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Abstract

A rationale for providing high-quality support during teachers' early years is to develop further the skills teachers acquire during preparation and to help overcome weaknesses that might lead them to abandon the profession. Yet, almost no consideration has been given to potential interactions between preservice preparation and induction support received. This study utilizes survey and administrative data to examine the effects, including interactions, of preservice preparation and early career support on new teachers' career intentions and decisions. Consistent with previous research, we find a direct association between perceived preparation quality and leaving teaching. Moreover, we find the quality and comprehensiveness of mentoring and induction to be related to teachers' intentions and decisions. Our results also suggest that comprehensive support moderates the relationship between preservice preparation and intentions to leave. The findings point to the importance of considering preservice preparation in combination with induction support in efforts to address teacher attrition.

Keywords

recruitment and retention, preservice education, teacher induction, quantitative research

Teacher attrition has been an issue of concern for policy makers and educational administrators for more than two decades. While much of the early research focused on the personal and school- and district-based characteristics associated with teachers' career intentions and decisions (for comprehensive reviews, see Borman & Dowling, 2008; Guarino, Santibanez, & Daley, 2006), increasing attention has been paid during the past several years to the impact of teachers' preservice preparation and early career support (i.e., mentoring and other induction support) on their intentions or actual decisions to stay or leave (see, for example, Darling-Hammond, Chung, & Frelow, 2002; Ingersoll, Merrill, & May, 2012; Smith & Ingersoll, 2004). Nearly all studies to date, however, have focused on *either* the effects of preservice preparation *or* the effects of early career support. Yet, a rationale for providing high-quality support during teachers' early years is to develop further the skills teachers acquire during their preservice preparation and help overcome weaknesses that might lead novice teachers to abandon the profession (Feiman-Nemser, 2001; Ingersoll & Strong, 2011). It is surprising then that almost no consideration has been given to potential interaction effects between preservice preparation and mentoring and other induction support during teachers' first few years in the classroom. Duke, Karson, and Wheeler's (2006) study is an exception, although their examination of the career intentions of all

teachers rather than just beginning teachers using a cross-sectional data set suffered from data censoring, thereby limiting the usefulness of their results (Ingersoll & Strong, 2011).

Using a combination of survey and longitudinal administrative data, we seek in this study to contribute to the knowledge base by examining the direct effects of preservice preparation quality and early career support as well as potential moderating effects of early career support on the career intentions and decisions of novice teachers. Our results are particularly important for teacher preparation programs to consider in light of mounting efforts to hold teacher training programs accountable for their graduates' outcomes after entering teaching (see, for example, Crowe, 2010; Levine, 2006; Noell, Burns, & Gansle, 2009; The Teaching Commission, 2004). In contrast to prior studies that have utilized either teachers' stated intentions or actual decisions to assess early career attrition, our data enable us to consider both. As a result, we make a secondary contribution by

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examining the impact of these factors on teachers' intentions and decisions as well as the extent to which these outcomes correspond during teachers' early years in the profession.

Background and Context

Recent studies have shown that less effective teachers as measured by teachers' value-added to student achievement are more likely on average to leave their schools and the profession than more effective teachers (Boyd, Grossman, et al., 2011; Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Boyd, Lankford, Loeb, Ronfeldt, & Wyckoff, 2011; Goldhaber, Gross, & Player, 2011; Hanushek & Rivkin, 2010). This raises the question of whether efforts to reduce teacher attrition are even warranted. However, as Goldhaber et al. (2011) demonstrated, teachers who change schools or leave the profession do not come solely from the bottom of the distribution of teaching effectiveness; rather, they span the range of that distribution, which means that effective teachers are leaving schools as well. Moreover, the costs associated with the loss of teachers from schools can be high, in financial terms (Barnes, Crowe, & Schaefer, 2007; Texas Center for Educational Research, 2000) and in terms of the negative impacts on students and teachers in affected schools (Ronfeldt, Lankford, Loeb, & Wyckoff, 2011). In fact, Ronfeldt et al.'s (2011) study revealed a disruption effect associated with teacher turnover that extends beyond the students of teachers who leave to students and teachers throughout the school, with the strongest negative disruption effects found in schools with large populations of low-performing and minority students. They concluded that "though there may be cases where turnover is actually helpful to student achievement, on average, it is harmful" (Ronfeldt et al., 2011, p. 18).

Factors Affecting Teacher Attrition

Research on teacher attrition has shown that a number of factors affect teachers' intentions or decisions to leave the profession or change schools. For example, differences in attrition rates among teachers have been linked to a number of organizational (i.e., school and/or district) characteristics, including attributes of the school or district itself (e.g., locale, size, level), the types of students served, and working conditions within the school (Borman & Dowling, 2008; Guarino et al., 2006). Generally speaking, this research indicates that schools and districts that tend to have more challenging conditions, such as those with greater percentages of low-performing, low-income, and/or non-White students, poorer physical resources, and/or unsupportive school climates, have a more difficult time retaining teachers than those with less challenging conditions (see, for example, Allensworth, Ponisciak, & Mazzeo, 2009; Boyd et al., 2009; Boyd, Grossman, et al., 2011; Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2001; Johnson & Birkeland, 2003; Ladd, 2011; Loeb, Darling-Hammond, & Luczak, 2005).

Studies also have shown associations between teachers' career intentions or actual decisions and a number of their own personal and background characteristics, including gender, race/ethnicity, age, years of experience, education level, subject specialty, and academic ability (Borman & Dowling, 2008; Guarino et al., 2006). For example, a number of studies have found that female teachers are more likely to leave than male teachers, although this difference appears to have become less pronounced in recent years (Grissmer & Kirby, 1992; Imazeki, 2005; Quartz et al., 2008; Stinebrickner, 1998, 2002; Theobald & Laine, 2003). Similarly, teachers who enter the profession at a young age also have been shown to have higher attrition rates than older entrants (Kirby, Berends, & Naftel, 1999; Quartz et al., 2008; Theobald & Laine, 2003). One of the most consistent findings regarding teacher characteristics and of particular concern to policy makers and administrators is that new teachers (i.e., those in their first few years in the profession) have significantly higher attrition rates than teachers with more experience (Grissmer & Kirby, 1992; Hanushek et al., 2004; Stinebrickner, 1998). For this reason, many studies in this area, including this one, focus on new teachers.

To date, research regarding the influence of teachers' preservice preparation on teacher attrition is less extensive than the research base regarding other teacher characteristics. Moreover, the research has focused primarily on assessing differences in attrition rates among teachers from different preparation routes or with different types of preparation (see, for example, Andrew & Schwab, 1995; Borman & Dowling, 2008; Darling-Hammond et al., 2002; Fleener & Dahm, 2007; Ingersoll et al., 2012; Kaplan, Knight, & Parks, 2008; Mantle-Bromley, Gould, McWhorter, & Whaley, 2000; Quartz & the TEP Research Group, 2003; Reynolds, Ross, & Rakow, 2002; Reynolds & Wang, 2005; Shen, 1997). Overall, the evidence tends to show higher retention rates for teachers with more formal or comprehensive preservice preparation. In a study most similar to this one, Darling-Hammond et al. (2002) used teachers' perceptions to assess their level of preparation and found that beginning teachers in New York City who felt less prepared by their preservice programs were significantly less likely to plan to remain in teaching. The authors' primary interest was to examine differences in perceptions of preparation among teachers from different preservice preparation pathways; however, their study revealed significant variation in teachers' perceptions even *within* preparation program type (e.g., university-based undergraduate programs), a finding that has been documented in studies involving other teacher outcomes (e.g., teacher effectiveness) as well (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2006; Goldhaber & Liddle, 2012; Kane, Rockoff, & Staiger, 2008; Noell et al., 2009). In fact, Boyd et al. (2006) and Kane et al. (2008) found *greater* variation in teacher effectiveness within preparation program type (e.g., traditional preparation programs) than across program types (e.g., traditional vs. alternative preparation programs). This suggests that attention also needs to be paid to differences in

teacher outcomes across preservice preparation programs of the same type, not just across different types of programs. We focus in this study on the career intentions and decisions of new teachers who graduated from a single preservice program type, namely, 4-year undergraduate programs.

Impact of Early Career Support

Given the relatively high attrition rates of teachers during their first few years in the profession, there has been increasing efforts by practitioners and policy makers over the past two decades to provide mentoring and/or other induction support for beginning teachers.¹ Based on an analysis of national data, Smith and Ingersoll (2004) found that 83% of beginning public school teachers in 1999-2000 participated in some form of induction, up from 51% in 1990-1991. More recently, Goldrick, Osta, Barlin, and Burn (2012) reported that 27 states now have policies requiring novice teachers to participate in some form of induction program, with 17 of those states providing financial support for such efforts. As Ingersoll and Strong (2011) explained,

The goal of these support [induction] programs is to improve the performance and retention of beginning teachers, that is, to both enhance and prevent the loss of teachers' human capital, with the ultimate aim of improving the growth and learning of students. (p. 203)

The expansion in early career support likely stems at least in part from the growing evidence base regarding such programs. In a recent review of the induction literature, Ingersoll and Strong (2011) found generally favorable results, with several studies showing a positive association between induction support and teachers' intentions or actual decisions to remain in the profession or current school but a few studies showing mixed results or no association. Given that the availability and quality of induction programs vary widely from state to state and even from district to district within states (Youngs, 2007), Ingersoll and Strong (2011) also concluded in their review that the quality of induction programs is important to consider when assessing their impact on teacher outcomes. Kapadia, Coca, and Easton (2007), for example, found that simply participating in an induction program did not significantly impact new Chicago teachers' career plans; rather, they found that the intensity and perceived helpfulness of mentoring and induction support made a difference such that teachers who received strong levels of mentorship or induction support were more likely to intend to remain in their school than teachers who received only average or weak support. Similarly, Smith and Ingersoll (2004) found only a few induction activities when considered in isolation had a significant impact on turnover. However, when considered collectively, they found that teachers who received comprehensive induction "packages" (i.e., multiple types of induction support) were substantially less likely to leave their schools or the profession after the

first year than those who received less comprehensive support or no induction support at all. Overall, higher quality or more comprehensive or intensive induction programs appear to have a greater impact on teacher retention rates than lower quality programs (Ingersoll & Strong, 2011).

Teachers' Intentions Versus Actual Decisions

Although teachers' career intentions are important to consider in their own right given the potential impact of negative feelings and intentions on teacher effort and effectiveness (Ladd, 2011), a number of studies in the teacher attrition literature have relied on teachers' stated intentions as a proxy for their actual decisions to remain in or leave their schools or the profession. In fact, two of the oft-cited studies on which the preservice preparation and induction measures in this study are based utilized teachers' intentions (Darling-Hammond et al., 2002; Kapadia et al., 2007). Little is known, however, about how well teachers' intentions reflect their subsequent career decisions because researchers almost always have data that enable them to assess one outcome or the other, not both. Depending on the correspondence between these outcomes, factors that have been found to affect teachers' intentions may or may not turn out to affect their subsequent behaviors. In this study, our data enable us to consider the impact of preservice preparation and early career support on teachers' intentions and their actual decisions following their first and second years in the profession.

Research Questions

Together, the existing literature tends to point with some exceptions to direct associations between preservice preparation quality or early career support and teachers' career intentions or decisions. However, the focus of studies on teacher preparation programs and teachers' career outcomes has been limited mostly to the examination of differences across preparation program type, notwithstanding the fact that studies have revealed greater variation in teacher outcomes within preparation type. Moreover, given a primary intent of induction programs to improve the skills of beginning teachers (Feiman-Nemser, 2001; Ingersoll & Strong, 2011), Ingersoll and Strong (2011) cited a need for more research devoted to understanding the effects on teacher retention of mentoring and induction across settings, including among teachers with varying levels of preservice preparation. This study aims to help address these gaps. Like Duke et al. (2006), we hypothesize that, in addition to having a direct effect, early career support may differentially benefit beginning teachers depending on the quality of their preservice preparation. Recognizing from our literature review the importance of controlling for other factors that also have been found to influence teacher attrition,² we address the following research questions in an effort to confirm and expand the knowledge base in this area:

Research Question 1: Controlling for other teacher and organizational characteristics, does preservice preparation as measured by novice teachers' satisfaction with the overall quality of their preservice preparation program affect their career intentions and actual decisions?

Research Question 2: Controlling for other teacher and organizational characteristics, does early career support as measured by the availability and quality of mentoring and other induction activities during teachers' first year in the profession affect their career intentions and actual decisions?

Research Question 3: Controlling for other teacher and organizational characteristics, does early career support have a differential effect on the career intentions and actual decisions of novice teachers depending on the perceived quality of their preservice preparation?

Research Question 4: To what extent do teachers' stated intentions regarding their career plans reflect their actual decisions?

Data and Method

Data

This article draws upon a combination of survey and archived state employment records. The survey data were generated in spring 2005 through the identification of all 2003-2004 four-year undergraduate teaching degree completers from 12 public higher education institutions ($N = 4,974$) in a large, diverse state. The 12 institutions vary in Carnegie classification type from Master's colleges to doctoral research universities.

The teaching degree graduates were matched to state administrative records in late fall 2004 to identify all those who were employed in their first year after graduation as a full-time public school teacher in the state ($N = 2,221$, 45.2% of the completers). Surveys were administered to those first-year teachers in spring 2005 through a process that included a prenotification postcard, survey invitation packet, reminder postcard, and follow-up phone calls to nonrespondents. The overall response rate was 52%, providing a sample of 1,159 teachers for this study.

The survey utilized in this project included 20 questions regarding perceptions of teacher preparation, mentoring and induction participation, career intentions, and individual background characteristics. The survey was initially developed by a collaborative partnership among the 12 public institutions for the purpose of gathering information to inform program improvement, assist in fulfilling external reporting concerns to the state and NCATE, and allow for following over time new teachers employed in public schools in the state. Survey development was a collaborative process among representatives of the 12 institutions. The survey was framed around state teaching standards along

with understanding recent graduates' program preparation and induction/mentoring activities. The instrument was pilot tested with one institution's 2002-2003 graduates in January 2005, and then revised by the committee for March 2005 full administration.

To the survey data, we matched the survey respondents to archived state administrative data from the 2005-2006 and 2006-2007 academic years. This enabled us to identify whether and where within the State's public schools they were teaching after their first and second years in the profession. By matching the data sets over time, we were able to distinguish among those who remained in the same school, changed schools within the same district or in a different district, or left public school teaching in the state altogether.

We also determined from the survey the teachers' career intentions as of the spring of their first year, which allowed us to (a) consider the impact of preservice preparation and early career support on their intentions and (b) compare their intentions with their actual decisions. The intentions item asked, "How long do you plan to remain in teaching?" Those who indicated no plan to leave their school in the near or longer term were identified as stayers, those who indicated a plan to remain in teaching but "in a different school or district" were identified as movers, and those who indicated plans to leave teaching in the near or longer term were identified as leavers. For those who expressed an intention to move, we were unable to differentiate intentions to move within the current district from intentions to move to a different district on account of the wording of that item.

As noted earlier, though most existing research focuses on differences in teacher outcomes across preparation program type (e.g., traditional vs. alternative), greater variation in outcomes has been found *within* preparation program type (Boyd et al., 2006; Kane et al., 2008), indicating a need for greater research attention on differences across programs of the same type. In this study, we consider differences in preservice preparation quality among graduates from a single preparation pathway only, namely, traditional, 4-year campus-based certification programs. The graduates from the 12 public institutions included in this study constitute roughly two thirds of teacher preparation program completers in the state in that year. Graduates from alternative route programs, who made up just over 1% of teacher preparation program completers in 2003-2004, are not considered, nor are graduates from undergraduate programs in private higher education institutions, fifth-year, or special preparation programs, such as urban academies or professional development schools. The indicator of the quality of preservice preparation that we use is teachers' answers to a survey question regarding their satisfaction with the overall quality of their teacher education program. Responses were captured using a 4-point Likert-type scale ranging from 1 (*very dissatisfied*) to 4 (*very satisfied*). We acknowledge that this measure is not ideal—it provides neither an independent assessment of program quality nor any indication of respondents' actual effectiveness in the

classroom. Nonetheless, it is very similar to that used by Darling-Hammond et al. (2002), which enables us to compare our results with theirs. Moreover, as Kee (2012) noted, teachers' subjective perceptions of their preparation and impact have been found in multiple studies to be tied to their career decisions. It is important to note that the correlations of our program satisfaction variable with measures of the characteristics of the students and schools in which the teachers were working at the time of the survey revealed only a weak association between satisfaction and school size ($r = -.078, p \leq .01$). Similarly, the correlations of preservice program satisfaction with measures of the early career support received (descriptions of those measures are provided below) also revealed only weak associations with two of the three measures and no association with the third ($r = .049, p = .10$ with helpfulness of mentor; $r = .115, p \leq .001$ with the comprehensiveness of mentoring and induction). Thus, teachers' reported satisfaction with their preservice preparation program does not appear to have been determined by nor reflective of measurable conditions in their schools or the induction support received in their first year.

Like Kapadia et al. (2007), we utilize multiple measures of mentoring and induction to capture the impact of the availability and quality/comprehensiveness of support. All three of our measures are based on teachers' responses to the survey that was conducted during spring 2005 when they were in their first year of teaching. At that time, the state in which these data were gathered had just passed legislation requiring schools to provide induction support for beginning teachers (specifically focused on providing a mentor for the first 2 years), but the requirement did not take effect until the academic year following the survey (i.e., 2005-2006) and no financial support or other assistance was to be provided by the state for such programming.

Our first measure of early career support captures whether the teacher was provided a mentor. Ingersoll and Strong (2011), like others (e.g., Feiman-Nemser, 2001; Smith & Ingersoll, 2004; Yost, 2006), have identified mentoring as a critical form of induction. We differentiate among teachers who were assigned a mentor from the same subject area, a different subject area, or no mentor at all. Smith and Ingersoll's (2004) findings suggested the effects of having a mentor depend on whether or not the mentor is from the same subject area.

Our second indicator of early career support is the teacher's perception of the helpfulness of his or her mentor regardless of subject area. This measure is intended to capture the quality of the mentoring relationship rather than simply the availability of mentoring support. In the survey, teachers were asked to indicate the extent to which the assigned mentor was helpful. Possible response categories for those having a mentor included: *not at all*, *to some extent*, *to a moderate extent*, and *to a great extent*. Our helpfulness of mentoring variable incorporates a fifth category, no mentor, and ranges from 0 (*no mentor*) to 4 (*to a great extent*).³

The third and final measure of early career support that we consider in this article combines mentoring with teacher-reported information regarding the availability and value of other induction activities received. It is meant to capture the quality and comprehensiveness of the mentoring and induction support received by the teachers. Eight nonmentoring induction activities corresponding to those considered by Smith and Ingersoll (2004) and Kapadia et al. (2007) are considered in this measure and include access at school or district expense to workshops on topics such as teaching methods, lesson planning, or student discipline; common planning time with other teachers in the same subject area; regularly scheduled collaboration with other teachers on issues of instruction; participation in a network of teachers; supportive communication with one's supervisor; extra classroom assistance; release time to see other teachers teach; and observation and feedback from other experienced teachers. Respondents indicated whether they had received each of these induction activities and, if so, how valuable the activities were to them (on the following 4-point scale: *not at all valuable*, *somewhat valuable*, *moderately valuable*, *extremely valuable*). Similar to the approach taken by Kapadia et al. (2007), we constructed this third measure of early career support to equal 0 for those with *no mentoring at all* or mentoring that was *not at all helpful* and no induction activities that were rated *at least somewhat valuable*. For those with *at least somewhat helpful* mentoring, the measure was set equal to the number of somewhat or more valuable induction activities received, with possible values ranging from 1 to 8.

In addition to our primary variables of interest, we include a number of variables capturing teacher and school characteristics in our regression analyses to control for their influence on teachers' career intentions and decisions. The teacher variables include demographic information (gender, race/ethnicity, age, age squared) and main subject assignment during their first year of teaching. Given the nature of the sample, no controls for years of experience or certification type are necessary. All of the teacher information was obtained from the survey and administrative data. The school variables include locale type (urban, suburban, town, rural), school level, school size, and student demographic information (% non-White students, % low-income students). Information on the characteristics of the schools in which the teachers were employed was gathered from public-use files from the National Center for Education Statistics' Common Core of Data (CCD).

Method

Because our outcome variables are categorical (intend to stay, move, or leave; actually stayed, moved within district, moved across district, or left teaching after the first and second year), we utilize multinomial logistic regression models to estimate the impact of our respondents' perceptions of

preservice program quality and early career support on their career intentions and outcomes. Intend to stay or stayed in the same school serves as the baseline category in each model, which means the relative risk ratios presented in the tables reflect the impact of a unit change in each independent variable on the odds of making each particular transition relative to staying in the same school, controlling for all other characteristics included in the model. A relative risk ratio that is significantly greater than one reflects greater odds of making the transition, whereas a ratio significantly less than one reflects lower odds.

We estimated four models for each early career support variable/outcome measure combination, with controls for the teacher and school characteristics included in each model.⁴ In Model I, we examined only the effect of perceived preservice program quality. In Model II, we examined only the effect of early career support. By including those variables in separate models, we are able to compare our results from Models I and II to existing studies. In Model III, we included both of those variables to examine their independent effects while controlling for the other. In Model IV, we added the interaction term to capture potential differential effects across the levels of preparation quality and early career support. The results for teachers' career intentions and actual decisions after 1 and 2 years in the profession are presented in Tables 2, 3, and 4, respectively. Given the focus of this study, we do not report the results for the teacher and school variables that are included as controls in each of the models. The three blocks of results in Tables 2, 3, and 4 correspond with the three different early career support measures described earlier.⁵

Findings

Descriptive Statistics

Table 1 provides descriptive information for all of the independent variables used in the regression models. Compared with the entire cohort of first-year teachers in the state at that time, the teachers in this study were similar in terms of gender, race/ethnicity, and school level, but significantly younger, which is not surprising given that all of the teachers in our sample entered the profession after completing undergraduate education programs, whereas the population of new teachers entered via multiple routes, including graduate-level and alternative certification programs.

Table 1 shows that teachers in the study on average were between satisfied and very satisfied ($M = 3.3$, $SD = 0.6$) with the overall quality of their preparation program. However, similar to Darling-Hammond et al.'s (2002) findings, teachers' perceptions of program quality varied significantly within and among the 12 institutions from which they graduated. In Figure 1, we show the mean and 95% confidence interval for teachers' responses regarding satisfaction with preservice program quality for each of the 12 institutions. The small sample size from institution 12 ($n = 8$) reflects the

Table 1. Descriptive Characteristics for Variables Used in Multinomial Logistic Regression Analyses.

Teacher characteristics	
% Male	20.8
% Non-White	12.6
Mean age	27.3 (6.8)
Main subject assignment (%)	
Elementary	41.5
Math	4.9
Science	3.9
Special education	16.0
Other	33.7
School characteristics	
Mean % low-income students	32.9 (7.6)
Mean % non-White students	35.8 (32.6)
Mean student enrollment	938.2 (821.2)
School level (%)	
Elementary/middle	64.1
High	34.3
Other	1.6
Locale type (%)	
Urban	22.4
Suburban	52.0
Town	6.8
Rural	18.8
Preservice program quality and early career support	
Mean satisfaction with overall program quality (1-4 scale)	3.3 (0.6)
Availability of mentoring (%)	
Same subject mentor	55.8
Different subject mentor	20.9
No mentor	23.3
Mean helpfulness of mentor (0-4 scale)	2.4 (1.5)
Comprehensiveness of mentoring and induction activities (%)	
0	29.4
1	3.2
2	7.6
3	9.6
4	14.1
5	17.1
6	12.6
7	4.3
8	2.2
N	1,159

Note: Standard deviations are shown in parentheses.

small size of that program and explains the wide range of its error bar; the sample sizes for the other institutions ranged from 30 to 286. An analysis of variance of teachers' perceptions of program quality among institutions was found to be highly significant ($F = 3.97$, $p \leq .001$). Overall, only a small percentage (8.1%, $n = 95$) of teachers reported being *dissatisfied* or *very dissatisfied* with their preparation program, but those teachers made up a greater proportion of some institutions' graduates than others (range of 2.7%-25.0% across institutions).

Figure 1. Variation in teachers' satisfaction with the overall quality of their preservice preparation program by institution.

Table 1 also shows that just under one quarter (23.3%) of the teachers in the study reported having no mentor at all during their first year. Of those with a mentor, about three-quarters reported having a mentor from the same subject area (Table 1). With regard to the comprehensiveness of mentoring and induction activities, nearly 3 out of 10 (29.4%) of the teachers in the sample had no mentoring at all or mentoring that was perceived to be not at all helpful and no induction activities that were rated at least somewhat valuable. Among the 70% of teachers who received at least somewhat helpful mentoring and one or more induction activities that were at least somewhat valuable to them, Table 1 reveals that most participated in four to six induction activities in addition to mentoring.

Figure 2 shows the distribution of our outcomes variables, namely, the percentages of stayers, movers, and leavers based on the teachers' intentions and on their actual decisions after 1 and 2 years in the classroom. Whereas 71.7% of the teachers expressed in the survey an intention to remain teaching in the same school, only 62.9% of those teachers were still in the same school after 2 years. This difference was due to more teachers changing schools after their first and second years (18.2% and 27.0%, respectively) than intended. In contrast, fewer teachers than intended left within the first 2 years (4.1% and 10.1% after the first and second years, respectively), perhaps due to the relatively short time frame for which we were able to track teachers in this study.⁶

Impact on Teachers' Intentions

Main effects. Table 2 shows the regression results of the impact of perceptions of preparation program quality and the three measures of early career support on teachers'

intentions to change schools or districts (move) or leave teaching altogether (leave) as opposed to staying in the same school. Recall that we were unable to differentiate teachers' intentions to move within versus across districts so our "move" category captures both types of intended moves. Consistent with Darling-Hammond et al.'s (2002) results, we found that teachers who were more satisfied with the overall quality of their preservice program were significantly less likely to intend to move to another school ($p \leq .10$) or to intend to leave the profession (Model I). The results remained quite consistent even after controlling for the various measures of early career support received (Model III).

With regard to the impact of early career support, we discovered no direct impact of simply having a mentor, regardless of whether the mentor was from the same subject or a different subject, on teachers' intentions to move schools or leave the profession. The same was true even after controlling for preservice program quality (top block of results for Models II and III in Table 2). However, when we considered the quality of mentoring (i.e., teachers' perceptions of helpfulness of mentor) and the comprehensiveness of mentoring and induction activities, we found significant results. Specifically, our results in the middle of Table 2 show that teachers who perceived their mentors to be more helpful were less likely to intend to leave their current schools than teachers with less helpful or no mentors, even after controlling for perceived preservice program quality. They had similar odds, however, of intending to leave the profession (Models II and III, respectively). Taking into account mentoring and induction activities received (i.e., comprehensiveness of mentoring and induction), teachers who were provided more comprehensive support were significantly less likely to intend to move or leave than teachers with no support or less comprehensive support. These results are similar to those reported by Kapadia et al. (2007). Once again, our results were consistent even after controlling for perceptions of program quality (bottom block of results for Models II and III).

Interaction effects. Model IV in Table 2 shows the interaction effects between perceived program quality and early career support on teachers' intentions. Overall, we found some evidence of differential effects for both intentions to move and leave, although the effects were not consistent across the various measures of early career support. For teachers who indicated an intention to move, the effects of having a same subject mentor and the helpfulness of the mentor differed by teachers' perceptions of preservice program quality. For those intending to leave, having a different subject mentor and the comprehensiveness of mentoring and induction support received showed differential effects. To ease interpretation, we show in Figures 3 through 6 the predicted probabilities of intentions to move or leave associated with low, medium, and high levels of program quality satisfaction

Figure 2. Teachers' career intentions and actual decisions after 1 and 2 years in the profession.

Table 2. Multinomial Logistic Regression Analysis of First-Year Teachers' Career Intentions (Stay in Same School Is Base Category).

	Move				Leave			
	I	II	III	IV	I	II	III	IV
Satisfaction with overall program quality	0.72*		0.72*	1.36	0.69**		0.69**	0.85
Availability of mentor (no mentor is reference)								
Mentor in same subject		0.90	0.91	17.08**		0.84	0.86	1.45
Mentor in different subject		1.03	1.05	5.47		1.01	1.05	11.02**
Satisfaction × Same subject				0.40**				0.85
Satisfaction × Different subject				0.60				0.48**
Satisfaction with overall program quality	0.72*		0.73*	1.11	0.69**		0.69**	0.65***
Helpfulness of mentor		0.84***	0.84***	1.55*		0.94	0.94	0.87
Satisfaction × Helpfulness				0.83**				1.03
Satisfaction with overall program quality	0.72*		0.75	0.87	0.69**		0.70**	0.55***
Comprehensiveness of mentor and induction activities		0.87***	0.87***	1.05		0.94**	0.95*	0.72**
Satisfaction × Comprehensiveness				0.94				1.09*
n	1,095	1,095	1,095	1,095	1,095	1,095	1,095	1,095

Note: Relative risk ratios are reported. All of the models include controls for the teacher and school characteristics shown in Table 1. The standard errors are adjusted to account for the clustering of individuals within institution.

* $p \leq .10$. ** $p \leq .05$. *** $p \leq .01$. **** $p \leq .001$.

and the relevant early career support measures. The low satisfaction group includes teachers who indicated being either dissatisfied or very dissatisfied with their preservice preparation.⁷ The medium and high satisfaction groups include teachers who reported being satisfied or very satisfied, respectively.

For teachers with no mentor, we discovered similar predicted probabilities of intentions to move across the three program satisfaction groups (Figures 3 and 5). In addition, we found that teachers who were provided with a same

subject mentor (Figure 3) or more helpful mentoring (Figure 5) had significantly lower probabilities, but only for teachers who indicated high satisfaction (Figure 3) or medium and high satisfaction (Figure 5) with their preservice preparation. The positive association of those types of mentoring did not extend to teachers with low perceived quality preparation. In fact, such teachers with mentors from the same subject area showed significantly *higher* predicted probabilities than similar teachers who did not receive mentoring. It may be that the mentors of

Figure 3. Predicted probabilities of intending to move for teachers with a same subject mentor versus no mentor by satisfaction level with their preservice program.

Figure 4. Predicted probabilities of intending to leave for teachers with a different subject mentor versus no mentor by satisfaction level with their preservice program.

poorly prepared teachers provided feedback to the teachers or perhaps even to their administrators that prompted those teachers to want to leave the school. Further research is needed to determine whether that is the case.

Figures 4 and 6 show that the predicted probabilities of intending to leave tended to be highest for teachers in the low satisfaction group and lowest for those in the high satisfaction group. Having a mentor from a different subject area compared

Figure 5. Predicted probabilities of intending to move for teachers by perceived helpfulness of their mentor and satisfaction level with their preservice program.

Figure 6. Predicted probabilities of intending to leave for teachers by the comprehensiveness of their mentoring and induction support and satisfaction level with their preservice program.

Figure 7. Comparison of teachers' career intentions with their actual decisions after 1 and 2 years in the profession.

with not having a mentor at all did not alter teachers' intentions to leave for those in the medium and high program quality satisfaction groups, although, similar to the relationship shown in Figure 3, it slightly raised the predicted probability of leaving for those in the low satisfaction group (Figure 4). Again, these results suggest that simply having a mentor is not sufficient support for teachers who perceive themselves to be less well prepared. Having more comprehensive mentoring and induction support, in contrast, was associated with significantly lower predicted probabilities of intending to leave for teachers in the medium and low satisfaction groups, particularly for those in the low group (Figure 6). In fact, teachers who were provided with relatively high levels of induction support showed little to no difference in their predicted probabilities of intending to leave, regardless of their level of satisfaction with their preservice preparation. Interestingly, more comprehensive support did not affect the intentions to leave of teachers in the high satisfaction group, perhaps because those intentions were relatively low to start.

Teachers' Intentions Versus Decisions

Before turning to the regression results based on teachers' actual decisions, we thought it would be informative to compare teachers' career intentions with their actual decisions to stay, move, or leave. Chi-square tests of the differences in distributions were significant for both after one year ($\chi^2 = 148.7, p \leq .001$) and two year ($\chi^2 = 125.1, p \leq .001$) decisions compared with teachers' intentions. Figure 7 provides a visual representation of the cross-distribution of these outcomes, with teachers categorized by their intentions (i.e., intended to stay, move, or leave) on the horizontal axis and

their actual decisions within each intentions category represented by the vertical bars. Note that the solid vertical bars represent teachers' decisions (stayed, moved, or left) after their first year of teaching, whereas the patterned vertical bars represent their decisions after their second year. Among the teachers who indicated in the first-year spring survey that they intended to stay in their school (71.7% of the teachers in the sample), the vast majority (84.5%) remained in their schools after the first year but fewer (70.1%) remained after 2 years (Figure 7). Nearly all those who left their initial school after the first year moved to a different school, about two thirds (8.6% of the 13.1%) to a new school in a different district. After the second year, nearly a quarter of those who had intended to remain in the same school but did not had left public school teaching in the state altogether. Of the 23.1% of intended stayers who moved, again about two thirds (15.0% of the 23.1%) transitioned to a different district. Unfortunately, we are not able, with our data, to determine whether those who moved and left were forced to do so or whether they did so voluntarily.

Of the teachers who indicated an intention to move to a new school, over 4 in 10 had done so after their first year, and almost half had done so after 2 years. Interestingly, nearly all of the movers (85.1% after the first year, 84.3% after the second year) changed districts as opposed to changed schools within the same district. After 2 years in the profession, about 30% of the intended movers were still in their initial schools, down from just over 44% a year earlier. Compared with the teachers who indicated an intention to stay in the same school, substantially greater percentages of intended movers ended up leaving the profession after 1 (11.4%) and 2 (19.8%) years.

Table 3. Multinomial Logistic Regression Analysis of Teachers' Decisions After First Year (Stayed in Same School is Base Category).

	Moved within district				Moved across districts				Left teaching			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Satisfaction with overall program quality	0.83		0.83	0.97	0.94		0.95	0.84	0.53***		0.53***	0.50
Availability of mentor (no mentor is reference)												
Mentor in same subject		0.89	0.89	0.66		0.72**	0.72**	0.40		0.56	0.57	0.14
Mentor in different subject		1.22	1.24	1.70		0.70	0.70	0.45		0.87	0.92	1.68
Satisfaction × Same subject				1.09				1.20				1.57
Satisfaction × Different subject				0.45				1.15				0.38
Satisfaction with overall program quality	0.83		0.83	0.74	0.94		0.97	0.97	0.53***		0.54***	0.37***
Helpfulness of mentor		1.03	1.03	0.88		0.82***	0.82***	0.82		0.89	0.90	0.54
Satisfaction × Helpfulness				1.05				1.00				1.19
Satisfaction with overall program quality	0.83		0.83	0.87	0.94		1.00	0.95	0.53***		0.57**	0.48*
Comprehensiveness of mentor and induction activities		1.01	1.01	1.07		0.85***	0.85***	0.79		0.79***	0.80***	0.63
Satisfaction × Comprehensiveness				0.98				1.02				1.08
<i>n</i>	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117

Note: Relative risk ratios are reported. All of the models include controls for the teacher and school characteristics shown in Table 1. The standard errors are adjusted to account for the clustering of individuals within institution.

* $p \leq .10$. ** $p \leq .05$. *** $p \leq .01$. **** $p \leq .001$.

Among the teachers who expressed an intention to leave teaching, the vast majority stayed or moved rather than left after the first and second years. Following the first and second years, only 6.5% and 18.1% of the intended leavers, respectively, were no longer teaching in a public school in the state. And similar to what we found for the intended movers, the majority of intended leavers who changed schools moved to a new district. It is not clear whether the teachers who remained in the profession changed their minds or whether their intended time frame for leaving exceeded the 2 years that we were able to track them. Nonetheless, our analysis reveals that teachers' stated intentions are not very reliable predictors of their early career decisions, especially for those who express intentions to move or leave.

Impact on Teachers' Decisions After 1 Year

Main Effects. Table 3 shows the multinomial logistic regression results for the impact of the teachers' perceptions of preparation program quality and the three measures of early career support on their career decisions after 1 year of teaching. Here, we were able to distinguish among teachers who remained teaching in the same school (base category), moved to a new school within the same district, moved to a new school in a different district, or left public school teaching in the state altogether.

Teachers' perceptions of the overall quality of their pre-service programs had no impact on their decisions to change schools within or across districts. However, teachers who indicated being more satisfied with the quality of their preparation program were significantly less likely to leave teaching after their first year in the profession than those who were less satisfied (Models I and III in Table 3). In fact, the odds of leaving were about half for those who were more satisfied, regardless of the type of early career support received.

Like Smith and Ingersoll (2004), we found some benefit associated with teachers having a mentor from the same subject area. Specifically, teachers with same subject mentors were significantly less likely to move to a different district after the first year of teaching than those with no mentor, although they had similar odds of moving within district and leaving altogether. Having a mentor in a different subject, in contrast, showed no effect on any of the transitions relative to having no mentor at all (first block of results, Models II and III in Table 3).

Taking into account the quality of the teachers' mentoring experiences (middle block of results in Table 3), teachers who perceived their mentors to be more helpful (regardless of subject background) were significantly less likely to move across districts. Again, however, the results for this mentoring variable showed no effect with regard to teachers' decisions to move within district or leave after their first year in the profession.

Table 4. Multinomial Logistic Regression Analysis of Teachers' Decisions After 2 Years (Stayed in Same School Is Base Category).

	Moved within district				Moved across districts				Left teaching			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Satisfaction with overall program quality	1.04		1.03	1.19	0.92		0.93	0.91	0.82***		0.82	0.78
Availability of mentor (no mentor is reference)												
Mentor in same subject		1.35	1.35	1.88		0.78	0.78	0.85		0.61*	0.61*	0.39
Mentor in different subject		1.53	1.52	4.56		0.79	0.79	0.37		0.95	0.97	1.42
Satisfaction × Same subject				0.90				0.97				1.15
Satisfaction × Different Subject				0.72				1.25				0.89
Satisfaction with overall program quality	1.04		1.02	1.00	0.92		0.94	0.96	0.82***		0.83	0.77
Helpfulness of mentor		1.17	1.16	1.13		0.87***	0.87***	0.90		0.85**	0.85**	0.76
Satisfaction × Helpfulness				1.01				0.99				1.04
Satisfaction with overall program quality	1.04		1.01	1.03	0.92		0.97	1.00	0.82***		0.87	0.75
Comprehensiveness of mentor and induction activities		1.04	1.05	1.06		0.88***	0.88***	0.92		0.85***	0.85***	0.71
Satisfaction × Comprehensiveness				1.00				0.99				1.06
<i>n</i>	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117

Note: Relative risk ratios are reported. All of the models include controls for the teacher and school characteristics shown in Table 1. The standard errors are adjusted to account for the clustering of individuals within institution.

* $p \leq .10$. ** $p \leq .05$. *** $p \leq .01$. **** $p \leq .001$.

Having more comprehensive mentoring and induction support, in contrast, significantly decreased the odds of new teachers changing districts and leaving the profession after the first year (last block of results in Table 3, Models II and III). These results coincide with those of Smith and Ingersoll (2004) and Kapadia et al. (2007), whose studies also showed positive benefits associated with more comprehensive induction support.

Interaction effects. Contrary to our findings for teachers' intentions, we found no significant interactions between perceived preservice preparation quality and early career support in our models of teachers' decisions after the first year (Model IV in Table 3). However, the results continued to show some significant, albeit conditional, effects of preparation program quality on leaving, controlling for its interaction with the second and third early career support variables.

Impact on Teachers' Decisions After 2 Years

Main effects. It is important to note that we have no information about the mentoring and other induction support received by teachers during their second year in the profession. Thus, Table 4 shows the impact of perceived preparation quality and early career support on teachers' decisions after their second year based on their responses to the survey conducted in the spring of their first year.

Again, we found that teachers' perceptions of preservice program quality were significantly related to their odds of leaving teaching, but not to their odds of moving within or across districts (Model I in Table 4). However, in contrast to what we found after the first year, the effect of program

quality on leaving after the second year became insignificant once we controlled for the mentoring/induction support received by teachers (Model 3).

Similar to what we found for teachers' decisions following the first year, our results show that the quality and comprehensiveness of early career support significantly affected teachers' decisions to change districts and leave the profession after 2 years, whereas the availability of a mentor had marginal to no effects, depending on the subject area of the mentor. Those results held true regardless of the quality of the teachers' preservice preparation (Models II and III in Table 4) and provide additional support for the notion that the quality, not just availability, of induction support matters.

Interaction effects. Similar to our findings for teachers' decisions after the first year, we found no significant interactions between perceived preservice preparation quality and early career support in our models of teachers' decisions after the second year (Model IV in Table 4).

Discussion and Implications

Our findings confirm and extend prior research related to the effects of early career support alone and in conjunction with varying levels of satisfaction with preservice preparation.

Consistent with Darling-Hammond et al.'s (2002) results, we show a direct association between new teachers' perceptions of preservice preparation quality and their intentions to remain in their current school and in the profession. More importantly, we extend their findings to show that the association carries over to teachers' actual decisions following their first and second years of teaching, at least with regard to

teachers remaining in the profession. Specifically, teachers in our study who were less satisfied with the quality of their preservice preparation were significantly more likely to intend to change schools or leave and more likely to actually leave teaching than those who were more satisfied. We acknowledge the inherent limitations associated with using teachers' perceptions as an indicator of preparation program quality. Nonetheless, our study demonstrates that those perceptions differed across individuals within and across different preparation programs and, as has been reported in other studies (Kee, 2012), were significantly associated with teachers' subsequent career decisions. With previous research linking students' perceptions of their educational experience with their level of engagement while in the program (Pascarella & Terenzini, 2005), teacher education programs would be well served to foster significant student engagement given the association found in this study between perceptions of preparation and retention intentions and decisions. As teachers' perceptions were *not* associated with characteristics of the schools in which they worked nor of the level of early career support that they received during their first year, teachers' reported satisfaction in this study was not simply capturing teachers' reactions to conditions in their schools, thus supporting further attention by teacher preparation programs to ensure rigorous, educationally intentional engagement by teachers in training, or what Arum and Roksa's (2011) analysis of college learning describes as high engagement in reading, writing and thinking. The benefits of rigorous educational experiences are multiple, but ensuring high-quality educational engagement remains a persistent challenge in teaching training programs where students are increasingly consumers of education rather than learners in preparation (Slaughter & Rhoades, 2004).

Concerns about the quality of teacher preparation have prompted calls and efforts to hold teacher training programs more accountable for their graduates' outcomes after entering the profession (see, for example, Crowe, 2010; Levine, 2006; Noell et al., 2009; The Teaching Commission, 2004). As a result, considerable attention is being paid to the effectiveness of teacher preparation programs and the impact of preparation on teacher and student outcomes (Goldhaber & Liddle, 2012; Ing & Loeb, 2008; Wilson, Floden, & Ferrini-Mundy, 2002). The federal Race to the Top program, for example, has focused participating states' attention on the link between teacher preparation programs and teacher effectiveness (U.S. Department of Education, 2009). Some states are focusing on preparation programs' impact more broadly, including teachers' persistence in the profession (Crowe, 2011). Our findings linking teachers' preservice program satisfaction with their later career decisions reinforce the need to pay attention to the quality of teacher preparation, and suggest that teacher preparation programs would benefit from developing and utilizing assessment processes for improvement as well as accountability purposes (Plecki, Elfers, & Nakamura, 2012). Assessment processes can be

seen as a way to address needs for information to report on quality concerns, but have greater potential in the opportunity to better understand the significant within institutional variance in new teacher preparation for the purpose of examining strengths and limits of current programs with an aim toward enhancing learning and subsequent outcomes. Relying on teacher self-reports alone is inadequate for fully understanding differences across programs (Wilson et al., 2002), but in the context of program improvement can provide meaningful practical insights for advancing program quality. The process described here to collect self-reported perceptions of graduates in combination with retention data provides an example of how assessment data has the potential to be used for both reporting and program improvement efforts.

Our findings of direct associations between the quality and comprehensiveness of early career support and teachers' intentions and decisions, even when controlling for perceived preparation program quality, provide further evidence of the importance of mentoring and induction quality, rather than simply availability. Given the expense of hiring and orienting new teachers, the findings here reinforce the case made by others (e.g., Ingersoll & Strong, 2011; Kapadia et al., 2007; Smith & Ingersoll, 2004) for providing high-quality, comprehensive induction supports, with mentoring as one component. Moreover, our results indicate that matching new teachers with mentors from the same subject area provides more benefit than mentoring by teachers from different subject areas or no mentoring at all. This finding is consistent with Smith and Ingersoll's (2004) and Youngs' (2007) results using national- and district-level data, respectively. The very strong correlation ($r = .881$) that we found in our survey between teachers' perceptions of helpfulness of the mentor and the frequency of mentoring received also points to the importance of providing novice teachers and their mentors with opportunities to interact on a regular basis. Together, these findings regarding the type of mentoring that makes a difference suggest more specific guidelines for districts and schools regarding the development of mentoring programs whereby subject matches, the nature of interactions, and the duration of interactions frame mentor training and mentor/mentee programmatic expectations.

Of particular significance are the interaction effects that we found in our intentions models, which provide support for a nonlinear conceptual model of the interrelationships among preservice teacher preparation, early career support, and new teacher attrition. Specifically, our results indicate that high-quality comprehensive mentoring and induction support can moderate the negative impact of perceived poor quality preparation on teachers' intentions to leave. Mentoring alone, in contrast, was shown to have the opposite effect on teachers' intentions to change schools and leave, thereby providing some evidence to explain why the availability of mentoring by itself has been found to be less effective at addressing new teacher attrition than more

comprehensive induction efforts. We surmise this may be due to the feedback received from mentoring. To the extent that mentors provide critical feedback to novice teachers, the absence of additional induction support to help teachers respond to that feedback might prompt teachers who are struggling to consider other career options. A greater understanding of these dynamics and how they ultimately translate into teachers' subsequent career decisions is needed to help policy makers and administrators determine how early career support programs might be best tailored to compensate for variations among new teachers in their preparation. Induction programs are costly, and our results suggest a targeted and tailored approach based on beginning teachers' needs as opposed to the more common one-size-fits-all approach may prove to be more cost-effective and beneficial to novice teachers at least in terms of retaining them in their schools and the profession.

In addition, our findings about induction quality in combination with the interaction findings suggest a need for better coordination and collaboration across traditional organizational boundaries. Research shows that state mandates are not sufficient to ensure the implementation of high-quality induction support programs at the district and school levels (Wechsler, Caspary, Humphrey, & Matsko, 2010; Youngs, 2007); moreover, nearly half of all states do not require such programs (Goldrick et al., 2012). Given the expectations that are increasingly being placed on teacher preparation programs for their graduates' outcomes, it appears that teacher education programs would benefit from becoming involved in pathways to new teacher success that extend beyond program graduation. Collaborative efforts, such as those found in professional development school partnerships, that connect teacher preparation programs and school districts to form a pathway of support from training through mentoring and induction during teachers' early years would recognize the interrelationships revealed in this study and situate the development of teachers as a continuing and shared responsibility.

Finally, our findings shed needed light on the relationship between self-reported intentions and the actual movements by teachers in their first two years of teaching. Specifically, we show significant and meaningful differences between new teachers' intentions to stay in their initial school, change schools, or leave the profession and their documented behaviors within the first couple of years in the profession. The differences are most notable for teachers who indicated intentions to change schools or leave altogether. Among intended leavers, only a fraction had left during the time frame of our study, reflecting either a change in plans by those teachers or a longer time commitment to staying than the 2 years that we observed, either of which would provide some benefit for schools given the aforementioned costs associated with attrition and the well-documented positive association between teacher experience and effectiveness (see, for example, Boyd, Lankford, Loeb, Rockoff, &

Wyckoff, 2008; Kane et al., 2008; Rice, 2003). Our results differ from those reported by Ladd (2011), who found higher (not lower) actual leave rates after 1 year in the profession by teachers who had expressed an intent to leave. Nevertheless, what is important is that Ladd too found differences between the career intentions and actual decisions of teachers in her study using data from another state. We view the decisions of intended movers in this study to be more concerning than those of intended leavers because a notable percentage ended up leaving public school teaching in the state rather than moving to new schools. Given that nearly all of the intended movers who changed schools moved to a new district, perhaps a lack of opportunity to move to another district prompted some of those teachers to leave the profession rather than stay in an undesirable situation. Alternatively, it may be that some of the intended movers switched to private schools or to schools in another state, two outcomes that we were not able to observe with our state-level administrative data set. Notwithstanding this data limitation, such movements would have the same negative consequences as teacher attrition, namely, human capital loss and financial and educational costs, for the affected schools, districts, and the State's public school system as a whole. For certain, these results reveal for researchers in this field a limitation of relying on teachers' career intentions as a proxy for the labor market decisions of teachers early in their careers.

In closing, this study provides a first and important step in filling a gap in the teacher attrition literature by examining whether mentoring and induction support differentially influences beginning teachers' career intentions and decisions depending on their level of preservice preparation. In addition to confirming direct effects of preservice preparation and early support that have been documented in prior research, we reveal in this study intriguing differential effects, particularly on teachers' intentions to leave the profession. Our findings suggest that more targeted approaches to mentoring and induction support based on teachers' level of preparation may be needed to address new teacher attrition, though more research is needed to understand better the interactions that we found among these factors. We recognize that our focus on teachers from just one preparation program type limits the generalizability of these findings, particularly given the increasing popularity of alternative, fifth-year, and other preparation pathways. Nonetheless, our approach contributes to the mounting evidence of substantial variation among teachers from the same preparation type and highlights the need for researchers and program administrators to consider and address differences within preparation program type, even within the same institution.

Given the findings and noted limitations of this study, we recommend three ways future research might extend this work. First, rather than relying solely on teachers' perceptions of program quality, future research should incorporate multiple indicators to assess differences in preparation, including measures of student learning that reflect teachers'

actual effectiveness in the classroom, if available. Second, to overcome the limitations of self-report of program preparation, supervisors in the graduates' initial teaching positions should be queried to provide their perceptions of the new teacher's preparation as a means of triangulating individual teacher perceptions of program preparation. For teachers and their supervisors, perceptions of preparation around particular skills and competencies identified in new teacher standards would provide a more robust and informative assessment of preparation than the single measure of overall quality used herein. And third, to further explore the interaction between teacher preparation program quality and induction in relation to retention, we propose a longitudinal qualitative study that would capture more fully the complex interplay that our study revealed between preservice preparation and mentoring and induction support on new teachers' career decisions.

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Notes

1. It is important to note that mentoring, though often used interchangeably with the term *induction*, is just one of a number of types of induction support that a district or school might provide to novice teachers (Feiman-Nemser, 2001; Ingersoll & Strong, 2011; Smith & Ingersoll, 2004; Yost, 2006).
2. We include control variables in our models to capture differences in measurable teacher characteristics that have been found to impact teacher retention, though we recognize that selection bias may still be an issue due to unmeasured differences across teacher graduates from different institutions.
3. We also have information on the frequency of interaction of the teachers with their mentors. Possible responses included once every couple of months, once a month, once a week, and several times a week. The responses to this frequency measure were highly correlated with the helpfulness of mentoring measure ($r = .881, p \leq .001$) and the regression results were very similar to the helpfulness results reported in this article. Those results are available from the authors by request.
4. We also include an age-squared term in the models to control for potential nonlinearities with that variable.
5. We cluster adjusted the standard errors to account for the lack of independence among teachers by teaching degree institution. In their first year, the 1,159 teachers worked in nearly 900 different schools in the state so there was far less dependence among teachers in that regard.
6. Our study tracks teachers' decisions until the start of the 2006-2007 academic year. Given that the recent economic recession in the United States officially started at the very end of 2007 and it did not affect employment in education until 2008-2009 or later (Executive Office of the President, 2011), we do not believe that the discrepancies between teachers' intentions and decisions in this study are attributable to the recession. However, we only are able with our data to track the teachers in our sample across the State's public schools. Thus, it is possible that some of the teachers whom we identified as having left the profession after their first or second year moved to teaching positions in private, charter, or out-of-state schools.
7. We combined the dissatisfied and very dissatisfied teachers into one category due to the relatively small number of such teachers ($n = 95$).

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