teachers, the odds ratio was significant at $p < .01$, with a value of 1.91. These findings suggest that when controlling for the influence of NSLP and urbanicity of the school, there is a positive association between intent to stay in teaching and the predictor variable of *tradsttch*. Specifically, in their first year, general education teachers who completed 8 weeks or more weeks of student teaching were 3.81 times more likely to express an intent to stay in the teaching profession than those with less than 8 weeks of student teaching. The odds of second year teachers with 8 weeks or more of student teaching expressing an intent to stay in teaching were 1.91 times greater than those without such an experience, suggesting a continued reliable relationship between 8 weeks or more of student teaching and intent to stay in teaching. None of the control factors (percent of students eligible for the NSLP and urbanicity) had a significant effect on intent to stay in teaching. For general education teachers responding during their third year of teaching, none of the predictor variables, including student teaching, significantly affected their intent to stay in teaching.

Special education teachers, intent to stay, and change over time. Completion of a student teaching experience of 8 weeks or more did not reliably predict commitment to the profession for novice special education teachers. As illustrated in Table 16, none of the predictor variables included in the logistic regression model resulted in a significant effect for first, second, or third year special education teachers.

Table 16

Predicting intent to stay in teaching for novice special education teachers

Model	Predictors	Odds Ratio	SE	z	$p > z $	[95% Conf Interval]	
Intent to Stay Y1 Special Ed (n=210)							
	<i>tradsttch</i>	0.70	0.52	-0.49	0.626	0.16	2.99
	<i>high NSLP</i>	0.43	0.33	-1.11	0.267	0.91	1.90
	<i>med NSLP</i>	.042	0.32	-1.15	0.251	0.94	1.85
	<i>city</i>	0.91	0.57	-0.16	0.875	0.26	3.10
	<i>suburb</i>	2.45	1.62	1.36	0.175	0.67	8.96
	constant	8.63	9.18	2.03	0.043	1.07	69.45
Intent to Stay Y2 Special Ed (n=230)							
	<i>tradsttch</i>	1.87	1.31	0.90	0.368	0.48	7.35
	<i>high NSLP</i>	1.75	1.15	0.85	0.394	0.48	6.36
	<i>med NSLP</i>	0.66	0.42	-0.65	0.518	0.19	2.33
	<i>city</i>	2.12	1.62	0.99	0.321	0.48	9.48
	<i>suburb</i>	1.77	1.09	0.93	0.354	0.53	5.91
	constant	1.46	1.39	0.39	0.693	0.22	9.48
Intent to Stay Y3 Special Ed (n=230)							
	<i>tradsttch</i>	1.08	0.83	0.09	0.925	0.24	4.91
	<i>high NSLP</i>	1.57	1.03	0.68	0.497	0.43	5.75
	<i>med NSLP</i>	0.51	0.40	-0.86	0.392	0.11	2.36
	<i>city</i>	0.25	0.18	-1.92	0.055	0.06	1.03
	<i>suburb</i>	0.88	0.70	-0.16	0.869	0.18	4.17
	constant	4.12	3.86	1.51	0.130	0.66	25.81

Note. *tradsttch* coded as 1 = 8 weeks or more of student teaching, 0 = 7 weeks or less of student teaching; NSLP levels of high (75% or more students eligible), medium (35%-74% students eligible), low (less than 35% students eligible); city = 1, suburb and rural = 0; suburb = 1, city and rural = 0

Y1 Wald chi-square (df) = 3.82 (5); Y2 Wald chi-square (df) = 3.18 (5); Y3 Wald chi-square (df) = 7.68 (5)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2011-12.

For special education teachers, regressing the variable *tradsttch* (representing 8 weeks or more of student teaching) on intent to stay in teaching did not yield any significant results.

Specifically, none of the resulting p values suggested that 8 weeks or more of student teaching

was a reliable predictor of intent to stay in teaching for first, second, or third year special educators.

For special education teachers, additional models were tested in which the teaching environment characteristics were combined to identify whether student teaching of 8 weeks or more might emerge as a significant factor in specific contexts created by the interaction of the two control variables. The additional models were used, for example, to determine if student teaching of 8 weeks or more was a significant predictor of intent to stay for teachers working at a city school categorized as *highNSLP* but not for teachers working at a city school categorized as *lowNSLP*. The additional analyses were completed using only first-year special education teachers because the results with general education teachers suggested effects of student teaching of 8 weeks or more may be more evident with first year teachers. Interactions between variables suggested by the literature as potentially related to teacher attrition (high eligibility for National School Lunch Program, city and rural locales) were modeled. As illustrated in Table 17, no significant effects were identified.

Table 17

Predicting intent to stay in teaching for first year special education teachers – interaction between teaching characteristic independent variables

Model for intent to stay if first year special education teacher with 8 weeks or more of student teaching	Odds Ratio	$p > z $
<i>highNSLP city</i>	0.54	0.40
<i>medNSLP city</i>	0.60	0.62
<i>lowNSLP city</i>	1.75	0.63
<i>highNSLP suburb</i>	1.69	0.53
<i>highNSLP rural</i>	0.44	0.25
<i>medNSLP rural</i>	0.46	0.19
<i>lowNSLP rural</i>	5.10	0.16

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public Teacher Questionnaire,” 2011-12.

Summary

To investigate the association between preservice preparation of an 8 week or more student teaching experience and teachers' intent to stay in the field, direct logistic regression analyses were conducted. The initial model was conducted using data from all study participants as a group (first, second, and third year general and special education teachers). The results suggested that when controlling for urbanicity and percentage of students eligible for the NSLP, novice teachers who completed a student teaching experience of 8 weeks or more were 1.81 times more likely to express an intent to stay in teaching long-term than those teachers without that student teaching experience.

A second analysis was done to evaluate the link between a student teaching experience of 8 weeks or more for general education teachers in comparison to special education teachers. A significant association (odds ratio = 2.04) was identified for general education teachers. For special education teachers, however, none of the predictor variables, including *tradsttch* (1 = 8 week or more student teaching experience; 0 = 7 weeks or less) was significant.

In examining change over time for novice general education teachers, this same reliable link between student teaching of 8 weeks or more and intent to stay in the field was observed during their first and second year of teaching. Specifically, the odds of a first-year general education teacher with 8 weeks or more of student teaching expressing a positive intent to stay in the profession was 3.28 time greater than for first year teachers with less student teaching experience. The association between 8 weeks or more of student teaching and positive intent to stay in teaching was still significant for second year teachers (odds ratio of 1.91). Effects of the student teaching experience faded to a non-significant level by the third year of teaching. For the group of primary concern in the present study, novice special education teachers, no reliable link

between student teaching and intent to stay in the field was identified, regardless of the characteristics of the teaching environment or number of years of teaching experience at the time they completed the survey.

Chapter 5 - Discussion

The United States has a long-standing shortage of special education teachers. The current historically low enrollment in educator preparation programs combined with an increased demand for special education teachers has the potential to jeopardize promised ideals of equitable educational opportunities for students with disabilities (Billingsley & Bettini, 2019). In response to the diminished supply of teachers, many states have created pathways to teaching credentials that require minimal or no traditional teacher preparation, including limited or no student teaching. Research (e.g., Connelly & Graham, 2009; Henke et al., 2000; Ingersoll et al., 2014) suggests that novice teachers who complete a student teaching experience of at least weeks are more likely to intend to and/or stay in the teaching field than their colleagues who have had limited or no student teaching. As such, state policy responses to teacher shortages predicated on abbreviation or elimination of a more traditional student teaching experience may in fact serve to exacerbate rather than resolve teacher shortages by filling classrooms with educators who are not likely to stay in the field on a long-term basis.

Results from the present study add to our understanding of links between traditional preservice preparation that includes student teaching and increased professional commitment. Specifically, this study confirms that for first- and second-year general education teachers, completion of an 8 week or more student teaching experience is associated with an increased commitment to stay in teaching. The strong effect found for first year general education teachers lessens over time as teachers gain experience but is still significant for second year teachers. Given the strong association between 8 weeks or more of student teaching and an intent to stay in teaching for general educators, results for novice special education teachers were surprising. The findings of the present study suggest that for first, second, or third year special education

teachers, completion of an 8 week or more student teaching experience does not reliably predict an intent to stay in teaching. This result seems to conflict with numerous studies associating student teaching with positive professional commitment and retention in the field (Boyd et al., 2006; Connelly & Graham, 2009; Henke et al., 2000; Ingersoll et al., 2014; Ronfeldt et al., 2014). However, outside of one study (Connelly & Graham, 2009), none of the studies making this link focused exclusively on or disaggregated results for special education teachers. Given that in most previous research, teachers from all fields were considered together, it could be that this association between student teaching and intent to stay in teaching has never held true for special educators in comparison to general education colleagues. One study that did focus specifically on special educators (Connelly & Graham, 2009) investigated attrition and found a positive association between student teaching of 10 weeks or more and the retention of novice special educators in their present teaching position. In analyzing the data, the researchers grouped together all special educators who did not stay in the same classroom for the subsequent year of teaching, so participants who were considered “leavers” included teachers moving to teach in a different classroom, stepping out of teaching temporarily for personal or family reasons, or leaving the field permanently. Differences in participant grouping and definition of turnover make it difficult to compare results from Connelly and Graham (2009) to the present study.

In interpreting the results from the current study, several issues warrant further discussion. First, these findings suggest it should not be assumed that present day understandings of teacher professional commitment and attrition apply equally across teachers in all disciplines. Reviews of research related to teacher turnover (e.g., Borman & Dowling, 2008; Nguyen, Pham, Springer, & Crouch; 2019), have identified patterns in teacher attrition and professional intent in

relation to teacher demographics, characteristics of the teaching environment, and professional credentials and preparation. Because research results have not often been disaggregated by or compared across teaching fields (i.e., special education, content areas in general education), it is not known to what extent the patterns exist across different teaching fields. Investigating how and whether effects vary based on teaching field may be an important next step in understanding these complex issues.

A second point for consideration is that the present study used completion of a student teaching experience of 8 weeks or more as a proxy for participation in a comprehensive preservice program. Recommended practice in preservice special educator preparation calls for thorough preparation in core academic subject areas as well as extensive opportunities to learn about and apply special education pedagogy in areas including managing learning environments, developing and individualizing curricula, assessment, instructional planning and strategies, and collaboration with families and other professionals (Council for Exceptional Children, 2015). The Council for Exceptional Children's (2015) field experience and clinical practice standard describes an expectation that preparation programs support teacher candidates in completing multiple field experiences with candidates gradually assuming increased responsibilities over time and sequenced to afford experience across the full range of student ages, curriculum types, and service delivery models of their licensure. It is not clear that participants who identified completion of an 8 week or more student teaching experienced a high quality, comprehensive preservice preparation program that reflected recommended practices in educator preparation. If it were possible to parse results based on completion of a comprehensive, high quality program of preservice coursework and field experiences rather than simply an 8 week or more student teaching experience, different results might be found. Future research is needed in this area.

Finally, it is important to keep in mind that student teaching expectations vary widely across and within disciplines based on institutions' models for placement and supervision. An assumption of the present study was that length of student teaching (number of weeks) was the distinguishing feature of quality that is relevant in predicting intent to stay in teaching. Given the variation that can be observed in mentoring, coaching, and supervision across student teaching programs, it is likely that there are characteristics of a student teaching experience other than the number of weeks that impact one's commitment to the profession. More research is needed to evaluate the influence of these variables.

Limitations

A significant limitation of this study is that the analyses were conducted on data collected in one year, at one point in time – and that the data are nearly ten years old. The teacher employment context in 2011 was very different from today. Pressures of state accountability systems and high stakes testing policies had led to increased levels of teacher dissatisfaction (Sutcher et al., 2016). Additionally, schools were reeling from the impact of the Great Recession, during which nearly 300,000 school employees lost their jobs (Evans, Schwab, & Wagner, 2019). As late as fall 2013, the employment of teachers had not yet returned to pre-recession levels, even while public school enrollment had risen by 1.6 percent during that time (Evans, Schwab, & Wagner, 2019). Therefore, special and general educators' responses to the SASS survey in 2011 may have been influenced significantly by economic factors and a lack of employment options in schools and other career areas. It is impossible to know to what extent the data were affected by the economic context of the time. Additionally, it is not known if surveys conducted in subsequent years would yield responses consistent with those found in the present study. A large nationally representative sample survey based on the SASS design, the 2015-16

National Teacher and Principal Survey (NTPS) (NCES, 2017), should soon have more recent Teacher Questionnaire data available to provide insight into this issue.

Implications

Implications for policy makers. When considering novice teachers as a group, the results of this study reinforce findings of previous work (e.g., Connelly & Graham, 2009; Henke et al., 2000; Ingersoll et al., 2014) suggesting that student teaching is a key component in preparing professionals who are likely to stay or intend to stay in teaching. It may be that student teaching has differential effects across disciplines on intent to stay in the profession. However, the body of literature on teacher attrition and professional commitment (i.e., Darling-Hammond, et al., 2002; Henke, et al, 2000; Hunter-Quartz, 2003; Ingersoll, et al., 2014; Kane, et al., 2008; Redding & Smith, 2016; Ronfeldt, et al., 2014; Zhang & Zeller, 2016) offers strong support for the importance of professional preparation in reducing teacher turnover. Policies creating pathways to teacher credentials that omit or abbreviate student teaching or other components of typical preservice preparation are likely ill-advised as mechanisms to address teacher shortages. Policy makers may find greater success in reducing teacher shortages and stemming attrition by supporting fully-prepared, licensed educators with the implementation of policies that provide training subsidies, competitive compensation packages, effective novice teacher induction and mentoring, and that address factors associated with teacher dissatisfaction such as teacher autonomy and administrative support (Sutcher et al., 2016).

Implications for teacher educators and researchers. This study's unexpected finding of no reliable link between a student teaching experience of 8 weeks or more on special educators' intent to stay in teaching underscores the need for more investigation focused specifically on the preservice preparation of special education teachers. First, more research

should be conducted using data that reflect the current teaching context to confirm this finding as a trend over time. Additionally, to bring deeper understanding to issues involving student teaching and the intent of special educators to stay in teaching, qualitative research investigating the nature and experience of student teaching and novice educators' experiences should be conducted. Ethnographic research involving novice general and special education teachers may be an especially valuable method to gain insights into why teachers intend to leave – or to stay – in teaching. These understandings could support future research that helps teacher educators examine specific student teaching components or experiences and the extent to which they influence novice teachers' persistence in the profession. Next steps to address both teacher retention and quality might include research exploring associations between preservice special educator preparation, persistence in the field, and teacher efficacy and effectiveness.

While student teaching has a critical role in preservice preparation, recommended practices identify important areas of coursework and suggest the integration of college courses and field experiences (Council for Exceptional Children, 2015). Given the findings that the effects of preparation on teachers' intent to stay in teaching may vary by teaching field, systematic research into all components of the preservice preparation of special educators could provide helpful insights to teacher educators in designing effective and efficient programs. Of particular benefit would be intervention-based studies or research supporting causal connections between specific components of preparation programs and increased commitment to stay in teaching for novice educators.

Additional research also is needed to explore why student teaching seems to have such a strong predictive link for general educators but not for special education teachers. Researchers examining links between demographic characteristics of teachers and turnover typically do not

disaggregate findings by teaching field (c.f., Borman & Dowling, 2008). Descriptive data from the current study suggest that there may be variations in the demographic characteristics of novice teachers across fields that could mediate intent to stay in the profession. Specifically, novice special educators were more likely to be female (80% of special educators versus 67% of general educators). Also, the special education teacher group was older: 36% of first, second, and third year special educators were age 30 or older, with 18% of those being age 40 or older. In contrast, 27% of the novice general educator group was age 30 or older, and only 10% of that group was 40 or older. Regardless of the number of weeks of student teaching, special educators expressed an intent to stay in teaching that was significantly higher than novice general education teachers. Methods such as propensity score matching (Rosenbaum & Rubin, 1983) could be used to support analyses across teaching fields by investigating intent to stay in teaching across groups of teachers with similar characteristics. Identifying whether teaching is a second career should be included in the analyses, as well. It may be that the higher proportion of older novice special educators choose teaching with greater insight into their long-term aspirations – or perhaps internal sources of motivation such as social justice are involved in shaping commitment and intent to stay in teaching for special education teachers.

Another possibility to explore is that for general educators, student teaching provides experiences in curriculum, instruction, and professional responsibility that end up being reasonably like what they encounter in their first teaching position. For example, a high school math teacher whose student teaching and employment contexts end up being quite different from each other will still connect reliably to the knowledge they gained in student teaching about high school students' developmental characteristics and the typical high school math curriculum. In special education, however, it is possible that noncategorical licensure structures interfere with

the connection between student teaching and employment contexts. Thirty-six states have a generalist special education licensure structure, with 18 considered purely noncategorical across both student age and special education service needs (Sindelar, Fisher, & Myers, 2019). In these states, a teacher who student taught with primary grade students with severe disabilities in an inclusive educational placement may end up being hired to teach students with emotional or behavioral disabilities in a self-contained high school special education classroom. While there are certainly common teaching and professional responsibilities across these very different positions (e.g., planning and delivering instruction; assessment, preparing individualized educational programs), it may be that the variation in special education practice across contexts is so great that effects of student teaching are mitigated.

A related consideration worthy of further exploration is the alignment of specific activities and experiences in student teaching with challenging areas of special education practice. Some researchers (Billingsley, 2004; Billingsley & Bettini, 2019; Gersten, Keating, Yovanoff, & Harniss, 2001) have identified elements of job design and teacher workload that are both unique to special education and related to job dissatisfaction, stress, burnout, and attrition (i.e., caseload management, intensity of student needs, bureaucratic responsibilities including extensive paperwork and documentation). Due to the nature of the student teacher's role in relation to the cooperating teacher and the "high stakes" nature of these kinds of responsibilities, teacher candidates may have limited opportunities during student teaching to gain authentic experience in approaching these challenging tasks. A different conception of student teaching that allows for aligned and supported practice experiences with these difficult tasks might improve the reliability of the link between student teaching and intent to stay in the field of education. For example, extensive and direct caseload management experiences, supported by

and with feedback from cooperating teachers and university supervisors, may help special education student teachers develop efficient and effective strategies that prepare them for these responsibilities. Ensuring that student teaching affords opportunities to collaborate meaningfully with general education teachers, related service providers, and families could serve to increase novice special educators' confidence as they begin their career. Similarly, student teaching could provide an important opportunity to introduce novice special educators to effective workload management strategies that will help them learn to balance competing demands on their time and attention.

In conclusion, this study provides important information about links between student teaching and novice educators' intent to stay in teaching. The results suggest that an 8 week or more student teaching experience is predictive of intent to stay in teaching for first- and second-year general education teachers, but not for special educators. More research into connections between preservice preparation and special education teachers' commitment to the profession is needed to better understand how teacher education might play a role in retaining teachers and ensuring that children with disabilities are served by committed and well-prepared professionals.

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Appendix A - Summary of Literature Reviewed

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
Banks & Necco (1987)	To examine relationship between job longevity, preparation program type, & educational background	203 teachers in special education	Range not reported – all district teachers surveyed, so all numbers possible	All teachers in a large district	Program type: alternative route certification program versus traditional Level of degree Level of degree (undergraduate or graduate)	Number of years of experience reported on survey	Independent sample (t tests) applied to survey mailed by district administrator	Alt cert program teachers average 4 years; traditional route average 6 years Graduate degree holders taught 3+ years longer than undergraduate degree holders
Boyd, Grossman, Lankford, Loeb & Wyckoff (2006)	To identify effects of preparation program models	40,798 teachers in all fields combined	1-4 years of experience	First time New York City teachers 2000-04	Preparation models: Recommended by a college program Individual transcript review	Left teaching in New York City public schools	Descriptive statistics applied to data from NY State Education Dept and human resources records from NYC Dept of Education;	College-recommended had attrition of 14% at year 1 and 45% by year 4 NYC Teaching Fellows had attrition of 10% at year 1

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
					NYC Teaching Fellows Program Teach for America Program		Results adjusted for differences in school environments	and 44% by year 4 Teach for America had attrition of 9% at year 1 and 81% by year 4
Connelly & Graham (2009)	To determine whether student teaching length affects attrition To identify preparation features related to attrition	168 teachers in special education	1 or 2 years of experience	Teachers surveyed in Schools and Staffing Survey (SASS) 1999-2000; 2001 Teacher Follow-Up Survey from SASS	Number of weeks of student teaching (<10> Coursework in learning theory and adapting educational materials	Leavers: left profession for a different profession Movers: stayed teaching in another subject or working in other education-related capacity in schools	Logistic regression analysis applied to data from the SASS and TFS study	After 1 year, 80% of 10+ week student teaching group still in special education compared to 63% <10 weeks When controlled for student teaching length, no preparation or demographic variable had an impact
Darling-Hammond, Chung, &	To describe how novice teachers' self-reports of	2302 teachers in all fields combined	1-3 years of experience	NYC public school teachers who	Preparation models:	Stated intent to remain in teaching	Used mean ratings on surveys to describe	90% of teachers feeling well prepared

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
Frelow (2002)	efficacy, satisfaction with preparation, and intent to remain in teaching vary based on preparation program model			responded to survey	<p>Recommended by a college program</p> <p>Compared to a group composed of: Individual transcript review</p> <p>Emergency credential included no preparation, Teach for America, Peace Corps and Teacher Opportunity Corps</p>	<p>Survey options included: Stay in teaching as long as able</p> <p>Stay in teaching until something better comes along</p> <p>Plan to leave teaching as soon as possible</p>	<p>relation between preparation model & self-reported preparedness</p> <p>Chi-square analysis was used on survey data to describe relation between intent to remain in teaching and perceived preparedness</p>	<p>intended to teach as long as possible compared to 82% of those feeling poorly prepared.</p> <p>Mean ratings of perceived preparation were significantly higher for traditional program completers</p>
Eckert (2013)	To determine relation between amount of preparation and 1-year teacher retention in	1759 teachers in all fields combined	1 year of experience	<p>Quantitative: Teachers surveyed in 2007-08 SASS & 2009 TFS</p> <p>Qualitative: 25 novice</p>	Number of education courses and length of student teaching	First year teacher stayed or did not stay in same school building into second year of teaching	Quantitative: logistic regression and multinomial ordinary least squares applied to data	No relationship found between amount of preparation and staying/leaving original school

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
	high poverty and high minority schools			teachers in high poverty, high minority schools identified via convenience and snowball sampling methods			from SASS and TFS Qualitative: themes developed from interview responses coded into a priori categories drawn from study hypotheses	Interviews suggest level of general teacher efficacy (which was positively and significantly associated with amount of preparation) may mediate decision to leave the school building
Fleener & Dahm (2007)	To identify how PDS preparation programs affected attrition among elementary school teachers and whether impact varies based on candidate gender,	1959 teachers in elementary education	1-5 years of experience	Elem ed teachers in Texas who completed either PDS or non-PDS preparation program during 1992-1996	PDS model (10-12 weeks student teaching; 4+ supervisor visits; course based early field experiences) Traditional model (12-16 weeks student teaching; 4+ supervisor	Leavers: left employment as a teacher in Texas public school Stayers: maintained continuous employment as a teacher in Texas public schools	Descriptive statistics and Kaplan-Meier survival functions applied to data collected from multiple sources, including teacher prep programs and Texas Education Agency	Overall, teachers prepared in traditional programs were more likely to leave profession than those prepared through PDS schools.

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
	ethnicity, academic performance, and/or student teaching site				visits; early field experiences of 2-3 days per week)			
Goldhaber & Cowan (2014)	To analyze differences in mobility and attrition rates of teachers across state preparation programs	20,527 teachers in all fields combined	1-22 years of experience	All teachers completing licensure programs in the state of Washington	Higher education programs are compared to each other and to out-of-state preparation; descriptive information about program features or design was not included	Left teaching in same building in Washington public schools Left teaching in Washington public schools	Discrete-time hazard modeling controlled for salary, school characteristics, academic year & experience, & preparation program applied to data from a variety of state administrative databases involving teacher employment	7% teachers exited each year; teachers prepared out-of-state were most likely to leave; teachers from programs with highest attrition were 1% less likely to exit teaching than out-of- state; lowest attrition programs were 4-5% less likely to leave -the range of program effects was about 7%

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
Henke, Chen & Geis (2000)	To describe teacher pipeline and the rate at which those who taught left the profession; To report pipeline members' expectations for teaching in the future	Not reported directly – full sample is 9274; per Shen & Palmer (2005), about 18% of full sample taught All fields combined	1-4 years of experience	Teachers surveyed in Baccalaureate and Beyond Longitudinal Study 1992-93 & second follow up study (1997)	Had student teaching versus had no student teaching	Left teaching without returning, defined as 1993 grads who taught, and left teaching no later than January 1997 and had not returned by April 1997	Student's <i>t</i> statistic was used with the study data to test difference between means or proportions ANOVA was used to test linear relationship between variables	29% teachers without student teaching left within 5 years compared to 15% with student teaching
Hunter-Quartz (2003)	To examine the role of specialized preparation and ongoing support for teaching in urban schools	307 teachers in either elementary or secondary general education	1-5 years of experience	Teachers who completed teacher education program at UCLA's Center X	Completion of degree and licensure via specialized curriculum of Center X	Teachers were categorized as: Still a classroom teacher Still in education, but not classroom	Quantitative study using descriptive statistics to analyze data from telephone interviews	After 5 years, 70% Center X grads still teaching compared to 61% national statistics; another 17% were still in education (admin, teacher education, counselors)

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
						Left education		
Ingersoll, Merrill, & May (2014)	To examine relations between new teachers' prior education & preparation and whether they were likely to leave after first year of teaching	2651 teachers in all fields combined Analysis focused separately on math, science, & all other fields	1 year of experience	First year teachers surveyed via SASS (2003-04 and 2004-05) and TFS 2004-05	Coursework in teaching methods; length of student teaching; specific coursework in selection of instructional materials and learning theory or child psychology; opportunities to observe others' teaching; formal feedback on own teaching	Leavers-left teaching altogether after first year Stayers-stayed teaching in same or different school after first year of teaching	Logistic regression analysis of relation between measures of teacher education and preparation and likelihood of teacher leaving the field	After controlling for background characteristics of teachers & their schools, those with more training in pedagogy and methods were far less likely to leave teaching after first year. Teachers with 3+ methods classes were 36% less likely to leave and teachers with 12+ weeks of student teaching were over 3 times less likely to leave

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
Kane, Rockoff, & Staiger (2008)	To identify effects of models of teacher preparation with reduced courses & experiences on student achievement and composition of NYC teaching workforce	49,736 teachers in all fields combined	1-7 years of experience	All teachers hired by NYC public schools from 1999-2000 to 2004-2005 school years	Preparation models included: Recommended by a college program Individual transcript review NYC Teaching Fellows Program Teach for America Uncertified	Left teaching in NYC public schools	Estimated logistic regressions of hazard rates for certified, uncertified, and alt cert teachers with 0-7 years teaching applied to data from NYC schools' administrative data files; results were controlled for teacher age	By the 5 th year, Teaching Fellows and traditional college-recommended teachers had similar cumulative retention rates with \approx 50% retention in the district; Teach for America retention at 5 years was \approx 18%
Latham & Vogt (2007)	To examine effects of PDS model on persistence in elementary education teaching in public schools in Illinois	959 teachers in elementary education	1-7 years of experience	Teachers who completed elementary education licensure program at Illinois State University via PDS or	Program model: PDS (included 1+ semester student teaching)	Left teaching in Illinois public schools and number of years of teaching prior to exit from field	Regression analysis via ordinary least squares and logistic regression used with data from State of Illinois Teacher	PDS-prepared teachers entered teaching more often and stayed longer than traditionally

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
				traditional program model	Traditional (1 semester student teaching)		Service Record; results were controlled for gender, ethnicity, transfer status, academic readiness	prepared teachers
Latham, Mertens & Hamann (2015)	To examine effects PDS model on persistence in teaching in public schools in Illinois for elementary, early childhood, middle grades, and bilingual teachers	6649 teachers in early childhood, elementary education, middle grades, or bilingual	1-13 years of experience	Teachers who completed licensure program at Illinois State University via PDS or traditional program model	Program model: PDS (included 1+ semester student teaching) Traditional (1 semester student teaching)	Left teaching in Illinois public schools and number of years of teaching prior to exit from field	ANOVA and regression analyses on data from State of Illinois Teacher Service Record; results were controlled for gender, ethnicity, transfer status, academic readiness	PDS participation was strongest predictor of persistence in teaching; program area strongly influenced persistence, perhaps even stronger than PDS vs non-PDS; bilingual teachers most likely to become employed and persist; early childhood

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
								teachers were least likely
LaTurner (2002)	To investigate inter-path variation in preparation & experience for math and science teachers	211 teachers in secondary grades math or science	1 year of experience	Teachers surveyed in Baccalaureate and Beyond Longitudinal Study 1992-93 & first follow up study (1994)	Number of credit hours in subject and certification status 4 groups: 18+ hours in subject taught plus full certification 18+ hours in subject taught, no certification <18 hours in subject taught plus full certification <18 hours in subject taught, no certification	Stated intent to remain in teaching Survey options included: Stay in teaching for 2 more years Stay in teaching long-term	Logistic regression analysis with B&B survey and follow up data to predict likelihood of teachers' stated intent to remain in teaching; results were controlled for teacher gender, race, and school characteristics	Full certification suggested longer commitment to teaching (stay 2 years/stay long term): 18+ hours plus certification (89%/71%) 18+ hours with no certification (41%/37%) <18 hours plus certification (90%/57%) <18 hours with no certification (75%/53%)
Lawrenson &	To study factors in attrition	33 teachers in special	1-19 years of experience	Special educators from one	Level of degree (BA/BS; BA/BS+; MA)	Left teaching in current district (area	Descriptive statistics used on mailed	31% of BA/BS level teachers left; 60% of

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
McKinnon (1982)	among special education teachers	education (emotional disabilities)	with a sample mean of 4 years	region in Iowa teaching between 1977-1980 on Team for Emotionally Disturbed	and temporary versus full certification in emotional disturbance	cooperative for special education)	survey (return rate of 83%); structured interviews of 52% of participants, randomly selected as follow up – analysis not described	BA/BS+ left, and 50% of MA preparation level left 64% of teachers with temporary credentials left; 29% of fully certified left
Paese (2003)	To compare PDS & semi-PDS student participants' perceptions of efficacy at student teaching entry/exit & post-1-year teaching; to compare PDS & semi-PDS participants' entry and retention rates	48 elementary education teachers	1 year of experience	Teachers who completed licensure during one-year at large university	Design of student teaching experience: PDS was 12 candidates per building, traditional visiting university supervisor, plus building-based supervisor who conducted weekly seminars with cooperating teachers and	Not entering teaching after student teaching Leaving teaching after the first year	Descriptive statistics used to analyze a 2-question entry & retention survey completed after student teaching and again during the first year of teaching Other surveys addressing efficacy and teacher stress	While more total PDS entered teaching (100% vs 79%) the percentage remaining after first year was the same. Both groups lost 1/3 of teachers from original cohort.

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
					with candidates Semi-PDS was 4 candidates per building, traditional visiting university supervisor		were also administered	
Redding & Smith (2016)	To compare staying, moving and leaving rates of traditionally & alternatively certified teachers. To identify whether group differences could be explained by school and teacher characteristics	18, 080 in all fields combined	1-4 years of experience	Teachers surveyed in SASS and TFS 1999-2000, 2003-2004, 2007-2008, 2011-12	Self-reported entering teaching through an alternative or traditional certification program	Leavers: left profession for a different profession Movers: stayed teaching but in another subject or working in other education-related capacity in schools Stayers: continued teaching in	Binomial logit modeling with SASS & TFS data to estimate turnover probabilities for each teacher. Model accounted for certification pathway, teacher & school characteristics, & organizational supports accessed by teacher	Alternatively, certified teachers were more likely to leave the field than traditionally certified teachers. In 1999-00 data, there were no turnover differences in groups. By 2007-08, turnover rate for alternatively certified was 10% greater than

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
						current building		traditional certification.
Reynolds, Ross, & Rakow (2002)	To compare PDS and non-PDS completers regarding retention, effectiveness, & preparation perceptions	80 teachers in elementary or middle grades	1-4 years of experience	Teachers who completed post-baccalaureate licensure program at George Mason University in 1996 or 1998	<p>Program model:</p> <p>PDS - included 2 semester student teaching plus embedded coursework</p> <p>Non-PDS - 1 semester student teaching plus traditional coursework</p>	Reported intent to stay in teaching and intent to stay in current school building	Descriptive statistics used to analyze scaled items from written & phone surveys completed by teachers & their principals	95% PDS completers versus 74% non-PDS intended to stay; Switch to school administration or guidance counselor, etc. was coded as "leave education," as was taking time off for family reasons
Ronfeldt (2012)	To examine effect of field placement school characteristics on teacher retention and student achievement	2860 teachers in all fields	1 year of experience	NYC public school teachers	Field placement school characteristics. Used a stay-ratio (school level measure of average turnover over 5 year) & considered % of students by	Left teaching in an NYC public school during first 4 years of teaching	Survival analyses models applied to data from NYC schools' administrative records were used to estimate likelihood of leaving NYC schools as a	Teachers who learned to teach in field placement schools with higher stay-ratios were 14-22% less likely to leave teaching in NYC public schools in first

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
					race, ELL, free lunch & lowest level math		function of teacher, field placement school, and current school characteristics	5 years of teaching. None of other variables affected the outcome
Ronfeldt, Schwartz, & Jacob (2014)	To identify whether amount of practice teaching and methods-related coursework predicts teachers' retention & perceived instructional preparedness	3145 teachers; results disaggregated for elementary & secondary levels	1-4 years of experience	Teachers surveyed for SASS & TFS 2003-2004 & 2007-2008	Length of student teaching Number of methods courses taken	Stayers – in year following SASS response, reported in TFS as teaching any regularly scheduled classes & identifies as regular, itinerant, long-term substitute teacher or administrator Leavers - in year following SASS response, reported in TFS as	Linear & logistic regression models to estimate likelihood of staying in teaching as a function of perceived preparation, teacher & school characteristics	Positive relation between methods coursework, practice teaching, perceived preparedness & intent to remain in teaching. Relation held across pathway & was stronger with more competitive colleges based on Barron's Profiles of American Colleges, males, math &

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
						teaching no regularly scheduled classes		science teachers, & urban, rural and secondary teachers
Shen (1997)	To compare characteristics of traditional & alternative certification teachers in public schools, included stated intent to remain in teaching	14,721 teachers in all fields	1-10 years of experience	Teachers surveyed for SASS 1993-94	Self-reported completion of traditional certification program or alternative certification program	<p>Stated intent to stay in teaching. Options included:</p> <p>Stay as long as able</p> <p>Stay until retirement</p> <p>Stay until something better comes along</p> <p>Plan to leave as soon as possible</p> <p>Undecided</p>	Descriptive statistics used to analyze data from SASS survey	Lower percentage of alternative cert intended to teach to retirement (19.7% versus 22.7%). More alternative certified teachers were undecided about plans to remain in teaching (26% compared to 22.3%)
Shen & Palmer (2005)	To examine attrition patterns of	1702 teachers in all fields	1-4 years of experience	Teachers surveyed in Baccalaureate	Aspects of entry into	Left teaching determined based on	Survival analyses method	34% of educators left teaching by

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
	those who began teaching with less preparation (no student teaching or induction) & more traditional preparation			and Beyond Longitudinal Study 1992-93 & second follow up study (1997)	<p>teaching included:</p> <p>Prepared & taught versus taught, but had no preparation</p> <p>Fully prepared (student teaching, fully certified, induction program) versus not fully prepared</p>	month-to-month employment records (number of months teaching before attrition did or did not happen)	<p>involving a Cox regression model applied to data from Bacc & Beyond to model when event (leaving teaching) is likely to occur</p> <p>Researchers used survival analysis in which a factor (preparation) is used to predict an outcome (attrition) over time. This approach allows for modeling when an event is likely to occur based on the factor</p>	<p>Year 5. Those less than fully prepared were more likely to leave</p> <p>There was a 355% increase in hazard rates – hazard = leaving teaching</p> <p>The probability of staying in teaching for an individual who was fully prepared compared to those who had taught but had no teacher preparation was higher</p>
Zhang & Zeller (2016)	To determine effects of type of	60 teachers in all fields	1-2 years of experience	Teachers in North Carolina	Completion of:	Self-reported still teaching versus no	Descriptive statistics, logistic	Alternative route had highest

Authors	Purpose	Participants			Preparation Variable	Type of Turnover	Method	Findings
		Number & Field	Years of Experience	Description of participant sample				
	preparation (& other variables) on teacher retention				<p>Traditional preparation route</p> <p>Alternative route</p> <p>State-sponsored alternative route</p>	longer teaching	<p>regression, & qualitative analysis methods applied to interview responses and follow up data</p>	<p>proportion of leavers.</p> <p>Alternative teachers' retention was lower than other types in both short and long term. 86% of traditionally prepared teachers were still teaching at 7 year follow up, versus 35% of lateral entry and 67% of NC Teach (a state-created alternative route program)</p> <p>Overall, about 25% of teacher retention likelihood was explained by teacher preparation</p>

Appendix B - Selected Sections from SASS Teacher Questionnaire 2011-12

14411011

U.S. DEPARTMENT OF EDUCATION
NATIONAL CENTER FOR EDUCATION STATISTICS

OMB No. 1850-0598: Approval Expires 07/31/2014
Conducted by:
U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

**TEACHER QUESTIONNAIRE
SCHOOLS AND STAFFING SURVEY
2011-12 SCHOOL YEAR**



(Please note all name and address changes on page 3.)

THIS SURVEY HAS BEEN ENDORSED BY:

- American Association of School Administrators
- American Association of Teachers of German
- American Federation of Teachers
- Computer Science Teachers Association
- International Reading Association
- National Association of Elementary School Principals
- National Association of Secondary School Principals
- National Council of Teachers of Mathematics
- National Middle School Association
- The National Association for Music Education



This survey is authorized by the Education Sciences Reform Act of 2002, 20 U.S. Code §9541(b) and §9543(a). The results will only be produced as statistical summaries.

FORM SASS-4A
(7-28-2011)



I GENERAL INFORMATION

1. How do you classify your position at THIS school, that is, the activity at which you spend most of your time during this school year?

☛ Mark (X) only one box.

0025

- 1 Regular full-time teacher (in any of grades Kindergarten-12 or comparable ungraded levels)
- 2 Regular part-time teacher (in any of grades Kindergarten-12 or comparable ungraded levels)
- 3 Itinerant teacher (i.e., your assignment requires you to provide instruction at more than one school)
- 4 Long-term substitute (i.e., your assignment requires that you fill the role of a regular teacher on a long-term basis, but you are still considered a substitute)
- 5 Short-term substitute
- 6 Student teacher
- 7 Teacher aide
- 8 Administrator (e.g., principal, assistant principal, director, school head)
- 9 Library media specialist or Librarian
- 10 Other professional staff (e.g., counselor, curriculum coordinator, social worker)
- 11 Support staff (e.g., secretary)

2. Which box did you mark in item 1 above?

0026

- 1 Box 1 → GO TO item 5 on page 5.
- 2 Box 2, 3, or 4 → GO TO item 4 on page 5.
- 3 Box 5, 6, or 7 → Please STOP now and return this questionnaire to the U.S. Census Bureau. Thank you for your time.
- 4 Box 8, 9, 10, or 11

3. Do you TEACH any regularly scheduled class(es) at this school in any of grades K-12 or comparable ungraded levels?

(Regularly scheduled classes are those taught at least once per week.)

☛ If you work as a library media specialist or librarian at this school, do not include classes in which you teach students how to use the library (e.g., library skills or library research).

☛ If you teach a particular specialty either within or outside of a regular classroom (e.g., reading specialist, special education teacher, English as a Second Language teacher), include that time as a regularly scheduled class.

0027

- 1 Yes → GO TO item 4 on page 5.
- 2 No → Please STOP now and return this questionnaire to the U.S. Census Bureau. Thank you for your time.

8. *Continued –*

d. In addition to these usual activities, were you also teaching in one or more of grades K-12 last school year?

0035

1 Yes

2 No → **GO TO item 9 below.**

e. How would you classify that teaching position?

☛ *Mark (X) only one box.*

0036

1 Regular full-time teacher

2 Regular part-time teacher

3 Substitute teacher

4 Itinerant teacher

5 Other – please specify →

5036

9. In what school year did you FIRST begin teaching, either full-time or part-time, at the elementary or secondary level?

☛ *Do NOT include time spent as a student teacher.*

(Example: If you FIRST began teaching in September 2010 or in January 2011, you would report 2010-11.)

0040

School year

10. In how many schools have you taught at the elementary or secondary level?

☛ *Do NOT include time spent as a student teacher.*

0041

Schools

11. Excluding time spent on maternity/paternity leave or sabbatical, how many school years have you worked as an elementary- or secondary-level teacher in public, public charter or private schools?

☛ *Include the current school year.*

☛ *Do NOT include time spent as a student teacher.*

☛ *Record whole years, not fractions or months.*

0042

School years

YOUR COMMENTS

13. *Continued* – Do you currently teach students in any of these grades at THIS school?

11th	0082 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
12th	0083 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
Ungraded	0084 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No

14. Of all the students you teach at this school, how many have an Individualized Education Program (IEP) because they have disabilities or are special education students?

If none, please mark (X) the box.

0085 None or Students

15. Of all the students you teach at this school, how many are of limited-English proficiency or are English-language learners (ELLs)?

(Students of limited-English proficiency [LEP] or English-language learners [ELLs] are those whose native or dominant language is other than English and who have sufficient difficulty speaking, reading, writing, or understanding the English language as to deny them the opportunity to learn successfully in an English-speaking-only classroom.)

If none, please mark (X) the box.

0086 None or Students

16. This school year, what is your MAIN teaching assignment field at THIS school?

(Your main assignment is the field in which you teach the most classes.)

Record one of the teaching assignment and subject matter codes from Table 1 on page 11.

0090 Code 5090 Main assignment

17. Are you intentionally assigned to instruct the same group of students for more than one year (e.g., looping)?

0091 1 Yes

2 No

YOUR COMMENTS

**Table 1. Teaching Assignment and Subject-matter Codes
For Questions 16 and 24**

<u>General Education</u>	
Elementary Education	Special Education
101 Early childhood or pre-K, general	110 Special education, any
102 Elementary grades, general	
<u>Subject-matter Specific</u>	
Arts and Music	Natural Sciences
141 Art or arts and crafts	210 Science, general
143 Dance	211 Biology or life sciences
144 Drama or theater	212 Chemistry
145 Music	213 Earth sciences
	214 Engineering
	215 Integrated science
	216 Physical sciences
	217 Physics
English and Language Arts	Social Sciences
151 Communications	220 Social studies, general
152 Composition	221 Anthropology
153 English	225 Economics
154 Journalism	226 Geography
155 Language arts	227 Government or civics
158 Reading	228 History
159 Speech	231 Native American studies
	233 Psychology
	234 Sociology
English as a Second Language (ESL)	Career or Technical Education
160 ESL or bilingual education: General	241 Agriculture and natural resources
161 ESL or bilingual education: Spanish	242 Business management
162 ESL or bilingual education: Other languages	243 Business support
	244 Marketing and distribution
	245 Healthcare occupations
	246 Construction trades, engineering, or science technologies (including CADD and drafting)
Foreign Languages	247 Mechanics and repair
171 French	249 Manufacturing or precision production (electronics, metalwork, textiles, etc.)
172 German	250 Communications and related technologies (including design, graphics, or printing; not including computer science)
173 Latin	253 Personal and public services (including culinary arts, cosmetology, child care, social work, protective services, custodial services, and interior design)
174 Spanish	254 Family and consumer sciences education
175 Other foreign language	255 Industrial arts or technology education
	256 Other career or technical education
Health Education	Miscellaneous
181 Health education	262 Driver education
182 Physical education	264 Library or information science
	265 Military science or ROTC
	266 Philosophy
	267 Religious studies, theology, or divinity
Mathematics and Computer Science	Other
191 Algebra I	268 Other
192 Algebra II	
193 Algebra III	
194 Basic and general mathematics	
195 Business and applied math	
196 Calculus and pre-calculus	
197 Computer science	
198 Geometry	
199 Pre-algebra	
200 Statistics and probability	
201 Trigonometry	

29. Did any of your coursework result in a concentration or specialization in READING?

- 0205
- 1 Yes
- 2 No

30. Have you ever taken any graduate or undergraduate courses that focused solely on teaching methods or teaching strategies?

- ☛ Include courses you have taken to earn a degree and courses taken outside a degree program.
☛ Do NOT include practice or student teaching.

- 0206
- 1 Yes
- 2 No

How many courses?

☛ Mark (X) only one box, then GO TO item 31a below.

- 0207
- 1 1 or 2 courses
- 2 3 or 4 courses
- 3 5 to 9 courses
- 4 10 or more courses

31a. Did you have any practice or student teaching?

- 0208
- 1 Yes
- 2 No → GO TO item 32 below.

b. How long did your practice or student teaching last?

☛ Mark (X) only one box.

- 0209
- 1 4 weeks or less
- 2 5-7 weeks
- 3 8-11 weeks
- 4 12 weeks or more

32. Was your FIRST year of teaching before the 2007-08 school year?

- 0210
- 1 Yes → GO TO Section IV on page 22.
- 2 No → GO TO item 33 on page 19.

YOUR COMMENTS

66a. If you could go back to your college days and start over again, would you become a teacher or not?

● Mark (X) only one box.

0472

- 1 Certainly would become a teacher
- 2 Probably would become a teacher
- 3 Chances about even for and against
- 4 Probably would not become a teacher
- 5 Certainly would not become a teacher

b. How long do you plan to remain in teaching?

● Mark (X) only one box.

0473

- 1 As long as I am able
- 2 Until I am eligible for retirement benefits from this job
- 3 Until I am eligible for retirement benefits from a previous job
- 4 Until I am eligible for Social Security benefits
- 5 Until a specific life event occurs (e.g., parenthood, marriage)
- 6 Until a more desirable job opportunity comes along
- 7 Definitely plan to leave as soon as I can
- 8 Undecided at this time

67a. Has a student FROM THIS SCHOOL ever threatened to injure you?

0475

- 1 Yes
- 2 No → GO TO item 68a on page 39.

b. Has a student FROM THIS SCHOOL threatened to injure you IN THE PAST 12 MONTHS?

0476

- 1 Yes
- 2 No → GO TO item 68a on page 39.

c. In the past 12 months, how many times has a student FROM THIS SCHOOL threatened to injure you?

0477

Times

75. During the CURRENT SCHOOL YEAR do you, or will you, receive a retirement pension check paid from a teacher retirement system?

- 0518
1 Yes →
2 No

How much?

● Record amount in whole dollars, then GO TO item 76 below.

0519 \$ _____ .00

76. Are you a member of a teachers' union or an employee association similar to a union?

- 0520
1 Yes
2 No

77a. Does your school, district, or school system offer tenure?

- 0521
1 Yes
2 No → GO TO item 78 below.

b. Are you tenured at your current school?

- 0522
1 Yes
2 No

78. Are you male or female?

- 0525
1 Male
2 Female

79. What is your current marital status?

● Mark (X) only one box.

- 0526
1 Married
2 Widowed
3 Separated
4 Divorced
5 Never married
6 Living with a partner in a marriage-like relationship

80. Are you of Hispanic or Latino origin?

- 0527
1 Yes
2 No

81. What is your race?

☛ *Mark (X) one or more races to indicate what you consider yourself to be.*

- 0528 1 White
- 0529 1 Black or African-American
- 0530 1 Asian
- 0531 1 Native Hawaiian or
Other Pacific Islander
- 0532 1 American Indian or Alaska Native

GO TO item 83 below.

82. Are you enrolled in a state- or federally-recognized tribe?

- 0533 1 Yes
- 2 No

83. What is your year of birth?

0534

YOUR COMMENTS

Appendix C - Letter from Office of Protection of Human Subjects



OFFICE OF THE VICE CHANCELLOR FOR RESEARCH

Office for the Protection of Research Subjects
805 W. Pennsylvania Ave., MC-095
Urbana, IL 61801-4822

Notice of Not Human Subjects Research Determination

February 25, 2019

Principal Investigator	Michaelene Ostrosky																						
CC	Suzanne Lee																						
Protocol Title	<i>Special Educators' Preparation and Intent to Stay in Teaching</i>																						
Protocol Number	19541																						
Funding Source	Unfunded																						
Study Description	The research study seeks to identify relations between the amount of preparation completed by preservice special education teachers and their intent to remain employed as teachers. The research team will analyze de-identified publically available data (National Teacher and Principal Survey) from the National Center for Education Statistics.																						
Study Components	<table><tr><td>Y</td><td>N</td></tr><tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td colspan="2">The project is a systematic investigation designed to contribute to generalizable knowledge.</td></tr><tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td colspan="2">The project involves obtaining information about living individuals.</td></tr><tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td colspan="2">The project involves interaction or intervention with human subjects or their identifiable private information.</td></tr><tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td colspan="2">There is a way to access a code to re-identify coded data.</td></tr><tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td colspan="2">The project involves human subjects as recipients of tests articles and/or medical devices.</td></tr></table>	Y	N	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The project is a systematic investigation designed to contribute to generalizable knowledge.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	The project involves obtaining information about living individuals.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	The project involves interaction or intervention with human subjects or their identifiable private information.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	There is a way to access a code to re-identify coded data.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	The project involves human subjects as recipients of tests articles and/or medical devices.	
Y	N																						
<input checked="" type="checkbox"/>	<input type="checkbox"/>																						
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There is a way to access a code to re-identify coded data.																							
<input type="checkbox"/>	<input checked="" type="checkbox"/>																						
The project involves human subjects as recipients of tests articles and/or medical devices.																							
Determination	It has been determined that this project, as described, does not meet the definition of Human Subjects Research as defined in 45CFR46(d)(f) or 21CFR56.102(c)(e) and does not require IRB approval.																						

The Office for the Protection of Research Subjects has reviewed and determined that the research study, *as described and reported to OPRS*, does not meet the criteria for Human Subjects Research. IRB approval is not required. This determination only applies to the research study as submitted. Please note that modifications may need to be submitted to OPRS for review, status determination, or approval before the modifications are implemented.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

IORG0000014 • FWA #00008584
217.333.2670 • irb@illinois.edu • oprs.research.illinois.edu