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ATTITUDES AND AFFECT:
HOW EARLY CAREER SPECIAL EDUCATION AND
GENERAL EDUCATION TEACHERS RESPOND TO
TEACHING AND THE CONTEXT OF SCHOOLS

presented by

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ATTITUDES AND AFFECT:
HOW EARLY CAREER SPECIAL EDUCATION AND GENERAL EDUCATION
TEACHERS RESPOND TO TEACHING AND THE CONTEXT OF SCHOOLS

By

Nathan D. Jones

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ABSTRACT

ATTITUDES AND AFFECT: HOW EARLY CAREER SPECIAL EDUCATION AND GENERAL EDUCATION TEACHERS RESPOND TO TEACHING AND THE CONTEXT OF SCHOOLS

By

Nathan D. Jones

This dissertation is a collection of three separate but interrelated studies exploring the experiences of early career special education and general teachers as they encounter their school environments. The first sub-study is an exploration of how teachers spend their school time and their instructional time more specifically. Additionally, I investigate the degree to which teachers' affective responses vary depending on the activity in which they are engaged. I find that teachers reported higher levels of concentration, challenge, activation, and self-esteem in school as compared to outside of school. Of a variety of work-related activities, instruction is associated with the highest levels of positive emotions. The data also indicate that teaching assignment (i.e., one's role and responsibilities) is strongly associated with teachers' time use and how they responded to teaching.

The second study analyzes whether momentary emotional responses at school become aggregated into attitudes about work, namely commitment and burnout. I draw on momentary affective data and fall and spring surveys to test whether mean levels of positive affect, negative affect, skill, and fatigue are associated with teacher attitudes. I find that negative affect and fatigue are both predictive of teacher burnout, even when controlling for prior levels of burnout. Also, mean levels of positive affect and skill are predictive of one's commitment to their grade/subject area.

The third sub-study compares the experiences of new general education and special education teachers in their interactions with mentors and social network members. Drawing on survey data from novice teachers, their mentors, and their key colleagues, I investigate differences in the two groups of teachers' abilities to access social capital in their social networks, and whether these differences contribute to variations in teachers' commitment to their schools, districts, and profession, as well as their levels of burnout. My results suggest that support from colleagues plays an important role in influencing teachers' career plans, particularly for special education teachers.

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CHAPTER 1: ATTITUDES AND AFFECT: HOW EARLY CAREER SPECIAL EDUCATION AND GENERAL EDUCATION TEACHERS RESPOND TO TEACHING AND THE CONTEXT OF SCHOOLS

This dissertation is a collection of three sub-studies exploring the experiences of early career special education and general teachers as they encounter their school environments. The first two of my sub-studies explore teachers' emotional responses to different aspects of their work, and I attempt to connect these emotional responses to broader attitudes about teaching. Both studies are psychological in that they explore how teachers interact with their work emotionally on a daily basis, but they are not direct tests of how policy impacts the lives of teachers. The third essay includes a comparison of formal and informal channels of support in schools, but the focus is on teachers' social environments, and how special educators and general educators experience the context of their schools in very different ways.

At first glance, it is difficult to locate the role of policy in this dissertation. However, across the three studies, an argument is advanced that policy plays a critical role in shaping the working environment that new teachers enter into. The transition into one's first teaching position has often been described as a process of "sink-or-swim" or "trial-by-fire," (Lortie, 1975; Gold, 1996; Ingersoll & Kralik, 2004). From the onset, the novice teacher often faces the same duties and expectations as a veteran teacher, but must simultaneously navigate the unfamiliar terrain of teaching without experience or practical knowledge to fall back on. A new teacher's success depends on their ability to achieve multiple goals: they must acquire instructional and classroom management skills, become familiar with district curricula, and adapt to the professional norms and procedures of

their individual schools.¹ And, the learning curve is steep--they are to acquire their knowledge through experience, learning what does and does not work through practice.

Historically, this process of learning to teach has been considered a private ordeal, which Lortie (1975) attributes to the “cellular organization” of schools. However, research has increasingly suggested that new teachers strongly desire guidance and assistance from their peers (Kauffman et al., 2002; Kardos & Johnson, 2007), and that schools as social organizations can have profound influences on teachers’ success in the classroom (Desimone et al., 2004; Hill, Rowan, & Ball, 2005). Therefore, guiding my dissertation is the assumption that new teachers’ beliefs--about effective instructional practices, about their effectiveness at delivering instruction, and about their commitment to teaching—are situated within the social context of schooling (Bidwell, 2000; Zhao & Frank, 2003). Teachers do not struggle through the challenges of learning to teach in isolation, nor do structural or institutional factors alone dictate how teachers come to think about themselves as teachers. Instead, the two processes, psychological and social, interact in a way that shapes an individual’s beliefs and attitudes about teaching. These internal and external factors, both of which influence teachers’ attitudes about their work, are the focus of this dissertation.

Study Design and Methodology

I investigated internal and external predictors’ of early career teachers’ attitudes at school through multiple sources of data. In the first two essays, I explored the dynamic

¹ In addition to these experiences which face all early career teachers, novice special education teachers are likely to encounter a unique set of challenges and responsibilities associated with teaching special education. Among others, these include modifying curriculum for specific populations, understanding federal special education laws, developing effective relationships with paraprofessionals, determining how to use assistive technology, and documenting student progress on individualized education plans (Boyer & Gillespie, 2000).

nature of teachers' experiences at work by making use of a data collection strategy known as the Experience Sampling Method (ESM). The ESM is an intensive, weeklong data collection process in which individuals are asked to respond to brief questionnaires at random intervals throughout their waking hours (7:00 – 11:00 PM). Participants were asked where they were, what they were doing, what they were thinking about, and how they felt about the activity in which they were engaged. The ESM differs from other time diaries because it obtains detailed information about individuals' time use and their subjective interpretations of various activities during daily life. A sample of 46 teachers participated in the ESM portion of the study.

I also collected survey data from early career teachers (ECTs) and their mentors and key colleagues. The surveys asked questions related to the teachers' backgrounds, professional preparation, interactions with others, experiences in their schools, and commitment to their grade/subject, their school, and their district. Early career teachers were surveyed in fall of 2007 and were asked to list the names of their mentors as well as up to eight colleagues with whom they engaged in professional interactions. To allow for social network analysis, mentors and colleagues nominated by ECTs were asked to complete surveys in the early winter of 2008 on similar items as those in the fall survey. Finally, early career teachers were invited to complete follow-up surveys in the spring to facilitate investigations of change over time. These data were used in the second and third sub-studies of this analysis.

Despite the frequent use of ESM studies in psychology (e.g., Haworth & Hill, 1992; Csikzentmihalyi, Rathunde, & Whalen, 1993; Schneider & Waite, 2005), there are fewer examples in education (DiBianca, 2000; Schweinle & Turner, 2006; Shernoff et al.,

2003; Yair, 2000). Further, the method has not been used to explore how teachers spend their time at school, or how they respond emotionally to their work. In my first sub-study, I therefore explored how the teachers in the ESM sample spent their time at school, as well as the activities they reported when they were engaged in some form of instruction. I also collected data on their average emotional states in each category of time use in order to capture the variation of emotions across context. Finally, I made comparisons between teachers based on whether they taught special education or general education, whether they taught in an elementary school or middle school, and whether they were in their first, second, or third year of teaching.

The goal of the second sub-study was to predict whether momentary affective responses (i.e., local measures of emotions and mood) become aggregated into attitudinal evaluations of individuals' work (i.e., global measures of job satisfaction). To do so, I developed ESM-based measures of teachers' levels of positive affect, negative affect, skill, and fatigue at school, and investigated whether these factors were associated with survey measures of burnout and commitment in the spring—while controlling for prior levels of attitude and burnout. I also tested two different conceptual definitions of how emotions might influence attitudes about work. First, I used person-level means, which are likely to reflect participants' overall affective state throughout the week—detached from any specific events. A second aggregation strategy was to investigate the relationship between participants' "peak" emotions and their attitudes about work.

Finally, the third sub-study compared the experiences of beginning special education and general education teachers in their interactions with mentors and social network members, as well as their perception of the collective assets embedded in the

school environment (i.e., collective responsibility, relational trust, and perception of fit). Regression models were developed for the two groups of teachers, with each model estimating the effects of support from colleagues on ECTs' levels of stress and burnout. Specifically, these models included predictor variables for the importance of colleague support, as well as perceptions of the collective assets of the school organization (i.e., ECTs' perceptions of trust and collective responsibility, as well as their perceptions of organizational fit). I also included interaction terms to see whether the sources of colleague support had a differential impact on general educators and special educators. Finally, I used social network analyses to more directly measure the influence of colleagues' commitment and perceptions of the school organization on early career teachers own attitudes.

Findings from the Three Studies

In the first sub-study, my findings showed that teachers spent an average of just over 50 hours per week at school. When teachers were at school, instruction was the most frequent activity cited by our participants (20.34 hrs/wk), which is not surprising given that instruction is a teacher's primary focus. The relative frequency of activities such as interacting with colleagues and engaging in non-instructional interactions with students suggest that teachers spent little of their daily time alone; social interactions played a large role in their daily work. Regarding instructional time use, instructional practices varied considerably across the ESM sample, although lecture was the most frequent classroom activity reported by teachers. Other common forms of instructional activities included whole-group activities such as reading as a class or engaging in discussion, or student-centered activities such as one-on-one or small-group instruction.

In comparisons of how different groups of teachers used their school time (i.e., general education teachers vs. special education teachers, elementary school teachers vs. middle school teachers, and first, second, and third year teachers), the most important distinction appeared to be between general education teachers and special education teachers. This is likely attributable to the differences in the job responsibilities of general education and special education teachers. Special educators, for example, spent significantly fewer hours per week providing instruction to their students than general education teachers. However, they also spent more hours per week doing paperwork—a task that played a minimal role in the daily lives of general education teachers. Fewer important differences were seen between elementary school teachers and middle school teachers, with middle school teachers using technology more frequently during the school day. Finally, differences based on year of teaching were not significant for any school or class activity.

When looking at teachers' average emotions in specific school contexts, I was surprised at how positive the experience of providing instruction was. Teachers reported higher than average levels of skill, challenge, engagement, self-esteem, and activation when engaged in instruction. Meanwhile, when doing activities such as planning, paperwork, or grading, the teachers in this sample reported lower than average levels of positive affect, enjoyment, and challenge. Interactions with colleagues, meanwhile, were associated with lower than average levels of being in control and feeling skilled. At the same time, during such interactions they reported higher levels of concentration and did not appear to have lower positive affect or enjoyment scores.

While the first sub-study focused on how teachers responded affectively to various activities throughout the school day, the second study focused on the aggregate effect of teachers' emotions at work. Several studies of early career teachers have drawn connections between challenging work environments and decisions to leave the profession, but omitted from these studies is the measurement of teachers' actual emotional responses to these conditions—as well as the direct consequences of these decisions for teachers' plans to stay in their teaching position. The results from my analysis of ESM and survey data provide evidence of a moderate and negative association between teachers' average levels of “negative affect” and “fatigue” and their levels of burnout with respect to their jobs. This finding held for both general education and special education teachers, and the effects of negative affect and fatigue were important for spring burnout regardless of teachers' levels of burnout in the fall.

Regarding the relationship between affective reactions to work and early career teachers' career plans, my results suggest that “positive affect” and “skill” are both positively associated with commitment to one's grade/subject, controlling for prior commitment as well as teacher demographic characteristics. This suggests that overall positive experiences at work are likely to increase teachers' desire to stay in their teaching positions; in contrast, negative affect was negatively associated with the commitment variable, although the coefficient for this relationship was only significant at $p \leq .10$. Finally, “mean” measures of affective responses at work were better predictors of teacher attitudes than “max” measures, suggesting that specific positive and negative experiences are less important to teachers' judgments about their jobs than overall moods at work.

The findings of my third sub-study highlight potentially important differences in the induction experiences of early career special education and general education teachers; and, these differences appear important for teachers' plans to stay in teaching. Descriptive analyses revealed that special education teachers interacted with their mentors far less frequently than general education teachers, which is likely attributable to the fact that fewer special education teachers had mentors who were colleagues in their schools. Both groups of teachers, however, valued the support they received from colleagues more than the support they received from mentors. This finding was supported by teachers' reports of the frequency of interactions with colleagues around instructional issues such as curriculum, teaching strategies, and student behavior. The frequency of interactions between special education teachers and their colleagues did not differ significantly from the colleague interactions of general education ECTs. Overall, the special education teachers in this sample do not appear more isolated from their colleagues than general education teachers.

Regression analyses predicting teacher burnout and commitment confirm that for both groups of teachers, support from colleagues was important for their ability to handle the stress associated with their jobs (i.e., their levels of burnout). More important was the positive role of colleagues in predicting teacher commitment, even when controlling for prior commitment and several teacher demographic variables. The findings also suggest that perceptions of school-level assets, including professional fit and collective responsibility, were each positively associated with overall levels of commitment. Models including interaction terms for special education teachers and each of these

sources of colleague support showed that, for special educators, higher levels of support were more closely associated with high levels of commitment.

Finally, the above measures of colleague support were all indirect measures of support—I was relying on ECTs' perceptions of the importance of their informal relationships, rather than attempting to capture the actual influence of colleagues on ECTs. However, by running social network models predicting teacher attitudes, I found that ECTs' attitudes were positively associated with their colleagues' attitudes about their work, even when controlling for prior levels of these attitude variables. Collectively, these results present strong evidence that how early career teachers come to think about their schools as organizations is influenced by their social networks.

Discussion of Findings across the Sub-studies

My focus shifts from the first and second sub-studies to the third, where I move from an analysis of internal factors (such as teachers' emotions and attitudes) to an analysis of teachers' broader school context. However, a common goal across each of the studies is to explicate what happens to teachers as they navigate the uncertainties surrounding their first teaching positions. The findings from the first sub-study suggest that it is not instruction itself that is likely to produce negative emotions for early career teachers; instead, it is activities such as planning, doing paperwork, and grading where teachers express higher levels of negative emotions. Further, the second analysis answers important questions about how teachers come to make judgments about their work. The analysis also suggests that researchers should not simply draw connections between work conditions and teacher outcomes, but should consider the mediating role of teachers' day-to-day emotional responses to their work. Based on my findings, I would make the

argument that work context does not directly impact teacher attitudes; instead, it is through other intermediary factors that these two are linked.

The results from the third analysis also support this conclusion. While my regression analyses suggest a positive association between one's social context and their overall commitment, I believe my findings from the social network analyses are more persuasive, because they allow me to capture the process by which colleagues' beliefs actually influence early career teachers' beliefs. In this sense, the real contribution of this study is in the evidence I present regarding processes influencing new teachers' attitudes, many of which are often only assumed in many studies of new teacher induction experiences. I show that individuals make judgments about their jobs based both on influence from their colleagues, as well as based on their own interpretations of events at school. There appears to be an interplay between teachers' social contexts and their psychological responses to work. Or, as Bidwell writes in his description of social psychology: "The person's cognitive and emotional states (e.g., thought and feeling) in some way link social context and individual behavior" (2000, p. 19).

In the case of teachers within schools, they do not develop teaching beliefs (e.g., about effective instructional practices, their ability to promote student learning, or their commitment to teaching) in isolation, nor do structural or institutional factors alone dictate how teachers develop convictions about teaching. Instead, psychological and social processes interact in ways that shape an individual's beliefs and behaviors. It is important, then, in trying to understand teachers' behaviors, to take account of a teacher's social context as well as their subjective responses to this context.

There are also important methodological contributions of this dissertation study. For one, I present evidence across multiple sources of data. I connect Experience Sampling Method data to survey data, as well as early career teacher survey data to colleague survey data. Additionally, in each of my models using survey data, I take advantage of the longitudinal nature of my data by controlling for prior measures. The fact that average emotions are associated with survey data suggests that the ESM could supplement more traditional forms of data collection in future studies. Similarly, the step of looking jointly at the experiences of general education and special education teachers is an important one. It suggests to policymakers that, within the same districts, general education and special education teachers experience induction policies differently, specifically with respect to formal mentors.

Finally, several of my findings inform prior research on early career special education teachers (see Billingsley, Carlson, & Klein, 2004; Miller, Brownell, & Smith, 1999); much of this prior research suggests that early career special educators are likely to feel overwhelmed by their jobs and are likely to feel isolated and confused about their role in the broader school context. The results of these three analyses present a more nuanced picture of the experiences of early career special education teachers. While it is true that special education teachers do not have access to the same formal sources of support as general education teachers (i.e., in comparison to general educators, special education teachers have, on average, less frequent interaction with their mentors), they appear to interact with their colleagues just as frequently as general education teachers do. Further, the relationship between both positive and negative emotions at work and attitudinal outcomes in the form of burnout and commitment is likely to function

similarly between the two groups of teachers. The more critical distinction appears to be in how important colleague support is for special education teachers' levels of commitment. My data suggest that collective assets of a school (such as relational trust, collective efficacy, and perception of fit) have a greater effect on commitment for special educators than they do for general educators. In this sense, the importance of school context is especially salient for new special educators.

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CHAPTER 2: SCHOOL TIME USE AND AFFECTIVE RESPONSES OF GENERAL AND SPECIAL EDUCATION TEACHERS DURING THEIR FIRST YEARS OF TEACHING

Introduction

The period at the beginning of a teacher's career has been described in a variety of ways. One well-known portrayal is Fuller and Bown's (1975) conceptual model of teacher development, which distinguishes among three phases of teaching, based on the concerns that characterize a teacher's main focus and efforts. The first phase of teaching – when teachers transition from teacher preparation programs/pathways into their first teaching positions – is typically marked by concerns about their own adequacy and survival. From a developmental perspective, the changes in teachers' concerns can be described as a shift from a self orientation to a pupil orientation. This viewpoint is supported by Veenman (1984), who in a review of the literature on beginning teachers, cited several challenges that novices frequently face (e.g., classroom discipline, motivating students, organizing instruction, insufficient materials and supplies, and dealing with problems of individual students), many of which can be classified as problems of survival.

The beginning years of teaching have also been described as a process of “sink-or-swim” or “trial-by-fire” (Gold, 1996; Ingersoll & Kralik, 2004; Lortie, 1975); from the onset, the novice teacher faces the same duties and expectations as a veteran teacher, but must simultaneously navigate the unfamiliar terrain of teaching with less experience or practical knowledge. Success depends on achieving multiple goals: novices must acquire instructional and classroom management skills, become familiar with district curricula, and adapt to the norms of their individual schools. Facing these challenges, new teachers

are likely to face high rates of anxiety, frustration, and inadequacy (Feiman-Nemser, Schwille, Carver, & Yusko, 1999).

The challenges associated with the beginning years of teaching have consequences for the retention of early career teachers. Data from the 1999-2000 Schools and Staffing Survey (SASS) indicate that close to 30% of first-year general education and special education teachers either left teaching at the end of the year or migrated to other schools or districts (Smith & Ingersoll, 2004). Further, research has found teacher attrition in the first five years among general and special education teachers to be 30% or greater (Henke, Chen, & Geis, 2000).

In recent years, a number of research studies have investigated associations between the context of learning to teach and a variety of new teacher outcomes. Some researchers have employed interviews and observations to examine possible associations between school or district context and beginning teachers' experiences (Achinstein, Ogawa, & Speiglmán, 2004; Author, 2007; Grossman & Thompson, 2004; Kardos et al., 2001). Others have used large-scale survey data and student achievement data to consider the impact of mentoring and other induction activities on teacher retention and student performance (Fletcher, Strong, & Villar, 2008; Glazerman et al., 2008; Kapadia, Coca, & Easton, 2007; Smith & Ingersoll, 2004).

But few studies have investigated what actually happens to teachers in the first years of teaching. How do early career teachers spend their time, both in terms of in-school experiences (such as planning classroom activities, engaging in specific forms of instruction, monitoring student behavior, and interacting with colleagues) and out-of-school activities (including work-related, family, and leisure activities)? How much of

teachers' time outside of school is devoted to working or thinking about school? Further, given that early career teachers' experiences are often characterized by struggles and uncertainty, what are teachers' emotional responses to the first years of teaching, and what kinds of instructional and non-instructional experiences are likely to elicit negative emotions among teachers?

This paper addresses these questions using a unique time sampling method known as the Experiencing Sampling Method (ESM); using the ESM, we collected data on the time use and subjective well-being of 42 early career teachers in Michigan and Indiana. In the first section of the paper, we briefly review the research literature on teachers' time use and their affective responses to teaching. The second section introduces the ESM and reviews research on its use in studying adolescents and adults. Third, we describe the theoretical framework that shaped our research design and analysis. In the fourth section, we discuss our method, including sample, ESM questionnaire, and measures used in the analysis. The fifth and sixth sections feature the results of this analysis and some interpretation of the study findings. Finally, we conclude by discussing the implications of this study for research, policy, and practice.

Teachers' Time Use and Affective Responses to Teaching and Other Activities

Teachers' Time Use. Until recently, there had been limited research on how much time U.S. teachers devoted to work-related and other activities, either in or outside of school. With the advent of the American Time Use Survey (ATUS) in the early-2000s, though, national data are now available on the work patterns of teachers and other professionals. The ATUS employs a random sample drawn from households that participated in the U.S. Current Population Survey (CPS) and is administered in the form

of computer-assisted telephone interviews (Hamermesh, Frazis, & Stewart, 2005). Each ATUS participant is asked to complete a time diary by describing all of their activities for a 24-hour period (i.e., from 4 AM the previous day until 4 AM the day of the interview); only their primary activities, however, are recorded and coded. After the time diary is complete, participants are asked a series of follow-up questions about child care, paid work, and volunteering (Hamermesh, Frazis, & Stewart, 2005).

Using ATUS data from 2003 through 2006, Krantz-Kent (2008) reported a number of noteworthy findings about teachers' time use and how it compared to that of other professionals. For example, teachers were more likely than other professionals to do some work at home, to work on Sundays, and to hold more than one job at the same time. At the same time, teachers spent fewer minutes than other professionals working on weekdays or Saturdays (Krantz-Kent, 2006). In addition, teachers generally worked less in the summer months than during other times of the year and older teachers (ages 40 and older) generally worked more hours each week than teachers aged 20 to 39. Finally, as compared to other professionals, teachers spent less time working and more time doing household activities (Krantz-Kent, 2006).

The ATUS data represent a significant contribution to what is known about teachers' time use (as well as that of other professionals) in the U.S. At the same time, these data have some limitations. First, they provide little detailed information about the types of primary activities teachers engage in during the work day (e.g., large-group instruction, small-group instruction, planning, meeting with colleagues, extra-curricular activities, etc.) or their secondary activities (e.g., child care, watching television, eating) (Horrigan & Herz, 2005). Second, they do not differentiate among early career, mid

career, and late career teachers. Third, the ATUS data are based on participants' ability to recall activities that occurred up to 36 hours earlier. Finally, these data are limited by the fact that the time diaries are only completed for a single 24-hour period.

Recent pioneering research by Rowan and colleagues at the University of Michigan has employed teacher instructional logs to investigate teachers' curricular and instructional practices in literacy and mathematics (Rowan, Camburn, & Correnti, 2004; Rowan, Harrison, & Hayes, 2004). Unlike most surveys of instruction, the teacher logs focus on instruction provided to individual students and are completed by teachers multiple times for each sampled student. In an analysis of elementary math instruction, for example, Rowan, Harrison, and Hayes (2004) analyzed data from 19,999 logs completed by 509 teachers in 53 schools. In this study, teachers who participated in every session were expected to complete approximately 60 to 70 logs, or about eight or nine for each sample student. Due to student and teacher absences and unusable data, the researchers obtained an average of 39-40 days of log data on instruction for each teacher. Similarly, in their analysis of elementary literacy practices, Rowan, Camburn, and Correnti (2004) had an average of 30 to 35 usable logs for each study participant.

The use of teacher logs has several advantages over traditional surveys of instruction. First, they provide much richer and more frequent data about individual teachers' classroom practices. Second, they can reveal variations in instruction within schools, within classrooms across students, and within classrooms over the course of a school year. Third, they address the issue of recall that can pose methodological challenges for annual or biannual surveys. At the same time, for the purposes of the analysis presented in this paper, instructional logs have two main shortcomings. First,

they are not designed to collect data on teachers' time use throughout the school day or outside of school; instead, they obtain detailed data during single periods of instruction. Second, the logs are not intended to reveal information about teachers' emotional responses to instructional and other work-related activities.

Teachers' Emotional Responses to Work-Related Activities. Over the past 15 years, several researchers in Canada, the U.S., England, and Australia have begun to investigate the emotions of teaching, teachers' emotional responses to key aspects of their work, and how these responses can vary based on career stage, teaching context, and other factors (Day & Leitch, 2001; Dinham & Scott, 1998, 2000; Hargreaves et al., 2006; Jeffrey & Woods, 1996; Little, 1996). A leading contributor in this area has been Andy Hargreaves, who has theorized and empirically examined emotional geographies of teaching (2001). In particular, Hargreaves directed a major study of teachers' emotional responses to their work in Ontario, Canada in the 1990s. Drawing on interview data with elementary and secondary teachers, he identified and illustrated "sociocultural, moral, professional, political, and physical distance as five key emotional geographies of teaching" (2001, p.1061). For example, when students and families came from cultural, linguistic, and/or socio-economic backgrounds that differed from those of their teachers, according to Hargreaves, this sometimes led to stereotyping, lack of emotional understanding, and readiness to assign blame on the part of teachers.

As part of their research in Ontario, Hargreaves and colleagues interviewed teachers to learn about their emotional responses to interactions with students (Hargreaves, 2000) and parents (Hargreaves, 2001; Lasky, 2000), and to serving as department chairs (heads) in secondary schools (Schmidt, 2000). In addition, researchers

from the U.S. have employed interviews (Little, 1996) and interviews and surveys (Lasky, 2005) to probe the emotional responses of secondary school teachers to efforts to engage in comprehensive high school reform. These studies represent important advances in research on teachers' emotions because they distinguish affective responses among teachers based on a) schooling level, b) work context (e.g., interacting with students versus interacting with parents), c) role (e.g., teacher, department chair, etc.), and d) reform context.

At the same time, researchers have acknowledged some limitations in the use of interviews to analyze teachers' emotional responses to their work (Hargreaves, 2001). In response, scholars have employed narrative, autobiographical accounts (Day & Leitch, 2001) and long-term observation (Jeffrey & Woods, 1996) to examine teachers' emotional experiences during professional development activities and school inspections. Further, researchers have also used surveys to investigate teacher job satisfaction, morale, and commitment (see, e.g., Dinham & Scott, 1998, 2000; Ebmeier, 2003; Evans, 2000; Ingersoll, 2001; Kapadia, Coca, & Easton, 2007). In our view, interviews and one-time surveys have limited capacity to provide detailed information about teachers' affective responses to the many different activities in which they engage in and outside of school. And while narrative autobiography and long-term observation offer fine-grained data concerning teachers' emotions, they have limitations as well. In particular, narrative accounts are also based on teachers' ability to recall past events while long-term observation requires many researchers and/or observations for each study participant.

In the next section, we describe an alternative way to collect detailed data on teachers' time use and their emotional responses to the activities in which they engage –

the Experience Sampling Method (ESM). The ESM has been used widely in research in the areas of psychology and human development (Csikszentmihalyi, 1997; Csikszentmihalyi & Schneider, 2000; Schneider & Waite, 2005) but much less frequently in educational settings. Compared to interviews and other forms of data collection, it enables researchers to obtain in-the-moment data on teachers' primary and secondary activities throughout several days over a week or more.

The Experience Sampling Method

Developed by Mihaly Csikszentmihalyi and his colleagues (Prescott, Csikszentmihalyi, & Graef, 1981; Csikszentmihalyi & Larson, 1984; Csikszentmihalyi, 1997), the ESM is a week-long data collection activity in which participants wear a signaling device such as a beeper, watch, or personal digital assistant (PDA). The signaling devices are pre-programmed to beep eight times a day for seven days, randomly within two-hour time intervals. That is, they emit signals each day eight times across a 16-hour period (from 7:00 a.m. to 11:00 p.m.), with no two beeps occurring less than 30 minutes apart. The ESM differs from other time diaries because it also asks individuals what they are thinking about at a particular moment and obtains detailed information about subjective interpretations of various activities during daily life. Also important is that ESM data provide a random sample of an individual's daily activities, giving the researcher "a relatively complete and undistorted picture of daily life, and (these data) often provide unexpected glimpses into what one would never have expected" (Hektner, Schmidt, & Csikszentmihalyi, 2007).

Previous research has shown that ESM measures and data are reliable and valid compared with data collected through other survey methods (Csikszentmihalyi & Larson,

1984; Robinson, 1985). Additionally, by having multiple responses for each individual across a variety of variables (there can be as many as 56 data points for every participant), researchers can develop aggregate scores at the person level that take into account the ways in which emotions vary across situations. For example, the metric used to determine a person-level characteristic such as *happiness* is a mean or sum score based on multiple responses across multiple contexts and experiences; this aggregate happiness measure can then be used in a regression analysis in conjunction with variables from other surveys. An additional benefit of the ESM is that it does not suffer from the same bias of recall that characterizes other methods, which require a participant to reconstruct at a later point what they were doing at a previous time and how they felt about it. Instead, when responding to the ESM, individuals record their activities and emotional responses to these activities as they occur.

Research studies in education that have used the ESM have most frequently investigated student engagement in schooling, as well as how specific teacher practices elicit different behaviors and emotions in students (see, e.g., DiBianca, 2000; Schmidt, Shurnow, & Kackar, 2007; Schweinle & Turner, 2006; Shernoff & Schmidt, 2008; Shernoff & Vandell, 2007; Shernoff et al., 2003; Yair, 2000). In one study, for example, Shernoff and Schmidt (2007) used the ESM to investigate similarities and differences in achievement, engagement, and quality of experience among 586 white, black, Latino, and Asian high school students. In a second study employing ESM data, Shernoff and Vandell (2007) examined students' engagement levels in after-school programs during different types of activities and with various partners. Finally, Shernoff et al. (2003)

drew on ESM data to consider how adolescents spent their time in high school and the conditions under which they reported being engaged.

A number of researchers have also used the ESM to examine adults' emotional responses to work and non-work activities. In the 500 Family Study, Schneider and Waite (2005) collected detailed information, including ESM data and parent and adolescent surveys, from over 500 middle-class, dual-earner families in eight communities across the U.S. The purpose of the study was to obtain and analyze extensive data on parents' home and work experiences, adolescents' home and school experiences, and both groups' affective responses to their experiences. In a smaller study, Williams and Alliger (1994) used the ESM with 41 parents to explore their subjective experiences with work and parenting and whether their emotional responses in one sphere of responsibility carried over to the other sphere. Further, Fisher (2000) employed the ESM with 121 working adults in order to consider the relationship between real-time emotions during the work day and overall job satisfaction.

In sum, the ESM has been shown to be a valid, reliable instrument for measuring adults' activities and their in-the-moment affective responses to their activities. A growing number of studies have used this research method to examine student engagement, adolescents' experiences at school and home, and adults' experiences at work, at home, and when they are/are not parenting. At the same time, though, no existing ESM studies have focused on how teachers spend their time, as well as how they respond emotionally to experiences in their daily lives, such as trying to help students master a difficult math topic, asking one's mentor for advice, or grading tests in front of the television at home. In this manuscript, we report findings from a study that employed

the ESM with 42 early career teachers, thereby contributing to the research literature on teachers' time use and their affective responses to their experiences.

Theoretical Framework

In this study, we employ a theoretical framework that is based on a social psychological approach to the study of schooling (Bidwell, 2000; Bryk & Schneider, 2002; Frank, 1998). From this perspective, an individual's psychological state is in part shaped by their social context, which in turn influences their behavior. Or as Bidwell writes: "The person's cognitive and emotional states (e.g., thought and feeling) in some way link social context and individual behavior" (2000, p. 19). In the case of teachers within schools, they do not develop teaching beliefs (e.g., about effective instructional practices, their ability to promote student learning, or their commitment to teaching) in isolation, nor do structural or institutional factors alone dictate how teachers develop convictions about teaching. Instead, psychological and social processes interact in ways that shape an individual's beliefs and behaviors. It is important, then, in trying to understand teachers' behaviors, to take account of a teacher's subjective responses to their social context.

Our conceptualization of a teacher's focuses on their social position within the school organization (e.g., whether they teach at the primary or secondary level, their content area and grade level, the population of students they teach). The basic question of what it looks like to be a teacher is profoundly influenced by each dimension of their particular social context. Positional variation, such as whether a teacher works with elementary school students or middle school students, is likely to shape their definition of what their role should be in the lives of their students, while the distinction between

teaching special education versus general education may have profound consequences for how novice teachers think about attending to individual needs of students compare to those a class as a whole.

Variations in individuals' teaching contexts are likely to dictate the kinds of activities in which teachers engage on a daily basis. And, given the dynamic and complex nature of a teacher's work life, the range of activities related to teaching are likely to produce a variety of emotional responses from moment to moment, including happiness, frustration, anxiety, and excitement; and two different individuals may respond to the same circumstances in two different ways. Consequently, the study of how emotions vary by context and by person can help move us toward a more accurate representation of individuals' experiences in their everyday lives, as well as how these momentary experiences are likely to influence future attitudes and behaviors. As Csikszentmihalyi and Larson (1987) write, the objective of this research is to "identify and analyze how patterns in people's subjective experience relate to the wider conditions of their lives" (p. 527). Or, how are momentary emotional responses associated with individuals' global psychological states?

In the field of organizational science, researchers have paid increasing attention to the influence of current reports of mood and emotion at work on critical outcomes such as job performance and satisfaction (Brief & Weiss, 2002; Fisher, 2000; Fisher & Ashkanasy, 2000). Much of this work draws on a theoretical model developed by Weiss and Cropanzano (1996), known as the Affective events theory (AET). The AET model provides a framework for understanding how momentary emotions may produce "affect-driven behaviors," which, in the aggregate, can influence attitudes and behaviors about

work. Relevant to teachers is the question of whether their momentary emotional responses predict more global job attitudes such as self-efficacy, motivation, and commitment to one's school and to the teaching profession, each of which is likely to influence teachers' quality of instruction and decisions related to retention.

In sum, the theoretical framework guiding this study suggests that momentary emotional responses to teaching provide a theoretical link between a teacher's social context – including the design of their teaching environment and their interactions with colleagues, students, and other school personnel – and their attitudes and behaviors related to their teaching position.

In this study, we employed the Experience Sampling Method (ESM) with more than 40 early career teachers to investigate the social-psychological processes of learning to teach and whether/how these processes varied among different groups of teachers. That is, we studied whether these processes differed among a) general education and special education teachers, b) elementary and middle school teachers, and c) first-year versus second- or third-year teachers. In particular, the study was designed to address the following research questions:

1. What activities do early career teachers engage in throughout the course of the work week, both during their time at school and when they are specifically engaged in instruction Does this time use vary by category of teacher, including whether an individual teaches special education or general education, whether they are in an elementary school or a middle school, and whether they are in their first, second, or third year of teaching?

2. When teachers say they engage in instruction, how is this instructional time used? Does it vary by category of teacher?
3. What are teachers' emotional responses to work? How do emotional responses vary by school activities?

Method

Study Participants

For this study, we recruited 42 teachers to participate from three school districts in Michigan and Indiana. The Experience Sampling Method (ESM) study reported on here is part of a larger, three-year study of early career teachers in several urban Michigan and Indiana districts. Funded by Carnegie Corporation of New York, the larger study examines how mentoring, social networks, and district policies affect early career teachers' commitment, retention, and instructional practices, and the achievement gains of their students. The study has been taking place since 2006-07 and continues through the 2008-09 school year; it features approximately 300 general education and special education teachers in school districts in Michigan and Indiana.²

In selecting first-, second-, and third-year teachers to participate in the ESM study described here, we focused on elementary and middle school general and special education teachers. In terms of the general education teachers, we only invited those in core content areas in grades 1-8 to participate in the ESM study. This included elementary school teachers (grades 1-5) and middle school teachers in the areas of language arts, history/social studies, mathematics, and science. With regard to the special

² In 2006-07, the sample for the larger study included first- and second-year teachers; in 2007-08, the sample for the larger study included first-, second-, and third-year teachers; and, in 2008-09, the sample for the larger study includes first-, second-, third-, and fourth-year teachers.

educators, we invited teachers who were responsible for providing academic instruction to students in grades 1-8, but excluded those who did not provide instruction (e.g., school psychologists, speech pathologists, social workers). All first-, second-, and third-year teachers who met these criteria were invited to participate, but they had to be teaching full-time, have earned a standard teaching certificate, and have completed university-based teacher preparation.

In addition, the student demographics in the study participants' classrooms and schools had to be consistent with those throughout their district. That is, we wanted to ensure that a given novice's experiences were not significantly shaped by having much higher or lower percentages of low-income students than other teachers in the study. In sum, the criteria for selecting new teacher participants included a) being responsible for academic instruction/teaching in a core content area, b) teaching full-time, c) having earned a standard teaching certificate and completed university-based teacher preparation, and d) having demographics in their classrooms and schools that were consistent with those throughout the three districts.³

In the three districts chosen for the ESM study, we selected 42 teachers to participate. Of these 42 teachers, 27 were teaching in elementary schools and 15 were teaching in middle schools. Twenty-six of the teachers taught general education, while 16 taught special education. The years of experience of teachers in the sample varied, with 11 first-year teachers, 22 second-year teachers, and 9 third-year teachers participating in the ESM study. The majority of the teachers in the sample were white females, with only seven males out of the total number of participants in the study. As seen in Table 1, the

³ Table 1 Illustrates how the ESM sample aligns with the full sample for the three districts.

sample of ESM teachers is largely representative of the full sample of teachers from the three districts participating in the MIECT study. However, the ESM sample has a higher proportion of special education teachers than the full sample, as well as a higher proportion of second-year teachers than is present in the full three-district sample.

[Insert Table 1 Here]

ESM Questionnaire

We adapted our questionnaire and response procedures from Schneider and Waite's *500 Family Study* (2005). When a participant was beeped, they documented the time they were initially beeped as well as when they were able to respond. Participants described *how* they were spending their time by reporting where they were, what activity they were engaged in, what else they were doing, as well as what was on their minds. Two trained coders, using coding schemes adopted from previous ESM studies, coded each of the open-ended questions about participants' activities and locations.⁴ Inter-rater reliability for the coding of ESM activities ranged from .75 to .90.

Participants were asked *who* they were with based on a list of categories of school- and home-based individuals. They also reported characteristics of their psychological states at the time they were beeped, responding to a set of Likert-type questions such as "Did you have the abilities to deal with the situation?" and "Was the activity important to you?" These were followed by a battery of emotions such as "cheerful," "worried," and "isolated."⁵

⁴ These categories (as well as the categories for instructional time use) were developed based on pilots of the ESM in 2007-08 as well as in-depth interviews with pilot participants. See Author (2008) for more details on the pilot.

⁵ The validity of these items is described at length in Csikszentmihalyi and Larson (1987), and in Hektner, Schmidt, and Csikszentmihalyi (2007).

Measures

In the analysis presented here, three categories of measures are used: activity when beeped, hours of time engaged in activity, and emotional state during activity. For the first category of measures, we were interested in three levels of activities. First, and most generally, we looked at teachers' total waking hours during the school week, and focused on the amount of time teachers spent at school, at home, and in public. Next, we looked at what activities teachers were engaged in during school; these activities included instruction, planning, non-instructional time with students, talking with colleagues, talking with administrators, talking with parents, doing paperwork, grading, disciplining students, professional development, extra-curricular activities, and using the computer. Of these, we only present findings on the categories that consumed greater than one percent of teachers' time in school (on average, across the sample).⁶ Finally, to determine how teachers spent their class time on average, we developed categories for the following classroom activities: lecture, working with a single student, reading as a class, engaging in class discussion, working in small groups, administering quizzes/exams, monitoring student behavior, using technology, engaging in games/activities, engaging in classroom routines, monitoring student seatwork, and working with students on functional skills (i.e., those skills not directly related to the curriculum, but that will help students in their everyday lives).

To determine the amount of time devoted to each of these activities, we calculated a proportion score by dividing the number of beeps for each person while in a particular context by their total number of beeps. "Total beeps" in this analysis refer to the person's

⁶ The following activities were dropped from the analysis: talking with administrators, talking with parents, disciplining students, professional development, and extra-curricular activities.

total number of responses during the work week (Monday through Friday). We have excluded data from the weekend in this analysis because of our focus on activities related to teaching; therefore, the total number of beeps possible was 40, or 8 beeps a day over 5 days. From these proportion scores, estimates of hours of time use were derived by multiplying the proportion score by the total number of waking hours in the work week. For example, during their waking hours in the work week, the teachers in our sample spent on average 63% of their time at school. Multiplying this by their total waking hours (16 hours per day x 5 days) gives us $.63 \times 80$, or 50.38 hours per week at school.

We addressed the question of how teachers' psychological states varied throughout their teaching day by including emotional and cognitive items that were likely to be impacted by teachers' social environments. For each teacher in the sample, we calculated a person-level average based on their beep-level responses for a given emotion. Eight single measures were included: a) Did you feel *skilled* in the activity? b) Did you *enjoy* what you were doing? c) How well were you *concentrating*? d) Did you feel *challenged* by the activity? e) Did you feel *stressed*? f) Did you feel *in control* of the situation? g) Did you feel *energetic*? and h) Did you feel *active*. Additionally, we included two composite variables that have been used frequently in ESM research; see Hektner, Schmidt, and Csikszentmihalyi (2007) for examples. These include self-esteem (the scale variables included living up to one's own expectations, living up to others' expectations, control, feeling good about self, and succeeding); positive affect (the scale variables included happy, cheerful, friendly, relaxed); activation (the scale variables included strong, active, and excited); and engagement (the scale variables included

concentrating, enjoy, interesting). Each of these composite variables had an internal consistency (*Alpha*) of higher than .75.

Results

Time Use

School Week Time Use. The first goal of the time-use analysis was to determine how many hours per five-day week teachers spent at school in comparison to time spent at home or in public (outside of school). Table 2 presents the results of this analysis, revealing that on average, the teachers in our study spent 50.38 hours per week at school. The remainder of their waking hours was divided between being at home (18.57 hrs/wk) and being in public (10.94 hrs/wk); the high standard deviations for each of these variables suggests that teachers varied considerably with regard to how they distributed their time outside of school.

[Insert Table 2 here]

We were also interested in whether certain categories of teachers spent more or less time at school relative to other locations; for example, did first-year teachers spend more time at work than second- and third-year teachers? To determine whether there were significant differences in time use based on assignment (general education vs. special education, elementary vs. middle school), we conducted independent samples t-tests on mean differences in weekly hours spent at school, in public, and at home. One-way ANOVAs were conducted to determine whether there were significant differences based on years of experience (first vs. second vs. third). Few of these comparisons were significant (see Table 3), although amount of time spent at school varied between special education and general education teachers (GE = 51.99 hrs/wk, SE = 47.78 hrs/wk;

$p < .05$), as well as between elementary school teachers and middle school teachers. (ES = 51.61 hrs/wk, MS = 47.92 hrs/wk; $p < .05$). There were no significant results when comparing teachers by years of experience.

[Insert Table 3 here]

Time Use at School. Person-level means were calculated for beeps in which participants indicated that they were at school. The person-level aggregates were then averaged across the entire sample of teachers to determine average time use while in school. As expected, the majority of teachers' time in school was devoted to instruction (20.36 hrs/wk), which far exceeded all other categories of time use (see Table 4). The two other major sources of time use during school included planning (6.59 hrs/wk) and non-instructional time spent with students (6.39 hrs/wk); the category of non-instructional time with students consisted of classroom interactions unrelated to instruction, as well as non-classroom interactions, such as monitoring hallways and walking students to lunch. Slightly less time was devoted to talking to colleagues (4.34 hrs/wk), but such conversations were likely to occur more frequently as secondary activities, while teachers were engaged in other tasks. Overall, there was substantial variation in how the teachers in the sample spent their time.⁷

[Insert Table 4 here]

As in our analysis of group differences in time spent at school versus at home or in public, we conducted independent samples t-tests on mean differences in weekly hours spent on school activities, investigating whether there were significant differences in time

⁷ A relevant check on the validity of these time estimations is the amount of time spent each week eating lunch. Teachers in the sample reported spending, on average, approximately 2.24 hours per week eating lunch; or, roughly a half hour per day. This estimate of time use fluctuated very little across each of the categories of teachers.

use based on assignment. One-way ANOVAs were also conducted to determine whether there were significant differences in the amount of time spent on various school activities based on years of experience (first vs. second vs. third).

[Insert Table 5 here]

Of these distinctions, the most significant differences with regard to time use in school appeared to be between general education teachers and special education teachers. Throughout their days at school, special education teachers spent significantly less time than their general education peers engaged in instruction (General Education (GE) = 23.74 hrs/wk, Special Education (SE) = 14.88 hrs/wk; $p < .01$) and grading (GE = 2.89 hrs/wk, SE = 1.15 hrs/wk; $p < .05$), although they spent much more time interacting with colleagues (GE = 3.14 hrs/wk, SE = 6.78 hrs/wk; $p < .05$). Significant differences in school time use were also present in amount of time devoted to paperwork (GE = .60 hrs/wk, SE = 4.87 hrs/wk), which was likely due to federal and state policy regulations placed on special education teachers for completing paperwork for individual students.

There were fewer significant differences between elementary school teachers and middle school teachers. These teachers spent similar amounts of time on instruction, talking with colleagues, and talking with students; however, differences emerged in how other non-instructional time was used – middle school teachers spent more of their time grading (Elementary School (ES) = 1.46 hrs/wk, Middle School (MS) = 3.60 hrs/wk; $p < .05$), for example. The greatest differences between the two groups were in the number of hours spent using computers and other forms of technology for work-related tasks, with middle school teachers spending significantly more time on computers than elementary school teachers (ES = 1.42 hrs/wk, MS = 4.15 hrs/wk; $p < .01$).

Results of the ANOVAs show no significant effects for the comparisons of school activity based on years of experience (all F 's < 2.48, n.s.). However, several potentially important trends are worth noting. Teachers with more years of experience spent less time on instruction (first-year teachers = 20.21 hrs/wk; second-years = 20.93 hrs/wk; and third-years = 18.79hrs/wk) and on planning (first-year teachers = 7.17 hrs/wk; second-years = 6.74 hrs/wk; and third-years = 5.50 hrs/wk). However, the amount of time spent talking to colleagues increased with years of experience (first-year teachers = 2.96 hrs/wk; second-years = 3.93 hrs/wk; and third-years = 7.02) as did the amount of time talking to students about non-instructional topics (first-year teachers = 5.32 hrs/wk; second-years = 5.87 hrs/wk; and third-years = 8.96 hrs/wk).

Time Use During Instruction. We were interested both in determining how teachers spent their time devoted to instruction, as well as whether significant differences emerged among the relevant categories of teachers. As with the analysis of school time use, we aggregated the beep-level data into person-level means for moments when teachers indicated that they were engaged in instruction. Means were then calculated across the sample as a whole, revealing large variations in how instructional time was used. The most frequent classroom activity was lecture (4.18 hrs/wk), followed by instruction devoted to a single student (3.25 hrs/wk), working in small groups (2.08 hrs/wk) and reading as a class (2.04 hrs/wk). On average, other activities, such as classroom routines and technology-based instruction, occurred less frequently.

[Insert Table 6 here]

Differences in time use by teaching assignment were tested using independent samples t-tests, while one-way ANOVAs were conducted to determine whether there

were significant differences by years of experience. Results of these analyses are presented in Table 7.

[Insert Table 7 here]

The greatest differences in time use during instruction were between general education teachers and special education teachers. General education teachers were more likely than their special education peers to spend their instructional time lecturing. Special education teachers devoted on average 1.41 hrs/wk to lecture, versus 5.89 hrs/wk for general education teachers ($p < .01$), reflecting differences in the classroom dynamics between the two settings. In comparison to general education teachers, special education teachers devoted virtually no time to classroom routines (GE = 1.22 hrs/wk, SE = 0.13 hrs/wk, $p < .05$). They were also much more likely to focus on functional skills instruction than their general education peers (GE = 0.74 hrs/wk, SE = 3.92 hrs/wk; $p < .05$).

There were fewer meaningful differences with regard to how elementary school teachers and middle school teachers spent their instructional time. For one example, middle school teachers spent more of their time using technology in the classroom (ES = 0.47 hrs/wk, MS = 1.77 hrs/wk; $p < .05$). There were also significant differences in time devoted to classroom routines (ES = 1.13 hrs/wk, MS = 0.22 hrs/wk; $p < .10$) and in time in small groups (ES = 1.76 hrs/wk, MS = 0.86 hrs/wk; $p < .10$); however, given the number of t-tests conducted, reports of significance at the $p < .10$ level should be interpreted with caution.

The ANOVA tests for differences in years of experience yielded no significant results. Generally, it appeared that third-year teachers devoted a greater proportion of their classroom time to direct forms of instruction (such as lecture, discussion, and

quizzes and exams) and less of their time to classroom routines and monitoring student behavior. This is not surprising; as teachers gain experience, they are likely to focus less on classroom management and more on the quality of their instruction.

Finally, although we were interested in how the groups of teachers differed in their time use while engaged in instruction, there were no significant differences between categories. This is likely a result of small cell sizes; for many instructional activities (e.g., administering an exam, reading as a class, student seatwork), the frequency of their occurrence ranged widely within groups, and for some participants, certain activities either did not occur or occurred no more than a few times. This, coupled with the fact that the analysis divided the sample into smaller groups of teachers (e.g., for general education, $N = 26$; for special education, $N = 16$), likely explains our lack of significant findings.

Variations in Emotions

Emotional Responses In and Outside of School. In our analysis of variations in emotional states during the work week, we compared average emotional states at school to emotional states when not at school, using paired samples t-tests.⁸ Results are presented for our nine emotion measures of interest, represented by context-specific z-scores that indicate emotions at school relative to person-level averages. The use of context-specific z-scores allowed us to account for differences in how individuals used the Likert-type scales that documented their emotion at the moment they were beeped.

[Insert Table 8 here]

⁸ The “Not at school” beeps included all beeps when a teacher was at home or in public during the work week.

Our results reveal important differences in emotions in and outside of school. In general, it appears that school provided teachers with higher levels of intellectual stimulation, relative to time spent at home or in public. While in school, teachers reported being more challenged, more active, and concentrating more than on average; they also had higher levels of self-esteem. Conversely, when teachers were not at school, they were less stressed and enjoyed what they were doing more. Given these findings, it is surprising that neither engagement nor positive affect vary much between settings.

Emotional Responses During School Activities. We next investigated teachers' emotional states while at school, and how teachers' affective responses varied by school activity. We focused specifically on six school activities that occurred most frequently across teachers: planning, instruction, talking with colleagues, non-instructional time with students, grading, and paperwork. For each of these categories, we developed person-level z-scores for our nine emotion measures of interest. Thus, for each activity, participants had mean z-scores on the nine emotions, which could then be compared to their average emotional states across all activities.

[Insert Table 9 here]

Of the six school activities of focus, instruction was associated with the highest levels of positive emotions; in comparison to their average emotional states, teachers reported significantly higher than average levels of skill, activation, concentration, self-esteem, and engagement (all p -values $< .01$) when teaching. Instruction was the one activity where teachers also reported higher than average levels of enjoyment ($p < .05$). Other activities involving students and colleagues were associated with more mixed emotions. When interacting with their colleagues, teachers reported higher than average

levels of concentration and challenge ($p < .01$), though they felt significantly less skilled and in control of the situation ($p < .01$). Non-instructional activities with students (such as lining students up to go home or monitoring them at lunch) were associated with higher levels of activation ($p < .01$) and positive affect ($p < .05$) but lower levels of feeling challenged ($p < .05$).

As might be expected, lower levels of positive emotions were experienced by teachers when they were engaged in activities by themselves; when teachers were planning, grading, or doing paperwork, they experienced significantly lower levels of enjoyment ($p < .01$). Grading was associated with the lowest levels of positive affect ($p < .01$). Paperwork was also associated with significantly higher average levels of challenge ($p < .01$) and stress ($p < .05$), but lower levels of skill ($p < .01$). Meanwhile, when they were grading, the teachers reported lower than average levels of feeling activation ($p < .05$), but higher than average levels of skill ($p < .01$). Of the six activities, teachers felt least engaged when planning, reporting significantly lower than average levels of engagement ($p < .05$).⁹

For almost all comparisons of teachers in their affective responses to school-based activities, we saw no significant effects. However, there were two notable exceptions. First, in comparison to second- and third-year teachers, first-year teachers had significantly higher activation z-scores during instruction ($p < .05$), meaning that when teaching they varied more from their average emotional states than did either second- or third- year teachers. Second, there were also significant differences in affective responses

⁹ To account for within-person variation in emotions while in various school contexts, multilevel models were run using beeps at Level 1 and persons at Level 2. Separate models controlled for three different contexts: instructing, talking with colleagues, and working alone (planning, doing paperwork, or grading). Results from these analyses mirrored those presented in Table 9. The final HLM models can be found in the appendix in Tables 10.1-10.3.

between special education and general education teachers during non-instructional interactions with students. Relative to general education teachers, special education teachers reported higher levels of challenge ($p < .05$), enjoyment ($p < .05$), and engagement ($p < .01$).

Given the lack of significant findings for differences between categories of teachers in instructional time use, we did not conduct additional investigations into variations in affective response by instructional activity.

Discussion

This paper set out to address three questions related to how early career teachers experience the beginning years of teaching: a) How do teachers spend their time generally throughout the work week?, b) How much time do they devote to different school and class activities?, and c) How do they react emotionally to key experiences during their jobs? Our first goal was largely exploratory; we wanted to examine how early career teachers divided their work week between time at school, time at home, and time in public. On average, the teachers in our sample were at school for 50.38 hours per week, with the rest of their waking hours divided between being at home and in public (i.e., not in school). General education teachers spent an average of four additional hours per week at school relative to special education teachers, while elementary school teachers spent significantly more time at school than middle school teachers.

These differences in time use at school do not necessarily suggest that teachers who spend less time at school work fewer hours than their peers. The current analyses did not capture how much time teachers spent on school-related tasks when they were at home (either during the work week or on the weekend). It could be, for example, that

middle school teachers were able to do more of their work at home than were elementary school teachers. Additionally, our measure of time spent at school probably captured some activities unrelated to instruction, suggesting that the number of hours a week spent working likely varied from the time use estimates presented here.

How did the teachers in our sample spend their time in school? Our findings suggest that teachers' daily work is complex and requires that they manage a variety of responsibilities and relationships. Instruction was the most frequent activity cited by our participants (20.34 hrs/wk or approximately 4 hrs/day), which makes sense given that instruction is a teacher's primary focus. Yet at the same time, instruction accounted for less than half of teachers' time at school, with the rest of the day divided among necessary (though perhaps less desirable) tasks like grading, planning, and completing paperwork. Data on the other major categories of time use (i.e., non-instructional time with students and talking with colleagues) suggest that teachers spent little of their daily time alone; social interactions played a large role in their daily lives.

Turning our attention to teachers' instructional time, we found that lecture was the most frequent classroom activity; other forms of instruction, including whole-group activities such as reading as a class or engaging in discussion, as well as student-centered activities such as one-on-one or small-group, occurred for roughly two to three hours each. Thus, while the teachers in our sample spent the greatest proportion of their instructional time using lecture to present information, our evidence suggests that lecture may not play the dominant role that Goodlad (1984) andSizer (1984) found it did 25 years ago. The instructional practices used by teachers in our study were highly varied, and very often consisted of the kinds of activities that would facilitate give-and-take

between teachers and students. Further, it appeared that first-year teachers were just as likely to integrate these kinds of practices into their instruction.

On a related note, we had expected that for a sample of early career teachers, activities such as monitoring student behavior or disciplining students would have been observed more frequently. However, each of these activities occupied less than an hour of a given teacher's instructional time per week. Perhaps teachers did not see discipline as their main activity, and were more likely to think of it as a temporary interruption in their instruction. One advantage of the ESM is that it allows us to investigate teachers' secondary activities in addition to their primary activities. In future analyses, it will be possible to identify how frequently teachers documented either of these tasks as secondary activities, as well as what their primary activities tended to be when they were monitoring student behavior or disciplining students.

We hypothesized that time use was likely to vary depending on years of experience as well as job assignment (including whether they taught special education or general education, and whether they were an elementary school or middle school teacher). Further, we hypothesized that affective responses to teaching were likely to vary depending on the activities in which teachers were engaged. Our results largely confirmed these predictions, revealing significant differences in time use by teacher category and affective response by activity.

When comparing how different groups of teachers varied in their school and instructional time use, we found that the special education/general education distinction appeared to be the most important. Much of this variation is likely attributable to the unique role that special education teachers play in schools. Their job responsibilities

require that they focus their instruction on meeting the needs of individual students, which often means that less time is devoted directly to instruction, and more time is spent on paperwork and other tasks. In fact, the amount of time required to complete such tasks has been cited in several studies as a major reason why special education teachers leave the classroom (Billingsley, 2004). Interestingly, special education teachers reported spending more time than general education teachers talking with colleagues. This may have been because special education teachers at times may have been providing instruction to students with disabilities who were mainstreamed, requiring them to work in general education teachers' classrooms.

Student needs likely dictated why special education teachers differed from general education teachers in their instructional time use as well. Lecture was the most common form of instruction in general education classrooms, while special educators spent significantly more of their time reading as a class. Working with students on functional skills was also a more frequent occurrence in special education classrooms, while it rarely occurred in general education teachers' classrooms. The opposite was true with respect to time spent on classroom routines, which occurred less frequently in special education classes.

In our comparisons of time use based on instructional level, few meaningful differences were observed between elementary and middle school teachers. We had assumed that, much like the special education/general education distinction, differences in job specification would result in significant variation between these two categories of teachers. Elementary school teachers, for example, are often only responsible for one group of students and must prepare instructional material across multiple subject areas,

while middle school teachers generally have fewer “prep periods” but more students. Our results do reflect these differences, to a limited degree; middle school teachers spent more than twice as much time grading as elementary school teachers, and elementary school teachers spent more time planning, although this finding was only significant at the $p < .10$ level.

The most significant distinction between elementary and middle school teachers, both in terms of school time use and instructional time use, was the number of hours spent using computers and other technology. On average, middle school teachers spent 4.15 hours per week using technology, while elementary school teachers only devoted 1.42 hours per week; the greater use of technology by middle school teachers carried over to instructional time as well. These findings likely reflect the increased focus on academic content at the middle school level, where technology could have served as an important tool in math and science instruction. To determine that these differences were not simply a result of middle school teachers having more time to themselves (and thus more time to check email and browse the internet), it would be important, in future analyses, to use more refined measures of technology use. However, given that these findings held across school- and instructional-time use, we suspect that technology played an integral role in middle school teachers’ instruction.

Time-use comparison between first-, second-, and third-year teachers yielded no significant findings. This may be attributable to small sample sizes; dividing the sample into three groups left one category (third-years) with only 9 teachers. Alternatively, we could view these findings as representative of an extended induction phase in which, rather than make drastic changes from year to year, teachers gradually adapted their

practice as they gained more experience. Several trends in our data support this conclusion (although none of these differences were significant): teachers with more experience spent less time planning, more time talking with colleagues, and less time directly engaged in instruction. Related to instructional time use, experienced teachers spent less of their time using lecture to deliver classroom material, but spent more time providing one-on-one instruction; they also devoted fewer hours to classroom routines. Although these results should be interpreted with caution, they lend support to findings in extant literature.

Our final goal for this paper was to determine the degree to which early career teachers' affective states were likely to fluctuate depending on their context at school, as well as which situations during the work week were likely to elicit the strongest emotions. When comparing the emotional states of the teachers in our sample when in and outside of school, we found that being at work was associated with higher levels of intellectual stimulation, as evidenced by their higher levels of concentration, challenge, activation, and self-esteem. These heightened emotions, however, were also accompanied by less enjoyment and increased stress, suggesting that the work experience was not uniformly positive. That being said, these findings raise the question of whether these early career teachers' emotions are what we would expect given previous conceptualizations of the beginning years of teaching as "sink or swim" or "trial by fire."

In fact, when we looked more closely at teachers' experiences at school, we found that across multiple categories, instruction was associated with higher than average levels of positive emotions. When engaged in instruction, teachers felt more challenged and more skilled, they reported higher levels of self-esteem and enjoyment, and they felt both

more active and more engaged. Rather than being associated with anxiety and uncertainty, it appears that instruction was actually a time of heightened positive emotions. The tasks and responsibilities that are mandatory parts of a teacher's work day, however, generally reflected a "comedown" from the positive emotions associated with instruction. In these instances, teachers were less likely to enjoy their activity and often felt less active and less engaged than their average emotional states. Meanwhile, when teachers were engaged in social interactions other than instruction, their affective responses were not as clear-cut. When talking with colleagues, for example, the teachers in our study reported lower than average levels of being in control and feeling skilled. At the same time, during such interactions they were also concentrating more and did not appear to have lower positive affect or enjoyment scores.

Conclusion

In conclusion, this paper builds on recent research in Canada, the U.S., England, and Australia that has examined the emotions of teaching and teachers' affective responses to their work (e.g., Day & Leitch, 2001; Dinham & Scott, 1998; Hargreaves et al., 2006). In our analysis, we used a social-psychological framework (Bidwell, 2000; Frank, 1998) and the Experience Sampling Method (ESM) to analyze extensive data on 42 early career teachers' activities and their emotional responses to their activities. One of our main findings was that teachers reported higher levels of concentration, challenge, activation, and self-esteem in school as compared to when they were outside of school. In addition, when involved in instruction at school (as compared to other work-related activities), teachers reported feeling more active, more engaged, more challenged, and more skilled; and they had higher levels of self-esteem and enjoyment. At the same time,

the teachers in this sample also reported feeling less active, less engaged, and less enjoyment when they were involved with non-instructional work-related activities at school, such as planning, grading, or paperwork.

These findings represent an important contribution to the growing body of literature on teachers' emotions. Previous research has employed interviews to learn about teachers' affective responses to a range of work-related roles and activities, including interactions with students and parents; serving as department chairs in secondary schools; and responding to comprehensive reform efforts (Hargreaves, 1998; Lasky, 2000; Little, 1996; Schmidt, 2000). In addition, scholars have used narrative accounts and long-term observation to consider teachers' emotional experiences in professional development and during school inspections (Day & Leitch, 2001; Jeffrey & Woods, 1996). But few studies have obtained data on teachers' multiple activities during the school day and how they respond emotionally to these various activities and the people with whom they interact. By collecting ESM data from more than 40 teachers over several days of teaching, this study was able to analyze teachers' emotional states across a range of work-related activities. Further, by creating person-level z-scores for our nine emotion measures, we were able to compare participants' mean z-scores for the nine emotions with their average emotional states across all activities.

A second key finding from this study involved the nature of the general education teachers' instructional practices and the relatively low amount of attention they devoted to managing student behavior (at least as a primary activity). While we found that the general education teachers engaged most frequently in lecture (5.89 hours/five-day week), this represented less than half of their instructional time. In addition to lecture,

the teachers reported allocating substantial amounts of time to working with a single student (3.61 hours/week), reading as a class (2.85 hours/week), and working with students in discussion (1.74 hours/week) and small groups (1.56 hours/week). Further, they reported spending less time monitoring student behavior (i.e., 1.43 hours/week) than any of these instructional activities. In contrast to scholarship and research findings from the 1980s (e.g., Goodlad, 1984; Sizer, 1984), these results suggest that the general education teachers in this study devoted a significant amount of time to a range of one-on-one and group activities in which students were actively engaged in reading and discussion (Cohen, McLaughlin, & Talbert, 1993; Fenstermacher & Richardson, 2005).

Previous research has documented the general processes by which many educators move from the survival stage of teaching (characterized by a preoccupation with oneself, the delivery of one's lessons, and managing student behavior) to the mastery stage, in which teachers grow more concerned with curriculum, pedagogy, and their own effects on student learning (Author, 2007; Burden, 1990; Fuller & Bown, 1975; Huberman, 1993). Given that our sample consisted of first-, second-, and third-year teachers, the analysis presented here suggests that as a group, the general education teachers were moving from the survival stage to the mastery stage. In addition, this study provides evidence that the ESM can be used to document early career teachers' instructional and other work-related activities, thereby providing detailed data about the specific processes and emotions that novices experience as they move towards mastery teaching.

A third finding of importance had to do with variations between general education teachers and special education teachers in this study. In particular, the ESM data indicate

that teaching assignment (i.e., one's role and responsibilities) was strongly associated with how the teachers spent their time and how they responded to their teaching. We found that special educators spent significantly less time than general educators engaged in instruction, but much more time interacting with colleagues and completing paperwork. With regard to instructional activities, the special education teachers in the study spent much less time lecturing (1.41 hours/week compared to 5.89 hours/week), devoted less time to classroom routines (0.13 hours/week compared to 1.22 hours/week), and allocated more time to functional skills instruction than the general education teachers (3.92 hours/week compared to 0.74 hours/week). Finally, while there were few differences between the groups in terms of emotional responses to school-based activities, during non-instructional interactions with students, special education teachers reported higher levels of enjoyment, engagement, and challenge.

These results build on other research that has examined the nature of beginning special education teachers' induction experiences and how the expectations placed on novice special educators can differ from those faced by new general educators (Author, under review; Billingsley, Carlson, & Klein, 2004; Whitaker, 2000). More specifically, the findings from this ESM study suggest that novice teachers in both groups reported more positive emotions (i.e., with regard to self-esteem, enjoyment, and feeling active, engaged, skilled, and challenged), but that new special educators spent less time than general educators on instruction (and correspondingly more time on paperwork and interactions with colleagues). Given that instructional time seems to be associated with higher levels of positive emotions (and perhaps other key teacher outcomes), it could be useful for administrators and policy makers to examine ways to provide beginning special

educators with more opportunities to engage in instruction while reducing the amount of time they must spend on paperwork and/or meetings with colleagues.

With regard to limitations, the size of our sample ($n=42$) prevented us from analyzing and comparing various groups of teachers' emotional responses (i.e., general education vs. special education; elementary vs. middle school; first-year vs. second- and third-year). Thus, one implication for future research on teachers' affective responses would be to include sufficiently large samples to examine differences between and among groups of teachers. Second, our findings revealed that on average, general education elementary teachers spent more time at school each day than general education middle school teachers or special education teachers. But the data did not indicate whether general education elementary teachers were actually devoting more time to work-related activities at school than the other groups. Therefore, a second direction for future research would be to investigate whether certain groups allocate more time to work-related activities at school or at home, and what factors account for these differences.

Third, our data indicated that the teachers spent relatively small amounts of time managing student behavior, but the analyses reported here did not include data on the secondary activities in which teachers were engaged. That is, teachers may have actually devoted a much greater percentage of time to disciplining students and/or reinforcing positive behavior, but they may have engaged in these activities at the same time that they were lecturing, working with students one-on-one and in small groups, and/or leading class discussion. Thus, future research could productively capitalize on data on teachers' secondary activities to probe the extent to which they manage student behavior

as a secondary activity. Finally, key research questions involving both the social and psychological aspects of teaching remain unanswered. In particular, this study did not address whether a) teachers' time use, b) who they were with, and c) their emotional responses to their activities were associated with key outcomes, such as self-efficacy, commitment, and retention. Therefore, it will be important for future research that employs the ESM with beginning teachers to test associations between such outcomes and teachers' time use, who they are with, and their affective responses.

Appendix A

Table 1: Demographics of the ESM Sub-Sample vs. Full Sample (in 3 Districts)

Demographic Characteristics of ESM Sample			Demographics of Full Sample in 3 Districts		
Total	n=42		Total	n=92	
Gender			Gender		
Female	35	83%	Female	75	81%
Male	7	17%	Male	17	19%
Grade Level			Grade Level		
Elementary School	27	64%	Elementary School	58	63%
Middle School	15	36%	Middle School	34	37%
Special Ed. Status			Special Ed. Status		
General Education	26	62%	General Education	67	73%
Special Education	16	38%	Special Education	25	27%
Year of Teaching			Year of Teaching		
First	11	26%	First	30	34%
Second	22	52%	Second	38	41%
Third	9	21%	Third	24	25%
Race/Ethnicity			Race/Ethnicity		
African-American	2	5%	African-American	6	7%
Asian	1	2%	Asian	1	1%
White	39	93%	White	85	92%
District			District		
Daus (Michigan)	7	17%	Daus (Michigan)	17	18%
Kaline (Michigan)	8	19%	Kaline (Michigan)	20	22%
Engram (Indiana)	27	64%	Engram (Indiana)	55	60%

Table 2: Teachers' Waking Hours During the Work Week^a

	<i>Mean</i>	<i>SD^b</i>
At School	50.38	6.75
At Home	18.57	7.20
In Public	10.94	6.08

a. Waking hours are calculated by multiplying the proportion of time in each category by the teachers' total waking hours during the work week (80 hours total).

b. SD = Standard Deviation

Table 3: Teachers' Waking Hours During the Work Week (by Teacher Category)^a

	<i>Gen. Ed. Teachers n=26</i>	<i>Spec. Ed. Teachers N=16</i>	<i>t^a</i>	<i>Elem Teachers n=27</i>	<i>Mid. Sch. Teachers N=15</i>	<i>T</i>	<i>First Yr. Teachers n=11</i>	<i>Second Yr. Teachers n=22</i>	<i>Third Yr. Teachers n=9</i>	<i>F^b</i>
At School	51.99	47.78	2.04*	51.61	47.92	-2.05*	48.52	51.42	50.13	.67
At Home	17.64	20.07	-1.06	17.75	20.21	1.04	20.21	20.93	18.79	.18
In Public	10.27	12.02	-.90	10.47	11.87	.70	19.42	17.92	19.11	.26

a. When comparing two categories of teachers, Independent sample t-tests were conducted to determine whether differences between teachers were significant.

b. When comparing more than two categories of teachers, we conducted one-way ANOVAs and utilized F-statistics to test for significant differences.

Note: *p < .05; **p < .01 (2-tailed).

Table 4: Teachers' Use of School Time

	<i>Mean</i>	<i>SD</i>
Instruction	20.36	8.57
Planning	6.59	5.50
Non-Instruct. w/Students	6.39	4.66
Talking to Colleagues	4.34	4.81
Grading	2.23	2.82
Paperwork	2.23	3.91
Computer/Technology	2.40	3.18
Lunch/Meal	2.28	2.02

Table 5: Teachers' Use of School Time (by Category)

	<i>Gen. Ed. Teachers</i>	<i>Spec. Ed. Teachers</i>	<i>t</i>	<i>Elem Teachers</i>	<i>Mid Sch. Teachers</i>	<i>t</i>	<i>First Yr. Teachers</i>	<i>Second Yr. Teachers</i>	<i>Third Yr. Teachers</i>	<i>F</i>
Instruction	23.74	14.88	3.73**	21.55	18.23	-1.21	20.21	20.93	18.79	.19
Planning	6.91	6.06	.48	7.66	4.67	-1.72	7.17	6.74	5.50	.24
Non-Instruct. w/Students	7.11	5.21	1.29	6.75	5.74	-.66	5.32	5.87	8.96	1.88
Talking to Colleagues	3.14	6.78	-.214*	4.35	4.30	-.033	2.96	3.93	7.02	2.02
Grading	2.89	1.15	2.02*	1.46	3.60	2.51*	3.00	2.00	1.84	.56
Paperwork	.60	4.87	4.02**	2.77	1.26	-1.20	1.81	2.67	1.67	.28
Computer/Technology	2.64	2.00	.631	1.42	4.15	2.89**	2.65	2.79	1.13	.91
Lunch/Meal	2.32	2.22	.157	2.24	2.35	.165	2.30	2.28	2.26	.00

Note: *p < .05; **p < .01 (2-tailed).

Table 6: Teachers' Use of Class Time

	<i>Mean</i>	<i>SD</i>
Lecture	4.18	4.08
Single Student	3.25	3.79
Reading as a Class	2.04	2.88
Discussion	1.24	2.40
Small Group	2.08	3.39
Quiz/Exam	1.72	2.93
Monitoring Student Behavior	1.27	2.22
Technology	.94	1.75
Game/Activity	.56	1.82
Classroom Routines	.80	1.67
Student Seatwork	.69	1.80
Functional Skills	.84	2.57

Table 7: Teachers' Use of Class Time (by Category)

	<i>Gen. Ed. Teachers</i>	<i>Spec. Ed. Teachers</i>	<i>Elem. Teachers</i>	<i>Mid. Sch. Teachers</i>	<i>T</i>	<i>First Yr. Teachers</i>	<i>Second Yr. Teachers</i>	<i>Third Yr. Teachers</i>	<i>F</i>
Lecture	5.89	1.41	4.06**	3.09	1.31	5.89	3.80	3.05	1.43
Single Student	3.61	2.67	.78	2.99	-.32	1.35	3.81	4.19	1.98
Reading as a Class	2.85	.73	2.45*	1.84	-.33	3.29	1.25	2.46	2.07
Discussion	1.74	.43	1.75	1.29	.11	1.64	.57	2.40	2.17
Small group	1.56	2.93	-1.29	.86	1.79	2.52	2.08	1.55	.191
Quiz/Exam	1.50	2.08	-.62	1.67	-.09	.00	2.43	2.09	2.85
Monitoring Student Behavior	1.43	1.01	.596	.84	-.94	2.30	1.03	.57	1.81
Technology	1.27	.39	1.61	1.77	2.43*	1.26	.60	1.36	.84
Game/Activity	.91	.00	1.60	.86	.78	.00	.83	.60	.75
Classroom Routines	1.22	.13	2.15*	.22	1.73	1.10	.99	.00	1.38
Student Seatwork	.58	.88	-.53	.75	.166	.71	.85	.30	.29
Functional Skills	.74	3.92	-2.83*	1.13	.964	1.35	.84	.23	.46

Note: *p < .05; **p < .01 (2-tailed).

**Table 8: Teachers' Emotional States In and Out of School
(Using Context-Specific Z-Scores) ^{a, b}**

	<i>At School Mean</i>	<i>Other Mean</i>	<i>T</i>
Skilled in Activity	.02	-.03	.618
Enjoying Activity	-.09	.17	-2.79**
Concentrating	.11	-.16	2.55*
Challenged by Activity	.21	-.36	8.14**
Stressed	.10	-.16	2.59*
In Control	-.04	.06	-1.11
Positive Affect	.01	-.03	.384
Self-Esteem	.08	-.14	2.24*
Activation	.13	-.22	3.53**
Engagement	.00	.01	-.12

a. For every individual, context-specific z-scores were calculated by taking their average z-score in that setting.

b. When comparing differences in emotional states by context, paired sample t-tests were conducted.

Note: *p < .05; **p < .01 (2-tailed).

Table 9: Teachers' Emotional States At School (Using Context-Specific Z-Scores) ^a

	<i>Planning Mean</i>	<i>Instruction Mean</i>	<i>Talking w/ Colleagues Mean</i>	<i>Non-Instuct w/Students Mean</i>	<i>Grading Mean</i>	<i>Paperwork Mean</i>
Skilled in Activity	.00	.25**	-.31**	.00	.30**	-.16**
Enjoying Activity	-.27**	.18*	.06	-.10	-.56**	-.69**
Concentrating	.07	.30**	.48**	-.11	.30	.60*
Challenged by Activity	.07	.50**	.43*	-.22*	.00	.95**
Stressed	.10	.07	.21	-.12	.09	.60*
In Control	.14	.13	-.48*	.10	.01	.03
Positive Affect	-.21	.16	.19	.31*	-.48**	-.30
Self-Esteem	.19	.31**	-.22	.09	.24	.19
Activation	-.07	.29**	.18	.33**	-.50*	.17
Engagement	-.19*	.33**	.28	-.18	-.20	-.24

a. For each school context, paired sample t-tests were conducted between a person's situation-specific emotional state and their average emotional state (by definition, the person-level average results in a z-score of 0).

Note: *p < .05; **p < .01 (2-tailed).

Appendix B

Table 10.1: Predicting Teachers' Emotional States At School Based on School Context (Providing Instruction)

	Skilled in Activity	Enjoying Activity	Concentrating	Challenged by Activity	Stressed	In Control	Positive Affect	Self-Esteem	Activation	Engagement
Providing Instruction	.27** (.08)	.36** (.06)	.23** (.07)	.41 (.07)	.07 (.06)	.15* (.06)	.10 (.07)	.22** (.04)	.16* (.07)	.36** (.05)
<i>Intercept</i>	2.04** (.09)	1.72** (.07)	1.83** (.08)	1.10** (.09)	.65** (.08)	2.16** (.07)	4.13** (.12)	2.00** (.06)	3.84** (.12)	1.68** (.06)
Intraclass Correlation	.17	.16	.27	.23	.26	.19	.35	.29	.39	.22

Note: *p < .05; **p < .01 (2-tailed).

Table 10.2: Predicting Teachers' Emotional States At School Based on School Context (Talking with Colleagues)

	Skilled in Activity	Enjoying Activity	Concentrating	Challenged by Activity	Stressed	In Control	Positive Affect	Self-Esteem	Activation	Engagement
Talking with Colleagues	-.22 (.10)	.19* (.09)	.04 (.08)	.02 (.10)	-.15 (.08)	-.21** (.08)	.19 (.10)	-.12 (.06)	.09 (.09)	.18 (.07)
<i>Intercept</i>	2.20** (.09)	1.85** (.07)	1.92** (.08)	1.28** (.09)	.71** (.08)	2.27** (.07)	4.14** (.12)	2.12** (.06)	3.89** (.12)	1.80** (.06)
Intraclass Correlation	.18	.17	.27	.22	.26	.21	.35	.30	.39	.22

Table 10.3: Predicting Teachers' Emotional States At School Based on School Context (Working Alone)

	Skilled in Activity	Enjoying Activity	Concentrating	Challenged by Activity	Stressed	In Control	Positive Affect	Self-Esteem	Activation	Engagement
Working Alone	.00 (.10)	-.44** (.08)	.01 (.07)	-.07 (.09)	.12 (.07)	.05 (.07)	-.41** (.09)	.00 (.05)	-.35** (.08)	-.29** (.06)
<i>Intercept</i>	2.16** (.09)	1.97** (.06)	1.92** (.08)	1.30** (.09)	.65** (.07)	2.22** (.07)	4.27** (.11)	2.10** (.06)	3.99** (.12)	1.90** (.06)
Intraclass Correlation	.17	.14	.27	.23	.25	.22	.33	.30	.39	.20

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CHAPTER 3: THE RELATIONSHIP BETWEEN EARLY CAREER TEACHERS' AFFECTIVE RESPONSES TO WORK AND THEIR LEVELS OF COMMITMENT AND BURNOUT

Introduction

In addressing the high rates of attrition in the teaching workforce, researchers have increasingly looked to the loss of beginning teachers, or what Ingersoll refers to as the “revolving door” of teaching (2001a, 2001b). Using nationally representative data from the 1993-94 Schools and Staffing Survey (SASS), he found that in addition to personal characteristics (such as age and teaching assignment), aspects of a teacher’s work environment are also significant predictors of turnover. As Johnson and her colleagues have found, many teachers enter the profession with a “tentative commitment” to teaching; decisions regarding teaching as a career are based in large part on their experiences within their school environment, including whether they feel supported by colleagues and administrators (Johnson et al., 2004; Peske, Liu, Johnson, Kauffman, & Kardos, 2001).

In recent years, several empirical studies have attempted to establish connections between specific characteristics of schools and districts and relevant outcomes such as teacher commitment, teacher retention, and student performance. One principal area of interest is the role of mentoring programs--the establishment of a formal relationship between a beginning teacher and an experienced teacher in order to aid in the novice’s development. In their analysis of 1999-2000 SASS data, Smith and Ingersoll (2004) found that first-year teachers who participated in formal mentoring programs were less likely to leave the profession. In addition, using data from the California Department of Education, Strong and Fletcher (2004) found a positive association between having full-

release mentors and student learning gains. In contrast, Glazerman and colleagues tested the effects of two comprehensive teacher induction programs on teacher retention, teacher practices, and student test scores for teachers in 418 schools in 17 large urban districts (Glazerman et al., 2008); central to both induction programs was a “carefully selected and full-time mentor.” The authors found no significant differences between schools implementing comprehensive induction programs and the control schools on any of the three outcomes of interest, raising doubts about the potential impact of formal induction programs.

Glazerman’s findings are in line with research suggesting that induction programs relying on formal mentoring may not capture the important ways that other colleagues within schools play a role in the socialization of teachers. A recent study conducted by the Consortium on Chicago School Research found a stronger effect for informal support from colleagues than formal mentoring programs on novice teachers’ career decisions (Kapadia, Coka, & Easton, 2007). And, in addition to their findings regarding formal mentoring, Smith and Ingersoll also suggest that forms of induction that take into account the social relationships accessible to new teachers (e.g., having a common planning period with other colleagues, collaborating with other teachers on instruction) increase the rate of retention of new teachers.

Research at the local level confirms the importance of informal support from colleagues. Using interviews with first- and second-year teachers in Massachusetts, Johnson and Birkeland (2003) followed teachers across three years of teaching, finding that teachers were more likely to stay in the profession if their schools were organized in a way that supported their teaching. Schools which promoted frequent interactions

between colleagues were found to be more successful at retaining teachers. In other analyses with the same data, Kardos and her colleagues (2001) found that in schools with integrated professional cultures —where beginning teachers received frequent support and interacted with colleagues across experience levels—novice teachers felt most supported. In both of the above studies, the participants stressed the importance of support from principals, a finding which is in line with other research on new teachers (Youngs, 2007).

In sum, existing research suggests that there are numerous ways in which work conditions can play a role in early career teachers' retention decisions. However, little evidence exists which explores how teachers *experience* these conditions, as well as how these experiences in turn influence career decisions. It is conceivable, for example, that two teachers could react to the same set of organizational conditions in two different ways; whereas colleague support may be the critical factor for one teacher, feelings of success related to student achievement may be more important for another. The question then becomes how do organizational features translate into judgments about staying in teaching (as well as staying within a school more specifically)? What is the process by which teachers interpret aspects of their job environment and then make decisions about whether to stay or leave?

This paper advances a framework for understanding the process through which the organizational conditions of schools influence teacher outcomes, drawing on Weiss and Cropanzano's (1996) Affective events theory (AET). I argue that existing research ignores an important variable that may mediate the relationship between school characteristics and teacher retention decisions. Specifically, in addition to the analysis of

features of teachers' social environments, researchers should also consider how teachers' experience these conditions in their daily lives, as well as how they respond emotionally to these experiences. From this perspective, aspects of the school organization (such as a formal mentoring program or an informal support network) do not influence retention decisions directly, but instead do so by shaping teachers' experiences at school. Their affective responses to daily events—when aggregated—are hypothesized to interact with teachers' attitudes about their jobs, and eventually, influence their decision whether or not to stay in the profession.

To test this framework, I collected data on the affective states and attitudes of 42 early career teachers in Michigan and Indiana. I investigated teachers' momentary affective responses to experiences in schools by using a unique time sampling method known as the Experiencing Sampling Method (ESM). These data were then used to predict survey responses measuring teacher attitudes, including burnout and commitment to one's current teaching position and to the profession.

In the next section of the paper, I provide an overview of existing literature on the relationship between teachers' emotional and attitudinal responses to their work and relevant outcomes such as student achievement and teacher retention decisions. Following this section, I provide an overview of Weiss and Cropanzano's Affective events theory and describe how the theory helps to potentially explain the relationship between workplace conditions, teachers' emotions and teachers' summative attitudes about their work. In the third section, I discuss my method, including sample, ESM questionnaire, survey questionnaire, and measures used in the analysis. The fifth and sixth sections feature the results of this analysis and some interpretation of the study

findings. Finally, I conclude by discussing the implications of this study for research, policy, and practice.

Literature Review

Research on teachers' affective responses to their work has typically focused either on the direct emotional consequences of aspects of teaching, such as how teachers respond to new school policies or interactions with students, or on teachers' attitudinal evaluations of their work (e.g., their reflections on job manageability, stress and burnout, and commitment to the job). In a sense, these strands of research can be thought of as the short- and long-term expressions of teachers' affective states, or alternatively, as *local* and *global* dimensions of attitudes about work. A primary goal of both lines of research has been to understand how teachers respond to specific aspects of their work conditions, as well as how their evaluations about teaching translate into important teacher and student outcomes.

Teachers' Emotional Responses to Work. Hargreaves and his colleagues have contributed several important studies on how teachers respond emotionally to features of their work environment—as well as how responses vary by career stage, teaching context, and other key factors (Day & Leitch, 2001; Dinham & Scott, 1998, 2000; Hargreaves, 2001; Hargreaves et al., 2006; Jeffrey & Woods, 1996; Little, 1996). Using interviews with elementary and secondary school teachers in Canada, Hargreaves (2001) introduced the concept of “emotional geographies of teaching” as a means for understanding the ways in which teachers respond emotionally to the conditions and interactions of their work; Hargreaves defines these emotional geographies as: “the spatial and experiential patterns of closeness and/or distance in human interactions and

relationships that help create, configure, and color the feelings and emotions we experience about ourselves, the world and each other” (2001, p.1061). Thus, emotional geographies shape the kinds of interactions teachers have with other individuals at school and have important consequences for the nature of their work. For example, Hargreaves found that whether teachers and their students’ parents were from similar cultural, linguistic, and/or socio-economic backgrounds had important consequences for how teachers responded emotionally to interactions with parents, which in turn shaped the nature and frequency of future interactions.

Hargreaves and colleagues have extended the study of teachers’ emotions to other aspects of teachers’ work lives, including their emotional responses to interactions with students (Hargreaves, 2000) and to serving as department chairs (heads) in secondary schools (Schmidt, 2000). In addition, researchers have investigated secondary school teachers’ responses to comprehensive school reforms (Lasky, 2005; Little, 1996); Lasky, for example, found that these reforms frequently constrained teachers’ sense of agency. These studies represent important advances in research on teachers’ emotions because they acknowledge that teachers’ affective responses are likely to vary depending on their: a) schooling level, b) work context (e.g., interacting with students versus interacting with parents), c) role (e.g., teacher, department chair, etc.), and d) reform context.

Teachers’ Attitudes about Work. Separate from research on teachers’ emotions, several studies have attempted to tease out the causes and consequences of teachers’ summative attitudes about their work. A common response to overwhelming or negative job circumstances is a high level of stress, which when unaddressed over a long period of time, can undermine teachers’ satisfaction with their work. The term “burnout” has been

used to describe the results of this process. According to Maslach and Jackson (1981), burnout can be defined along three dimensions: *emotional exhaustion*, *depersonalization*, and *reduced personal accomplishment*¹⁰. Their Maslach Burnout Inventory has been a useful tool for analyzing how a negative work experience impacts teachers, and allows researchers to place teachers on a continuum of burnout. Research confirms that stress and burnout are problematic for the physical and psychological health of teachers (Cherniss, 1995; Gold, Roth, Wright, & Michael, 1991; Guglielmi & Tatrow, 1998). Additionally, recent studies confirm that for experienced teachers (Weisberg & Sagie, 1999) and, for early career teachers (Goddard & Goddard, 2006), burnout is associated with intentions to leave the profession. And for special education teachers, burnout is predictive of attrition (Miller, Brownell, & Smith, 1999; Singer, 1993).

A second relevant attitudinal outcome in educational research is *commitment*—both to one’s organization and to the profession. Ingersoll (2001b) argues that commitment is a more relevant outcome variable for policymakers than retention itself, because commitment more closely reflects attitudes about one’s job; retention decisions, meanwhile, may result from circumstances not having to do with work itself (e.g., the desire to move out of the area, start a family, or to pursue additional schooling). That being said, commitment has been shown to be predictive of career decisions (Weisberg & Sagie, 1999; Weiss, 1999). Commitment also has been a useful construct for understanding how characteristics of individuals’ work environments predict intentions to stay in the profession. Ebmeier (2003) has tied teacher commitment to teacher effort and

¹⁰ In the context of teaching, emotional exhaustion exists when a teacher feels like they do not have the emotional resources left to continue their work. Depersonalization involves feeling detached from work and as well as from interactions with their students. When teachers feel a sense of reduced personal accomplishment, they do not feel like their efforts at work are worthwhile.

effectiveness, and his findings also suggest that commitment is predicted by relationships with teacher colleagues, a finding supported in other research (Bryk & Schneider, 2002; Desimone et al., 2002).

Theoretical Framework

Relevant to the study of early career teacher attrition is literature from the field of organizational behavior. Researchers in this area have paid close attention to the definition of job satisfaction, particularly its causes and consequences. Emerging from this research is agreement that it is necessary to distinguish between individuals' emotional responses to their work and their evaluations about the job. As Weiss and Cropanzano (1996) suggest, "satisfaction is an evaluative judgment about one's job that partly, but not entirely, results from emotional experiences at work. It also partly results from more abstract beliefs about one's job" (p.2); similar definitions of job satisfaction are offered elsewhere in the literature (Crites, Fabrigar, & Petty, 1994; Eagly & Chaiken, 1993; Petty, Wegener, & Fabrigar, 1997).

The distinction between emotional responses to one's job and evaluative judgments about work is made clear in Weiss and Cropanzano's affective events theory, where they focus directly on how individuals' affective reactions to work events influence job satisfaction, independent from the features of one's work environment. In defining "affective reactions," Weiss and Cropanzano are careful to distinguish between emotions and moods. Drawing on research by Frijda (1993) and Morris (1989), the authors suggest that emotions are responses to specific events, and are thus likely to be intense but short-lived. Moods, in contrast, reflect more general affective states and are more likely to be detached from specific work events. Both categories of affective

reactions are thought to consist of positive and negative dimensions, although other categories of emotions are also presented: anger, fear, joy, love, sadness, and surprise (p.21). Additionally, AET suggests that both emotions and moods are influenced by experiences at work, and are thought to have direct consequences for work attitudes.

Weiss and Cropanzano (1996) acknowledge that work environments may have a direct influence on attitudes about one's job, yet they argue that more frequently the process by which environmental features influence attitudes is indirect—the work environment makes affect-producing events more or less likely. Research confirms the important role of characteristics of the work environment. LeFevre (1988) concluded that emotional well-being at work varied by position, with managers and engineers reporting higher levels of motivation, concentration, and creativity than clerical workers and assembly line workers. Studies by Larson and Richards (1994) and Basch and Fisher (1998) have documented that emotional experiences at work depend on the activities in which individuals engage. Further, Basch and Fisher found that the same types of events do not always produce the same emotions across participants, suggesting that “event-emotion connections” are individual-specific.

Finally, affective events theory suggests that emotional responses to work, coupled with abstract beliefs about one's job, influence overall judgments about job satisfaction. Thus, individuals make evaluations based not only on beliefs about characteristics of their jobs (e.g., the degree to which the job fosters independent decision-making), but also based on their recall of past experiences. Weiss and Cropanzano admit that the way in which individuals recall affective events is unclear, yet they suggest that individuals are likely to rely on these events because they are *concrete*

and *tangible* (p.50). This viewpoint is supported by research comparing affect-based and belief-based evaluations of work, which finds that both are important components of attitudes (Breckler & Wiggins, 1989; Edwards, 1990).

Empirical data supports Weiss and Cropanzano's assertion that affective responses are associated with overall job satisfaction (Fisher, 2000, 2002; Weiss, Nicholas, & Daus, 1999). Fisher (2000) considered the relationship between real-time emotions during the work day and overall job satisfaction, using the experience sampling method. She found that momentary reports of positive and negative emotions at work were associated with overall job satisfaction, and she also reported that the frequency of positive emotions was a better predictor of satisfaction than the intensity of emotions. Weiss and colleagues (1999), meanwhile, collected data on 24 managerial workers 4 times a day over 16 days; their results suggest that average levels of pleasantness are correlated with overall job satisfaction.

Purpose

Existing research in organizational behavior suggests that the organizational characteristics of schools play an important role in determining how teachers evaluate their jobs, while affective events theory provides a framework for understanding how individuals' emotions mediate this relationship. Despite the prominence of this line of research in organizational behavior, similar studies are missing in education. This study, therefore, tests the usefulness of applying the affective events theory to an analysis of factors predicting burnout and commitment among early career teachers. Particularly, I focus on the predictors of affective responses at work, and investigate whether these

emotional experiences have consequences for early career teachers' attitudes about their work.

I also attempt to test two different conceptual definitions of how emotions might influence attitudes about work. First, I use person-level means, representing participants' average emotions at work during the school week; this definition of affective responses is closely in line with Weiss and Cropanzano's definition of mood, and is likely to reflect participants' overall affective state throughout the week—detached from any specific events. A second aggregation strategy was to investigate the relationship between participants' "peak" emotions and their attitudes about work. Here, it was presumed that rather than overall mood at work, it would instead be extreme emotional responses that would influence teachers' attitudes about their jobs.

Drawing on a sample of 42 early career teachers in Michigan and Indiana, I analyze data on teachers' experiences using the Experience Sampling Method, and explore the associations between these experiences and global measures of job attitudes—which are drawn from survey responses of the same teachers. Specifically, the study was designed to address the following research questions:

1. Do affective responses to work (i.e., their reported levels of positive affect, negative affect, fatigue, and skill) predict teachers' levels of burnout, controlling for teachers' prior levels of burnout?
2. Do affective responses to work predict teachers' levels of commitment, controlling for teachers' prior levels of commitment?
3. Which ESM-based measure of teachers' emotions is more strongly associated with global measures of teacher attitudes--aggregated means of participants'

emotions' or aggregates based on teachers' maximum reported levels of emotions?

Method

Sample

The sample consisted of 42 first-, second-, and third-year K-8 teachers from three school districts in Michigan and Indiana. The teachers in this sample were all participants of a larger, three-year study of early career teachers in several urban districts in the two states; the sample of the larger study is approximately 240 early career general education and special education teachers.¹¹ The three districts in the current analysis were recruited because they are all medium to large in size and were hiring large numbers of early career teachers.¹² The three districts—Daus, Kaline, and Engram—ranged in enrollment from 9,448 to 19,055 students in grades K-12, with Daus being the largest of the three. The districts were all similar in the percentage of their students eligible for free or reduced-price lunch, ranging from 42% to 59%. Finally, the districts varied in the percentage of their students who were racial minorities, ranging from 12% in Daus to 50% in Kaline. Table 11 summarizes enrollment and demographic data from the three districts in 2006-07.

[Insert Table 11 here]

¹¹ The larger study is funded by the Carnegie Corporation of New York and examines how mentoring, social networks, and district policies are associated with early career teachers' commitment, retention, and instructional practices, as well as student learning gains. This study began in 2006-2007 and continues through the 2008-2009 school year.

¹² Given the tight fiscal climate in both states, the number of districts hiring new teachers was limited. As a result, the districts in the sample look different from one another in terms of size, percentage of minority students, and percentage of low-income students.

In selecting teachers to participate in this study, we recruited general and special education teachers who met the following criteria: they were teaching full-time, they had earned a standard teaching certificate, and they had completed university-based teacher preparation programs. Additionally, we only included teachers who provided instruction in the core content areas in grades 1-8. For the general education teachers in our sample, this meant that they either provided instruction at the elementary school level (grades 1-5) or taught at the middle school level in the areas of language arts, history/social studies, mathematics, and science. Of the special education teachers, we only included teachers who provided academic instruction in grades 1-8 (i.e., we excluded individuals who did not provide instruction, such as school psychologists and speech pathologists).

The sample included 26 general education teachers and 16 special education teachers. The teachers varied in their years of experience, with a larger number of second-year teachers (22) than either first-year (11) or third-year teachers (9). Thirty nine of the teachers in the sample were white and 35 of the 42 teachers were female, however, both of these numbers are in line with national averages. Finally, the sample included a disproportionate percentage of teachers (64%) from the Indiana district, Engram. The demographic characteristics of the teachers in the ESM sample are summarized in Table 12; to allow for comparison with the teachers who participated in the larger study, the table also includes demographic characteristics for all participants in the three districts.

[Insert Table 12 here]

Data and Measures

This study used data from two different sources, including surveys at two time points--in Fall 2007 and again in Spring 2008--and data from a signal-contingent time

sampling method known as the Experience Sampling Method (ESM). The surveys included questions related to the teachers' backgrounds, professional preparation, instructional practices, and the nature and frequency of their interactions with mentors and colleagues, and experiences in their schools. Of particular interest to the current study were the questions that asked early career teachers' about the degree to which their work had left them feeling burned out, as well as questions about their commitment to their school, district, and to the profession more generally. These questions were asked on both the fall and spring surveys, allowing us to track change across the school year.

The ESM is a week-long data collection activity in which participants respond to signaling devices that are pre-programmed to beep eight times a day for seven days, randomly within two-hour time intervals (Prescott, Csikszentmihalyi, & Graef, 1981; Csikszentmihalyi & Larson, 1984; Csikszentmihalyi, 1997). The ESM differs from other time diaries because it also measures participants' primary and secondary activities, their thoughts, their location, and their affective experiences at the time they were signaled. Because the data is collected at random, and because participants provide multiple responses to the same measures, the ESM can limit the recall error associated with other survey methods; further, it has been shown to have high levels of reliability and validity (Csikszentmihalyi & Larson, 1984; Hektner, Schmidt, & Csikszentmihalyi, 2007; Robinson, 1985).

The ESM questionnaire and response procedures were adopted from Schneider and Waite's *500 Family Study* (2005). All ESM participants participated in the ESM process during the same school week in May of 2008, beginning on a Sunday and continuing through the following Saturday. Upon entering the raw data into a data file,

two trained coders, using coding schemes adopted from previous ESM studies, coded each of the open-ended questions about participants' activities, locations, and thoughts;¹³ inter-rater reliability for the coding of ESM activities ranged from .75 to .90. In order to focus specifically on times when teachers were at work, two steps were taken to restrict the total number of teachers' responses. First, I excluded data from Saturday and Sunday, and instead only focused on the 5-day work week (Monday-Friday). Second, I only included teachers' responses when they were coded as being at school, which resulted in using 773 of the 1233 observations across all teachers.

Teachers' Emotions at School. The ESM data provide a rich and informative picture of individuals' daily experiences, allowing for the measurement of a variety of emotions across multiple contexts. For the current analysis, I focused on teachers' emotions at work, employing a total of four emotion variables. In prior research testing Affective events theory, positive affect and negative affect at work have been shown to consistently predict job satisfaction (e.g., Weiss et al., 1999; Fisher, 2000, 2002). ESM studies have made frequent use of these two constructs as well (Csikszentmihalyi & Larson, 1984; Csikszentmihalyi, Rathunde, & Whalen, 1993; Koh, 2005). Thus, I follow their strategies for constructing composite variables for these two measures.

The composite variable for positive affect was constructed from the mean of the scale variables for happy, cheerful, friendly, and relaxed; negative affect was the mean of the scale variables for angry, frustrated, irritated, lonely, nervous, worried. Both composite variables had an internal consistency (*Cronbach's alpha*) of higher than .80.

¹³ These categories (as well as the categories for instructional time use) were developed based on pilots of the ESM in 2007-08 as well as in-depth interviews with pilot participants. See Jones & Youngs (2008) for more details on the pilot.

Two single scale measures of emotion were also included in the analysis. First, in predicting teacher levels of burnout, I wanted to include a local measure of fatigue, an emotion not represented in the negative affect measure. I therefore included the scale variable that asked whether participants felt *tired* at the time they were beeped. I was also interested in whether feeling skilled during activities at school was likely to lead to higher levels of commitment (or conversely, lower levels of burnout). Therefore, each of my final models also included the variable *skilled*. Table 15 in the appendix provides information on the descriptive statistics for these variables, as well as information about their construction.

To allow for regression analyses, it was necessary to develop person-level aggregates of the four ESM emotion variables.¹⁴ Two definitions of affect were developed, a person-level mean and a person-level maximum. Person-level means and maximums were created using only the beeps when teachers were at school. For the person-level maximums, I first calculated beep-level z-scores, which represented how far from their average emotional states did participants' vary when they were beeped at a given time point. Then, for every participant, I calculated their maximum z-score¹⁵ when at work.¹⁶

¹⁴ In correlations with job satisfaction, person aggregates of mood and emotion have been shown to provide comparable results to multi-level models (see Fisher, 2000).

¹⁵ For the "maximum" variable, I used z-scores rather than raw scores because across the sample, participants made full use of the response categories. As a result, when person maximums were calculated using the raw scores, there was little variation between individuals. In contrast, the z-scores produce a more accurate reflection of extreme deviation from person averages.

¹⁶ Although the activities that prompted the "maximum" emotions are not the focus of this analysis, Table 17.1-17.4 in the Appendix provides a list of teachers' activities when they reported their highest levels of positive and negative affect, relative to their mean levels.

Teachers' Work Attitudes. To measure teachers' evaluations of their jobs, I created composite variables for two concepts frequently employed in literature on teacher attrition: burnout and commitment; separate composites were made for the fall survey and for the spring survey. The burnout variable was based on the Maslach Burnout Inventory and consisted of the following items: I feel emotionally drained from my work, I feel used up at the end of the workday, I feel fatigued when I have to get up in the morning and face another day on the job, I feel burned out from my work, I feel frustrated by my work, I feel I'm working too hard on my job. Responses on these single measures ranged from 1=strongly disagree to 4=strongly agree ($\alpha = .91$); the fall composite variable for burnout had a mean of 2.52 and a standard deviation of .74, while the spring composite variable for burnout had a mean of 2.53 and a standard deviation of .75. While it appears that average levels of burnout did not change from fall to spring, when prior burnout was regressed on spring burnout, the residuals for the sample did not violate assumptions of normality.

In order to reflect the various ways in which teachers might conceptualize their future career plans, three measures of commitment were developed. This was an important step because teachers may have based their evaluations of their career plans on their satisfaction with their school or district specifically, or on their attitudes about their subject area or grade more generally. Thus, I calculated variables reflecting a teacher's commitment to their school, to their grade or subject area,¹⁷ and to their district. Composite variables for each definition of commitment were created by calculating the mean values of teachers' plans for the upcoming school year and their plans for five years

¹⁷ Elementary school teachers were asked about their commitment to their grade, while middle school teachers were asked about their commitment to their subject area.

from now (see Table 15 in the Appendix for means and standard deviations for each commitment measures).

Of the three measures of commitment, only commitment to grade/subject was correlated with the emotion variables of interest, once controlling for prior levels of commitment.¹⁸ Consequently, this was the only definition of commitment included in the final analyses. One could argue that the commitment to grade/subject variable may not fully encompass the ways that teachers think about their career plans. However, of the three definitions, commitment to grade/subject most likely reflects a strong overall measure of commitment to the profession, as it asks teachers to comment on their career plans irrespective of their current school and district. Responses on the commitment to grade/subject ranged from 1=strongly disagree to 5=strongly agree; the mean for fall commitment was 4.14 with a standard deviation of 1.14, while the mean for spring commitment was 4.08 with a standard deviation of 1.02.

Teacher Demographics. The models also included a series of variables indicating characteristics about the teachers in the sample, including whether they taught general education or special education, whether they were in middle school or in elementary school, and how many years of teaching experience they had. Teaching experience was classified as a binary variable, with second- and third-year teachers being collapsed into one category; this step accounted for the unique factors facing first-year teachers, including negotiating new relationships with colleagues and students, and implementing curriculum for the first time. Finally, teacher race and gender were included in the models, although the majority of the teachers in the sample were white females.

¹⁸ The correlations between each of the emotion variables and the study's dependent variables can be found in Table 16 in the Appendix.

Analytic Approach

In this study, I investigated the relationship between in-the-moment emotional responses to teaching and attitudinal evaluations of work, in the form of teachers' reported levels of burnout and commitment to their grade or subject area. Although this paper argues that momentary affective responses (i.e., local measures of emotions and mood) become aggregated into attitudinal evaluations of individuals' work (i.e., global measures of job satisfaction), an argument could also be made that equally important is the impact of the global on the local, or how job satisfaction influences an individual's daily affective states.¹⁹ To address this concern, the ordinary least squares regression models in this analysis controlled for teachers' prior levels of commitment and burnout (as reported in the Fall 2008 survey).²⁰ In addition, each model controlled for several demographic characteristics (i.e., whether the teacher taught special education, whether they were in elementary school or middle school, and whether they were a first-year teacher). Race and gender were also included in the regression models.

Analyses were conducted separately for each emotional predictor of interest. I could have included multiple emotions in the same model; however, I decided to run models with one emotion at a time, given the moderate correlation of many emotional variables to one another. Thus, for every emotion, I investigated its relationship with

¹⁹ Fisher (2002) has attempted to address this issue by testing all components of AET using structural equation analyses, a methodological strategy which allows one to test the direction of relationships. Her results confirm the role of positive and negative emotions in predicting job satisfaction, but she also suggests that disposition and characteristics of the work environment are predictive of affective responses.

²⁰ As described by Allison (1990), an alternative approach for controlling for the dependent variable at a prior time point is a change model where the dependent variable is represented as $Y_2 - Y_1$. I analyzed each of the models in this analysis using change scores as outcomes. In most cases, the coefficients for the significant predictors were similar across models. However, unlike in the models that controlled for prior commitment, the models using change scores produced higher coefficients for "skilled" in predicting spring commitment.

burnout and commitment respectively; I also compare the two aggregations of emotions (“mean” and “max”) to determine which better predicted teacher attitudes.

Results

Comparing Mean and Max Constructs of Teacher Emotions. One of the goals of this study was to determine whether teacher emotions were better estimated using mean variables (the average of teachers’ responses across the ESM data collection) or max variables (the maximum value that teachers reported during the week, relative to their overall means). Thus, for each of the four emotional predictors (positive affect, negative affect, fatigue, and skill), I ran separate regression models using both mean and the max constructs. For the purpose of comparison, I have included the coefficients for both sets of aggregate measures in Tables 17.1 – 17.4 in the Appendix.

In all models, the “mean” aggregates were stronger predictors of both burnout and commitment than the “maximum” aggregates; as these comparison tables indicate, no “maximum” predictor was significant at $p \leq .10$ for burnout or commitment. Further, in some cases, the coefficients changed direction when using maximum values, often in ways that did not make intuitive sense. For example, while mean negative affect was positively associated with spring burnout, the association between maximum negative affect and spring burnout was negative but was not significant. These results suggest that average emotional states across the week were more salient for teachers’ job attitudes than peak emotions at single time points. Also, given the relatively weak correlations between the mean and maximum aggregates, this would seem to indicate that estimates of emotions at any one time point were unlikely to represent teachers’ overall moods.

Consequently, the final models in Table III (Burnout) and Table IV (Commitment to Grade/Subject) only include the mean constructs of positive affect, negative affect, skill, and fatigue.

Teacher Emotions and Burnout. As shown in Table 13, the results of this analysis indicate that even when controlling for prior levels of burnout, there is a moderate association between two of the four emotional variables and burnout. Negative affect (the composite of the degree to which participants felt angry, frustrated, irritated, lonely, nervous, stressed, and worried) had a standardized coefficient of .46, and was significant at $p \leq .01$, while “tired” was statistically significant at $p \leq .05$ and had a standardized coefficient of .35; the R^2 for the two models were .53 and .47 respectively. Further, although they were not included in the final models, interaction terms between each of the emotions and prior burnout were not associated with spring levels of burnout.²¹ This suggests that regardless of whether teachers felt burned out in the fall, negative emotions during the year were likely to lead to higher levels of burnout at the end of the year.

[Insert Table 13 here]

The remaining two emotion variables, positive affect (the mean of teachers’ levels of feeling happy, cheerful, friendly, and relaxed) and “skilled”—had negative coefficients of -.12 and -.13 respectively, but neither was significant at $p \leq .10$; each model had an R^2 of .38. Despite the relatively small coefficients in each model, the direction of these relationships, however, is suggestive of a potential mediating role of positive emotional experiences in reducing teacher levels of burnout. Overall, the data indicate that the

²¹ Tables 18.1-18.2 show the final models with interaction terms.

negative emotions contributed to burnout more than either positive affect or feeling skilled.

Of the variables representing teacher characteristics, only the dummy variable for teaching special education was associated with teacher burnout independent of the emotional variables and prior burnout. Only in the model that included the variable “skilled” was special education status significant at $p \leq .10$; yet in all five models, the standardized coefficient for teaching special education was at least .20. Interaction terms between special education and each of the four emotion measures were non-significant when included in each of the models, however, suggesting that the emotions did not have a differential impact on burnout across the two groups of teachers. These results are in line with previous research by researchers in special education who have indicated that a high level of burnout is a primary cause of special education teacher attrition (Miller, Brownell, & Smith, 1999; Singer, 1993). Neither year of teaching nor the elementary teacher/middle school teacher distinction was associated with burnout once controlling for emotions and prior burnout.

Teacher Emotions and Commitment to Subject/Grade. The results from the regressions predicting teacher commitment to subject/grade are shown in Table 14. In each of the four models, prior commitment had standardized coefficients ranging from .47 to .51, all of which were significant at $p \leq .01$. Of the four emotion variables, positive affect and feeling skilled both had moderate associations with teachers’ levels of spring commitment, with standardized coefficients of .34 and .30; both relationships were significant at $p \leq .05$. The R^2 for positive affect (.44) was slightly higher than the R^2 of skilled (.42)—yet both values were smaller than the R^2 values for the relationships

between emotions and burnout. Finally, the relationship between negative affect and spring commitment was significant at $p \leq .10$, with a standardized coefficient of $-.16$, suggesting that when teachers experience feelings of negative affect, it may reduce their commitment throughout the school year.

[Insert Table 14 here]

As in the models predicting burnout, there was a negative relationship between teaching special education and commitment to grade/subject—independent of teacher emotions and prior commitment—with standardized coefficients in the four models ranging from $-.29$ to $-.31$. Also, interaction terms were again created to test the joint effects of teaching special education and having high average values for each of four emotion variables, yet none of these variables were significant. The results are also suggestive of a negative relationship between first-year teachers and level of commitment, as well as a small positive association between elementary school teachers and level of commitment; however, given the size of the standard error of these variables (relative to special education), these findings should be interpreted with caution.

Discussion

The purpose of this study was to investigate the influence of teachers' in-the-moment responses to their work on overall job attitudes—namely their stated levels of burnout and their future career plans with respect to teaching in their grade or subject. In doing so, I tested a framework developed in organizational behavior known as the Affective events theory (AET), which proposes that emotional responses to work, coupled with abstract beliefs about one's job, emotional influence overall judgments about job satisfaction. Further, AET posits that emotions provide a theoretical link

between workplace conditions and work attitudes; it is by influencing the kinds of events that individuals experience (and respond emotionally to) that work context affects job satisfaction. Studies in organizational behavior have empirically tested these relationships and shown that emotional responses play an important role in evaluations of work (Fisher, 2000, 2002; Weiss, Nicholas, & Daus, 1999). However, despite the potential contribution of this theory in predicting teachers attitudes about their jobs (as well as their future career decisions), no studies have made use of this framework in educational research. This study therefore represented an initial application of Affective events theory in predicting early career teachers' levels of commitment and burnout.

Three questions were proposed to investigate these relationships. First, I analyzed the degree to which four categories of emotional responses to work—teachers' levels of positive affect, negative affect, skilled, and tired—predicted burnout in Spring 2008, controlling for prior burnout and several teacher demographic characteristics. Second, I analyzed the same set of emotional items to determine how well they predicted teacher commitment. Finally, I was interested in comparing two different conceptualizations of teacher affect—one based on peak levels of emotion at school and the other based on average levels of emotion at school over the work week

Related to the first research question, the results of my regression analyses provide evidence of a moderate association between teachers' average levels of emotions at work—namely, their levels of “negative affect” and “fatigue”—and their stated levels of burnout, a measure which I based on the Maslach Burnout Inventory. This finding is noteworthy for multiple reasons. It lends support to Weiss and Cropanzano's argument regarding the importance of considering the impact of one's emotional experiences on

their attitudes about their job. Additionally, it appears that negative affect and fatigue can lead to higher levels of burnout, regardless of whether teachers felt burned out at the beginning of the school year. Finally, the magnitude of the relationship between momentary emotions and global measures of attitudes is noteworthy given the relatively small sample size of the analysis ($n=39$).

Negative affect was also shown to be negatively associated with teachers' career plans, although the coefficient for this relationship was only significant at $p \leq .10$. In addition to supporting the theoretical argument advanced in AET, this finding also supports previous research in special education by Miller, Brownell, and Smith (1999), who suggested that stress is one of the strongest predictors of attrition in special education, even when controlling for a multitude of personal, background, classroom, and school-level factors. The results also indicate that both positive affect and skill are associated with higher levels of commitment, suggesting that positive emotional experiences at school can impact teachers' desire to stay in teaching. And, although the data in the current study do not speak to teachers' actual career decisions (only their stated career plans) the association between teacher emotions and commitment is important given studies that have linked commitment to retention (Weisberg & Sagie, 1999; Weiss, 1999).

The study's last research question was posed in an effort to distinguish between emotional responses to specific events and general categories of mood that might emerge over time. Based on comparisons of models that separately tested the association of these variables with teacher attitudinal outcomes, it appears that the mean variables more strongly predicted both burnout and commitment. This suggests that when making

assessments about their work, teachers rely not on specific moments but on average emotions over time. It is likely true that, at times, teachers do consider particularly salient experiences when determining their future career plans (or assessing the degree to which they feel burned out); however, attitudes are more likely to be based on one's average emotional state while at work.

Although these findings do not speak directly to how specific activities or contexts influence average emotional states, prior analyses of these same data (Author, 2009a) have looked at how teachers' emotions vary across contexts. The teachers in the sample experienced significantly higher than average levels of skill, challenge, engagement, self-esteem, and activation when engaged in instruction. Meanwhile, when doing activities such as planning, paperwork, or grading, the teachers in this sample reported lower than average levels of positive affect, enjoyment, and challenge. Given the results of the current analysis, which suggest that average emotions are associated with teachers' work-related attitudes, further investigations into how teacher emotions in specific situations shape overall affect are warranted.

Finally, of the teacher characteristics that were controlled for in the analysis, the distinction between special education and general education teachers appeared to be the most important (when predicting commitment), and the results indicate that average affective responses did not differ significantly between general education and special education teachers. However, the reasons for these differences in commitment were not the focus of this study. In an analysis of the full MIECT sample, Author (2009b) has investigated how informal support from one's mentor and colleagues influences teachers' career plans; their results indicate that informal support from colleagues is critical for

early career special education teachers' commitment, as is a supportive school context more generally.

Limitations

A primary shortcoming of these data was the limited number of teachers included in the analysis. While I can be relatively confident about the general direction of the associations measured (i.e., whether a predictor was positively or negatively associated with one of the two outcomes of interest), more fine-grained interpretations were more difficult to detect. For example, other than teaching special education, neither year of teaching nor level of teaching (i.e., elementary vs. middle school) was significantly associated with burnout or commitment. While this speaks to the predictive strength of the special education/general education distinction—even with a sample that only included 16 special education teachers—it also suggests that the sample was too small to distinguish between other differences in teacher characteristics. For example, while the results for teaching special education were rather straightforward (i.e., special education teachers felt more burned out and less committed than general education teachers), the association between being a first-year teacher and the two outcomes was less easily interpretable: the first-year teacher variable was consistently negative in predicting commitment to grade/subject, but was also consistently associated with lower levels of burnout. Perhaps with a larger sample, the nature of these relationships would become more evident.

A second shortcoming of the current analysis was that it only focused on one relationship within Weiss and Cropanzano's theory. Although the authors' main argument is that emotions at work aggregate into attitudes about work, they also use

affective responses as a way to bridge the relationship between work conditions and job satisfaction. As I discussed in the introduction to this paper, it is frequently assumed in educational research that teaching environments have a direct influence on teachers' attitudes about work. Operating under this assumption, researchers and policymakers have often attempted to increase teachers' commitment levels by increasing their access to resources, information, and support through mentoring and induction programs. While the current study provides evidence suggesting that teachers' emotional experiences are also important predictors of their levels of burnout and future career plans, it does not, however, directly assess the relationship between mentoring and induction policies and teacher affect.

Similarly, Weiss and Cropanzano suggest that job satisfaction predicts whether workers leave their jobs. Given that this study's data were collected only over the course of one year, it was not possible to determine whether participants followed through on their career plans. Thus, I could not directly test how emotional responses to teaching affects (through job attitudes) teacher attrition. An example that would be useful to the future study of teachers' affective responses to work is Fisher's (2002) analysis of AET, in which she used structural equation modeling to look at both antecedents and consequences of positive and negative affective experiences at work. Structural equation modeling has the additional advantage of allowing the researcher to investigate the direction of relationships, which would address questions about the direction in which workplace emotions and workplace attitudes operate.

A final limitation is the study's measurement of teacher commitment. Although I base my measures on previous research on teachers' levels of commitment, it will be

important in future studies to consider employ alternative measures of teacher commitment to the profession—rather than relying on the proxy of commitment to grade/subject. Additionally, although the distribution of the residuals when regressing spring commitment on fall commitment did not violate the assumption of normality, participants did not vary considerably in their levels of commitment from fall to spring. While this may reflect that teachers' levels of commitment are for the most part stable across the school year, it does raise questions about the sensitivity of the measures to more subtle changes in commitment. Despite these limitations, the moderate association between teacher emotions and attitudes about the job suggests that affective variables are an important (and underutilized) predictor of teachers' plans to either stay or leave in the profession.

Implications

Significant attention has been paid by researchers and policymakers to improving the work conditions facing early career teachers. Districts, for example, have increasingly looked to induction programs to assist elementary and secondary teachers in their transition from preparation programs to their first jobs.²² Further, the majority of new teachers are provided with some sort of mentor to support them as they encounter the many uncertainties of their jobs. The argument underlying many of these programs is based, at least partly, on assumptions about teachers' emotional responses to work. It is presumed that in the face of undesirable work conditions, teachers will feel less attached to their jobs, and will be more inclined to leave their position. And research confirms this to be the case; teachers in challenging positions, such as teaching or teaching in an urban

²² These induction programs may take a variety of forms, such as workshops, collaborations, support systems, orientation seminars, and mentoring (Smith & Ingersoll, 2004, p. 683).

school, are more likely to leave their positions (Billingsley, Carlson, & Klein, 2004; Miller, Brownell, & Smith, 1999; Hamilton, Lankford, & Loeb 2002).

While much of the research on early career teachers has studied the effects of teacher induction programs, few have rigorously collected data on how teachers' actual experiences impact their career plans. By connecting the fine-grained emotion data of the ESM to longitudinal survey responses on teachers' attitudes about their jobs, this study presents evidence that teachers' affective responses to their work play an important role in teachers' judgment about their jobs. While the size of my sample precluded me from focusing specifically on teachers' emotional responses to aspects of induction (e.g., professional development, formal mentor meetings, observations with principals), the findings on teachers' general emotional states are significant. By taking account of teachers' emotional reactions to their work (in addition to features of their work environments), researchers, policymakers, and district administrators will be provided with ways of better supporting special educators in their early years of teaching.

Appendix A

Table 11: Demographic Characteristics of the Districts in the Sample

District	Total Enrollment	% Free/Reduced Lunch	% Non-white
Daus (MI)	19,055	51%	12%
Kaline (MI)	9,448	42%	50%
Engram (IN)	13,726	59%	47%

Table 12: Demographics of the ESM Sub-Sample vs. Full Sample (in 3 Districts)

Demographic Characteristics of ESM Sample			Demographics of Full Sample in 3 Districts		
Total	n=42		Total	n=92	
Gender			Gender		
Female	35	83%	Female	75	81%
Male	7	17%	Male	17	19%
Grade Level			Grade Level		
Elementary School	27	64%	Elementary School	58	63%
Middle School	15	36%	Middle School	34	37%
Special Ed. Status			Special Ed. Status		
General Education	26	62%	General Education	67	73%
Special Education	16	38%	Special Education	25	27%
Year of Teaching			Year of Teaching		
First	11	26%	First	30	34%
Second	22	52%	Second	38	41%
Third	9	21%	Third	24	25%
Race/Ethnicity			Race/Ethnicity		
African-American	2	5%	African-American	6	7%
Asian	1	2%	Asian	1	1%
White	39	93%	White	85	92%
District			District		
Daus (Michigan)	7	17%	Daus (Michigan)	17	18%
Kaline (Michigan)	8	19%	Kaline (Michigan)	20	22%
Engram (Indiana)	27	64%	Engram (Indiana)	55	60%

Table 13: Models for Predicting Teacher Burnout—Spring (n=39)

Independent Variable	Positive Affect		Negative Affect		Skilled		Tired	
	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient
Burnout—Fall	.50*** (.19)	.49	.37*** (.14)	.37	.55*** (.15)	.53	.52*** (.14)	.51
<i>Teacher Emotions</i>								
Positive Affect	-.12 (.19)	-.12						
Negative Affect			1.07*** (.33)	.46				
Skilled					-.13 (.20)	-.09		.35
Tired							.48** (.20)	
<i>Teacher Characteristics</i>								
Elem. School Teacher	.04 (.24)	.02	-.01 (.21)	.00	.00 (.24)	.00	-.17 (.23)	-.11
Special Ed. Teacher	.40 (.24)	.26	.36 (.21)	.23	.42* (.24)	.27	.34 (.22)	.22
First Year Teacher	-.18 (.26)	-.10	-.09 (.23)	-.05	-.17 (.27)	-.10	-.03 (.25)	-.02
White	.15 (.43)	.05	.03 (.37)	.01	.11 (.43)	.04	-.04 (.42)	-.01
Female	-.14 (.42)	-.06	-.33 (.30)	-.14	-.27 (.35)	-.12	-.13 (.34)	-.06
Intercept	1.63 (1.04)		1.18 (.53)		1.42* (.80)		.80 (.58)	
R-squared	.38		.53		.38		.47	

Note: *p ≤ .10; **p ≤ .05; ***p ≤ .01 (2-tailed).

Table 14: Models for Predicting Teacher Commitment—Spring (n=40)

Independent Variable	Positive Affect		Negative Affect		Skilled		Tired	
	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient
Commitment—Fall	.47*** (.15)	.47	.47*** (.15)	.47	.53*** (.15)	.51	.51*** (.16)	.50
<i>Teacher Emotions</i>								
Positive Affect	.46** (.20)	.34						
Negative Affect			-.52* (.47)	-.16				
Skilled					.55** (.26)	.30		
Tired							-.15 (.30)	-.08
<i>Teacher Characteristics</i>								
Elem. School Teacher	.19 (.30)	.09	.23 (.32)	.11	.23 (.31)	.11	.24 (.35)	.11
Special Ed. Teacher	-.61* (.30)	-.29	-.66** (.32)	-.31	-.64** (.31)	-.30	-.66** (.33)	-.31
First Year Teacher	-.25 (.33)	-.10	-.22 (.35)	-.09	-.31 (.34)	-.13	-.21 (.37)	-.09
White	-.16 (.56)	-.04	-.09 (.59)	-.02	.00 (.57)	.00	-.09 (.59)	-.02
Female	-.42 (.51)	-.13	.12 (.50)	.03	-.01 (.47)	-.00	.00 (.49)	.00
Intercept	.85 (1.08)		2.50** (.97)		.94 (1.09)		2.34** (.97)	
<i>R-squared</i>	.44		.32		.42		.34	

Note: *p ≤ .10; **p ≤ .05; ***p ≤ .01 (2-tailed).

Appendix B: Supplemental Tables and Figures

Table 15: Description of Variables

	Description		Mean	S.D.
I. Dependent Variables				
Burnout	Composite measure taken from the survey questionnaire, consisting of 6 questions: I feel emotionally drained from my work, I feel used up at the end of the workday, I feel fatigued when I have to get up in the morning and face another day on the job, I feel burned out from my work, I feel frustrated by my work, I feel I'm working too hard on my job. Responses on single measures ranged from 1=strongly disagree to 4=strongly agree. ($\alpha = .91$)	Spring	2.53	.75
		Fall	2.52	.74
Commitment to Grade/Subject	Composite measure taken from the survey questionnaire, consisting of 2 questions: I would prefer to continue teaching in this grade/subject next year, I could see myself teaching in this grade/subject in five years. Responses on individual measures ranged from 1=strongly disagree to 5=strongly agree. ($\alpha = .87$)	Spring	4.08	1.05
		Fall	4.14	1.14
Commitment to School	Composite measure taken from the survey questionnaire, consisting of 2 questions: I would prefer to continue teaching in this school next year, I could see myself teaching at this school in five years. Responses on individual measures ranged from 1=strongly disagree to 5=strongly agree. ($\alpha = .84$)	Spring	3.81	1.31
		Fall	3.95	1.22
II. Independent Variables				
Positive Affect	Taken from the ESM questionnaire. Beep-level composite variable including the following scale variables: strong, happy, cheerful, relaxed. (Cronbach's alpha (α) = .84)	Aggregate (person raw-score mean)	4.18	.75
		Aggregate (person z-score max)	1.48	.51
Negative Affect	Taken from the ESM questionnaire. Beep-level composite variable including the following scale variables: angry, frustrated, irritated, lonely, nervous, stressed, worried. ($\alpha = .86$)	Aggregate (person raw-score mean)	4.17	1.22
		Aggregate (person z-score max)	2.72	.83

Description of Variables (continued)

Skilled	Taken from the ESM questionnaire. Beep-level response to the question: "As you were beeped, were you feeling skilled?" Responses ranged from 0=not at all to 3=very much.	Aggregate (person raw-score mean)	2.17	.56
		Aggregate (person z-score max)	1.12	.81
Tired	Taken from the ESM questionnaire. Beep-level response to the question: "As you were beeped, were you feeling tired?" Responses ranged from 0=not at all to 3=very much.	Aggregate (person raw-score mean)	1.14	.55
		Aggregate (person z-score max)	1.28	.56

III. Control Variables

Special Education	Dummy variable where 0 = general education teacher and 1 = special education teacher
Elementary School	Dummy variable where 0 = middle school teacher and 1 = elementary school teacher
First Year Teacher	Dummy variable where 0 = not a first year teacher and 1 = first year teacher
Gender	Dummy variable where 0 = male and 1 = female
Race	Dummy variable where 0 = non-white and 1 = white

Table 16: Correlations for Variables Used in the Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Burnout	1.00											
(2) Commitment (Grade/Subject)	-0.52**	1.00										
(3) Commitment (School)	-0.24	0.43**	1.00									
(4) Commitment (District)	-0.41**	0.45**	0.84**	1.00								
(5) Positive Affect (Mean)	-0.37*	0.36*	-0.04	0.15	1.00							
(6) Positive Affect (Max)	-0.32*	0.18	0.22	0.17	-0.10	1.00						
(7) Negative Affect (Mean)	0.62**	-0.21	-0.08	-0.18	-0.20	-0.07	1.00					
(8) Negative Affect (Max)	-0.20	-0.01	-0.21	-0.17	0.26	-0.10	-0.45	1.00				
(9) Skilled (Mean)	-0.22	0.27	-0.11	-0.05	0.33**	0.04	-0.05	-0.03	1.00			
(10) Skilled (Max)	-0.02	-0.17	0.13	0.04	-0.30*	0.12	-0.13	0.00	-0.20	1.00		
(11) Tired (Mean)	0.45**	-0.01	0.29	0.09	-0.27	-0.08	0.66**	-0.33*	-0.29	-0.01	1.00	
(12) Tired (Max)	0.01	-0.09	-0.16	-0.13	0.01	-0.35*	0.02	0.24	-0.38**	-0.11	-0.06	1.00

Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$ (2-tailed).

Table 17.1: Models for Predicting Teacher Attitudes Based on Teachers' Levels of Positive Affect

Independent Variable	Burnout—Spring (n=39)				Commitment to Grade/Subject (n=40)			
	<i>Model 1 (Mean)</i>		<i>Model 2 (Max)</i>		<i>Model 1 (Mean)</i>		<i>Model 2 (Max)</i>	
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient
Burnout—Fall	.50*** (.19)	.49	.54*** (.15)	.53	.47*** (.15)	.47	.50*** (.16)	.52
<i>Teacher Emotions</i>								
Positive Affect (Mean)	-.12 (.19)	-.12			.46** (.20)	.34		-.03
Positive Affect (Max)			-.24 (.22)	-.17			.04 (.31)	
<i>Teacher Characteristics</i>								
Elem. School Teacher	.04 (.24)	.02	.02 (.24)	.01	.19 (.30)	.09	.18 (.33)	.08
Special Ed. Teacher	.40 (.24)	.26	.32 (.26)	.20	-.61* (.30)	-.29	-.66* (.35)	-.31
First Year Teacher	-.18 (.26)	-.10	-.19 (.26)	-.11	-.25 (.33)	-.10	-.15 (.35)	-.07
White	.15 (.43)	.05	-.24 (.34)	-.11	-.16 (.56)	-.04	-.06 (.50)	-.02
Female	-.14 (.42)	-.06	-.09 (.42)	-.03	-.42 (.51)	-.13	-.14 (.60)	-.04
Intercept	1.63 (1.04)		1.57 (.74)		.85 (1.08)		2.19 (1.05)	
R-squared	.38		.45		.44		.35	

Table 17.2: Models for Predicting Teacher Attitudes Based on Teachers' Levels of Negative Affect

Independent Variable	Burnout—Spring (n=39)			Commitment to Grade/Subject (n=40)		
	<i>Model 1 (Mean)</i>			<i>Model 1 (Mean)</i>		
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)
Burnout—Fall	.37*** (.14)		.52*** (.14)	.47*** (.15)	.47	.50*** (.16)
<i>Teacher Emotions</i>						
Negative Affect	1.07*** (.33)	.46		-.52* (.47)	-.16	
Negative Affect (Mean)						
Negative Affect (Max)			-.21			.06
<i>Teacher Characteristics</i>						
Elem. School Teacher	-.01 (.21)	.00	.02 (.23)	.23 (.32)	.11	.18 (.33)
Special Ed. Teacher	.36 (.21)	.23	.50 (.23)	-.66** (.32)	-.31	-.71** (.34)
First Year Teacher	-.09 (.23)	-.05	-.26 (.26)	-.22 (.35)	-.09	-.13 (.36)
White	.03 (.37)	.01	-.21 (.33)	-.09 (.59)	-.02	.03 (.51)
Female	-.33 (.30)	-.14	.07 (.41)	.12 (.50)	.03	-.12 (.60)
Intercept	1.18 (.53)		1.70 (.75)	2.50** (.97)		2.01 (1.12)
<i>R-squared</i>	.53		.40	.32		.34

Table 17.3: Models for Predicting Teacher Attitudes Based on Teachers' Levels of Skill

Independent Variable	Burnout—Spring (n=39)				Commitment to Grade/Subject (n=40)			
	Model 1 (Mean)		Model 2 (Max)		Model 1 (Mean)		Model 2 (Max)	
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient
Burnout—Fall	.55*** (.15)	.53	.57*** (.15)	.56	.53*** (.15)	.51	.53*** (.15)	.53
<i>Teacher Emotions</i>								
Skilled (Mean)	-.13 (.20)	-.09			.55** (.26)	.30		
Skilled (Max)			-.03 (.15)	-.03			-.31 (.20)	-.25
<i>Teacher Characteristics</i>								
Elem. School Teacher	.00 (.24)	.00	.01 (.24)	.01	.23 (.31)	.11	.16 (.32)	.08
Special Ed. Teacher	.42* (.24)	.27	.43* (.24)	.28	-.64*** (.31)	-.30	-.67** (.31)	-.32
First Year Teacher	-.17 (.27)	-.10	-.21 (.27)	-.12	-.31 (.34)	-.13	-.23 (.34)	-.10
White	.11 (.43)	.04	-.31 (.39)	-.14	.00 (.57)	.00	-.32 (.54)	-.10
Female	-.27 (.35)	-.12	.13 (.43)	-.05	-.01 (.47)	-.00	-.21 (.58)	-.05
Intercept	1.42* (.80)		1.17 (.71)		.94 (1.09)		2.87*** (1.01)	
<i>R-squared</i>	.38		.37		.42		.38	

Table 17.4: Models for Predicting Teacher Attitudes Based on Teachers' Levels of Fatigue

Independent Variable	Burnout—Spring (n=39)				Commitment to Grade/Subject (n=40)			
	Model 1 (Mean)		Model 2 (Max)		Model 1 (Mean)		Model 2 (Max)	
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient
Burnout—Fall	.52*** (.14)	.51	.57*** (.15)	.56	.51*** (.16)	.50	.50*** (.16)	.50
<i>Teacher Emotions</i>								
Tired (Mean)	.48** (.20)	.35			-.15 (.30)	-.08		
Tired (Max)			-.11 (.21)	-.07			-.04 (.29)	-.02
<i>Teacher Characteristics</i>								
Elem. School Teacher	-.17 (.23)	-.11	.01 (.24)	.00	.24 (.35)	.11	.18 (.33)	.08
Special Ed. Teacher	.34 (.22)	.22	.47* (.25)	.30	-.66** (.33)	-.31	-.66* (.34)	-.31
First Year Teacher	-.03 (.25)	-.02	-.22 (.26)	-.13	-.21 (.37)	-.09	-.15 (.36)	-.07
White	-.04 (.42)	-.01	-.29 (.35)	-.13	-.09 (.59)	-.02	.06 (.50)	.02
Female	-.13 (.34)	-.06	.18 (.43)	-.06	.00 (.49)	.00	-.14 (.61)	-.04
Intercept	.80 (.58)		1.20* (.64)		2.34** (.97)		2.27** (.98)	
R-squared	.47		.37		.34		.40	

Table 18.1: Models for Predicting Teacher Burnout (with Interaction Terms)

Independent Variable	<i>Positive Affect</i>	<i>Negative Affect</i>	<i>Skilled</i>	<i>Tired</i>
	OLS Regression (SE)	OLS Regression (SE)	OLS Regression (SE)	OLS Regression (SE)
Burnout—Fall	1.18 (.78)	.00 (.28)	1.39** (.56)	.49 (.37)
<i>Teacher Emotions</i>				
Positive Affect	.30 (.50)			
Negative Affect		-.92 (1.28)		
Skilled			.84 (.66)	
Tired				.43 (.80)
<i>Emotions x Prior</i>				
Positive x Prior	-.18 (.20)			
Negative x Prior		.76 (.48)		
Skilled x Prior			-.41 (.27)	
Tired x Prior				.02 (.31)
<i>Teacher Characteristics</i>				
Elem. Teacher	.05 (.24)	-.07 (.22)	.10 (.24)	-.17 (.24)
Special Ed.	.40 (.24)	.42 (.21)	.40* (.23)	.34 (.23)
First Year	-.15 (.27)	-.07 (.22)	-.11 (.26)	-.03 (.26)
White	.11 (.43)	-.07 (.37)	.12 (.42)	-.04 (.41)
Female	-.07 (.42)	-.31 (.29)	-.07 (.36)	-.13 (.34)
Intercept	.00 (2.08)	2.18 (.80)	-.82 (1.64)	.86 (1.07)
<i>R-squared</i>	.39	.56	.42	.47

Table 18.2: Models for Predicting Teacher Commitment (with Interaction Terms)

Independent Variable	<i>Positive Affect</i>	<i>Negative Affect</i>	<i>Skilled</i>	<i>Tired</i>
	OLS Regression (SE)	OLS Regression (SE)	OLS Regression (SE)	OLS Regression (SE)
Commitment—Fall	1.14* (.61)	.94** (.38)	1.18** (.44)	.50 (.45)
<i>Teacher Emotions</i>				
Positive Affect	1.15* (.64)			
Negative Affect		2.79 (2.52)		
Skilled			1.85 (.85)	
Tired				-.20 (2.10)
<i>Emotions x Prior</i>				
Positive x Prior	-.17 (.15)			
Negative x Prior		-.78 (.58)		
Skilled x Prior			-.32 (.20)	
Tired x Prior				.01 (.48)
<i>Teacher Characteristics</i>				
Elem. Teacher	.16 (.30)	.31 (.33)	.17 (.24)	.24 (.35)
Special Ed.	-.64** (.30)	-.67** (.32)	-.71** (.30)	-.66* (.35)
First Year	-.23 (.33)	-.18 (.35)	-.26 (.33)	-.21 (.39)
White	-.20 (.56)	-.02 (.59)	-.11 (.56)	-.09 (.62)
Female	-.56 (.52)	.06 (.49)	-.20 (.47)	.00 (.52)
Intercept	-1.70 (2.50)	.41 (1.83)	-1.47 (1.83)	2.39 (2.16)
<i>R-squared</i>	.39	.56	.46	.34

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CHAPTER 4: A COMPARISON OF THE INFLUENCE OF SOCIAL CONTEXT ON THE COMMITMENT AND BURNOUT OF EARLY CAREER SPECIAL EDUCATION AND GENERAL EDUCATION TEACHERS

Introduction

The struggle to staff all classrooms with highly-qualified teachers is a struggle across all teaching not unique to special education (Darling-Hammond, 1997, 1999), although but the severity of the problem is. The scarcity of special education teachers is widespread across all regions of the U.S., with 98% of the nation's school districts facing chronic shortages in special education (Boe, Cook, Bobbitt, & Terhanian, 1998; Carlson et al., 2002; ERIC, 2001, McClesky, Tyler, & Flippin, 2004). Positions remain vacant each year because, in many cases, suitable candidates cannot be found. Instead, vacant positions are likely to be filled by personnel who a) are not certified, b) are assigned to positions for which they do not have certification, or c) have no certification at all.²³ Taken cumulatively, uncertified personnel filled more than 30,000 teaching positions per year in the 1990s (U.S. Department of Education, 2000 in McClesky et al., 2004).

The extent of the shortage of special education teachers has also increased because of the growing special education population. For students ages 6-21, the demand increased by 42% from 1987-88 to 2002-03, from 284,300 teachers to 403,100 teachers (Boe, 2006). During this same time, the supply of teachers grew as well, but it could not match the steady, long-term growth in demand. This trend shows no signs of abating, and schools are likely to continue to use unqualified replacements, as well as to increase the demands on the fully-certified teachers already in their positions.

²³ Boe (2006) calculated that 1.1% of these teaching positions remain vacant, staffed by long-term substitutes.

Finally, the teacher shortage has intensified because special education teachers are more likely to leave the profession than their general education peers. Strong disparities between the two fields are reported by Boe, Bobbitt, and Cook (1997). Using a sample of 4,782 public school teachers, they determined that 5.8% of general education teachers and 7.9% of special education teachers left teaching between 1987-88 and 1988-89. They also found that 13% of special educators transferred to general education teaching positions during the same time. More recent data suggests that, on the national level, the percentage of special educators either leaving or transferring to general education remains close to 20%, with attrition rates much higher in some districts and states (National Commission on Teaching and America's Future, 2003). The high rate of transfer from special education to general education is worth noting because it suggests that there is something about the special education setting itself (rather than the profession of teaching) that is driving teachers out of special education.

The high rates of attrition across the teaching profession is due in large part to the loss of beginning teachers, or what Ingersoll refers to as the “revolving door” of teaching (Ingersoll, 2001). Approximately 30% of new teachers leave teaching within the first three years, while 50% are likely to leave within five years (Huling-Austin, 1990; Ingersoll & Smith, 2003; Olson, 2000). In special education, the problem of attrition is even more pronounced. In their analysis of the retention decisions of first-year teachers using the Schools and Staffing Survey, Smith and Ingersoll (2004) found that first-year special education teachers were 2.5 times as likely to leave the profession as teachers in other disciplines. This finding is corroborated by other researchers as well (Boe, 2006).

While individual characteristics are a primary determinant of leaving teaching (such as age, class, content area), beginning teachers often make retention decisions based on organizational factors, such as whether they receive support from their colleagues or administrators, whether they have adequate resources, and whether they feel successful with their students (Johnson & Birkeland, 2003; Johnson et al., 2004; Ingersoll, 2001). As a wide body of research confirms, the organizational norms of schools have consequences for whether or not a beginning teacher feels attached to their school and to the teaching profession more generally.

Several strategies for addressing the field's shortage of teachers have been proposed. Given the multiple trends affecting the supply and demand of special education teachers, Boe (2006) advocates focusing our attention on the ways in which we can increase the quality and quantity of the supply of the teaching labor force—the system's inputs. He recommends luring teachers who have left the profession back into the labor force, finding ways to attract general education teachers into special education, and increasing the number of individuals becoming certified to teach special education in colleges and universities.

This paper argues that a more viable policy aim would be to target factors that are likely to improve retention, bringing together an analysis of two of the most significant predictors of leaving teaching—being an early career teacher and teaching special education. If we do not address the challenges facing these populations, any efforts to increase the pool of potential teachers will likely be undermined by the adverse institutional conditions that they face in the beginning of their careers. And, if we can improve the quality of the work environment for these teachers, we can also increase

their ability to increase students' achievement levels in language arts and mathematics (Desimone et al., 2004; Hill, Rowan, & Ball, 2005). By describing the ways in which schools as social organizations shape the commitment of early career special education teachers, this paper will provide direction for district and state level policies related to special education teacher retention.

Literature Review

Research on beginning teachers has rarely focused on both general education and special education teachers.²⁴ Yet, it is becoming increasingly important to simultaneously consider the experiences of both groups of teachers, as students with disabilities are more frequently being integrated into general education classrooms for instruction. Similarly, from a policy perspective, it is important to investigate whether induction policies that are thought to be effective for all teachers may have differential impacts on general education and special education teachers. Consequently, when reviewing literature of the experiences of early career teachers, I explore differences in curricular expectations, induction experiences, and outcomes for both groups of teachers.

For beginning general education teachers, districts often take on a proactive role in defining curricular expectations. Stein & D'Amico (2002) studied district policy surrounding literacy improvement in New York City's District #2. They found that district leaders relied on professional development to facilitate teacher learning of curricular expectations; additionally, policies related to student assessment and teacher evaluation provided clear messages about how the instruction of new general education elementary teachers should look. Similarly, Grossman and Thompson (2004) reported

²⁴ This is in part because the work lives of general education and special education teachers have traditionally been viewed as separate.

that districts facilitated teacher learning and communicated teaching expectations through “(t)he tasks they assign(ed) to new teachers, the resources they provide(d), the learning environments they create(d), the assessments they design(ed), and the conversations they provoke(d) (2004, p.298).” Finally, these findings are aligned with those of Achinstein, Ogawa, and Speiglmán (2004), who found that in two California districts, teachers’ instructional practices were strongly influenced by district curricular choices and the professional development opportunities they provided.

In contrast, research suggests that the curricular and instructional expectations placed on beginning special education teachers tend to be ambiguous (Author, under review; Billingsley & Tomchin, 1992; Carter & Scruggs, 2001; Conderman & Stephens, 2000; Mastropieri, 2001; Zabel & Zabel, 2001). Special education teachers are often responsible for designing curriculum for multiple subjects across multiple grade levels, yet most do so without adequate resources for determining how this instruction should look (Kilgore et al., 2003). And, while general education teachers are typically provided with materials such as textbooks, pacing guides, and state teaching standards, special education teachers often do not receive the same kind of direction. The materials they do receive are often identical to those given to general education teachers, but they are provided without guidance for adapting these materials to meet their students’ needs.

The organization of schools in many instances reinforces the distinction between the work lives of general educators and special educators. With the exception of co-teaching arrangements, there are few formal avenues for collaboration between special education teachers and their general education peers. Further, even though students with disabilities may be co-taught by general education and special education teachers, these

students are frequently thought to be the primary responsibility of special education teachers (Kilgore et al., 2003). Additionally, with teachers often grouped according to team or grade level, there can be physical distance between special education and general education teachers, limiting opportunities for informal interactions. These circumstances may heighten the isolation experienced by early career special education teachers, and there is evidence that such isolation has negative consequences for special educators' intentions to remain in teaching as well as their actual retention decisions (Billingsley & Cross, 1992; Billingsley & Tomchin, 1992; Crane & Iwanicki, 1991; Mastropieri, 2001; Miller et al, 1999).

The procedural demands and paperwork facing special education teachers also limit them from engaging in conversations with colleagues about instructional issues. In particular, along with their teaching responsibilities, special education teachers must complete individualized education plans (IEPs), conduct initial and follow-up evaluations of students, and track special education goals and objectives. Billingsley, Carlson, and Klein (2004) conducted a study of a nationally representative sample of special education teachers with less than five years of experience and found that 72% of the teachers in their sample indicated that routine duties and paperwork interfered with their teaching. In her review of existing literature, Billingsley (2004) found a similar pattern, noting that paperwork was a dominant factor influencing decisions to leave the classroom (Billingsley, 2004).

With regard to mentoring and induction, research from both general and special education suggests that mentors can play an important role for early career teachers (Holloway, 2001; Miller, Brownell, & Smith, 1999; Smith & Ingersoll, 2004; Strong &

St. John, 2001; Whitaker, 2000). In general education, for example, Youngs (2007a) reported that when mentors were knowledgeable about novice teachers' curricula and state assessments, they were more likely to help them plan instruction and analyze student learning. In their analysis of the Schools and Staffing Survey, a nationally representative sample of teachers, Smith and Ingersoll (2004) found that having a mentor in one's field reduced the risk of leaving teaching by approximately 30%.

Similar evidence has been found in special education research; when relationships with mentors are informal and more personal, new special educators are more likely to intend to stay in teaching (Whitaker, 2000). In addition, it seems that for beginning special educators, mentors in special education can offer unique pedagogical and assessment skills, knowledge of students, and knowledge of subject matter that general education teachers cannot (Lane & Canosa, 1995; White, 1996). Further, such mentors are well positioned to provide emotional support to early career special educators (Whitaker, 2000; Kueker & Haensly, 1991). At the same time, many new special education teachers are not assigned to mentors who teach special education in their schools. And, even when a beginning special educator is matched with a mentor at their school who teaches special education, the mentor may have a different job description (i.e., they may be responsible for working with disabilities that differ from those to which the novice is assigned) and, thus, may not be familiar with the novice's curriculum or caseload.

Research also suggests that induction programs that rely on formal mentoring may not capture the important role that other colleagues within schools play in the socialization of teachers. The degree to which a teacher feels supported by colleagues

appears to have a significant influence on whether or not novices stay in teaching (Johnson & Birkeland, 2003; Johnson et al., 2004; Ingersoll, 2001; Kardos et al., 2001). A recent study conducted by the Consortium on Chicago School Research reported that informal support from colleagues, rather than formal mentoring programs, appeared to have a more significant influence on whether or not novices stayed in teaching (Kapadia, Coka, & Easton, 2007). Smith and Ingersoll (2004) found that having a common planning period with other colleagues or collaborating with other teachers on instruction increased the rate of retention of new teachers by more than 43%.

Similarly, Billingsley, Carlson, and Klein (2004) found that when special education teachers had access to support from colleagues and administrators, they were more committed to staying in teaching. Although relatively few empirical studies have directly examined the informal support available to new special education teachers, research indicates that when new special education teachers do not interact with colleagues, they are likely to struggle to meet the needs of their diverse students and to experience high levels of stress. Further, the lack of support from colleagues also appears to have consequences for their intent to remain in teaching, as well as actual retention decisions (Billingsley, Carlson, & Klein, 2004; Billingsley & Tomchin, 1992; Mastropieri, 2001; Miller, Brownell, & Smith, 1999). The degree to which administrators support early career special education teachers also appears to have important consequences; Billingsley, Carlson, and Klein (2004) found that when teachers reported that their principals did not understand the responsibilities of a special education teacher, they were most susceptible to feeling dissatisfied with their jobs. Lack of administrative

support was also cited as a strong determinant of stress for first year teachers by Billingsley and Tomchin (1992) and Kilgore and Griffin (1998).

Research on mentoring and induction in general education has produced comparable findings. For example, Kardos et al. (2001) found that new teachers were well served in schools where veterans supported novices through mentoring, collaborative work in grade teams and departments, and professional development. In both studies, principals played a key role in successful induction experiences by addressing issues related to instruction, collaboration, and student learning (Kardos et al., 2001; Youngs, 2007b).

In research on retention, Smith and Ingersoll (2004) used the 1999-2000 SASS to investigate the influence of induction activities on first-year teacher attrition and migration while controlling for other factors. They reported that having a mentor in one's field reduced the risk of leaving teaching by about 30%, but had little effect on teacher migration. In addition, collaborating regularly with colleagues on instruction reduced the risk of leaving teaching by 43% and lowered the risk of migration by 25% (Smith & Ingersoll, 2004). In contrast, recent research by Glazerman and colleagues (under review) found no significant differences between schools implementing comprehensive induction programs and those that did not, raising doubts about the potential impact of formal induction programs.

In sum, research indicates that the school experiences of early career general education teachers and special education teachers vary considerably. In particular, compared to their counterparts in general education, new special education teachers receive less guidance regarding curricular expectations and experience higher levels of

isolation at work. Studies in both general and special education have shown that, through mentoring and induction programs, districts can play a proactive role in providing new teachers with opportunities to gain resources, instructional skills, and support from their colleagues. However, few of these studies have incorporated beginning general education and special education teachers. As a consequence, it is unclear how the two groups of teachers respond to the same set of district induction policies, as well as how their experiences differ as they negotiate key relationships with mentors, special and general education colleagues, administrators, and other individuals in their schools and districts.

Theoretical Framework

Social Capital Theory. To explain why the experiences of early career special education and general education teachers differ, this paper advances a conceptual framework of new teacher support based on social capital theory. This theory pays specific attention to the process by which individuals access relationships with colleagues, as well as to the consequences of these interactions on a teacher's burnout and commitment.

For a new teacher to be successful in their teaching, they can take steps to increase their productivity by increasing their human capital (their value in the marketplace based on their skills, intelligence and experience) and/or by increasing their access to social capital. Social capital theory suggests that an individual can also invest in their social relations (thereby gaining access to the resources of others) in order to produce increased returns. While human capital is an individual-level attribute, social capital can be thought of the resources embedded in an individual's social context (Burt, 1992, 2000; Coleman, 1990; Lin, 1999; Putnam, 1993). Through a variety of avenues,

social capital provides advantages to individuals that would otherwise not be available to them.

This paper adopts a definition of social capital based on that of Lin (1999), who defines social capital as: “Investment in social relations by individuals through which they gain access to embedded resources to enhance expected returns of instrumental or expressive actions” (39-40).²⁵ Lin’s theory remains rooted in individual interactions; he suggests that there are group-level profits made available through social capital, but only in the aggregate. Thus, if we return to the question of how relationships with colleagues influence new special education teachers, it is important to locate the resources available to a novice teacher through their interactions with colleagues, determine how early career teachers incorporate these resources into their own thinking about their teaching, and investigate how this social capital in turn impacts their perceptions of their work environment and their affective response to these conditions.

To clearly measure social capital, Lin suggests a network approach in which one locates the resources available to an individual based on who they interact with. Frank, Zhao, and Borman (2004), for example, have done work in the area of the diffusion of information about technology among networks of teachers. One of their central questions was how teachers access expertise about technology (i.e., using computers in the classroom) from their colleagues. Frank et al. calculated the social network’s influence on an individual by summing the resources they received across all of the individuals they

²⁵ This is in contrast to Coleman’s theory, in which social capital is defined as any aspect of a social structure that is useful to the individuals in an organization. This is useful in how widely it can be applied, but it also introduces problems with differentiating between the causes of social capital and its effects, something that Lin discusses directly.

named. Their findings suggest that schools as organizations provide a context for sharing resources that are present within the social network of teachers.

In this study, I conceptualize social capital as the help and expertise that teachers access for their personal benefit. In an organization such as schools, individuals will not interact with all available actors. Instead, individuals (“egos”) seek out certain specific others (“alters”), exchanging resources with one another (Wellman & Frank, 2001). The social capital available to individuals varies according to the resources embedded in the network as well as their location within this network. Both of these factors are critical in understanding the social capital available to early career teachers, as well as why special educators and general educators may differ in their ability to access resources in their school networks.

Collective Assets of the School Organization. Lin’s theory of social capital also takes the important step of distinguishing social capital from other forms of collective goods, such as trust, collective efficacy, and teachers’ perceptions of professional fit. Separate from the social capital directly available to teachers through their interactions with colleagues, more general characteristics of schools as organizations may have a less direct, though still important, influence on the socialization of early career teachers. As Lin argues, the process through which these organizational characteristics influence individuals is by either constraining or enabling individuals to access the social capital (the resources) that are embedded in the system.

Relational trust, as suggested by Bryk and Schneider (2002), produces advantages at the organizational level in terms of how schools operate. When individuals in an organization trust one another, efficiency in decision-making can be increased, because

individuals will be more likely to trust one another's intentions. Also, high levels of relational trust allow organizations to "coordinate meaningful collective action," by providing individuals with clear expectations of their role expectations. However, while organizational-level benefits of relational trust are noteworthy, the contribution of relational trust to the social capital literature described here is that its presence increases the likelihood that individuals can make use of the social capital existent in the organization. In organizations with high levels of relational trust, actors will be more likely to mobilize the resources that exist in their relationships. In short, as described by Hoy and Tschannen-Moran (1999), relational trust ensures that individuals have access to cohesive and productive relationships.

A second, related asset of school organizations is collective responsibility, or the degree to which the faculty share common goals for improving student learning (Lee & Loeb, 2000; Lee & Smith, 1996; Newman & Associates, 1996). When a teaching faculty views the success or failure of their students as a shared responsibility, it has been shown to have a positive impact on student achievement gains (Lee & Loeb, 2000; Lee & Smith, 1996). And, although collective responsibility is an emergent feature of schools, it can provide personal benefits to individuals. For early career teachers, having common goals with colleagues may increase the likelihood that they feel connected to the school organization. When individuals perceive that their colleagues are capable of producing high levels of student learning, this will alter the ways in which they access and make use of resources from their colleagues.

Finally, an important characteristic of schools as organizations is the degree to which teachers feel that they "fit" into the overall school community (Kristof, 1996;

Kardos et al., 2001). If teachers feel that their beliefs and practices are aligned with their mentor and other colleagues, it may increase the degree to which induction programs are effective (Youngs, Qian, & Holdgreve-Resendez, in progress). Kardos and her colleagues (2001) explain how the school culture—and whether or not it is supportive of new teachers—can influence new teacher's retention decisions. Outlining three different forms of professional cultures (veteran-oriented cultures, novice-oriented cultures, and integrated professional cultures), they found that in integrated cultures—where beginning teachers received frequent support and interacted with colleagues across experience levels—novice teachers were best served (Kardos et al., 2001).

On their own, each of these theories regarding the role of collective assets is useful in examining the performance of individuals, but taken as part of a larger model of social capital, they become powerful predictors of a series of individual-level returns.

Purpose

By studying the social capital available to new teachers (both directly through their interactions with their mentors and colleagues as well as indirectly through their perceptions of the school organization), I improve upon previous models of how mentors and other colleagues influence early career teachers' beliefs and career plans.

Analytically, this study consists of three separate research questions. The first research goal is exploratory in nature; I investigate the degree to which early career special education and general education teachers differ in their access to formal and informal channels of support from mentors colleagues. Specifically, I look at how frequently early career teachers interact with colleagues in regard to instructional issues, as well as the content of these interactions.

Second, I investigate the association between early career teachers' interactions with colleagues and two relevant teacher outcomes: teachers' stated career plans (expressed as their commitment to their schools, district, and grade/subject) and their levels of burnout. I quantify the importance of support novices receive from mentors and colleagues, and also incorporate into these models teachers' perceptions of the school organization more generally (i.e., their perceptions of trust and collective responsibility, as well as their perceptions of organizational fit). These models control for teachers' personal and professional backgrounds, producing a more powerful model for estimating the effect of the theoretical constructs on commitment and burnout. I also include interaction terms for teaching special education and each of the theoretical variables of interest, to determine, for example, whether high levels of relational trust have a differential effect for special education teachers (as compared to general education teachers).

Finally, while the previous research question indirectly measures the importance of social capital for beginning special education and general education teachers, the final goal of this study is to directly test the flow of resources and information from colleagues to new teachers, using social network analyses. I incorporate survey data from mentors and key colleagues into the early career teacher data, in order to ask whether social network members' own levels of commitment—as well as their perceptions of the school—influence early career teachers' levels of commitment and perceptions of their schools. I also investigate whether teaching special education is associated with teacher outcomes, once controlling for influence from key colleagues.

Method

Sample

The sample for this study included first-, second-, and third-year K-8 teachers from eight school districts in Michigan and Indiana.²⁶ The districts in the current analysis were recruited because they were all medium to large in size and were hiring large numbers of early career teachers (ECTs). Although the eight districts were somewhat similar with respect to size and student composition, there were some important differences, which are outlined in Table 19.

[Insert Table 19 here]

The two smallest districts in the sample, Kaline and Wagner, had total K-12 student populations of less than 10,000 students, while the largest district in the sample, Greenberg, had over 21,000 students. Similarly, the districts varied with respect to the percentages of their students who were racial/ethnic minorities, although all but one of the districts (Daus) were over 40% minority.²⁷ The districts were somewhat similar with respect to the percentage of their students who were from low-income backgrounds. The largest district in the sample, Greenberg, had the highest number of low-income students, with 65% eligible for free or reduced lunch, while Wagner--the smallest district in the sample--had the fewest low-income students (36%). Given the tight fiscal climate in both states, we were limited in the pool of districts who were hiring new teachers; thus, the districts differ in size and student composition

²⁶ Teachers who were new to their district but who had more than three years of prior teaching experience were not included in this study.

²⁷ Daus had a high percentage of Arab-American students (i.e., more than 50%), many of whom were identified as non-minority. This helps to explain the low percentage of non-white students in the district.

Early Career Teacher Sample. In selecting general education teachers to participate in the study, we required that teachers teach in a core content area (math, science, social studies, English/language arts, and elementary general education) in grades 1-8, and we also required that they had standard teaching certificates and had completed university-based teacher preparation programs. For special education teachers, we also required that they be providing academic instruction in grades 1-8 (i.e., we excluded individuals who did not provide instruction, such as school psychologists and speech pathologists). The response rate for the two groups of teachers was comparable, with 68% of general education teachers and 67% of special education teachers completing the fall 2007 survey; we also had a spring retention rate of approximately 75%. In total, the sample for this study included 185 teachers: 47 special education teachers and 135 general education teachers. The characteristics of the early career teacher sample are provided in Table 20.

[Insert Table 20 here]

Seventy percent of the teachers in the sample were elementary school teachers (n=129), and the number of teachers in their first, second, and third year of teaching were distributed fairly evenly (61 first-year teachers, 80 second-year teachers, 43 third-year teachers). Additionally, the overwhelming majority of the teachers were white (90%) and female (83%).

Mentor/Colleague Sample. To allow for social network analysis, we asked each early career teacher in the sample to provide the name of their mentor and up to eight colleagues at their schools with whom they engaged in professional interactions (e.g.,

interactions about curriculum, instruction, students, and school policies).²⁸ We then contacted up to 4 of the classroom teachers nominated by the ECTs; colleagues who were not full-time classroom teachers or who were instructional support providers²⁹ were not asked to participate in the study. Of the teachers who were contacted, 72 teachers named as mentors by ECTs and 325 named as colleagues completed surveys in winter 2008. The overall response rate for mentors and colleagues was approximately 61%.

Data

All participating ECTs completed surveys at two time points, in the fall of 2007 and spring of 2008. The surveys asked questions related to the teachers' backgrounds, professional preparation, interactions with others, experiences in their schools, and their future career plans. In order to understand the content of the conversations of ECTs with their mentors and colleagues (e.g., curriculum, instruction, classroom management, psychological support), as well as how frequently they had professional interactions, novices were also asked to provide information on their relationships with their mentor and, separately, colleagues. In addition to describing the content and frequency of their interactions, the novices also rated the usefulness of each of these relationships. Finally, to account for changes in teachers' levels of burnout and commitment from fall to spring, teachers were asked the same questions at both time points. This allowed me to more accurately model the impact of mentors, colleagues, and school-level characteristics on early career teacher outcomes.

²⁸ ECTs were asked to nominate colleagues in fall 2007.

²⁹ Examples of instructional support providers included literacy or math coaches, as well as mentors who have been released from teaching.

Similarly, to compare ECTs to their mentors and colleagues, identical items were asked in both the ECT and the mentor/colleague surveys. Specifically, colleagues were asked about the school organization (i.e., their perceptions of relational trust, collective responsibility, and their fit within the organization), as well as their own future career plans. Data was also collected on the experienced teachers' educational backgrounds, demographic characteristics, and whether they had prior experiences as mentors.

Measures

Teacher Outcomes. This analysis focused on two teacher outcomes. In the special education literature, *burnout* has been an important concept for understanding the struggles of early career special education teachers. For special educators, a common response to overwhelming or negative job circumstances is a high level of stress, which has been shown to influence commitment (Billingsley & Cross, 1992; Gersten et al., 2001; Wisniewski & Gargiulo, 1997) and attrition (Miller, Brownell, & Smith, 1999; Singer, 1993). When this stress goes unaddressed over a long period of time, and negative experiences accumulate, the teacher is likely to find their work increasingly unsatisfying. The term *burnout* has been used to describe the accumulation of this stress. In this study, I measure burnout through a battery of items taken from the Maslach Burnout Inventory (Maslach & Jackson, 1981), such as "I feel used up at the end of the day" and "I feel that I'm working too hard at my job." Responses for each scale variable ranged from 0 = "strongly disagree" to 4 = "strongly agree," and the composite variable was the mean of these six items ($\alpha = .91$). The mean level of burnout for general education teachers in the sample was 2.39 (standard deviation (SD) = .67); the mean for

special education teachers was 2.46 (SD = .71). Table 29 in the Appendix provides descriptive statistics for all variables included in these analyses.

The second outcome used in this analysis is commitment, which as Ingersoll (2001b) has argued, is believed to be a more relevant outcome variable for policymakers than retention itself, because commitment more closely reflects attitudes about one's job. Retention decisions, on the other hand, may result from circumstances not having to do with work itself (e.g., the desire to move out of the area, start a family, or pursue additional schooling) or due to declines in student enrollment and/or district finances. Commitment has been a useful construct for understanding how characteristics of individuals' work environments predict intentions to stay in the profession. Ebmeier (2003) has found teacher commitment to be associated with teacher effort and effectiveness, and he also suggests that commitment is predicted by relationships with teacher colleagues, a finding supported in other research (Bryk & Schneider, 2002; Desimone et al., 2002). Finally, commitment has been shown to be predictive of career decisions (Weisberg & Sagie, 1999; Weiss, 1999).

To measure commitment, I considered three sets of items that addressed teachers' commitment to their school, grade or subject area, and district. For each category of commitment, the survey included two questions, one asking the teacher about their commitment to school, subject/grade, and district for the next school year and the second asking about their commitment in five years. Responses to these items ranged from 0 = "strongly disagree" to 4 = "strongly agree." Comparisons of teachers' responses to these items revealed little variation (i.e., teachers differed very little in how they conceptualized commitment to school, grade/subject, and district). Consequently, I

collapsed the total of six items into one composite measure of commitment, representing teachers' career plans overall. The final composite variable had an internal consistency, as measured by Cronbach's alpha (α), of .90. The mean of this commitment variable for general education teachers was 3.36 (SD = .69); the mean for special education teachers was 3.06 (SD = .81).

Support from Mentors/Colleagues. For the descriptive analysis (in which I compared the nature and frequency of interactions with mentors/colleagues for special education and general education ECTs), I looked at how frequently ECTs interacted with their colleagues around six categories of professional support: curriculum, teaching strategies, student behavior, assessments, standardized testing, and psychological support. Responses were coded as the number of school days per month that ECTs interacted with colleagues about a given topic. For the regression analyses, I used an additional measure of colleague support, based on how much the novice teachers valued the support they received from mentors and colleagues. I treated "importance of mentor support" and "importance of colleague support" as two different dummy variables, where 0 = support is "not important at all" or "somewhat important," and 1 = "very important" or "extremely important."

Collective Assets of the Social Structure. Variables were created to represent the theoretical constructs of relational trust, collective responsibility, and perception of fit—all of which were considered to be additional sources of support for early career teachers. For each variable, I created a composite measure by taking the mean of single scale items from the ECT survey. *Relational trust* consisted of items such as "teachers in this school trust each other" and "teachers in this school respect those colleagues who are experts in

their craft;" responses ranged from 0 = "strongly disagree" to 4 = "strongly agree." This composite variable ($\alpha=.89$) had a mean of 3.16 for general education teachers and 3.02 for special educators. Perception of fit consisted of 6 survey items, and the resulting composite variable ($\alpha=.89$) had a mean of 3.34 for general educators and 3.26 for special educators. Lastly, the items making up *collective responsibility* asked teachers about the proportion of their school-based colleagues who took responsibility for such things as student discipline and student learning, with responses ranging from 1 = none to 5 = all. The mean for the composite variable for collective responsibility was 3.61 for general education ECTs and 3.58 for special education ECTs ($\alpha = .90$).

Person- and School- Demographic Characteristics. In addition to special education status, the models included other teacher demographic variables, including whether they taught in middle school or in elementary school, and whether they were in their first, second, or third year of teaching. Teaching experience was classified as a binary variable, with second- and third-year teachers being collapsed into one category; this step allowed me to account for the unique factors facing first-year teachers, including negotiating new relationships with colleagues and students, and learning a new curriculum. Although the majority of the teachers in the sample were white females, I also included race and gender in all models.

Analytic Approach

Descriptive Analysis. Given that few studies have jointly investigated the experiences of beginning general education teachers and special education teachers, this analysis began with a descriptive comparison of the formal and informal support available to the two groups of teachers. Characteristics of mentors were determined based

on answers in the colleague surveys, while ECT responses were used to calculate mean levels of interaction between ECTs and their mentors, as well as ECTs and their colleagues. The last step in the descriptive analysis was to measure the degree to which novices saw the support from mentors and colleagues as important; as with the previous comparisons, means were calculated separately for general education and special education teachers.

Regression Analysis. Following the descriptive analysis, I estimated the relationship between teachers' perceptions of support from colleagues (as well as their perceptions of the resources embedded in the broader school context) and their levels of burnout and commitment. The models predicting burnout were framed as an exploration of school factors that may mediate the relationship between burnout in the fall and burnout in the spring, while the models predicting commitment investigated the factors that might increase the likelihood that teachers were committed in the spring.

The models for this analysis were run in three stages. First, I ran separate ordinary least squares (OLS) regression models³⁰ predicting burnout and commitment, focusing specifically on the measures of mentor and colleague support. I then included the predictors for the three measures of collective assets (i.e., relational trust, collective responsibility, and perceptions of fit) to determine if the expanded models better predicted the teacher outcomes. Finally, I investigated the degree to which there was an interaction between teaching special education and each of the predictor variables of interest. For the purpose of interpretation, these interaction terms were considered one at

³⁰ I had considered using HLM to account for the nesting of teachers within schools. However, the average number of cases within schools was two, suggesting that multilevel models would add not contribute greatly to my understanding of the relationship between support and teacher outcomes. Additionally, an unconditional model (i.e., a multilevel model with no predictors) indicated that for spring burnout, there was no school-level variation.

a time. At each stage of the analysis, I paid specific attention to the coefficient for the variable indicating whether a teacher was in special education. Additionally, each model included as a control the teacher's prior measure of commitment or burnout, in order to more closely estimate the effect of the predictors of interest. These models controlled for the personal and professional backgrounds of each novice teacher, producing a more powerful model for estimating the effect of the theoretical constructs on commitment.

Social Network Analyses. In addition, I used social network analysis to measure the influence of colleagues' levels of commitment and perception of the school environment on early career teachers' own commitment and beliefs. This analysis provided a more direct measure of social capital, taking into account both the "resources" that were being exchanged (e.g., levels of commitment) and the frequency of ECT-colleague interactions. It was hypothesized that colleagues' commitment and perceptions of the school organization (i.e., relational trust, perception of fit, and collective responsibility) would influence early career teachers' levels of these measures. The model below represents how I have conceptualized and measured the influence of colleagues on new teachers, using the example of teacher commitment:

$$\text{commit}_{it} = (\text{commit}_{it-1}) + \beta_1 \left[\frac{\sum X_{ij} \cdot Y_{j,t-1}}{n_i} \right] + \beta_2(\text{flag}_i) + \beta_3(\text{special education teacher}_i) + e_i$$

In this model, the outcome variable of teacher commitment is represented for novice teacher *i* at time *t* (spring of 2008), and the influence of the network is captured by

β_1 . The network, $\sum X_{ij} \cdot Y_{i,t-1}$, represents the mean³¹ influence of the ECT-colleague relationship (X_{ij}) and the colleague's commitment at time t-1 ($Y_{i,t-1}$). This total figure captures the expertise of the others with whom one talks as well as the frequency of a novice's interactions with these individuals. In order to measure change over time as a result of interactions with colleagues and school-level factors, the model also controls for teachers' commitment at time t-1 (fall of 2007). The model also includes a flag ($flag_i$) for whether the teacher had data from their colleagues; this ensured that participants without data from their colleagues were not dropped from the model. Finally, I developed similar models for predicting the influence of colleagues' perceptions of three school context variables (relational trust, perception of fit, and collective responsibility) on ECTs' own perceptions of these measures.

Results

Descriptive Results

Support from Mentors. Table 19 provides information about the characteristics of mentor relationships for special education and general education teachers. Seventy-seven percent of special education teachers and 69% of general education teachers in the sample had formal mentors.³² A surprising difference was the percent of teachers whose mentors were full-time teachers in their schools; in special education, 62% had full-time teachers in their schools as mentors, compared to 91% in general education. With fewer special education teachers per school, the number of eligible "same-subject" mentors is

³¹ The mean is derived by dividing the sum of the network influence and dividing it by the number of colleagues with which the novice interacted (n_i).

³² This is partly attributable to the fact that more general education teachers were in their third year of teaching than special education teachers (25% versus 17%).

much smaller, which likely explains the difference between the groups in their frequency of interactions with mentors.

[Insert Table 19 here]

As shown in Figure 1, a comparison of the frequency of interaction with mentors shows important differences between special educators and general educators. The majority of special education ECTs reported interacting with their mentors between “1-3 times per month” and “1-2” times per week. The frequency of interaction between general education teachers and their colleagues was more broadly distributed; forty percent interacted with their colleagues between “3-4 times per week” and “every day,” versus 21% in special education.

[Insert Figure 1 here]

Figure 2 presents the frequency of interaction between ECTs and their mentors around specific content areas, expressed in days per month. The largest disparities between ECT-mentor interactions for special education and general education teachers was in the area of *curriculum*, where special education teachers spent approximately 1.2 days per month interacting with mentors and general education teachers spent 5.2 days per month; a Wilcoxon rank-sum test revealed this mean difference to be significant at $p < .01$. Similarly, the difference in means for interacting about *teaching strategies* and *assessments* were each significant at $p < .05$. The most frequent topic of interaction between special education teachers and their mentors was student behavior, at approximately 3.2 days on average per month.

[Insert Figure 2 here]

Support from Colleagues. When comparing special education and general education teachers' frequency of interaction with their colleagues around specific content areas, there were fewer significant differences. Both groups of teachers interacted with their colleagues on a more frequent basis than their mentors, as reflected in Figure 3. Student behavior was the most frequent area of conversation, with general education teachers talking with their colleagues about student behavior on average 8.9 days per month and special education teachers interacting with their colleagues 10 days per month. Curriculum, teaching strategies, and psychological support were frequent topics of conversation for both groups of teachers; the only significant difference (as measured by a Wilcoxon rank-sum test) was that special education teachers spent significantly more time per month talking with their colleagues about psychological support. Assessments and standardized testing were less frequent topics of conversation for both groups.

[Insert Figure 3 here]

Lastly, teachers were asked to assess the importance of the support they received from their mentors and colleagues, with response categories ranging from "not at all important" to "extremely important." In line with the results reported in the above figures, ECTs placed a higher value on the support they received from colleagues (special education (SE) = 3.53; general education (GE) = 3.42), than they did from mentors (SE = 2.95; GE = 3.05). Given the high average levels of importance of support from colleagues, in the next section's regression analyses, I treated colleague support as a dummy variable where 0 is "not important at all" or "somewhat important" and 1 = "very

important” or “extremely important.”³³ Overall, these analyses suggest that the mentor-mentee relationship looks different for special education teachers, with general education teachers having closer professional relationships with their mentors. In contrast, both groups more heavily rely on support from colleagues.

Regression Results

Predicting Teacher Burnout. The results from the regression analyses predicting spring levels of teacher burnout (once controlling for fall burnout, teacher characteristics, and the theoretical predictors of interest) are presented in Table 22. Not surprisingly, the most important predictor of spring burnout was burnout in the fall, with a standardized coefficient of .59 ($p \leq .01$). Teachers who reported that support from colleagues was “very important” or “extremely important” were significantly less likely to have high levels of burnout in the spring. The standardized coefficient for colleague support, -.29, was negative and significant at $p \leq .05$. Also important was the lack of significance for the special education variable, suggesting that, controlling for all other variables, general education and special education teachers had common levels of burnout.

[Insert Table 22 here]

When the collective assets variables (i.e., perception of fit, relational trust, and collective responsibility) were included in the model, none were significantly associated with burnout, which suggests that the presence or absence of these forms of support for early career teachers is likely not important for teachers’ levels of burnout.³⁴ The variance explained in the model predicting burnout increased from ($R^2 = .41$) to ($R^2 =$

³³ Because only 73% of teachers had mentors, and because the relative importance of support from mentors was less than support from colleagues, this variable was not included in the regression analyses.

³⁴ The standardized coefficient for collective responsibility (-.16), however, is suggestive of an association with burnout.

.53) with the addition of the collective asset variables; however, once these variables were included, the coefficient for colleague support decreased from -.13 to -.09. To test for multicollinearity in my predictors, I ran a test of variance inflation and found that none of the included variables presented serious threats of multicollinearity—no variables had variance inflation factors over 2.00.³⁵

Predicting Teacher Commitment. When predicting teacher's levels of spring commitment, the first model only included teacher characteristics and the variable for the importance of support from colleagues. As in the model predicting burnout, both prior commitment and colleague support were positively associated with spring commitment. The coefficient for prior commitment was .51, while colleague support had a standardized coefficient of .13, and both of these values were significant at $p \leq .01$. In addition, two of the teacher characteristic variables were significant once controlling for prior commitment and support from colleagues; the coefficients for teaching special education (-.14) and teaching middle school (-.23) were both significant at $p \leq .01$.

[Insert Table 23 here]

Many of the significant correlations in the first model of commitment decreased once the three collective asset variables were included in the analysis. The coefficients for prior commitment (.42), special education (-.11), and middle school (-.20) decreased in size but remained significant at $p \leq .01$; in contrast, colleague support decreased to .07 and was no longer significant. Of the three collective asset measures, perception of fit and collective responsibility were both positively associated with spring commitment, with coefficients of .22 and .17 respectively; these values were significant at $p \leq .01$. Also, the

³⁵ Tests for multicollinearity were also non-significant in each of the models predicting teacher commitment.

inclusion of the collective asset measures resulted in a change in R^2 of .09, suggesting that the expanded model did a better job of explaining the variance in teachers' levels of commitment. Finally, the size of the coefficient for teaching special education—one of the measures of theoretical importance to this analysis—indicated that testing for interaction with other important predictors was warranted.

Four interaction terms were tested in separate models in order to determine whether the relationship between teaching special education and commitment was dependent on higher levels of colleague support (as measured by the “importance of colleague support” variable and by the three collective asset variables) As outlined in Table 24, the interaction terms for support from colleagues, perception of fit, and collective responsibility were significant at $p \leq .05$, while relational trust was significant at $p \leq .10$.

[Insert Table 24 here]

These interaction terms indicate that the relationship between colleague support variables and teacher commitment functions differently for the two groups of teachers. Given that special education teachers have lower levels of commitment in the spring to begin with, the positive coefficients³⁶ for the interaction coefficients suggest that the importance of colleague support and a positive school environment is greater for novice special education teachers than novice general educators. This is especially the case for the variables of collective responsibility and perception of fit, both of which were significantly correlated with commitment. An analysis of the scatter plots of each of the collective assets on spring commitment confirms what the findings from the regression

³⁶ The standardized coefficients for the interaction variables were derived by standardizing the individual variables before calculating their product.

models suggest. In each plot, we see that higher values for the collective asset measures are more strongly correlated with commitment for special education teachers than they are for general education teachers.

[Insert Figure 4.1 – 4.3 here]

Social Network Analysis Results

In the previous step, the regression analyses used indirect measures of the influence of social capital on teacher commitment and teacher burnout. However, these variables do not capture how interactions with colleagues actually influence early career teachers' attitudes about their work. Therefore, the advantage of using social network analysis is that it directly measures the manifestation of social capital by accounting both for the frequency of interactions between ECTs and their colleagues and for the resources embedded in the teacher's network (in this case, colleagues' own levels of commitment, as well as their perception of collective responsibility, fit, and relational trust). The question underlying this analysis, then, is the degree to which colleagues' attitudes about work influence the attitudes of early career teachers. Tables 25 – 28 show the results of these social network analyses.

[Insert Tables 25 - 28 here].

While the focus of each of the four models was on the influence variable (which represented the mean influence measured across all colleagues for a given ECT), each model also included a prior-level measure of the attitudinal measure of interest, a flag variable for whether the teacher had influence data available, and a control for whether the teacher taught special education. My results show that the influence variable was significantly and positively associated with ECT spring measures of attitudes. For

predicting ECT commitment, the influence variable for colleagues' level of commitment had a standardized coefficient of .29. The size of this coefficient is similar to those calculated in the other three influence models--the coefficient for influence in the perception of fit model was .30, the coefficient in the perception of trust model was .25, and in the collective responsibility model, it was .34. On average, a standard deviation in influence was associated with between .25-.34 standard units in early career teachers' own attitudes. Lastly, the coefficients for the special education variable were significant in all but the collective responsibility model, indicating that even once controlling for prior attitudes and controlling for the influence of colleague attitudes, teaching special education was still associated with teachers' attitudes (i.e., their commitment, their perception of fit in the school organization, and their perceptions of relational trust).

Discussion

The primary purpose of this study was to compare the experiences of early career special education and general education teachers as they became socialized into their schools. I explored differences in their interactions with their mentor and informal colleagues—in terms of the frequency and content of these interactions. Additionally, I investigated the association between the support available to new teachers and two relevant teacher outcomes: their overall commitment to their jobs and their levels of burnout. These models included predictor variables for the importance of support novices received from colleagues, as well as teachers' perceptions of the school organization more generally (i.e., their perceptions of trust and collective responsibility, as well as their perceptions of organizational fit). I also included interaction terms to see if the sources of support in the school organization had a differential impact on general

educators and special educators. Finally, I used social network analyses to investigate the direct influence of colleagues' commitment and perceptions of the school organization on early career teachers own attitudes, incorporating survey data from ECTs' key colleagues.

Overall, my findings point to important differences in the induction experiences of early career special education and general education teachers, and I provide evidence to suggest that these differences are critical for teachers' career plans. My descriptive analysis suggests that even though special education teachers and general education teachers are equally likely to have a mentor, fewer special education teachers have mentors who are teachers in their own schools. This is a likely reason why general education teachers engage in professional interactions much more frequently with their mentors, and do so across a wide variety of topics. The two groups of teachers seem to place relatively equal importance in the support they receive from informal colleagues in their schools; ECTs across the sample most frequently engaged with their colleagues about curriculum, teaching strategies, and psychological support, and student behavior. These results suggest that the support early career teachers receive from formal mentors is likely less valuable than the support from informal relationships with their colleagues. And, overall, the special education teachers in this sample do not appear more isolated from their colleagues than general education teachers.

The regression analyses predicting teacher burnout and commitment support this conclusion. For both groups of teachers, support from colleagues was negatively associated with teacher burnout, suggesting that colleagues can, in some cases, help novice teachers cope with the stress and turmoil of learning to teach. More important was

the role of colleagues in predicting higher levels of teacher commitment, even when controlling for prior commitment. The findings indicate that when early career teachers feel that they fit into the school environment, and when they perceive high levels of collective responsibility among the faculty, they are likely to be more committed. This is particularly true for special education teachers; while they have lower average levels of commitment, results from analyses including interaction terms for special education show that, for special educators, higher levels of support are more closely associated with high levels of commitment.

When I measured the influence of colleagues' attitudes on the attitudes of early career teachers, I found a direct relationship between colleagues' beliefs about their school organization and ECTs' own beliefs; similar results were found for ECTs' future career plans. These results are in line with previous research by Frank and colleagues regarding how teachers' beliefs are influenced by others in their social network. Further, given the positive role of collective assets-- such as collective responsibility and professional fit--in predicting teacher commitment, these findings suggest that the role of informal relationships with colleagues should not be overlooked.

Theoretically, this study expands on research suggesting that school organizations may provide an important source of social capital for new teachers. When a new teacher feels that they fit in professionally with their colleagues, it will likely increase the frequency with which they reach out to their peers for guidance and assistance. Similarly, if individuals perceive that there are high levels of collective responsibility in their schools (i.e., their colleagues are capable of producing high levels of student learning), this may alter the ways in which they access and make use of resources from colleagues.

When novice teachers feel that support is available to them—and when they value this support—it is no wonder that they are likely to feel more committed to their schools (Kardos et al., 2001).

The results from my influence models suggest that teachers do not develop their attitudes in isolation; rather, their judgments about their school are derived both from their own previous beliefs but also the beliefs of others around them. As Frank, Zhao, and Borman (2004) write: “The function of social capital in intraorganizational diffusion helps us understand the transitions between the macrolevel social entity of the organization and the microlevel action of independent individuals” (p. 162). My findings support this claim, suggesting that social capital can serve as a bridge between the broader school context and teachers’ beliefs. Although my analysis is limited to collective assets and teachers’ career plans, it is likely that this process is replicated with other resources embedded in novices’ social networks. For example, just as Frank and colleagues show that teachers access help and expertise through their interactions with colleagues, a similar argument could be made about the influence colleagues have on the instructional beliefs and practices of new teachers. If this is the case, school- and district-leaders would do well to take a more strategic role in structuring early career teachers’ interactions with colleagues.

Limitations

Several limitations of this study are worth noting. There are likely factors of teachers’ induction experiences that I have not adequately accounted for. For example, research has suggested that principal support is a key component of a successful induction program (Kardos et al., 2001; Youngs, 2007b). Particularly for special

educators, principals can foster collaboration with general education colleagues, provide curricular and instructional support directly aimed at special educators, and may shape the overall climate of schools. Principals also often take an active role in assigning early career teachers to mentors; given the proportionately low percentage of special education teachers with mentors in their schools, this could be critical for their access to a supportive mentoring relationship.

A second source of support not measured in this analysis was the role of external resources—family, friends, and colleagues who were not in the same schools as the participants. Even if a new teacher feels isolated from their colleagues, or lacks support around certain areas of instruction, they very well may gain access to support from external sources. This support could ultimately serve as a buffer against high levels of burnout or plans to leave the profession. These individuals were excluded from this analysis because of my interest in the role of schools as organizations; also, it was presumed that policy can only leverage resources available to teachers in their schools.³⁷

Another potential source of error is that I did not collect data on teachers' personal characteristics (including their disposition) that may have shaped how participants responded to their school environments. Data was gathered on teachers' educational background and basic demographic characteristics (e.g., race, gender, undergraduate institution), but there are likely other factors that shape teachers' responses to challenging work conditions. Examples of these characteristics are teachers' reasons for entering the profession and the degree to which they teachers were introverted or

³⁷ Although the surveys in the study asked teachers how important they rate their nonschool-based channels, systematic data was not collected on these individuals.

extroverted. However, the fact that I collected data on prior levels of commitment and burnout likely lessens the potential impact of personal characteristics to some degree, yet future research should pay closer attention to these differences.

Finally, researchers in special education would likely argue that I have not adequately explored the variation within the special education teacher sample. For example, teachers of students with learning disabilities or mild cognitive impairment are more likely to spend their time interacting with general education teachers because they may share responsibility for mainstreamed students. On the other hand, this experience may contrast greatly from teachers of students with severe multiple impairments; there will likely be fewer opportunities for these teachers to collaborate on instruction with other teachers in their schools. To make claims about these teachers as a group overlooks the varying needs of special educators, as well as potential differences in whether these needs are being met.

Finally, the analyses of colleague data that I have conducted are relatively simple applications of social network analysis. Possible extensions of this study would be to look at colleagues' influence on commitment for other (and potentially multiple) predictors. If, for example, experienced teachers complained to novices about the negative aspects of the school organization (and perceived that there were low levels of trust or collective responsibility) this could very well influence early career teachers' commitment to their schools. The current study, however, did not consider these relationships. Additionally, I have employed *egocentric* social network analyses—i.e., I collected data on colleagues based on who the ECT nominated. As a result, my estimations of teachers' working conditions are based on early career teachers' perceptions. If I had collected *sociocentric*

data by surveying entire schools, I would have had a more complete picture of the school as an organization.

Implications

Previous studies on induction in special education have focused primarily on the relationship between beginning teachers and their mentors, but have not provided a comprehensive analysis of how novice special educators become socialized into their schools. The purpose of this study was to analyze the ways in which beginning special education teachers' mentors and peers (collectively thought of as their social network) influence their experiences in their early careers, and to compare these results to a sample of novice general educators. By focusing on social networks rather than on mentor-mentee relationships alone, I am able to provide a more comprehensive picture of the qualities of the induction experience that increase the likelihood that new special education teachers feel competent in their profession, feel committed to their schools, and intend to stay in teaching.

This study provides researchers, policymakers, and district administrators with ways of better supporting special educators and general education teachers in their early years of teaching. Researchers are becoming increasingly mindful of the ways in which relationships in schools impact the work lives and career decisions of teachers, yet few existing studies address patterns unique to special education. The findings of this study demonstrate that informal relationships are critical for the experiences of new teachers, as are the broader school conditions in which these new teachers work. Strong relationships with colleagues—and positive perceptions of the school environment—are likely to reduce the attrition of both special educators and general educators. As evidence from

these analyses suggests, for new special education teachers, these channels of support are especially salient.

Appendix A

Table 19: Demographic Characteristics of Districts in the Sample

District	# of Schools in District	Total K-12 Student Population	% Minority	% Eligible for Free or Reduced Lunch
Daus (MI)	36	18386	0.12	0.51
Greenberg (MI)	80	21448	0.80	0.65
Kaline (MI)	18	9139	0.50	0.42
Wagner (MI)	12	7994	0.46	0.36
Engram (IN)	20	13666	0.48	0.62
Luckman (IN)	18	16138	0.57	0.44
Payton (IN)	13	10662	0.84	0.50
Wilson (IN)	19	12483	0.59	0.58

Table 20: Demographic Characteristics of Teachers in the Sample

Total	n=185	%
Special Ed. Status		
General Education	138	75%
Special Education	47	25%
Grade Level		
Elementary School	129	70%
Middle School	56	30%
Year of Teaching		
First	61	34%
Second	80	43%
Third	43	23%
Race/Ethnicity		
White	167	90%
African-American	13	7%
Other	5	3%
Gender		
Male	31	17%
Female	154	83%

Table 21: Characteristics of Mentoring Relationships

	Special Ed.	General Ed.
Percent w/ mentor	77%	69%
Percent of mentors who are full-time teachers in same school	62%	91%
Percent w/ mentor match	59%	49%
Frequency of Interaction w/Mentors (in days/month)	7.00	9.42

Figure 1: Frequency of Interactions Between ECTs and their Mentors

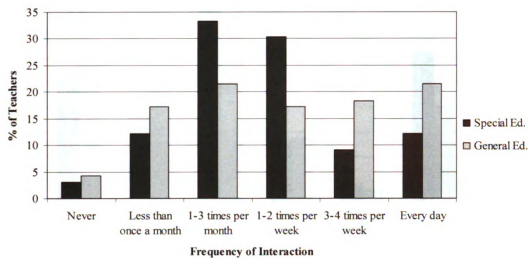


Figure 2: Content of Interactions Between ECTs and their Mentors

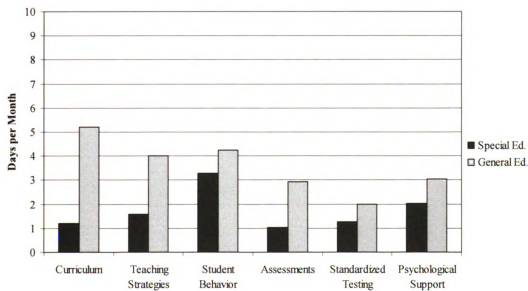


Figure 3: Content of Interactions Between ECTs and Colleagues

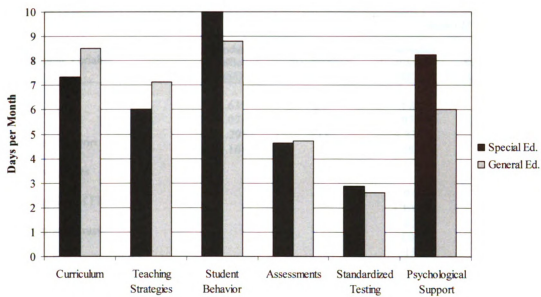


Table 22: Models for Predicting Teacher Burnout—Spring (n=164)

Independent Variable	<i>Model I</i>		<i>Model II</i>	
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient
Burnout—Fall	.63*** (.07)	.59	.58*** (.07)	.54
Colleague Support	-.29* (.16)	-.13	-.22 (.16)	-.09
<i>Collective Assets</i>				
Perception of Fit			-.04 (.10)	-.03
Relational Trust			-.02 (.09)	-.02
Collective Responsibility			-.15 (.07)	-.16
<i>Teacher Characteristics</i>				
Special Ed. Teacher	.08 (.09)	.06	.07 (.09)	.05
Middle School Teacher	.06 (.09)	.02	.01 (.09)	.00
First Year Teacher	.04 (.09)	.03	.07 (.09)	.05
White	.05 (.14)	.02	-.03 (.14)	-.01
Female	-.18 (.11)	-.10	-.15 (.11)	-.09
Intercept	1.26 (.29)		2.12 (.43)	
<i>R-squared</i>	.41		.53	

Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$ (2-tailed).

Table 23: Models for Predicting Teacher Commitment–Spring (n=167)

Independent Variable	<i>Model I</i>		<i>Model II</i>	
	Unstandardized Coefficient (SE)	Standardized Coefficient	Unstandardized Coefficient (SE)	Standardized Coefficient
Commitment—Fall	.58*** (.07)	.51	.48*** (.07)	.42
Colleague Support	.34*** (.15)	.13	.18 (.14)	.07
<i>Collective Assets</i>				
Perception of Fit			.32*** (.10)	.22
Relational Trust			.03 (.08)	.03
Collective Responsibility			.27*** (.09)	.17
<i>Teacher Characteristics</i>				
Special Ed. Teacher	-.23*** (.10)	-.14	-.19*** (.09)	-.11
Middle School Teacher	-.37*** (.09)	-.23	-.32*** (.09)	-.20
First Year Teacher	-.08 (.09)	-.05	-.09 (.09)	-.06
White	-.12 (.14)	-.05	.00 (.14)	.00
Female	.00 (.11)	.00	-.03 (.10)	-.02
Intercept	1.28*** (.32)		-.09 (.37)	
<i>R-squared</i>	.47		.56	

Note: *p ≤ .10; **p ≤ .05; ***p ≤ .01 (2-tailed).

Table 24: Models for Predicting Teacher Commitment—Spring (n=166)

Independent Variable	SPED*CollSupport		SPED*Fit		SPED*Trust		SPED*Collective	
	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient	OLS Regression (SE)	Standardized Coefficient
Commitment—Fall	.49*** (.07)	.44	.48*** (.07)	.42	.46*** (.07)	.41	.46*** (.07)	.41
Colleague Support	.04 (.14)	.10	.20 (.15)	.08	.20 (.14)	.07	.20 (.14)	.08
Perception of Fit	.33*** (.09)	.22	.23** (.11)	.21	.32*** (.10)	.21	.34*** (.10)	.23
Relational Trust	.02 (.08)	.02	.02 (.08)	.01	-.02 (.09)	.03	.01 (.08)	.01
Collective Responsibility	.16** (.07)	.22	.18*** (.07)	.18	.17** (.07)	.16	.10* (.08)	.24
SPED * collsupport	.88** (.38)	.14						
SPED * fit			.35** (.18)	.10				
SPED * trust					.25* (.15)	.09		
SPED * collective							.30** (.13)	.13
Special Ed. Teacher	-1.02*** (.37)	-.13	-1.33** (.59)	-.10	-.96** (.46)	-.11	-1.26*** (.47)	-.11
Mid. School Teacher	-.33*** (.09)		-.30*** (.09)	-.19	-.32*** (.09)	-.19	-.31*** (.09)	-.19
First Year Teacher	-.09 (.08)	-.05	-.06 (.08)	-.06	-.07 (.09)	-.05	-.08 (.09)	-.05
Intercept	.00 (.37)		.18 (.39)		.15 (.40)		.20 (.39)	
<i>R-squared</i>	.58		.57		.57		.58	

Figure 4.1: Scatter Plot of the Association Between Perceptions of Fit and Commitment (by Special Education Status)

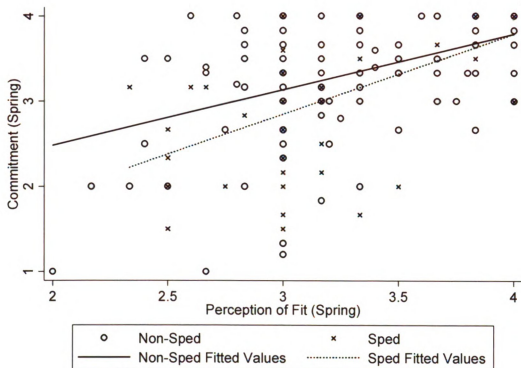


Figure 4.2: Scatter Plot of the Association Between Perceptions of Relational Trust and Commitment (by Special Education Status)

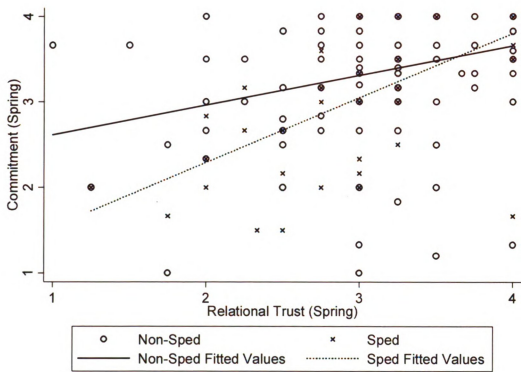


Figure 4.3: Scatter Plot of the Association Between Perceptions of Collective Responsibility and Commitment (by Special Education Status)

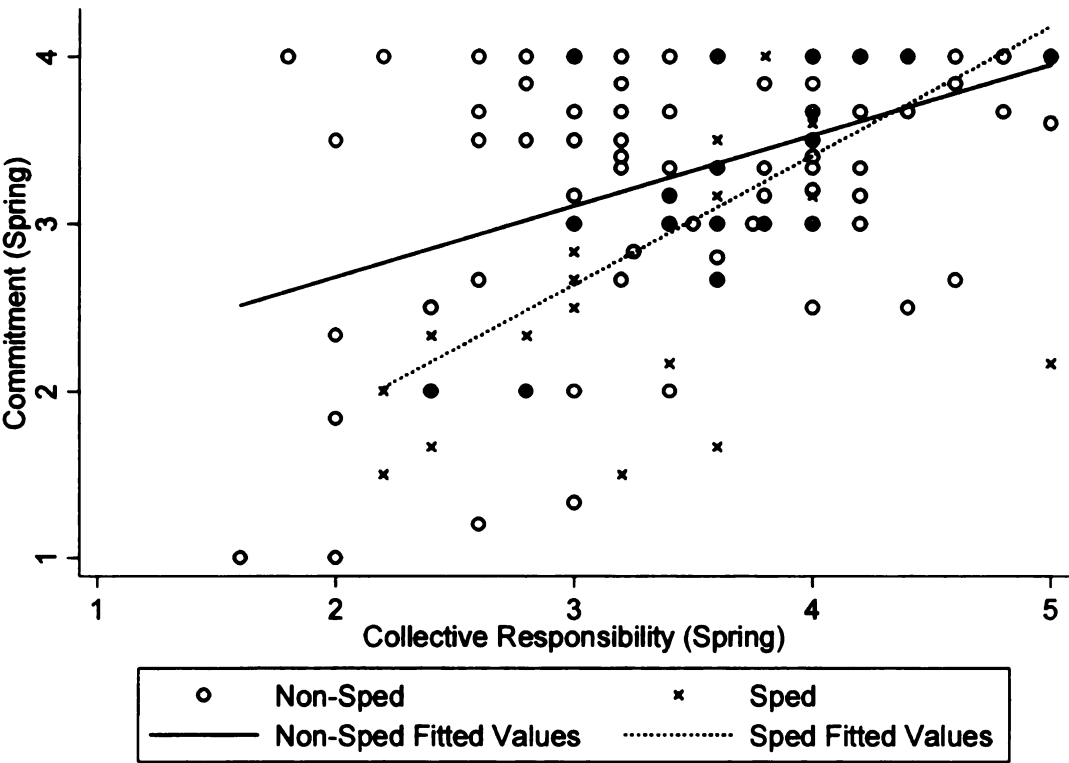


Table 25: Influence Models Predicting ECT Commitment

Independent Variable	Unstandardized Coefficient (SE)	Standardized Coefficient
Commitment—Fall	.66** (.07)	.57
Mean Influence (Colleagues' Commitment)	.03*** (.01)	.29
Special Education Teacher	-.31*** (.10)	-.18
Flag	.47*** (.18)	.27
Intercept	.64*** (.25)	
<i>R-squared</i>	.43	
<i>N</i>	178	

Table 26: Influence Models Predicting ECT Perceptions of Fit

Independent Variable	Unstandardized Coefficient (SE)	Standardized Coefficient
Fit—Fall	.55*** (.07)	.49
Mean Influence (Colleagues' Fit)	.02*** (.01)	.30
Special Education Teacher	-.14** (.07)	-.12
Flag	.31** (.13)	.26
Intercept	1.25*** (.23)	
<i>R-squared</i>	.33	
<i>N</i>	182	

Table 27: Influence Models Predicting ECT Perceptions of Trust

Independent Variable	Unstandardized Coefficient (SE)	Standardized Coefficient
Trust—Fall	.65*** (.07)	.58
Mean Influence (Trust)	.03** (.01)	.25
Special Education Teacher	-.18** (.08)	-.12
Flag	.45*** (.15)	.28
Intercept	.76*** (.22)	
<i>R-squared</i>	.42	
<i>N</i>	181	

Table 28: Influence Models Predicting ECT Perceptions of Collective Responsibility

Independent Variable	Unstandardized Coefficient (SE)	Standardized Coefficient
Collect. Responsibility—Fall	.40*** (.06)	.43
Mean Influence (Collective Responsibility)	.03*** (.01)	.34
Special Education Teacher	.01 (.09)	.01
Flag	.64*** (.16)	.43
Intercept	.85 (1.08)	
<i>R-squared</i>	.31	
<i>N</i>	171	

Appendix B

Table 29: Description of Variables

			General Education	Special Education
			Mean (SD)	Mean (SD)
I. Dependent Variables				
Burnout	Composite measure taken from the ECT survey questionnaire, consisting of 6 questions: I feel emotionally drained from my work, I feel used up at the end of the workday, I feel fatigued when I have to get up in the morning and face another day on the job, I feel burned out from my work, I feel frustrated by my work, I feel I'm working too hard on my job. Responses on single measures ranged from 1=strongly disagree to 4=strongly agree. ($\alpha = .91$)	F07	2.36 (.64)	2.36 (.64)
		S08	2.39 (.67)	2.47 (.71)
Commitment	Composite measure taken from the ECT survey questionnaire, consisting of 6 questions: I would prefer to continue teaching in this grade/subject next year, I could see myself teaching in this grade/subject in five years, I would prefer to continue teaching in this school next year, I could see myself teaching at this school in five years, I would prefer to continue teaching in this district next year, I could see myself teaching in this district in five years. Responses on individual measures ranged from 1=strongly disagree to 4=strongly agree. ($\alpha = .90$)	F07	3.47 (.63)	3.45 (.63)
		S08	3.36 (.69)	3.06 (.81)
II. Independent Variables				
Importance of Mentor Support	Dummy variable created from the ECT survey questionnaire, where 0 = mentor support is "not important at all" or "somewhat important" and 1 = "very important" or "extremely important"		.71 (.46)	.70 (.46)
Importance of Colleague Support	Dummy variable created from the ECT survey questionnaire, where 0 = colleague support is "not important at all" or "somewhat important" and 1 = "very important" or "extremely important"		.90 (.30)	.96 (.20)
Perception of School-Level Trust	Composite measure taken from the ECT survey questionnaire, consisting of 4 questions: It's OK in this school to discuss feelings, frustrations, and worries with other teachers, Teachers in this school trust each other, Teachers in this school respect other teachers who take the lead in school improvement efforts, Teachers in this school respect those colleagues who are experts in their craft. Responses on individual measures ranged from 1=strongly disagree to 4=strongly agree. ($\alpha = .89$)		3.16 (.63)	3.02 (.67)

Description of Variables (continued)

Perception of School-Level Collective Responsibility	Composite measure taken from the ECT survey questionnaire; participants are asked the proportion of teachers in their school who: Help maintain discipline in the entire school, not just their classrooms, Take responsibility for helping one another do well, Take responsibility for improving the overall quality of teaching in the school, Feel responsible for helping students develop self-control, Set high expectations for academic work, Feel responsible for ensuring that all students learn. Responses on individual measures ranged from 1 = none to 5 = all. ($\alpha = .90$)	3.61 (.74)	3.58 (.69)
Perception of Fit in School	Composite measure taken from the ECT survey questionnaire, consisting of 6 questions: My approach to teaching fits in throughout this school, My professional interests are the same as those of other teachers throughout this school, I identify with other teachers throughout this school, My professional goals are the same as those of other teachers throughout this school, I matter to other teachers throughout this school, Other teachers throughout this school matter to me. Responses on individual measures ranged from 1=strongly disagree to 4=strongly agree. ($\alpha = .89$)	3.34 (.48)	3.26 (.40)

III. Teacher Characteristic Variables

Special Education	Dummy variable where 0 = general education teacher and 1 = special education teacher
Middle School	Dummy variable where 0 = elementary school teacher and 1 = middle school teacher
First Year Teacher	Dummy variable where 0 = not a first year teacher and 1 = first year teacher
Gender	Dummy variable where 0 = male and 1 = female
Race	Dummy variable where 0 = non-white and 1 = white

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