

Teachers' Job Satisfaction, Organizational Commitment, Turnover Intentions, and Actual
Turnover: A Secondary Analysis using an Integrative Structural Equation Modeling Approach

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Abstract

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To better understand how strategic management policies may mitigate teacher turnover, this study presents an alternative conceptual framework, which links three interrelated factors of teaching quality to attitudinal constructs that may influence teachers' turnover decisions. The teacher turnover model, derived from applied psychology, examines how teachers' job satisfaction, organizational commitment, turnover intentions, shocks and economic opportunity are associated with different turnover outcomes. Using structural equation modeling with data from two large national datasets—the 2007-2008 Schools and Staffing Survey and the 2008-2009 Teacher Follow-up Survey—this study aims to identify the determinants of and relative influence of these constructs on five different teacher turnover outcomes. The findings indicate that job satisfaction is significantly, negatively related to turnover intentions, which, in turn, predicts teachers that stay in their respective schools from one year to the next. A broad theme emerges from the findings that suggest teachers stay in their respective schools from one year to

the next for similar reasons, yet teachers that engage in intra- and inter district movement and attrition from the public teaching profession do so for a variety of reasons. These results signal potential strategic teacher talent management policies aimed at supporting teachers and their work.

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For us.

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Chapter 1: Introduction

A common and significant problem with most human capital management systems in education is their inability to mitigate high teacher turnover in certain types of schools and/or districts (Odden, 2011), with high rates of teacher mobility being particularly prominent in certain urban districts (Ingersoll, 2001a, 2003) and higher poverty schools (Hanushek, Kain, & Rivkin, 1999). A substantial body of research has studied teacher retention and mobility by examining districts, school, and student characteristics (Borman & Dowling, 2008; Guarino, Santibanez, Daley, 2006), but very little is known about the psychological and organizational factors that may influence teacher turnover.

To gain a better understanding of conditions influencing teacher mobility and retention, this study treats teacher turnover as a complex, multi-stage process with links between individual attitudes, intentions to quit, and actual turnover (Price, 2004), which is moderated by the economic market (Muchinsky & Morrow, 1980). Using structural equation modeling, this study examines how several teacher level latent constructs, namely, *job satisfaction*, *organizational commitment* and *turnover intention*, predict *actual teacher turnover*. Additionally, this study assesses how *economic opportunity* may influence the relationship between turnover intentions and teacher turnover, and how *shocks* directly influence teacher turnover. To examine the relationships between these job attitudes and teacher turnover, this study addresses the following overarching research question: To what extent do job satisfaction, organizational commitment, turnover intention, and shocks predict various teacher mobility outcomes?

The theoretical framework used in this study is grounded in early theories of voluntary employee turnover that focused on employee job attitudes and job alternatives to explain turnover (e.g. March & Simon, 1958; Mobley, 1977, 1982; Price, 1977; Price & Mueller, 1981, 1986). These works are heavily influenced by March and Simon (1958) who provided much of

the impetus for turnover research with their general theory of motivation termed *organizational equilibrium*, that is, the conditions of survival of an organization (Barnard, 1938; Simon, 1947). From this perspective, an organization's inducements must match or exceed member's contributions to ensure continued member participation (March & Simon, 1958). March and Simon's explanatory scheme partly shaped the thinking for Mobley's withdrawal process (1977) and Lee and Mitchell's (1994) unfolding model. Although this study does not adopt either of these models in their entirety, it incorporates the constructs that Mobley (1977) pioneered, namely, *turnover intentions* and, that Lee and Mitchell (1994) proposed, that is, *shocks*, which refer to jarring events that initiate the process of quitting. Additionally, based on Price and Mueller's (1981, 1986) models, this study incorporates *organizational commitment*, which is conceptualized as side-bets between the individual, organization and culture that encourage employees to stay (Becker, H., 1960) and *economic opportunity*, which represents the availability of jobs by means of objective conditions, such as regional unemployment rates.

Developing well-informed teacher retention strategies is critical for the strategic management of human capital (SMHC) and, in turn, achieving high performance standards in education. Empirical research demonstrating the powerful effects of teachers on student performance (Nye, Konstantopoulos, & Hedges, 2004; Rockoff, 2004) implicates that high rates of teacher turnover may have numerous negative consequences for schools' and students' performance. Examining psychological and organizational factors may help us to better understand the antecedents of teacher turnover, allowing us to target more specific policy amenable mechanisms and influences of teacher mobility.

This introductory chapter presents the background and purpose of the study, followed by an elaboration on the theory of the problem, the research questions that will be addressed, and the limitations of the study. Chapter II presents the conceptual overview of the study and

discusses the relevant literature on teacher and employee turnover. Chapter III describes the methodology for the study, covering the research design, data source, variables, models, equations, and analysis. Chapter IV presents the research findings, and Chapter V discusses the implications of the study for informing policies aimed at strategically managing teacher talent.

Background of Study

As scholars have repeatedly demonstrated the significant influence of teachers on the quality of a students' education (Hanushek & Rivkin, 2010b; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004; Sanders & Rivers, 1996), educators, policymakers, and stakeholders have focused more intensely on ensuring all classrooms are staffed with effective teachers. Since the 1983 report *A Nation at Risk*, numerous studies, commissions, and national reports have targeted teacher quality as central to educational reform. Most prominently, the federal No Child Left Behind Act of 2001 required a high quality teacher in every classroom and, more recently, the Race to the Top Fund focused on teacher quality by aiming to place an effective teacher in all classrooms. To this day, these efforts to address the distribution of well qualified teachers continue to be a focal point for education groups and advocates (e.g. Strauss, 2011).

Meeting the challenge of placing an effective teacher in all classrooms entails addressing teacher shortage problems, whether brought on by shortages in recruitment or high rates of turnover. Concerns over teacher shortages has manifested in two particular responses: one type of response focuses on increasing the quantity of new teachers supplied (Darling-Hammond, 1984), while an alternative response highlights teacher turnover as the source of staffing problems (Ingersoll, 2001a, 2003). The first dominant policy attempted to augment the teacher supply, dealing with the growing demands of teachers by expanding teacher education programs and increasing alternative route options for interested professionals to met increasing demand (Darling-Hammond, 1999; Murnane, Singer & Willett, 1989); although, the effectiveness of this

type of policy response has been questioned, since there are millions of people with teacher certificates that have never taught (Feistritzer & Chester, 2001). The other type of policy response focused on the “revolving door”, that is, school staffing problems due to excess demand resulting from a large number of teaching leaving their jobs for reasons other than retirement (Ingersoll, 2001a, 2003). Ingersoll (2001a, 2002, 2003) and Prisciotta (2000) emphasized teacher turnover as the source of the teacher shortage problem and redirected policy levers towards teacher retention verses teacher recruitment. Although it has been argued that at the national aggregate level teacher retention levels are similar to other occupations (Harris & Adams, 2007); high turnover is still considered a problem for certain types of schools, with lower retention levels being associated with higher poverty, minority, and urban/rural schools (Hanushek et al., 2004; Boyd et al., 2005).

Importance of Employee and Teacher Turnover

There is a long history of research in the fields of applied psychology, organization, and labor economic theory on the positive and negative consequences of employee turnover for individuals, organizations, and the economy (e.g. Dalton, Todor, & Krackhardt, 1982; Price, 1977, 1989; Mobley, 1982; Becker, G., 1993; Becker, H., 1960; Hom & Griffeth, 1995). Theory and research from these traditions posit that some degree of employee turnover is normal, healthy, inevitable, and can be productive for the individual, the organization, and the economy (e.g. Kimmitt, 2007; Mobley, 1982). Simultaneously, theory and research have also long held that employee turnover can be both a cause and effect of problems in organizations (Mobley, 1982; Price, 1977, 1989). From this perspective, higher rates of employee turnover are not only a manifestation of underlying problems in an organization; it also creates problems for the organization (e.g. increased costs, decreased productivity, etc).

To help distinguish between positive and negative employee turnover, Dalton et al. (1982) introduced a taxonomy classifying turnover as either “functional” or “dysfunctional”. Functional turnover consists of poor performers leaving the organization; whereas, dysfunctional turnover consists of good performers leaving, based on the assumption that average performers would replace either (Dalton et al., 1982). A major focus of dysfunctional turnover is on its effects on organizational performance. As employee talent forms the basis for competitive advantages within many industries (Pfeffer 1994; 2005), it is not surprising that high rates of employee turnover have been found to hinder firm performance (Glebbeck & Bax, 2004).

Abelson (1987) further distinguished between various types of turnover with his taxonomy of turnover, which consisted of a two by two matrix of organizationally avoidable vs. unavoidable turnover, and voluntary vs. involuntary turnover. From this perspective, avoidable factors (e.g. better working conditions) are within an organization’s control, versus unavoidable factors (e.g. employee death, pregnancy leave) which the organization cannot control (Abelson, 1987). And, factors associated with voluntary turnover are within the employee’s control (e.g. better pay elsewhere), versus involuntary factors (e.g. layoff, forced retirement) that are outside of the employee’s control (Abelson, 1987). These refinements of employee turnover criteria suggest multiple considerations need to be taken into account when examining teacher turnover. In addition to determining whether levels of teacher turnover are functional or dysfunctional, researchers and policymakers need to account for and distinguish between avoidable, unavoidable, involuntary, and voluntary turnover. For example, to mitigate the negative consequences of teacher turnover, policies need to specifically target dysfunctional, avoidable and voluntary turnover, and simultaneously promote functional turnover.

In contrast to the private sector, education has only begun to research the costs and benefits, functions and dysfunctions of teacher turnover. Since education is a highly human

capital enterprise with student learning being greatly impacted by teachers (Hanushek & Rivkin, 2010b; Nye, Konstantopoulos, & Hedges, 2004), overall performance likely hinges on the development and retention of teacher talent. It has been argued that high rates of teacher turnover can expose more students to inexperienced teachers (Darling-Hammond, 2000), disrupt school performance (Ingersoll, 2001), and can impose high costs on the districts to replace teachers (Ingersoll & Smith, 2003). More recently, there has been a growing number of efforts to: identify and measure the costs of teacher turnover (e.g. Barnes et al., 2007; Milanowski & Odden, 2007); examine the relationship between teacher quality and teacher turnover (e.g. Clotfelter et al., 2006; Boyd et al., 2007; Goldhaber, Gross, & Player, 2007); and investigate the impact of teacher turnover on school performance (e.g. Ronfeldt, Lankford, Loeb, & Wyckoff, 2011; Keesler, 2010).

Pertaining to questions of whether teacher turnover is functional or dysfunctional teacher turnover, Goldhaber et al. (2007) examined the quality of teachers in North Carolina public schools and found that, contrary to popular opinion, the “most-effective” teachers tend to stay in teaching and in specific schools. And, regarding negative organizational consequences of turnover, Ronfelt et al. (2011) found a harmful effect on student achievement after controlling for different indicators of teacher quality suggesting there are school wide negative effects attributed to teacher turnover.

In their meta-analysis on teacher attrition and retention, Borman and Dowling (2008) summarized the teacher turnover literature by stating that the level of teacher turnover is: not necessarily healthy; influenced by personal and professional factors that change over a teachers’ career; and strongly moderated by teachers’ working conditions. And, in regards to the types of schools that are most likely to experience turnover, in their literature review Guarino and colleagues (2006) pointed out that urban schools and schools with high percentages of minority

students are the most difficult to staff, and that teachers tended to leave these schools when more attractive opportunities presented themselves. Borman and Dowling (2008) concluded that turnover is a problem that can be addressed through policies and initiatives, and they made a call for more nuanced theories.

Voluntary employee turnover models that integrate psychological, organizational, and economic perspectives (e.g. Hom & Griffeth, 1995; March & Simon, 1958; Mobley, 1982; Price, 1977, 1989) potentially offer a more comprehensive view of forces influencing the teacher turnover process; yet, there have been few efforts to apply these theoretical perspectives to teacher turnover (Borman & Dowling, 2008; Guarino et al. 2006). Primarily, the research examining teacher mobility is from a labor market economic perspective (Borman & Dowling, 2008), which provides associations between salaries and working conditions, along with district, school, teacher and student characteristics, but provides little insight into the psychological and organizational factors affecting teachers' mobility decisions. In order to better understand the antecedents of teacher turnover, it may be important to examine individual attitudes, such as job satisfaction and organizational commitment, along with their determinants, since these constructs have been a prominent focus for research investigating voluntary employee turnover (Holtom, Mitchell, Lee & Eberly, 2008; Hom & Griffeth, 1995).

Latent Factors and Moderators Influencing Actual Turnover

Constructs that have been used in employee turnover models to capture and predict the complex individual turnover decision process include: job satisfaction, organizational commitment, turnover intentions, economic opportunity, shocks and actual turnover (e.g. Lee & Mitchell, 1994; March & Simon, 1958; Mobley, 1977; Mowday, Porter, & Steer, 1982; Muchinsky & Morrow, 1980; Price, 1977; Price & Mueller, 1981; 1986).

An employee's level of job satisfaction has been shown to be a strong predictor of employee retention (Griffeth, Hom & Gaertner 2000), and, more specific to education, teacher job satisfaction has been linked to retention (Bobbitt, Faupel & Burns, 1991; Meek, 1998). Additionally, organizational commitment is a reliable predictor of employee turnover (Mathieu, 1991). Although few studies have used this latent construct in models examining teacher retention, determinants that load onto it have been examined and been found to influence teacher retention, for example, perceived administrator support (Billingsley and Cross, 1992) and professional autonomy (Perie & Baker, 1997).

Turnover intention has also been found to be an indicator of actual turnover (e.g. Lee & Mowday, 1987; Griffeth, Hom, & Gaertner, 2000). In some teacher retention studies, turnover intentions have been found to be influenced by affective responses, such as job satisfaction (e.g. Bobbitt et al. 1991).

In regards to economic opportunity, some economic studies have demonstrated that labor markets significantly influence turnover rates (e.g. Terborg & Lee, 1984). However, although objective indices of unemployment moderate the impact of turnover intentions (Carsten & Spector, 1987), at the individual level unemployment rates do not seem to influence the decision making process regarding turnover (Hulin, Roznowski, and Hachiya, 1985). In other words, objective proxies of the market are strong predictors of turnover, but individuals' perceptions of the market are not.

As opposed to accumulating job dissatisfaction and/or waning organizational commitment, and in spite of the economic conditions, Lee and Mitchell (1994) proposed that some employee turnover is a result of shocks; that is, a jarring event that initiates a turnover decision making process. This alternative pathway provides an additional decision making mechanism to examine when considering employee turnover.

Using a model that integrates these psychological, organizational and economic perspectives to examine teacher retention and mobility, helps reframe perceptions of teacher staffing problems associated with unalterable societal demographics, to organizational issues and psychological factors that involve policy-amendable aspects of schools and districts.

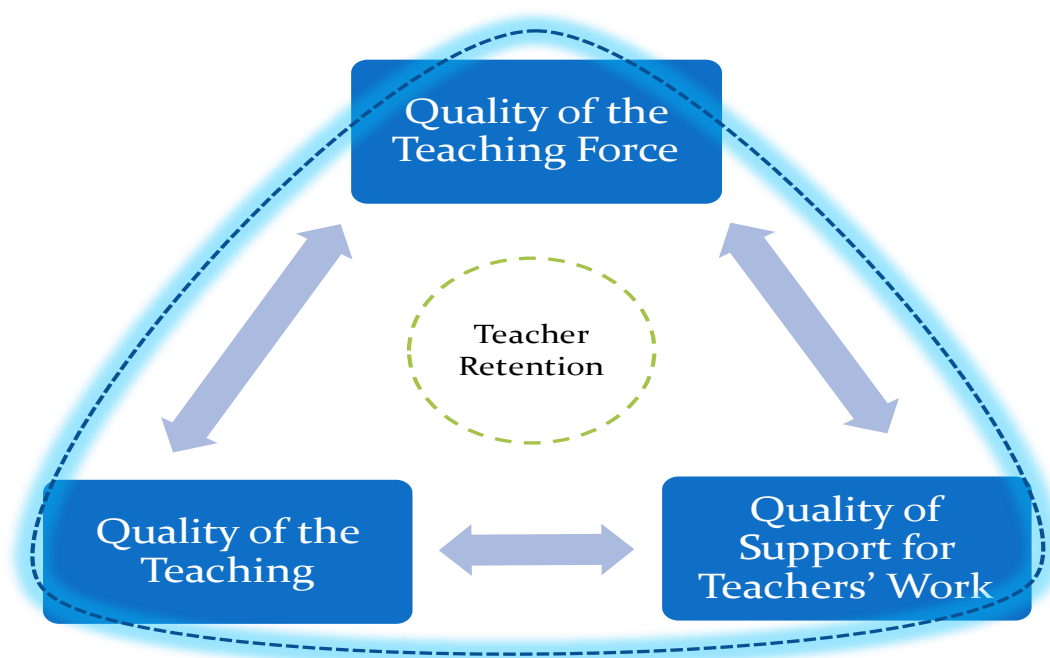
Statement of the Problem

Over time the perception of the teacher staffing “problem” has evolved from primarily a teacher supply issue (Darling-Hammond, 1984), to a teacher retention problem (Ingersoll, 2001a, 2003), particularly prominent at the school level (Hanushek, Kain, Rivkin, 2004a). A more recent conception of the problem frames it as being more about the variation in the quality and support of teachers’ work, than strictly about macro level supply issues or retention problems (Plecki, Elfers, & Knapp, 2007; Plecki et al., 2003). This view highlights the disparities in teachers’ working environments as a source of factors that influence teacher mobility, and shifts the policy focus to SMHC levers that concentrate on enhancing teacher support mechanisms, which can have the dual purpose of improving teacher retention and enhancing teacher quality.

Plecki’s et al. (2003) “teacher quality” framework provides a context to analyze the interactions between teacher mobility and mechanisms that contribute to teacher quality in the classroom. From this perspective, students’ exposure to teacher quality in the classroom is a result of three interrelated factors: the quality of *teaching*, the quality of *the teaching force*, and the quality of *support for teachers’ work*. The quality of teaching captures instructional delivery and pedagogical strategies used in the classroom. The quality of the teaching force refers to personal characteristics and qualifications of teachers that contribute to student learning. The quality of support for teachers’ work involves workplace conditions that facilitate student and teacher learning over time. (Plecki et al., 2003)

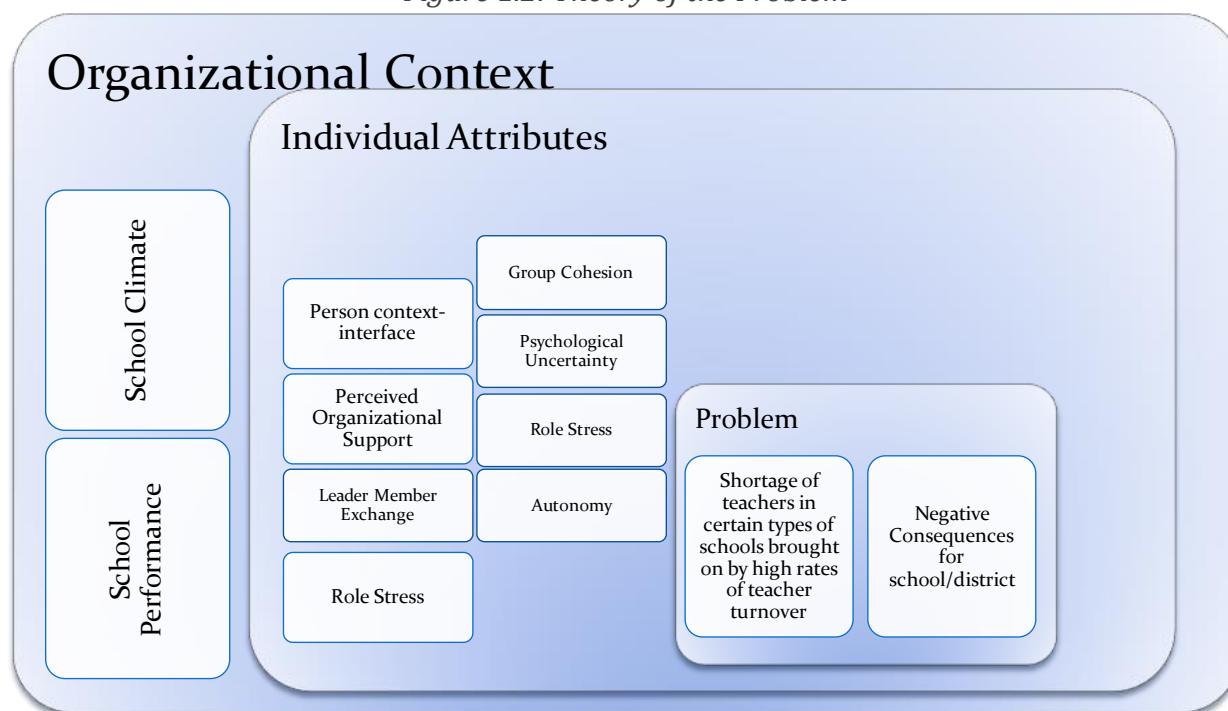
This picture of teacher quality signifies that there are reciprocal relationships between these three factors with each factor being able to augment one or two of the others, in turn, enhance itself and, ultimately, improve overall teacher quality in the classroom through these multiple pathways. Teacher retention issues lie at the intersection of these three factors, potentially interacting with each factor. Though, teacher mobility studies typically focus on the quality of the teacher workforce, in regards to both the resulting changes in turnover and as a policy lever to reduce turnover; as an alternative, this view incorporates the quality of support and the quality of teaching as mechanisms and pathways that can influence teacher turnover and overall teacher quality. For example, the level of administrator support, one type of support of teachers' work, has been linked to teacher turnover (Ingersoll, 2001a). Figure 1.1 presents this concept of teacher quality. In the figure, teacher quality is represented by the glowing, dotted line encompassing all three factors.

Figure 1.1: Teacher Quality—The interrelationships between quality of the teaching force, quality of teaching, and quality of support for teachers.



This study conceptualizes school staffing problems as being partly attributable to high rates of avoidable teacher turnover in certain types of schools and/or school districts due to variation in these three interrelated factors. In particular, it highlights the disparity in the type and amount of support teachers receive for their work as encapsulating a major source of forces and conditions that influence teacher turnover decisions. These conditions and forces are framed within individual perceptions of attributes, such as, perceived organizational support, group cohesion, autonomy, etc., and the organizational context in which teachers work, that is, the school climate and school performance. Figure 1.2 illustrates the theory of the problem.

Figure 1.2: Theory of the Problem



In addition to capturing indicators related to supporting teachers and their work, these influences, later referred to as determinants, are combined to provide measures of teachers' job satisfaction, the degree to which an individual is content with his or her job, and organizational

commitment, the extent to which employees' are committed, even emotionally attached, to an organization. To identify significant determinants that influence teacher mobility, this study examines how these individual factors are associated with teacher turnover and to what degree they predict teacher mobility.

Purpose of the Study

To better understand the nature of teacher mobility, this study applies organizational, psychological, and economic perspectives on voluntary teacher turnover to assess the extent to which the determinants of job satisfaction and organizational commitment are linked to teacher mobility with the aim of informing teacher retention strategies. Specifically, structural equation modeling (SEM) is used to examine how several teacher level latent constructs, namely, *job satisfaction*, *organizational commitment* and *shocks*, predict *turnover intention* and *actual turnover*. Additionally, the model examines how *economic opportunity* influences the relationship between turnover intention and actual turnover.¹

Research Questions

The study addresses the following research questions:

1. What are the relationships between job satisfaction, organizational commitment, turnover intentions, shocks and actual turnover?
2. What are the determinants of these latent factors?
3. Are the relationships between these latent factors and actual turnover influenced by economic opportunity, if so, to what degree?

¹ A full explanation of these constructs, including the underlying theories on which they are based, will be presented in the conceptual framework and literature review section. And, a discussion of how the constructs will be operationalized will follow in the methodology section.

4. Do these relationships vary for a specific subset of teachers, namely, beginning teachers in urban schools, if so how?

Significance of the Study

This study varies from most quantitative analysis of teacher mobility in several ways (see Borman & Dowling, 2008 and Guarino et al. 2006 for reviews), and makes several contributions to the literature on teacher mobility in regards to the theory applied, the methods used, and the potential implications. First, the study adopts and integrates several turnover theories and models typically used in business management research to provide an alternative perspective on teacher turnover. Second, it uses structural equation modeling (SEM) to simultaneously examine the interrelationships between the determinants, latent factors, and turnover outcomes. Third, the model examines the multi-nominal nature of teacher mobility, that is, teachers staying at the same school, moving schools within the same district, moving to a new district and exiting from teaching in the public education system. And, it examines individuals that move within the educational system by promoting or moving up. Lastly, the model is designed to signal specific SMHC policies education leaders, policymakers, and human resources should consider when they intend to mitigate teacher turnover.

This study integrates several theories and models used to examine voluntary employee turnover research (e.g. Lee & Mitchell, 1994; March & Simon, 1958; Mobley, 1982; Price, 1977). This interdisciplinary approach, based on applied psychology, organizational behavior, and economics, provides an alternative framework to examine teacher turnover. Although some research has used a similar framework to assess teacher turnover (e.g. Cha, 2008; Ingersoll & May, 2010), few studies examining teacher mobility have integrated these theoretical frameworks to incorporate the determinants, constructs, and linkages into a more comprehensive

model. For example, this analysis includes a mediating latent factor and a moderating factor, usually omitted from most teacher turnover research and models, namely, organizational commitment and economic opportunity. Some studies have examined the relationship between teachers' organizational commitment and retention, and found that attitudinal and behavioral measures of commitment are significant predictors of teachers' intent to stay in teaching (e.g. Billingsley & Cross, 1992; Ingersoll & Alsalam, 1997). Additionally, objective indices of the job market have been found to moderate the impact of attitudes on turnover (Carsten & Spector, 1987). However, these factors are typically excluded in teacher turnover research (Borman & Dowling 2008). Furthermore, this study models and assesses the more nuanced determinants of job satisfaction, such as, leader-member exchange, role stress, and psychological uncertainty, which have been empirically demonstrated to be predictive of voluntary employee turnover (Hom & Griffeth, 1995).

Second, this study uses SEM to examine teacher turnover. SEM is not commonly used to analyze teacher mobility; however, there are numerous benefits of using SEM. An SEM analysis simultaneously estimates the complex relationships captured by the measurement models and the structural models. In this case, the models that measure job satisfaction, organizational commitment, turnover intention and the links between job satisfaction, organizational commitment, turnover intention, and actual turnover. Additionally, while a rationale is provided for the hypothesized relationships between the determinants and constructs, there are likely numerous competing models that may provide a better fit for the data. SEM facilitates this type of competitive theory testing by assessing the relative substantive validity using parameter estimates and omnibus fit indices (James, Mulaik & Brett, 1982) and comparing competing models that are nested within one another (Netemeyer, Johnson & Burton, 1990). And, SEM

competitive testing allows concepts from different theories to test for construct redundancy (Griffeth & Hom, 1988a).

SEM also can account for the multi-nominal outcomes of teacher turnover. Accounting for the different types of teacher turnover is important since both intra- and inter- district teacher movement accounts for a substantial percentage (19%) of teacher movement (Tourkin et al., 2010). Understanding how the factors vary for different types of teacher turnover may provide further insight into teacher mobility decisions and aid policies in targeting specific types of teacher movement.

Additionally, identifying how influential the determinants and constructs are on teacher turnover may allow policy makers and education leaders to productively focus on forces and conditions within districts and schools that can mitigate teacher mobility and attrition; ultimately, pushing them to reconsider how to support teachers and their work, and improve the equitable distribution of teacher quality by reducing teacher turnover in certain types of schools.

However, there are some limitations to the design, results and implications of this study that are discussed in the next section.

Limitations of the Study

This study has several main limitations stemming from the fact that it is a secondary data analysis using the 2007-2008 Schools and Staffing Survey and the 2008-2009 Teacher Follow-up Survey. Firstly, as this study is not an experiment, causal claims and conclusions will not be warranted, and, at most, this study will provide support of a theory that can help explain teacher turnover. Secondly, this model excludes several theories and constructs that have been shown to influence employee turnover, such as, personality traits, organizational performance and temporal changes. Along the same lines, this study does not include teachers' or schools' measures of effectiveness/performance and examine how those factors may directly affect or

moderate teachers' turnover decisions and behavior. Thirdly, the SASS data is collected by one type of assessment procedure, which is self reported, exposing the study to measurement bias. Additionally, the sample is representative of k-12 public school teachers as a group; consequently, the results can be generalized to all k-12 teachers as a whole group, however, inferences about the nature of individuals or parts of the group cannot be made based on these aggregate statistics.

A big caveat is that this study is not an experiment that uses random samples; hence, the conclusions are susceptible to errors in the modeling, such as omitting important variables. As such, causal claims and conclusions will not be warranted, and at most this study will provide support of a theory that can explain teacher retention, mobility, and attrition. SEM can be considered a disconfirmatory technique, one that rejects false models, but never confirms a particular model when a true model is unknown (Kline, 2011). As Bollen (1989) stated "If a model is consistent with reality, then the data should be consistent with the model. But, if the data are consistent with the model, this does not imply that the model corresponds to reality" (p.68). Thus, it will not be known if the theory is true without further experimental, cross-validating, and confirmatory observational studies.

In regards to the limitations of the specific model chosen and the exclusion of some variables, the model leaves out several theories and factors that have been shown to explain and account for employee turnover. While there are multiple constructs in turnover models that influence decision-making for voluntary employee turnover (Holtom et. al., 2008), other management and psychological theories and models used to explain voluntary employee turnover were rejected either due to the fact that the factors that they examined were irrelevant in the context of the teacher labor market when comparing teachers' mobility, their implications for amendable policies were less advantageous, or there were no variables included in the SASS data

to capture them. For example, the construct of the nature of the job, consisting of job scope and role description, can be assumed to be relatively constant among teachers. Furthermore, the model used in this study does not account for the known temporal conditions of employee decision making, that is, it does not provide a dynamic model for the process of teacher decisions regarding retention, mobility, or attrition. The decision to quit, or in this case, move schools, change districts, or leave the public education system, brought on by changes in attitudes or organizational commitment is likely to change over time. Mobley (1982) argued for including a temporal dimension that is, repeated measures of multiple antecedents over time, and Steel (2002) criticized studies of turnover for tending to examine predictors at only one, arbitrary time point. Hence, though not accounting for temporal changes is a limitation of this study; it is a common limitation in voluntary employee turnover studies (Steel, 2002). None the less, omitting these variables makes the modeling susceptible to errors.

Also, in concerns to omitted factors, the study does not assess the fit and effectiveness of the teachers within their schools and districts. More specifically, beyond the key demographic characteristics commonly used as covariates in teacher mobility models, such as, age, race/ethnicity, experience and education levels, this study will not examine how being “more or less effective” may moderate teachers’ mobility decisions. For example, some evidence suggests teachers who produce higher student achievement gains are at least as likely to stay in schools as other teachers that are less effective (Boyd, Lankford, Loeb, Ronfeldt & Wyckoff, 2010; Hanushek & Rivkin, 2010a).

Nor does the model account for or examine how current inequities in the distribution of teacher quality may influence teachers’ mobility decisions. That is, more effective schools, as determined by value-added scores, have been shown to attract and hire more effective teachers, assign them in a more equitable manner, and retain high quality teachers (Loeb, Kalogrides, &

Beteille, 2011). This school level factor of effectiveness is not assessed in this study and is not included in the SEM model. So the relationship between more or less “effective” schools and teacher mobility will not be examined.

In regards to the methods, this study relies on one method of measurement, a survey, to provide measures for the constructs. There is likely measurement bias resulting from this data collection technique, since there are often discrepancies between declared preferences and revealed preferences. And, this sole measurement method likely influences the SEM analysis in terms of construct validation, and testing scale measurement.

Chapter II: Literature Review and Conceptual Framework

This section begins with a broad review of the theoretical underpinnings of the turnover model proposed in this study. Much of the theory is heavily influenced by March and Simon's (1958) concept of organizational equilibrium, which provides a theoretical foundation for examining turnover in organizations, and for focusing on job attitudes and perceptions as antecedents to turnover. March and Simon's (1958) work shaped future turnover models and constructs integrated into this study's model (e.g. Lee & Mitchell, 1994; Mobley, 1977; Muchinsky & Morrow, 1980). Additionally, Herzberg's (1966) dual satisfaction theory and H. Becker's (1960) "side-bet" notion are used to frame the job satisfaction and organization commitment constructs. These overarching theories provide the conceptual framework for the constructs, their determinants, and their linkages in the turnover model.

The literature review begins with a review of empirical evidence on teacher mobility from research applying primarily an economic and organizational perspective. Then, some of the research on the psychological factors of teachers' job satisfaction and organizational commitment in regards to turnover is discussed. Afterwards, the literature review expands to include organizational and management literature on voluntary employee turnover in various organizations to discuss the traditional constructs, along with their determinants, used to explain and account for employee turnover.

Conceptual Overview

Organizational Equilibrium

In their seminal book, March and Simon (1958) introduced a general theory of organizational equilibrium, which focused on balancing employee and organizational contributions and inducements. This process was based on an organization's ability to pay its members to motivate them to participate. Individuals received inducements from an organization

and, in return, made contributions to the organization. Both the individual and the organization strived for a state of equilibrium with the resulting equilibrium maintaining the continuance of the organization. Members continued participation in an organization so long as inducements matched (or exceeded) contributions. According to March and Simon (1958), the two factors that determined an employee's balance were perceived desirability of movement and perceived ease of movement. The balance between inducement utilities and contribution utilities determined the propensity of a member to leave an organization; when inducement utilities exceeded contribution utilities an individual was less likely to leave and, vice versa. Today, these concepts are generally referred to as job satisfaction and perceived alternatives (Holtom et al., 2008).

March and Simon's (1958) model is noteworthy as it represents one of the first attempts to systematically integrate individual behavior and the economic-labor market. In this process, a variety of psychological mechanisms were presented for linking individual turnover behavior with demographic, organizational, and economic variables. Their seminal work heavily influenced contemporary thinking about turnover, including Lee and Mitchell (1994) and Mobley (1977), by providing an explanatory scheme that focuses on job attitudes and alternatives.

Dual-Factor Satisfaction Theory

Motivation is considered to be an important factor related to one's work retention and productivity. Motivation theory can provide insights into work conditions that increase motivation and organizational commitment and, in turn, retention (Miner, 1980). While there is not an encompassing theory with one definition of job satisfaction (Evans, 1996), one prominent theory is Herzberg's (1966) dual-factor satisfaction theory, which has been widely applied in research examining K-12 teacher satisfaction (e.g. Meek, 1998; Perie & Baker, 1997).

Herzberg's (1968) dual-factor job satisfaction theory of job satisfaction, which consists of intrinsic factors, or "motivators", and extrinsic factors, "hygienes", has often been used to frame research in education examining job satisfaction. Motivators are associated with the job content, that is, what the person does, and hygienes are related to the work environment, which is the situation in which the person works (Herzberg, 1966). For teachers, examples of motivators would be effectively teaching and working with students and examples of hygienes would be compensation levels and facility quality.

The implications of Herzberg's (1966) theory suggest that teachers deprived of adequate hygiene factors and/or motivators may either accept the status quo or change their employment environment.

Human Capital Theory

Human capital theory also provides a framework to examine the factors that influence an individual's mobility decisions. The theory of occupational choice examines individuals' mobility decisions as a matter of investment and returns (Becker, G., 1993; Ehrenberg & Smith, 2012). According to human capital theory, the greater the amount of investment (e.g. knowledge and skills accumulated over time), the lower one's propensity is of turnover from that occupation (Ehrenberg & Smith, 2012).

In this decision process, individuals weigh the costs and benefits of their turnover decision. If the benefits outweigh the costs, individuals are likely to decide to move. The costs and benefits consist of factors, such as, salary, working conditions, and professional training. The net benefits of turnover are greater, if greater utility is derived from the new job, less happiness derived from the old job, and there are small costs associated with change (Ehrenberg & Smith, 2012).

G. Becker (1993) distinguishes between two types of professional training, general and specific training. In their cost and benefit analysis, teachers consider both general and specific investments. General training is useful for many firms besides the firm providing it; so in addition to increasing the marginal productivity of workers, general training also increases their marginal productivity in other firms. Specific training, on the other hand, increases marginal productivity of workers in the firm providing it, but not in other firms. Strictly defined, specific training would have no effect on productivity in other firms. With specific investments, teachers would gain little from turnover; and, conversely, when investments are general, workers gain from the benefits of the competitive market. These joint investments minimize employers' incentive to layoff workers and minimize workers incentive to quit (Hashimoto, 1981).

Another implication of human capital theory is that when costs of quitting a job are relatively high due to conditions in the market, workers will have lower mobility, versus, when the costs of quitting are relatively low, mobility will be higher.

“Side-bet” Notion of Organizational Commitment

H. Becker (1960) first proposed the construct of organizational commitment under the “side-bet” notion, that is, there are side-bets made by the individual, organization, and culture that encourage an employee to stay in the organization. Examples of these side-bet factors include, cultural expectations, adjustments to social positions, face-to-face interactions, all of which contribute to bind an employee to an organization (Becker, H., 1960).

Though organizational commitment has been reconceptualized several times (e.g. Allen & Meyer, 1990; O'Reilly & Chatmand, 1986; Porter, Steers, Mowday, & Boulin, 1974; Reichers 1985), theoretical arguments and empirical results suggest that commitment has three dominant dimensions: 1) attitudinal, 2) calculative and 3) normative (Hom & Griffeth, 1995). Attitudinal dimensions entail a match between an individual's and organization's values. Calculative

dimensions consist of involvement for external rewards. And, normative dimensions refer to a moral responsibility to the organization.

Withdrawal Process

Extending on the conceptual framework of March and Simon (1958) and Locke (1975, 1976), Mobley (1977) developed a more nuanced explanation of the turnover process by introducing a set of withdrawal cognitions and job-search behaviors that linked job dissatisfaction to actual turnover behavior. This intermediate linkage model consists of a cost benefit decision making process entailing an evaluation of job seeking and employment alternatives, in which thoughts of quitting elicit an evaluation of job seeking expected utility and costs of quitting (Mobley, 1977).

Price and Mueller (1986) adopted Mobley's (1977) withdrawal intentions construct in their model and renamed it intent to leave. This turnover intention construct directly preceded turnover, and was potentially moderated by opportunity (Price & Mueller, 1986). Turnover intention is conceptualized to be a conscious and calculated willingness to leave an organization (Tett & Meyer, 1993), also including thoughts of quitting and intent to search for alternative employment (e.g. Mobley, Horner & Hollingsworth, 1978). Ajzen & Fishbein (1980) theorized that the turnover intention construct is the best predictor of turnover, and there is some empirical evidence to support this proposition (Carsten & Spector, 1987).

As previously discussed, traditional thinking (e.g. March & Simon, 1958; Mobley, 1977) distinguished between various turnover intentions, such as thoughts of quitting, search behaviors, withdrawal behaviors; however, these different acts have not been substantiated by confirmatory factor analysis (Hom and Griffeth, 1991), suggesting that withdrawal cognitions are facets of a global construct.

Economic Opportunity

March and Simon (1958) also provided the theoretical impetus to include measures and/or perceptions of market conditions in turnover models. Their conception of *perceived ease of movement* for an individual consisted of the availability of jobs that an individual was qualified for in the organizations perceptible to him (March & Simon, 1958). “The greater the *number of perceived extraorganizational alternatives*, the greater the perceived ease of movement.” (March & Simon, 1958, p.100). Thus, when markets are constrained, voluntary movement is small, and vice versa. They claimed that in most circumstances the state of the economy is the most accurate single predictor of labor turnover (March & Simon, 1958).

Extrapolating from March and Simon (1958), Muchinsky and Morrow (1980) proposed that economic determinants, such as employment rates, are immediate forerunners to turnover. They theorized that individuals will not leave their job without employment alternatives, so determinants affects flow through economic opportunity, which potentially moderates the relationships between determinants and turnover (Muchinsky and Morrow, 1980.)

Conceived of from an individual’s perceptions of employment alternatives, Mobley (1977) theorized that individuals perform a cost/benefit analysis when considering alternative employment. In an expanded model, employee values and labor market perceptions affected withdrawal behaviors (Mobley et al., 1979). Unemployment rates diminish expected utility of job seeking. So when the costs of quitting a job are high due to market conditions, workers will have lower mobility, and vice versa. Hence, perceived alternatives moderate the relationship between quit intentions and turnover.

On the basis of the theoretical work provided by Muchinsky and Morrow (1980), Carsten and Spector (1987) conducted a meta-analysis to examine how the magnitude of relationship between satisfaction and turnover varied during high and low unemployment rates. They found a

correlation that ranged from low to moderate (-.18 to -.52) between unemployment rates and the strength of the satisfaction-turnover relationships, suggesting that the satisfaction-turnover relationship is moderated by economic opportunity.

Image Theory

Based on Beach's (1990) image theory, Lee and Mitchell (1994) argued that instead of a gradual buildup of dissatisfaction, leading ultimately to turnover, people often follow other pathways to turnover. Deviating from traditional economic decision making theories, Beach (1990) proposed image theory as an alternative conceptualization of the decision making process. In the decision making process, his theory places primary emphasis on screening, that is, a mechanism that determines whether new information or changes in behavior actually become options in the decision process (Beach, 1990). This process ascertains whether the new information can be incorporated into three domain-specific images: value, trajectory, and strategic. The value image refers to a set of general values, standards, and principles that define a person. The trajectory value captures a set of goals that directs an individual's behavior. The strategic image is defined as a set of tactics and strategies that an individual thinks will achieve his or her goals.

Applying Beach's (1990) image theory to employee turnover, Lee and Mitchell developed the unfolding model, part of which consisted of people responding to shocks, or particular jarring events that initiate the process of quitting, and image violations, that is, when an individual's values or goals did not fit with the organization (Lee & Mitchell, 1994). In their model, a shock can induce turnover without regard to levels of satisfaction or organizational commitment, or it can prompt a person to reconsider his or her organizational commitment due to image violations (Lee & Mitchell, 1994). Additionally, a person may or may not consider job alternatives prior to leaving. Thus, shocks and their theoretical underpinnings on which they are

based have varying implications for the structural model in this study; shocks may load directly onto turnover, be moderated by job alternatives, or be mediated through organizational commitment.

Including shocks in the model may also have important implications for teacher retention studies and policies. The construct of shocks accounts for influential factors not captured in the constructs of job satisfaction and organizational commitment. And, factors associated with shocks may signal turnover that is unavoidable or avoidable from an organizational perspective. Though teacher turnover research typically treats retirement as relatively unavoidable in studies, there is potentially more teacher turnover explained by unavoidable types of employee turnover. For example, teachers may turnover due to relocating or providing health care to family members or children. This type of turnover is not accounted for by job satisfaction and organizational commitment and could be considered a type of unavoidable turnover (Griffeth & Hom, 2001). Thus, shocks may help account for voluntary turnover that is unavoidable from an organizational perspective and identify a percentage of teacher turnover that is not policy amendable from an organizational standpoint.

Accounting for unavoidable teacher turnover helps focus the discussion on managing avoidable turnover. Along those lines, shocks may capture voluntary turnover that is avoidable from an organizational perspective, but not by enhancing job satisfaction or by building organizational commitment. For example, sudden changes in teachers' job assignments and/or responsibilities may initiate turnover.

Table 2.1 summarizes the overarching theories applied in this study, along with their main propositions, which provide the theoretical underpinnings of the constructs and the models. The hypothesized relationships between the constructs and turnover are also included.

Table 2.1: Overarching Theories

| Overarching Theories | Propositions | Constructs and Definitions | Hypothesis |
|--|---|--|---|
| March and Simon's (1958) Organizational Equilibrium (based on Barnard, 1938) | Individuals receive inducements from an organization and in turn make contributions to the organization | Perceived desirability of movement and perceived ease of movement (i.e. Job satisfaction and perceived alternatives) | Job attitudes together with job alternatives predict intent to leave, which precedes turnover |
| Herzberg's (1966) Dual-factor satisfaction theory | There are two dimensions of job satisfaction: motivation and hygienes | Job satisfaction | Individuals deprived of motivators and/or hygienes accept status quo or leave |
| G. Becker's (1993) General and specific training | In their cost and benefit analysis, teachers consider both general and specific investments. | Specific and general investments | With specific investments, teachers gain little from turnover; and, conversely, with general investments, workers gain from the competitive market. |
| H. Becker's (1960) Side-bet notion | "Side-bets" made by the individual, organization, and cultural encourage individuals to stay on the job | Organizational commitment | Antecedents of organizational commitment predict turnover related outcomes (e.g. desire to remain, intent to remain, attendance, retention) |
| Mobley's (1977) Withdrawal process | Intermediate linkages between job evaluation (e.g. satisfaction) and turnover | Turnover intention (withdrawal intentions) | Thoughts of quitting elicits an evaluation of alternatives, costs of quitting, and benefits of alternatives |
| Muchinsky and Morrow's (1980) Multidisciplinary Model | Individuals will not turnover without alternative employment opportunities | Economic opportunity | When the market is constrained, determinants affect turnover less, and vice versa. |
| Lee and Mitchell's (1994) Image theory | A jarring event or image violation triggers process of quitting | Shocks | Instead of accumulated job dissatisfaction, turnover may result from a image violation with little deliberation |

Literature Review

The literature review is framed by several broad questions: 1) What do we know about the forces and conditions that specifically influence teacher turnover? 2) What do we know about the correlates, determinants, and factors of employee turnover at large from voluntary employee turnover research (VETR)? 3) What are the implications of this literature base for developing a conceptual framework to examine teacher turnover?

Caveats/Terms

In the literature discussing teacher retention and mobility, *turnover* can refer to teacher attrition at different levels of the organization (e.g. school, school districts, or public education workforce). From a systemic-level perspective, emphasis is placed on teacher attrition from the workforce and teacher migration is deemphasized or deemed irrelevant. Conversely, from an organizational-level perspective, emphasis is placed on teacher migration between districts and/or schools. This study accounts for teacher turnover at the school, school district, and public education level.

In the literature that examines teacher attrition and retention, working conditions is a broad concept that ranges from using simple school resources (e.g. class size, student-teacher ratios), school organizational characteristics, and student characteristics (e.g. Baker & Smith, 1997; Grissmer & Kirby, 1997; Weiss, 1999) as proxies of working conditions, to examining more complex resources and organizational conditions, such as, teacher empowerment and principal leadership (e.g. Hirsch, Emerick, Church & Fuller, 2007). Another way to categorize working conditions is by demographic characteristics of schools/districts (e.g. percentage of minority students and student in poverty) largely unalterable by policies, or by organizational conditions, also referred to as environmental conditions, such as, administrator support, teacher autonomy, and collegiality, which are potentially malleable. This study takes the latter approach, that is, *working conditions* is perceived to be organizational conditions that may be amendable by policies.

For the discussion, this study adopts terms from Price (1977), in which, *correlates* refer to indicators to which turnover is related (and are synonymous with demographic variables), and *determinants* are “analytical variables which are believed to produce variations in turnover” (p.24). Much of the research that examines teacher turnover from an economic perspective

focuses on indicators of teacher turnover (i.e. correlates) as opposed to variables that produce turnover (i.e. determinants); whereas, studies that apply an organizational perspective, attempt to identify and distinguish between different types of determinants (e.g. Ingersoll, 2001b). In order to identify potential variables that produce turnover, the model proposed in this study primarily focuses on determinants of teacher turnover.

Additionally, this study also attempts to differentiate between various types of employee turnover, that is, *voluntary* vs. *involuntary*, and *avoidable* vs. *unavoidable* (e.g. Abelson, 1987). Examples of avoidable turnover factors in most organizations include: pay, working conditions, supervision, dismissal, layoffs, and forced retirements (Abelson, 1987). Though, in the context of education, it is possible that not all of these factors are completely in control of the organization. For example, in some cases teacher pay is largely determined by the state with certain requirements. Unavoidable voluntary factors include an employee moving to another location, going on maternity leave, or staying home to care for a family member (Abelson, 1987). Furthermore, factors that are associated with voluntary turnover include pay, working conditions, supervision because they are considered to be in the employee's control to change, and factors that are associated with involuntary are dismissals, layoffs, and forced retirements (Abelson, 1987).

Not accounting for involuntary turnover can potentially bias the results (Singer & Willet, 1988). However, due to limitations in the data, it is often the case that teacher turnover studies cannot, or do not, distinguish between involuntary vs. voluntary (Singer & Willett, 1988) and/or unavoidable vs. avoidable (see Ingersoll (2001b) for an exception). Ingersoll (2001b) distinguished between involuntary and voluntary turnover by accounting for teacher turnover attributed to school staffing action, such as, reduction-in-force, lay-off, and school closing, and accounted for some unavoidable vs. avoidable turnover by differentiating between school

staffing and personal reasons for turnover. This study attempts to distinguish between these various types of turnover to account for unavoidable and avoidable turnover, so as to help inform policies that can target avoidable, voluntary turnover.

Teacher Retention: A Review of Empirical Literature

The conceptual framework most often applied to examination of teacher retention, mobility, and attrition is derived from economic labor market theory of supply and demand (Borman & Dowling, 2008; Guarino et al. 2006). Thus, while the research on teacher mobility is extensive, it tends to focus on several main topic areas and their relationship with teacher retention, mobility and attrition including:

- 1.) Characteristics of individuals
- 2.) External characteristics of schools and school districts
- 3.) Working conditions
- 4.) Compensation

These main areas and their subtopics are presented in figure 4. Demographic characteristics are considered external characteristics, that is, “characteristics not generally within schools’ and districts’ control but are instead based on the demographics of the population they serve.” (Guarino et al., 2006); in contrast to working conditions, which entail organizational conditions for which schools and districts are believed to be partly in control of.

There is also some literature on teacher turnover from an organizational perspective that examines the relationships between teacher retention and organizational characteristics of schools (e.g. Ingersoll, 2001a, 2002, 2003; Ingersoll & May, 2010; Ingersoll & Perda, 2010). This organizational perspective is based on the premise that turnover is affected by the character and conditions in which employees work. While there is some overlap between the characteristics and conditions that each perspective examines, a primary benefit of applying this organizational perspective and focusing on these types of conditions is that they are “policy

amendable” aspects of schools (Newman, Rutter, & Smith, 1989; Rosenholtz, 1989; Bryk, Lee & Smith, 1990). Among the organizational conditions typically examined are: the compensation structures for teachers; the level of administrative support; the degree of teacher input and influence over policies; and the degree of strife within the organization (Ingersoll, 2001a, 2001b). These amendable school conditions that are examined from an organizational perspective are bolded in figure 2.1.

Figure 2.1: Factors Related to Teacher Retention and Mobility Used in Empirical Literature

| Characteristics of Individuals | External Characteristics of Schools and Districts | Service Policies | Compensation Policies |
|---|--|--|--|
| <ul style="list-style-type: none"> • Age and Experience • Gender • Race/Ethnicity • Qualifications, Field, Ability • Psychological factors | <ul style="list-style-type: none"> • Size • Location • Wealth • Student composition • School grade level • School type • School resources | <ul style="list-style-type: none"> • Certification process, traditional vs. alternative • Working conditions • Induction programs • Class sizes • Level of autonomy • Administrative support • Intra-Organizational Conflict | <ul style="list-style-type: none"> • Salaries association with retention |

Characteristics of Individuals

There are a large number of empirical studies devoted to examining the characteristics of individuals who remain in teaching. In part, this is because many states keep records of public school teachers’ movement in and out of the profession. Some of the most notable datasets are collected in three states: New York, Texas, and Michigan. Additionally, the Schools and Staffing Survey is a nationally representative data set that contains longitudinal data on teachers and is frequently used to examine teacher turnover (e.g. Ingersoll, 2001a, 2001b, 2002; Ingersoll &

May, 2010). In conjunction with the wealth of data, a variety of statistical methods have been applied to teacher turnover, including some derived from biomedical research involving hazard models (e.g. Brewer, 1996).

A well-documented phenomenon regarding the relationship between age and attrition is the U-shaped plot, that is, high rates of turnover for younger and older teachers. Using several sets of the SASS data, Ingersoll (2001a) found this U-shaped pattern of age versus attrition. Hanushek, Kain, and Rivkin (2004) analyzed data on 300,000 Texas public school teachers and found that teachers that left the Texas public schools were more likely to be either very young, within their first 2 years of teaching, or very experienced and close to retirement eligibility.

Some studies have found higher attrition rates among female versus male teachers (e.g. Ingersoll, 2001b; Kirby, Berends, & Naftel, 1999). In his analysis using the 1990-1991 SASS and 1991-1992 TFS, Ingersoll found male teachers were less likely to quit than female teachers (Ingersoll, 2001b). Kirby et al. (1999) also found that white males were less likely to quit the teacher profession than white females in their longitudinal data set on public school teachers in Texas.

Another finding that emerged from Ingersoll (2001b) and Kirby et al. (1999) is that minority teachers were less likely to quit than white teachers. However, a study from Plecki et al. (2005) using a state data consisting of approximately 52,000 classroom teachers that served in Washington state in 1998-1999 found that overall, teachers of color had similar retention rates at the school level as white teachers, with the exception of African American teachers.

A major focus of studies examining teacher mobility is on changes in the qualifications of the teaching workforce, and the relationships between these factors and attrition. These types of studies carry important implications for student learning. However, the conclusions that are warranted from them are complicated by the links between qualifications, “teacher quality”, and

student learning. Past research has used teachers' qualifications (e.g. test scores, degrees) as proxies for "teacher quality" (e.g. Murnane & Olsen, 1989); while, more recent research tends to use value added measures to gauge teacher quality, often termed teacher effectiveness (e.g. Hanushek et al., 2005). A common perception is that public education is losing its best and brightest. This view is fueled by research that suggest teachers' academic proficiency and movement patterns are correlated, and that indicates that the most academically proficient teachers are the most likely to leave teaching (e.g. Lankford, Loeb, and Wyckoff, 2002; Murnane & Olsen, 1989, 1990; Podgursky et al., 2004). Podgursky et al. (2004) tracked a sample of Missouri teachers and found that those with higher ACT scores and who graduated from more selective colleges tended to leave teaching earlier than others. Lankford, Loeb, and Wyckoff (2002) used a sample of New York state teachers that began teaching in 1993 and found that more qualified teachers had higher rates of changing schools and leaving the system. These studies indicate dysfunctional teacher turnover is occurring in these samples.

However, numerous studies show that these teacher attributes (e.g. credentials, tests scores, etc.) are weakly correlated with teachers' contribution towards student achievement on standardized tests, as measured by value added scores (e.g. Clotfelter et al., 2007; Hanushek, 1986). And, more recent studies using value added measures as a proxy of teacher quality present a different picture of the relationship between teacher quality and mobility (e.g. Goldhaber, Bethany, & Player, 2007; Hanushek et al., 2005).

Contrary to the notions that the "best and brightest" are leaving education, some research suggest that more effective teachers stay in teaching and stay in specific schools (e.g. Boyd et al. 2007; Goldhaber, Bethany, & Player, 2007; Hanushek et al., 2005). Using value added scores of early career teachers from North Carolina public schools, Goldhaber, Bethany, and Player (2007) provide evidence that suggest the most effective teachers actually stay in teaching. Hanushek et

al. (2005) examined teacher movement in a large urban district in Texas and found that teachers that stayed at the same school had higher average gain scores than those who moved within or out of the school district, or left Texas public education. These studies provide empirical evidence that suggest functional turnover is occurring in these contexts.

Characteristics of Schools and Districts

This section discusses some of the literature on the relationship between teacher retention and mobility and particular characteristics of schools and school districts. Examples of these characteristics are size, location, wealth, student body, grade levels and school type.

Many studies have examined the relationship between school characteristics such as, school location and size (e.g. Ingersoll, 2001a; Smith and Ingersoll, 2004) and facility quality (e.g. Loeb et al., 2005; Buckley et al., 2005). In his analysis using the 1980s and 1990s SASS data, Ingersoll (2001a) found that larger schools had lower turnover rates than small schools, and rural schools experienced less turnover than urban schools. And, using the 1999-2000 SASS data, Smith and Ingersoll (2004) found a similar relationship among beginning teachers in public schools, with public school teachers beginning in small schools being more likely to switch schools than those who started in large schools. Furthermore, teachers report proximity of home to school location as a strong factor influencing where they teach (Marvel et al., 2007); hence, teachers tend to distribute themselves at schools where they grew up, went to college or are close to their home (Boyd et al., 2007; Boyd et al., 2005; Reininger, 2006).

Multiple studies have demonstrated a relationship between student characteristics and teacher mobility. Research using a variety of quantitative methods (e.g. regression and factor analysis) and operationalizing working conditions in slightly different ways, indicates that teachers prefer working in schools with certain student characteristics (Boyd et al., 2005; Hanushek et al., 2004; Ingersoll, 2001a; Lankford et al., 2002; Scafidi et al., 2003). Empirical

research provided by Hanushek, Kain, and Rivkin (1999) and Lankford (1999) demonstrates that working factors do affect the attractiveness of jobs and that they influence teachers' decisions regarding where to teach. And, Hanushek et. al (2004) and Boyd et al. (2005) demonstrated that highly qualified teachers are more likely to transfer or quit when teaching lower achieving students. However, whether this relationship is due to preferences for certain types of students or if there are differences in the working conditions of the schools that these types of students attend is not clear.

Studies have also examined the relationships between school characteristics and teacher quality, distribution, and retention. Borman and Kimball (2005) found inequities in the distribution of teacher quality across schools based on minority and poverty rates. And, even within schools, evidence provided by Feng (2010) and Rothstein (2009), suggests teachers with certain characteristics are sorted to lower-achieving and more disadvantaged students. Loeb, Kalogridis and Beteille (2011) presented evidence that more effective schools attract and hire more effective teachers, and assign them equitably.

Working Conditions

Much of the research and information regarding working conditions indicates that numerous factors influence teacher retention. As discussed earlier, working conditions entail an extensive range of factors ranging from simple (e.g. percentage of minority students) to complex (e.g. teacher empowerment) resources. Some specific examples of various types of working conditions that have been examined include mentoring programs, class size, teacher autonomy, administrative support, and even accountability policies.

One specific type of school organizational characteristic that has received a lot of attention as a tool to reduce teacher attrition is professional development through induction programs. Since lack of support, guidance, and orientation, along with low salary and poor

working conditions, are often cited reasons for beginning teachers to leave teaching (Smith & Ingersoll, 2004), teacher induction/mentoring programs have become a primary tool to alleviate beginning teacher attrition, though programs vary widely in terms of duration, funding and participation levels (Hirsch, Koppich & Knapp, 2001). In their examination of the effects of induction programs on beginning teacher turnover, Smith and Ingersoll (2004) found a strong link between participation in induction programs and reduced rates of turnover. Conducting a discriminate function analysis on the 1990-1991 SASS and 1991-1992 TFS data, Shen (1997) found that mentoring programs are conducive to teachers staying in teaching.

Research provided by Ingersoll (2001b) indicates that organizational conditions (i.e. advanced salary, administrative support, student conflict, and faculty influence) strongly influence teacher mobility decisions. Ingersoll (2001b) examined the effects of organizational conditions in schools on teacher turnover. Using data from 1990-1991 SASS, Ingersoll (2001b) extracted four factors: advanced salary, administrative support, student discipline, and faculty influence, and performed a logistic regression analysis in which all four factors were found to be significantly influential on teacher turnover, after controlling for teacher and school characteristics. Also using data from the SASS, although from the years of 1987-1988 and 1990-1991, Weiss (1999) found that perceived leadership and teacher autonomy were linked to morale, and school leadership was a strong predictor of teachers' intention to remain in teaching.

In their report on the results of the TFS for 2004-2005, Marvel et al. (2007) found that 37.2 % of teachers ranked lack of support from administrators as "very important" or "extremely important" in their decision to move schools, second only to "opportunity for a better position" (at 38.1%). Evidence from Hirsch, Emerick, Church & Fuller (2007) also suggests school leadership is critical for teacher retention. Analyzing a working conditions survey completed by approximately 75,000 North Carolina educators, Hirsch et al. (2007) concluded that school

leadership and teacher empowerment were essential for teacher retention. Similarly, numerous other studies have demonstrated that principals are key factors in teacher retention (Brown & Wynn, 2009; Greenlee & Brown, 2009; Guarino, Santibanez, Daley & Brewer, 2004).

Furthermore, evidence provided by Johnson & Birkeland and by Farkas and colleagues suggests that difficult working conditions also may affect a teacher's sense of success, ultimately influencing their retention (Johnson & Birkeland, 2003; Farkas et al., 2000).

Compensation

There is rather a large body of literature that examines the relationship between compensation and teacher retention and mobility. In their review of the literature on teacher recruitment and retention, Guarino, Santibanez, and Daley (2006) concluded that generally, teachers displayed preferences for higher salaries. Numerous studies examine the relationship between teacher retention and wages, indicating, that overall, higher salaries are associated with lower teacher turnover rates; for example, literature provided by Brewer (1996) and Hanushek, Kain, & Rivkin (1999), and Ingersoll (2001a) suggest salary is positively related to teacher retention. Using a discrete time hazard model with a sample of only female teachers in New York from 1975 to 1990, Brewer (1996) found a positive relationship between teacher salary and retention rates. In a logistic regression model with a sample of Texas teachers, Hanushek, Kain, & Rivkin (1999) demonstrated that higher salaries reduce the likelihood that teachers would leave their districts; though, retention was more strongly associated with student characteristics. Using data collected in the Schools and Staffing Survey (SASS) of 1988-1989, 1990-1991, and 1993-94, along with the 1991-1992 Teacher follow Up Survey, Ingersoll (2001a) found that compensation had a small positive effect on voluntary teacher turnover, after controlling for teacher and school characteristics.

There has been substantial empirical research on teacher turnover regarding the characteristics of teachers and the schools in which they work, along with how various service and compensation policies influence teacher mobility. The findings that emerged from this research indicate that teachers demonstrate preferences for better working conditions, higher salaries, and greater intrinsic rewards. Yet, evidence of teachers' mobility patterns provided by quantitative research from an economic perspective, raises many questions regarding *why* teachers actually stay or move. Research examining teacher turnover from an organizational perspective (e.g. Ingersoll, 2001a, 2001b, 2003; Smith and Ingersoll, 2004) provides insights into aspects of schools and their organizational conditions influence teacher turnover. While these studies examine teacher turnover from an organizational level (i.e. the school), they identify and emphasize some conditional factors that influence teachers' job satisfaction and organizational commitment. At the individual level, these two job attitudes have been linked to employee turnover (e.g. Hom & Griffeth, 1995), and to teacher turnover (e.g. Billingsley & Cross, 1992, Bobbit et al., 1991).

The next section discusses some of the literature that examines the relationship between psychological factors (i.e. job satisfaction and organizational commitment) and teacher turnover. Afterwards, a discussion of the determinants of job satisfaction and organizational commitment provided by voluntary employee turnover research is presented.

Psychological factors: Teachers' Job Satisfaction and Organizational Commitment

Research in the field of education has examined some of the correlates, causes (determinants) and outcomes of teacher satisfaction. The most common influences that are examined include: demographic variables, job- or role-related characteristics, and working conditions. These factors have been linked to job satisfaction (Billingsley & Cross, 1992), which in turn, has been shown to influence retention (Billingsley & Cross, 1992; Bobbit et al., 1991).

It is important to note that there are different conceptualizations of “teacher job satisfaction”, ranging from an overall construct (e.g. Holdaway, 1978; Zigarreli, 1996) to more nuanced constructs consisting of two constituents (Evans, 1997). Holdaway (1978) studied teacher job satisfaction as a single, general construct, as did Zigarreli (1996), who maintained that it was a single, general measure. Evans (1997), however, critiqued the research examining teacher job satisfaction, arguing that the concept was ambiguous because of problems with construct validity.

Nonetheless, studies that have examined the relationship between teachers’ demographic characteristics and their job satisfaction have found that job satisfaction is related to age (Ma & MacMillan, 1999), gender (Waston, Hatton, Squires, & Soliman, 1991), marital status (Goodlad, 1984), grade level taught (Bolger, 2002; Perie & Baker, 1997), and educational level (Meek, 1998). Ma and MacMillan (1999) found that older teachers were less satisfied than their younger and less experienced colleagues. Waton et. al. (1991) found that female teachers reported greater job satisfaction than their male peers, and Goodlad (1984) reported that married women tended to be more satisfied than unmarried women and men.

Different aspects of job- or role-related factors have also been explored and linked to teachers’ job satisfaction. Using the personnel data from the Virginia Department of Education for 1988-89 school year to select approximately 1147 teachers, Billingsley and Cross (1992) administered a questionnaire to examine role conflict, role overload, and stress as predictors of job satisfaction. Billingsley and Cross (1992) found that leadership support, role conflict, and role ambiguity, and stress were predictors of job satisfaction and teacher turnover; and, overall, work-related variables were better predictor of job satisfaction (and commitment) for teachers than demographic variables.

Work experiences also influence teacher job satisfaction; some prime examples include: collaboration with colleagues (Cockburn, 2000), recognition from supervisors (Ma & MacMillan, 1999; Meek, 1998; Perie & Baker, 1997), participation in leadership roles (Perie & Baker, 1997), and development of professional skills (Meek, 1998).

Factors related to teachers' organizational commitment have also been examined in educational research; however, the link between organizational commitment and teacher turnover has not been examined as thoroughly as job satisfaction. Similar to job satisfaction, there are numerous definitions of organizational commitment (Mowday, Porter & Steers, 1982). And, to complicate the discussion, the factors that influence organizational commitment are similar to job satisfaction, and both constructs (i.e. job satisfaction and organizational commitment) may simultaneously influence each other. Some influences of organizational commitment identified by empirical research include, autonomy, participation, collaboration, learning opportunities and resources (e.g. Rosenhotz, 1989; Rutter and Jacobson, 1986).

Traditionally, organizational commitment is examined as one's commitment to an organization (Mowday, Porter, & Steers, 1982). Because organizational and occupational commitments can conflict, some researchers examined teachers' commitment to teaching separate from their organization (e.g. Bredeson, Fruth, & Kasten, 1983). And, in an effort to identify the multiple commitments of teachers, Firestone and Rosenblum (1988) proposed that teachers may be committed to the teaching profession, their school, and/or their students, and teachers' behaviors depended on which commitments are stressed. However, it is difficult to untangle these multiple commitments and provide separate measurements for them (Louis, 1991).

Hackman and Oldham (1980) defined autonomy as an employee's freedom to schedule work and determine procedures for conducting it. It is theorized that autonomy or self-

determination is necessary or central to internal motivation (Deci & Ryan, 1985), with commitment being derived from a sense of responsibility of one's work. Though empirical evidence on the relationship between autonomy and commitment is mixed, there is substantial evidence to support autonomy as a predictor of commitment. For example, Rosenholtz (1989) and Rosenholtz and Simpson (1990) found that autonomy was the best predictor of commitment using a survey of 1,213 teachers in 78 Tennessee schools.

While autonomy generally is based on influence over operational decisions, participation refers to a teachers' power over strategic decisions (Firestone & Pennell, 1993). Potential examples of teachers exercising influence on strategic decisions include departments (Johnson, 1990) or site-based management (Clune & White, 1988). Theoretically, it is argued that participation influences commitment in several ways; though, primarily, it purported that the process of participation invokes more commitment to specific organizational decisions. In their review of the literature, Firestone and Pennell (1993) found that most research supported a link between participation and commitment, though differences in variables and methods make generalizing difficult.

Collaboration consists of two or more people working together on a work task. For teachers in a school setting, examples of collaboration includes teachers working together to develop curriculum, plan programs, and/or team teach. These interactions can influence several dimensions of commitment. Collaboration can provide powerful opportunities to learn about methods and content and it can create a sense of collegiality (Johnson, 1990). According to Firestone and Pennell (1993), there are numerous studies that document the link between commitment and collaboration. However, Firestone and Pennell (1993) noted that collaboration seemed to contribute to commitment through group cohesion rather than contributing to teachers' craft and benefiting from the rewards.

More formal learning opportunities (e.g. professional development and academic courses) contribute to commitment by building teachers' knowledge. Learning opportunities are hypothesized to increase teachers' effectiveness, and, in turn, their sense of competence. Rosenholtz (1989) found that learning opportunities predicted commitment directly. However, the quality of the staff development or in-service program influences this relationship. Using a national data set, Rutter and Jacobson (1986) demonstrated that collaboration and teacher decision making had more of a direct effect on commitment than staff development time.

These studies highlight some of the possible determinants of job satisfaction and organizational commitment for teachers. However, although there are studies that link job satisfaction to teacher retention (e.g. Bobbitt et al. 1991; Perrachinone, Rosser & Peterson, 2008), and studies that examine teacher organizational commitment (Ingersoll & Alsalam, 1997), few educational studies examine these constructs and their determinants simultaneously in turnover models. Literature and research from voluntary employee turnover traditionally has examined these two constructs in more comprehensive turnover models (e.g. Hom & Griffeth, 1995). Following is a discussion of the determinants of job satisfaction and organizational commitment from the literature on voluntary employee turnover.

Determinants of Job Satisfaction

One of the most studied attitudinal antecedents to employee turnover is one's job satisfaction (Hom & Griffeth, 1995; Holtom et. al., 2008). Price (1972) defined satisfaction as "the degree to which members of a social system have a positive affective orientation towards membership in the system" (p.156). Again however, there is not an agreed upon definition of "job satisfaction" (Evans, 1996), and there is not an encompassing theory; thus, there are several variations of the construct of job satisfaction in voluntary turnover models represented by different accompanying determinants.

March and Simon (1958) hypothesized that there were three potential sources of job satisfaction: conformity of job to self-image, predictability of job relationships, and compatibility of job and other roles. Price (1977) integrated research findings on employee turnover and theorized that job satisfaction was determined by pay, integration, communication, and centralization. Price's (1977) model was expanded upon by Price and Mueller (1981; 1986) to include: role overload, routinization, centralization, communication, pay, distributive justice, and promotional opportunity. Price and Mueller (1981) proposed that workers who participated in job related decisions, formed social ties, earned fair compensation, and who had promotional opportunities were more likely to be satisfied, and, conversely, repetitive work reduced job satisfaction. Increased job satisfaction, in turn, was linked to increased intention of staying, which was negatively influenced by professionalism, kinship responsibility, and general training (Price & Mueller, 1981).

Moreover, the job satisfaction construct has also been conceived of as an aggregated index of job satisfaction derived from the Job Descriptive Index (JDI) reflected by relatively distinct dimensions of work, pay, promotions, supervision, and coworkers (Smith, Kendall & Hulin, 1969). Results from meta-analytic studies show that these five measures have a significant zero-order relationship with turnover (Kinicki, McKee-Ryan, Schriesheim & Carson, 2002). Among the attitudinal predictors, combined results suggest overall work satisfaction is the best predictor of turnover, explaining 29% of the variance, when controlling for measurement error in the predictors, sampling error, and variations in the turnover base-rate across studies (Griffeth, Hom, & Gaertner, 2000).

The determinants of job satisfaction for this study are: compensation, leadership member exchange, group cohesion, psychological uncertainty, and role/job stress. Each of these determinants is discussed below.

Compensation

It is theorized that compensation and compensation satisfaction builds employee retention through job satisfaction (Hulin, Roznowski, and Hachiya 1985; Price and Mueller, 1986). Using social-exchange and equity models Hulin, Roznowski and Hachiya (1985) and Rusbult and Farrell (1983) proposed that inadequate financial rewards for employee contribution initiates feelings of inequity that, in turn, induce employee turnover. Additionally, the influence of compensation on job satisfaction is also examined under a distributive justice lens, that is, the degree to which rewards and punishments are associated with the amount of effort or input into the organization (Price and Mueller, 1981; 1986). Management and labor economic studies have shown evidence to support this assertion, finding a relationship between dissatisfaction about pay negatively affecting job satisfaction (Lawler 1971, 1981) and turnover (Blakemore, Low, and Ormiston 1987). Motowidlo (1983) and Price and Mueller (1986) specifically have validated the meditational relationship of pay→satisfaction→quitting.

In the proposed model for this study, compensation is expected to load positively onto job satisfaction.

Leader-Member Exchange

Poor leader-member exchange (LMX) may also induce dissatisfaction and, in turn, employee turnover. Graen and Scandura (1986) argued that superiors develop more effective working relationships, for example trust, with select employees. According to this theory, individuals with higher LMX are extended more latitude on the job and influence on decision making, ultimately resulting in higher contributions from these individuals. This mutual interpersonal exchange fosters morale (Ferris, 1985). However, Ferris (1985) and Graen, Liden and Hoel, (1982) found that partialling out job satisfaction did not negate correlations between LMX and turnover, suggesting that satisfaction does not fully mediate LMX's influence on

turnover. LMX is also conceived of as a person-context interface variable within the organizational context construct (Holtom et. al., 2008).

In the proposed model, LMX is proposed to load positively onto job satisfaction.

Group Cohesion

Based on organizational demography theory, dissimilar members of a work group hold different values and outlooks, lessening the mutual attraction and communication between a work group (Pfeffer, 1983). An outcome of these lessening ties is weakened cohesion and exacerbated discord within a group. Evidence to support this proposition was provided by Jackson et al. (1991), McCain, O'Reilly and Pfeffer (1983), and Tsui, Egan & O'Reilly (1992) who found high quit rates in demographically diverse work groups. And, conversely, Cotton and Tuttle (1986), and Price and Mueller (1986) demonstrated how satisfaction or integration with coworkers results in longer job retention. In the proposed model, it is hypothesized that group cohesion is positively associated with job satisfaction.

Psychological Uncertainty

According to organizational psychology, employees and organizations enter a psychological contract in which it is clear what each will give and receive (Schein, 1980). As result of this contract, individuals gain a sense of mastery over their personal world. Factors at the organizational, job or personal level may threaten this sense of control and induce a strong reaction, one of which is insecurity (Ashford, Lee & Bobko, 1989). Greenhalgh and Rosenblatt (1984) sought to unify conceptions of job insecurity and defined it as "powerlessness to maintain desired continuity in a threatened job situation" (1984, p.438).

Factors associated with threatening an employee's sense of control include: major organizational change and role ambiguity (or role conflict). Large organizational changes that create uncertainty and insecurity can negate employee's psychological contracts with an

organization, by causing employees to experience anxiety and a loss of control (Tagiuri, 1979). Role ambiguity captures a lack of information about job requirement and procedures (Katz & Kahn, 1978). Personal, job and organizational issues associated with a perceived lack of control are correlated with job insecurity (Ashford, Lee & Bobko, 1989). And, job insecurity was found to be positively related to turnover intentions (Jackson, Schwab & Schuler, 1986; Ashford, Lee & Bobko, 1989).

In the proposed model, it is hypothesized that psychological uncertainty will be negatively associated with job satisfaction.

Role and Job Stress

Stress researchers claim that job stress affects actual turnover through dissatisfaction, yet there is little empirical evidence to support this assumption (Griffeth, 1995). In their framework for analyzing role stress, Kahn and Quininn (1970) defined job stress as constituting ambiguity in work role, role conflict, and role overload. With early research providing weak and mixed findings (see Hamner & Tosi, 1974; Lyons, 1971), job stress was reconceptualized to indirectly affect actual turnover through job satisfaction (Gupta & Beehr, 1979). Using Maslach's model (1982) of job burnout, consisting of emotional exhaustion, depersonalization and disappointments, Jackson, Schwab, and Schuler (1986) conducted a survey examining teachers' mobility and found that stayers reported less exhaustion than movers or leavers. Yet, depersonalization and beliefs about lack of achievement did not affect attrition rates among teachers.

Expanding on the job satisfaction concept, emotional exhaustion was also found to be positively related to turnover (Ashford, Lee & Bobko, 1989). Though, overall, job burnout explains less variance in turnover than other factors that it is associated with, such as, excessive workload and lack of autonomy on the job (Hom & Griffeth, 1995).

In the proposed model, job stress is hypothesized to be negatively associated with job satisfaction.

Determinants of Organizational Commitment

In addition to one's job satisfaction, another commonly studied attitudinal construct is an individual's commitment to the organization; generally termed *organizational commitment* and originally defined as coming "into being when a person, by making a side-bet, links extraneous interests with a consistent line of activity" (Becker, H., 1960, p.32). Although, at the time, there was little consensus with the respect to the meaning of the term, early theories of employee turnover put a primary emphasis on organizational commitment, suggesting it is negatively correlated with turnover (Mowday, Porter, & Steers, 1982; Porter, Steers, Mowday & Boulian, 1974).

Porter et al. (1974) provided evidence of the significance of this construct by demonstrating that organizational commitment differentiated between stayers and leavers more so than job satisfaction. More recently, meta-analytic studies indicate that organizational commitment is negatively correlated with employee turnover ($r = -0.22$) (Griffeth et. al., 2000), and provides unique, explanatory power even when job satisfaction is taken into account (Tett & Meyer, 1993).

The determinants of organizational commitment in this study are: perceived organizational support, autonomy, and procedural justice. Each of these determinants is discussed below.

Perceived Organizational Support

Based on social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960), perceived organizational support (POS) is theorized to result in increased organizational commitment, specifically, through affective attachment to the organization. According to social

exchange theory, POS induces feelings of obligation to support organizational goals, thus lowering employee turnover intention and actual turnover. The norm of reciprocity reinforces this proposition by suggesting people tend to feel obligated to those that have provided support (Gouldner, 1960). Allen, Shore, & Griffeth (2003) proposed that organizations that show investment in employees and recognize employee contributions signal that they are seeking to establish a social exchange relationship with employees. Maertz & Griffeth, (2004) theorized that current POS may provide the employee with feelings of confidence that support may be impending in the future; these expectations of forthcoming support may cause more favorable estimates that one will meet future career goals within the organization, thus reducing turnover. Maertz and Griffeth's (2004) proposition suggests calculative motives of organizational attachment mediate the effect of POS.

POS has been demonstrated to be positively related to affective commitment (Eisenberger et al., 1990; Wayne, Shore & Liden, 1997) and job satisfaction (Eisenberger, Cummings, Armelo & Lynch, 1997). Although its construct is often a mix of determinants, with several types of antecedents having been examined in regards to POS, including: perceptions of the organization (Moorman, Blakely & Niehoff, 1998), job conditions (Eisenberger, Rhodes & Cameron, 1999), and supervisor support (Settoon, Bennett & Liden, 1996).

The findings from early research indicated that POS and perceived supervisor support (PSS) influenced voluntary turnover decisions through organizational commitment, for example, evidence from Eisenberger et. al., (2002) and Rhoades et. al. (2001) suggest that PSS is fully mediated through organizational commitment; while a growing body of research suggests that PSS can influence turnover outcomes separately from organizational related perceptions (e.g. Becker, T., 1992; Maertz, Griffeth, Campbell & Allen, 2007; Wayne et al., 2002). These

alternative findings suggest that turnover studies should consider the potential of POS and PSS to directly impact turnover decisions.

In the proposed model for this study, POS is hypothesized to be positively related to organizational commitment.

Autonomy

It is theorized that autonomy influences organizational commitment because autonomy is central to internal motivation (Deci & Ryan, 1985). Mathieu and Zajac (1990) demonstrated a small but positive relationship between autonomy and organizational commitment and, as previously discussed, Rosenholtz (1989) and Rosenholtz and Simpson (1990) found autonomy to be a strong predictor of commitment.

In this study, it is hypothesized that autonomy will be positively related to organizational commitment.

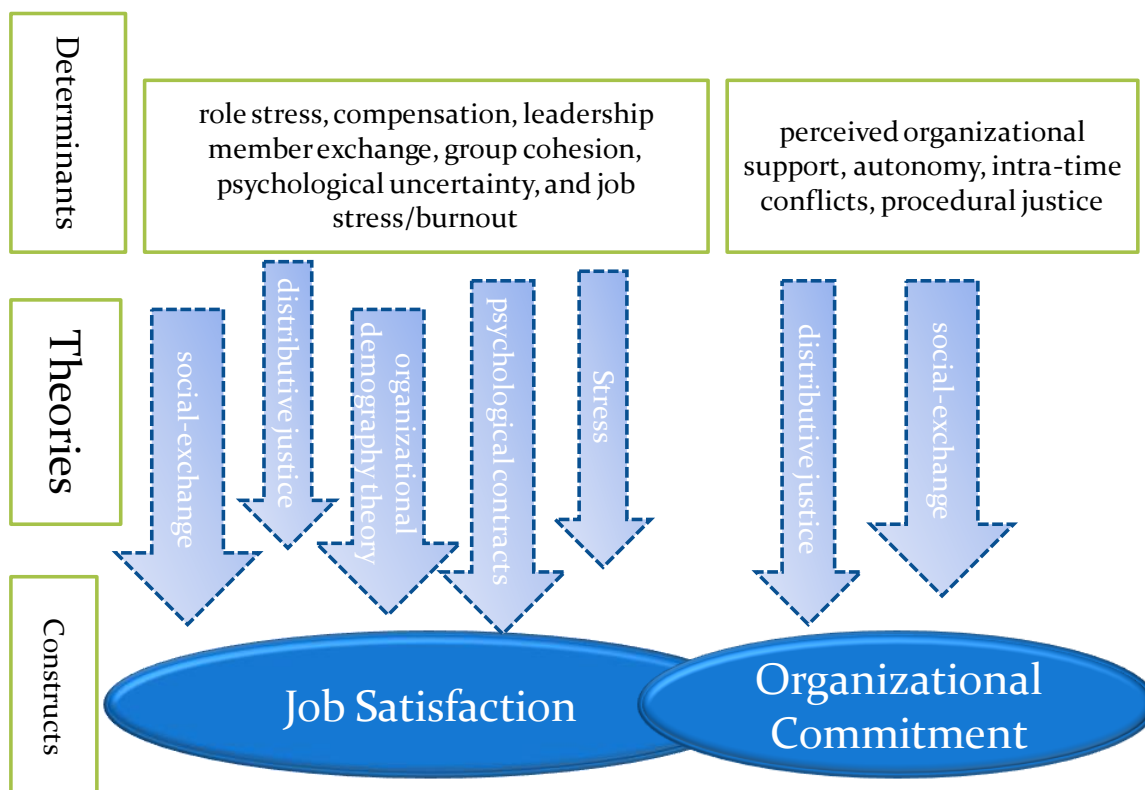
Procedural Justice

Folger and Konovsky (1989) hypothesized that procedural equity induces faith and confidence in the employees that the organization will distribute rewards fairly and equitably. If this faith and confidence is not met, then employees will withhold input (e.g. effort) and will seek employment elsewhere.

Equity from a personnel perspective can be defined by distributive justice; the idea that the proportionate relation between outcomes and inputs is equal for all people in the relationship (Wallace & Fay, 1988). This exchange relationship is constantly monitored by individuals within the organization (Adams, 1963), with perceptions of unfair exchanges impacting performance and morale (Herzberg, Mausner, & Snyderman, 1967).

Figure 2.2 summarizes the relationships between the determinants, theories and constructs of job satisfaction and organizational commitment.

Figure 2.2: Relationships between Determinants, Theories, and Constructs



Turnover Intentions

Turnover intention is a central construct in traditional turnover models (e.g. March & Simon; Mobley 1977; Price, 1977; Price & Mueller, 1986). These models assert that job dissatisfaction or a lack of commitment prompt a turnover process prior to actual turnover. While a majority of turnover models include these job attitudes in a structural network, their places in a structural network combined with turnover intention remains controversial, with some models theorizing that commitment mediates the influence of satisfaction (e.g. Price & Mueller, 1986), and others indicating a reciprocal causality between the two attitudes with each having a direct effect on turnover intentions (Mathieu, 1991). None the less, a substantial body of research reports a negative relationship between job satisfaction and turnover intentions (e.g. Lambert, Hogan, and Barton, 2001).

Turnover intentions is one of the most widely studied predictors of actual turnover behavior (Hom & Griffeth, 1995) and there is considerable body of research that has reported a positive relationship between turnover intention and actual turnover (e.g. Griffeth et al. 2000). In their meta-analysis Griffeth et al. (2000) found quit intentions to be the best predictor ($\rho_1 = 0.38$) of actual turnover.

However, this predictor of actual turnover has been largely ignored in research regarding teacher turnover. An exception is Cha (2008), in which, this construct was included in a structural equation model using data from the 1999-2000 SASS, along with the 2000-2001 TFS, and found that turnover intention had a positive direct impact ($\beta = 0.33$) on actual teacher turnover.

Economic Opportunity

Economic opportunity and perceived alternatives are central constructs in models of voluntary employee turnover (Price, 1977; Price & Mueller 1981; Steers and Mowday 1981), representing conceptualizations, at different levels, of the availability of jobs (Hom & Griffeth, 1995). While perceived alternatives represent an employee's perceptions of the labor market, economic opportunity refers to more objective conditions of the labor market.

Theoretically, economic opportunity is important to include in the model because even though an individual may have negative attitudes (e.g. lower levels of satisfaction and organizational commitment) the link between turnover intentions and actual turnover is clearly complex, involving perceptions of alternatives, search activities and a successful search. And, as Bretz, Boudreau and Judge (1994) demonstrated, job searches are frequently unsuccessful.

Labor economists have demonstrated that turnover rates and overall employment conditions are strongly associated at the aggregate level (Armknrecht and Early, 1972; Price

1977). However, these macro-level findings do not explain the underlying processes and reasons that individuals quit, which requires a different construct from industry turnover rates (Rousseau, 1985). Organizational studies suggest that economic opportunity and/or perceived alternatives may influence actual turnover at the individual level by moderating the relationship between turnover intention and actual turnover (e.g. Muchinsky & Morrow, 1980).

Although it is a central focus for labor-economic studies at a macro level, few organizational studies examine how economic opportunity influence employee turnover among individuals (Hom & Griffeth, 1995). One exception is Gerhart (1987), which found that regional unemployment rates moderated correlations between job satisfaction and turnover. Additionally, in their meta-analysis Carsten and Spector (1987) found evidence to suggest that the link between turnover intention and actual turnover is moderated by economic opportunity. In another meta analysis, Hom, Caranikis-Walker, Prussia, and Griffeth (1992) examined how various indices of unemployment moderated pathways between turnover intention and actual turnover. In their meta-analysis, Hom et. al. (1992) found that occupational unemployment moderated the pathway between turnover intention and actual turnover more so than other unemployment statistics, such as, national and regional unemployment rates.

Although both constructs are hypothesized to affect turnover or moderate its influences, organizational research has found a weaker relationship between perceived alternatives on individual turnover while labor economists have demonstrated a strong association between unemployment rates and quit rates (e.g. Hulin, Roznowski & Hachiya, 1985).

Little is known how economic opportunity influences teacher turnover. Economic opportunity has been included in some theoretical teacher turnover models (e.g. Cha, 2008); but, its moderating effects are not typically examined in teacher turnover models. To understand if,

and how, the conditions of the teacher labor market relate to teacher mobility outcomes, economic opportunity is included in this study.

Shocks

Lee and Mitchell (1994) argued that not all employee turnover is a result of accumulated dissatisfaction or a lack of organizational commitment; they proposed that shocks and/or image violations may induce the employee turnover process. In an analysis of 1200 “leavers” across various industries, Holtom, Mitchell, Lee, and Inderrieden (2005) found evidence that precipitating events, or shocks, were an immediate cause of turnover, as opposed to job dissatisfaction. Furthermore, findings from Morrell, Loan-Clarke and Wilkinson (2004) indicate that shocks that are expected are likely to be positive, personal and lead to unavoidable turnover; verses, shocks that are negative tend to be more work related, related to dissatisfaction, and result in avoidable turnover.

Teacher mobility studies indicate that significant personal life factors and school staffing actions account for a large proportion of turnover (e.g. Ingersoll, 2001b). Analyzing data from the 1990-1991 SASS and 1991-1992 TFS, Ingersoll (2001b) grouped reasons for teacher turnover into five categories, two of which were school staffing action and personal reasons. A large percentage of teachers that changed schools for year to the next cited these two reasons as major contributors to their turnover: 33% of teachers listed personal factors and 41% listed school staffing (Ingersoll, 2001b).

Actual Turnover

Most studies outside of education refer to employee turnover as individuals ceasing their membership within an organization (Hom & Griffeth, 1995). As previously mentioned, studies examining teacher retention and mobility often use various definitions of teacher turnover.

Macro level studies observing the teacher workforce as a whole typically treat teacher turnover

as attrition from the teaching field (e.g. Murnane & Olsen, 1989,1990); whereas, studies that focus on school organizational issues refer to changes in a teachers' school employment as turnover (e.g. Ingersoll, 2001a, 2001b). And, some studies distinguish between several different types of teacher turnover, accounting for overall attrition and, movement between and within districts (e.g. Lankford et al. 2002; Elfers, Plecki, & Knapp, 2006).

Though quantitative research examining teacher mobility using regression analysis usually treats teacher turnover as a dichotomous variable, either at the school level (e.g. Ingersoll, 2001a; Ingersoll & May, 2010) or at a more macro level of attrition from a state's public education teacher workforce (e.g. Murnane & Olsen, 1989, 1990); the nature of teacher mobility, and its implications for the strategic management of human capital at various levels of education (i.e. schools, school districts), warrants a more nuanced approach of accounting for multi-nominal turnover outcomes, that is, from one year to the next, a teacher staying in the same school (i.e. stayers), moving schools within the same district (i.e. movers in), moving out of a district (i.e. movers out), exiting the teaching profession in the public school system (i.e. exiters or leavers), or moving vertically within the system, that is for example, into an administrative role (i.e. movers up). These different mobility categories capture a more fine-grained picture of what sociologists refer to as "turnover" and what labor economists refer to as "labor mobility".

From a sociological perspective, "Turnover is the degree of individual movement across the membership boundary of a social system." (Price, 1977, p.4). Actual determination of membership boundary in a social system is a complex task; typically being assessed by three criteria: definition, interaction, and official sanctions (Price, 1977). An individual may be considered part of an organization if the person defines himself or herself as such. Second, the boundary of membership may be determined by the frequency of interaction between individuals. Third, membership can be assessed by whether an individual is subject to official

sanctions of the system. From this perspective, turnover involves crossing the membership boundaries of an organization. Though, most turnover research avoids this abstract concept of group membership and assigns membership based on payment from an organization (Price, 1977).

Economists frame teacher turnover as labor mobility, or “the actual movement of workers” (Parnes, 1954, p. 20). Parnes (1954) distinguished seven types of movement, one of which was “inter-firm movement” referring to movement from one firm to another or a change of employer. Though Price (1977) defined turnover as one type of labor mobility, namely, inter-firm movement, teacher mobility research also entails intra-firm movement, geographic movement, occupational movement, industrial movement, and movement in and out of the workforce. Stayers retain their group member within the school and school district in which they are employed, and are not involved in any interfirm movement. Those who move within a school district theoretically change their school group membership. This type of teacher mobility would involve intra-firm movement. Those that move out of their school district theoretically change both their school and school district group membership. This type of teacher mobility would involve inter-firm movement. Exiters or leavers theoretically change both their school, school district, and, potentially, professional group membership². This type of teacher mobility entails movement out of the public school teacher workforce (e.g. retirees), and potentially involves occupational and industrial movement. Teachers that move into administrator roles or other non-teaching supportive roles (e.g. resource specialists, librarians) potentially change their group membership within the school and school district, but are engaged in occupational, and not industrial, movement.

² An example of an exception to the change of professional group status would be teachers that enter teaching in the private market place.

An important dimension of these multi-nominal teacher mobility outcomes is that they have varying implications for the human and social capital losses, and, in turn, the impact on organizational performance, at different levels of the educational organizational system (e.g. the school, the school district, or the public education school system). For example, a teacher that moves within district, a school potentially loses some human and social capital, yet at the district level those capital losses would be less, since at that level the teacher is still considered a member within that organizational unit.

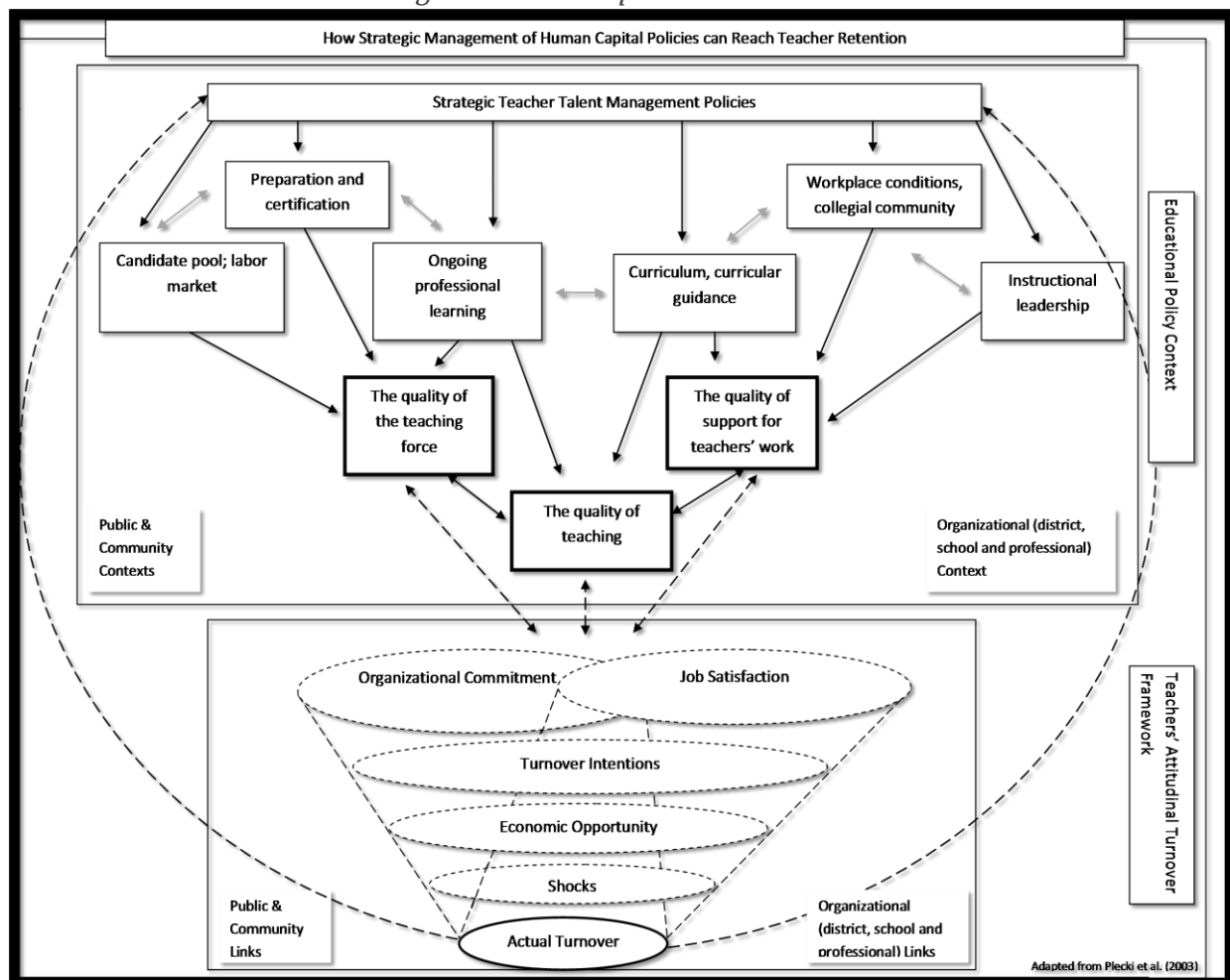
The next section presents the conceptual framework, which combines the information presented in this section regarding the educational context in which teacher retention and mobility is situated, and the construed individual level attitudinal constructs that influence turnover decisions. The framework is designed to signal potential strategic teacher management policies that may mitigate turnover.

Conceptual Framework

Figure 2.3 depicts how the strategic management of human capital policies can reach teacher retention and mobility through the three interrelated teacher quality factors. As previously discussed, teacher retention and mobility are potentially influenced by the quality of the teaching force, the quality of support for teachers' work, and the quality of teaching, as indicated by their separate factors (i.e. workplace conditions, instructional leadership, etc.). As shown schematically in figure 2.3, this extensive educational policy web is linked to a teacher attitudinal turnover framework, signifying that teachers' job satisfaction and organizational commitment are influenced by these factors associated with the quality of the teaching force, the quality of support for teachers' work, and the quality of teaching. In this study, influences associated with these factors are reframed as the determinants of job satisfaction and organizational commitment. The attitudinal turnover framework presents teachers' mobility

decisions as a combination of job satisfaction and organizational commitment, mediated by turnover intentions, and potentially influenced by economic opportunity and shocks.

Figure 2.3: Conceptual Framework



The attitudinal turnover framework applied in this study (depicted in figure 2.3) is rooted in early theories of voluntary employee turnover which focus on employee attitudes towards their job and organizations as antecedents for the turnover process (e.g. March & Simon, 1958; Mobely, 1977, 1982; Price, 1977; Price & Mueller, 1981; 1986; Steers & Mowday, 1981). These attitudinal constructs are typically termed *job satisfaction* and *organizational commitment*. This turnover framework is based on Price's (1977) structural model as well as its revisions (i.e. Price & Mueller 1981; 1986), integrating *job satisfaction*, *organizational commitment*, *turnover*

intentions, economic opportunity, and shocks, along with their structural links, all of which are supported by empirical findings (Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 1995; Holtom et al., 2008; Mathieu & Zajac, 1990).

Job Satisfaction refers to members' positive affective orientation towards membership in the organization (Price, 1972); and, more specifically to teachers, the degree to which teachers have a positive overall feeling towards their work (Perie & Baker, 1997). Based on March and Simon (1958) theoretical justification for examining job attitudes preceding turnover, and traditional turnover models (e.g. Price, 1977; Price & Mueller, 1981, 1986), job satisfaction is construed as a latent construct, which mediates the relationships between its determinants (also referred to as antecedents) and turnover intentions. Determinants of job satisfaction were considered from Herzberg's (1966) dual-factor satisfaction theory, which suggests teachers' overall satisfaction consists of a combination of motivators and hygienes; additionally, determinants of job satisfaction were derived and integrated from previous turnover models and empirical findings (e.g. Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 1995; March & Simon, 1958; Price & Mueller, 1981, 1986).

Organizational Commitment refers to a match between an individual's and organization's values, involvement for external rewards, and moral responsibility to the organization. Similar to job satisfaction, the framework depicts organizational commitment as a mediating latent variable. The determinants of organizational commitment are based on previous theoretical perspectives, turnover models, and empirical findings (e.g. Griffeth et. al., 2000; Hom & Griffeth, 1995; Price & Mueller, 1986; Mathieu & Zajac, 1990; Mowday, Porter, and Steer, 1982; Tett & Meyer, 1993). Early theories of employee turnover put a primary emphasis on organizational commitment (Porter, Steers, Mowday & Boulian, 1974); however, teacher

turnover studies rarely include organizational commitment in their turnover models (Borman & Dowling, 2008; Guarino et al., 2006).

Turnover Intentions embodies a conscious and calculated willingness to leave an organization (Tett & Myer, 1993) and entails thoughts of quitting (e.g. Mobley, Horner, & Hollingsworth, 1978). In the framework, turnover intentions mediates job satisfaction and organizational commitment's relationship with actual turnover, and directly affects turnover or is potentially moderated by economic opportunity. A fundamental belief of traditional turnover thinking is that decisions to withdraw from the organization best foretell future withdrawal (Hulin, Roznowski, & Hachiya, 1985; Mobley et al. 1979; Price & Mueller, 1986); yet most teacher turnover studies exclude this construct and do not examine the relationship between thoughts of quitting and actual turnover (see Cha (2008) for an exception).

Economic Opportunity represents objective conditions in the teacher labor market captured by unemployment rates. Based on existing theoretical perspectives, previous models, and empirical findings (e.g. March & Simon, 1958; Muchinsky & Morrow, 1980; Hom et al., 1992), this variable is included as a potential moderator between turnover intentions and actual turnover. Rooted in March and Simon's (1958) theoretical perspective, and based on Muchinsky and Morrow's (1980) following multidisciplinary model, economic opportunity is included as an immediate precursor to turnover. Although Hom et al. (1992) provided empirical evidence that indicates economic opportunity moderates the relationship between turnover intentions and actual turnover, in regards to the teacher labor market, little is known about the relationship between economic opportunity and actual teacher turnover.

Shocks denote jarring events or image violations that may trigger a quit decision (Lee & Mitchell, 1994). In this study, shocks consist of personal events, such as, a change in residence or taking leave for health reasons, and organizational events, for example, involuntary transfers.

It is theorized that these types of events may initiate turnover without regard to attitudinal constructs, previous turnover intent, or even economic opportunity; thus, this composite construct may have a direct effect on actual turnover. Previous research indicates that a large percentage of teachers cite major changes in personal or professional life as significant influences for their turnover (e.g. Ingersoll, 2001b). However, it is not known to what degree these factors influence actual turnover in a more comprehensive turnover model. The construct of shocks is included in this investigation to examine its relationship with teacher turnover, and because of its potential implications for informing teacher retention policies by assisting policies to target *avoidable* turnover.

Actual turnover is a multi-nominal (also referred to as unordered categorical) teacher mobility outcome consisting of teachers staying in the same school, moving schools within a school district, changing school districts, moving upwards, and exiting the public education system. Teachers that stay in the same school from the 2007-08 school year to the 2008-09 school year are referred to in this analysis as *stayers*. Teachers that move schools within the same school district from the 2007-08 school year to the 2008-09 school year are referred to in this analysis as *movers in*. Teachers that move to a new school district from the 2007-08 school year to the 2008-09 school year are referred to in this analysis as *movers out*. Teachers moving into administrator roles or other non-teaching supportive roles, are referred to as *movers up*. Teachers that exit teaching from the public school system from the 2007-08 school year to the 2008-09 school year are referred to in this analysis as *exiters or leavers*. Distinguishing between these different mobility outcomes may yield important insights into the nature of the different types of teacher turnover, ultimately aiding SHCM policies to target avoidable turnover.

The attitudinal turnover framework also includes two concepts that are not explored in this study, that is, community and organizational links. Teachers are situated in a community and

have ties to it. These community links, or lack thereof, potentially influence teachers' mobility decisions. Additionally, teachers may have varying degrees of links to the different levels of the organization. Teachers can be committed to their students, school, and/or profession.

Information from this teacher turnover model can be used to inform the design of SMHC policies by signaling problematic areas and, consequently, potential solution sets. Ultimately though, this framework suggests that strategic teacher talent management policies are about the relationship between teacher retention and the quality of teaching in the classroom.

Caveats

This study also discriminates between involuntary and voluntary teacher turnover by excluding involuntary teacher turnover. However, it can only account for cases in which teachers explicitly reported that mobility was not voluntary; it cannot account for voluntary departure that were implicitly forced by school and/or school district leaders. Furthermore, this study captures some basic factors related to unavoidable turnover (e.g. maternity leave, relocation), but there are likely more unavoidable factors triggering employee turnover that are not included. However, beginning to separate these different types of turnover allows this study to account for some turnover that is unavoidable, and to focus on avoidable voluntary teacher turnover that may be policy amendable by retention management strategies.

The subsequent section presents the methodology of the study, which includes the hypotheses that were tested, a description of the data sets and sample that were analyzed, how the determinants and constructs were operationalized, and the procedures for the structural equation modeling.

Chapter III: Methodology

This study is a secondary data analysis of the 2007-2008 Schools and Staffing Survey (SASS) and 2008-2009 Teacher Follow up Survey (TFS). Structural equation modeling was used to examine the relationships between job satisfaction, organizational commitment, turnover intentions, economic opportunity and actual turnover. This modeling process entails a two part analysis: development of the measurement models and analysis of the structural models. Confirmatory factor analysis (CFA) was used to develop the measurement models for job satisfaction, organizational commitment, and turnover intentions. After the CFA models were tested, the full structural equation models were conducted. The final structural model was used for the multi-group comparisons. To guide the modeling process, several groups of hypothesis were formulated.

Research Hypothesis

Based on the theoretical framework and the empirical literature on voluntary employee and teacher turnover, several sets of hypothesis were formulated regarding the relationships between job satisfaction, organizational commitment, turnover intention, shocks, economic opportunity, and actual turnover.

The first set of hypotheses states the anticipated relationships between the determinants and the latent constructs.

Hypothesis 1a: Job satisfaction will be a first order latent factor with six indicators.

Hypothesis 1b: Organizational commitment will be a first order latent factor with four indicators.

Hypothesis 1c: Turnover intentions will be a first order latent factor with five factors.

The second set of hypotheses presents the proposed relationships between the constructs of job satisfaction, organizational commitment, turnover intention, shocks, economic opportunity and actual turnover:

Hypothesis 2a: Job satisfaction will be negatively related to turnover intentions.

Hypothesis 2b: Organizational commitment will be negatively related to turnover intentions.

Hypothesis 2c: Turnover intentions will be positively related to actual turnover.

Hypothesis 2d: Shocks will be positively related to actual turnover.

Hypothesis 2e: Economic opportunity will influence the relationship between turnover intention and actual turnover.

To test these hypotheses, this study will use a combination of confirmatory factor analysis and structural equation modeling.

These analyses were conducted on a sample from two nationally representative datasets, the SASS and TFS, provided by the National Center for Education Statistics (NCES). These datasets are discussed below.

Data Sources

The 2007-2008 Schools and Staffing Survey (SASS) and 2008-2009 Teacher Follow-up Survey (TFS) were analyzed in this study. These data sets provide descriptive data on the context of elementary and secondary education including topics on teacher demand and teacher characteristics, along with teachers' perceptions of school conditions and problems in their schools (Tourkin et al., 2010). These measures can be used to examine job satisfaction (e.g. Cha, 2008; Perrie & Baker, 1997), organizational commitment, and turnover intention (e.g. Cha, 2008) factors. The 2008-2009 TFS data consists of a subset of the SASS sample that are tracked in the following school year to monitor teacher mobility outcomes from one year to the next.

The 2007-2008 Schools and Staffing Survey

The SASS is conducted by the National Center for Education Statistics (NCES) on behalf of the U.S. Department of Education in order to provide extensive data on the characteristics and qualifications of teachers and principals, along with working conditions of schools across the nation. SASS is the largest, most extensive sample survey of k-12 school districts, schools, and teachers in the United States, and includes a small longitudinal component consisting of a subset of teachers that respond to the SASS being surveyed in the subsequent school year with the TFS. Combined, these two datasets allow researchers to examine the antecedents of teacher attrition.

Originally designed to provide education policymakers and researchers with data on public and private schools in regards to their programs, teachers, and staffing levels, the SASS has been redesigned several times to address methodological difficulties and insufficient questionnaires (Mullens & Kasprzyk, 1996). Following a major redesign, SASS has since been conducted on 4-year intervals, 1999-2000, 2003-2004, and 2007-2008. The 2007-2008 follows the traditional methodology of a mail-based survey, followed up with telephone and field interviews. (For a review of the documentation on 2007-2008 SASS, see Tourkin et. al. 2010)

The 2007-08 SASS consists of five types of questionnaires: school district questionnaires, principal questionnaires, school questionnaires, teacher questionnaires, and school library media center questionnaires. A majority of variables were drawn from the public school teacher's questionnaire section of the survey, which includes nine sections: general information, class organization, educational background, certification and training, professional development, and working conditions.

The 2008-2009 Teacher Follow-up Survey

The objective of the 2008-09 TFS is to provide information on teacher retention, mobility and attrition among elementary and secondary teachers who teach grades k-12 in all 50 states by tracking a sample of the elementary and secondary school teachers who participated in the previous 2007-08 SASS. The TFS provides subsequent data on teachers' employment, teaching status, and job perceptions. The 2008-09 TFS was completed by approximately 4,750 current and former teachers. Out of these respondents 2,600 were *stayers*, 890 were *movers*, and 1,260 were *leavers*. (For documentation for the 2008-2009 Teacher Follow-up Survey see Cox et. al. forthcoming). Of the 3,380,300 public school teachers 84.5% remained at the same school, 7.6% moved to a different school, and 8.0% left the profession during the following year. (Keightler, 2010)

Of the movers, 51.6% moved from one public school to another public school in the same school district, while 45.5% moved from one public school district to another public school district (Keightler, 2010); thus, approximately 3.9% of K-12 public school teachers moved in their school district (i.e. *movers in*) and 3.5% of K-12 public school teachers moved out of their school district (i.e. *movers out*). (For documentation on the 2008-2009 Teacher Follow-up Survey, see Cox et. al. forthcoming)

Sampling Weights

To create a national, regional and state representative sample for related components (e.g. schools, teachers, principals, school districts) of public elementary and secondary schools, the SASS employs a complex survey design, which includes stratification (sampling each subpopulation independently), clustering (selection of teachers within schools), and over-sampling (over selection of teachers with certain characteristics (e.g. movers and leavers)). In this type of survey, direct estimates of the sampling errors will typically underestimate the

sampling variability in the summary statistics and distort test of statistical significance (Hahs-Vaughn, 2005; Thomas & Heck, 2001). To compensate for this bias, NCES develops weights and replicate weights for the SASS and TFS to be used in an analysis to produce unbiased population estimates. Essentially, these weights intend to capture and adjust for the probability of selection, and are inversely proportional to the probability of selection. (For a review of the weighting and variance estimation for the 2007-08 SASS, see Tourkin et al. (2010)).

Following from the recommendations and simulations provided by Asparouhov & Muthén (2006a; 2006b) and Asparouhov (2004; 2005; 2006), the TFS weights and corresponding replicate weights were used in the analysis to compensate for the complex survey design. Applying the sampling weights makes the results from this analysis generalizable to the population of the nation's K-12 full-time public school teachers, except for those that were excluded from the analysis. However, for some analysis it is not possible to use the weights and replicate weights with multinomial (also referred to as unordered categorical) outcomes (Muthén & Muthén, 1998-2010). When the unweighted sample is used, for security reasons required by the Institute of Education Sciences (IES) and the National Center for Education Statistics (NCES), the sample size is rounded to the nearest ten.

Analytic Sample

This study uses a restricted sample of teachers in the 2007-08 SASS file and the companion 2008-09 TFS, and focuses on full-time, K-12 public school teachers' turnover. The analytic data for the study was extracted from the SASS and TFS through several steps. First, the TFS sample of former and current teachers (n=4,750) were merged and matched with their cases in the 2008-09 SASS data (public school teachers n= 37,280)³. In this process, private school

³ Following security protocol procedures from IES for the dissemination of research using secure data, all unweighted sample numbers and entities are rounded to the nearest ten.

teachers were excluded from the merge (former n=310 and current n= 540), which left 3,900 public school teachers (former n=960 and current n=2,950) in the dataset. Of the 3,900 public school teachers, 450 were not regular full-time teachers (e.g. they were part-time, itinerant, long-term substitute, library media specialist, support staff, etc); those individuals were deleted from the dataset leaving 3,460 regular full-time public school teachers. Out of the 3,460, 170 individuals reported that their contract was not renewed; those individuals were excluded due to the fact that their mobility was not voluntary. After this process, the remaining sample consists of 3,290 cases of primarily voluntary turnover of regular full-time public school teachers⁴.

Stayers

Among the 3,290 sample, 1,970 (59.8%) are defined as *stayers*; those are individuals who were teaching in the same school as they were when they responded to the 2007-08 SASS one year earlier. 270 (8.1%) are *movers in* and 290 individuals (8.7%) are *movers out*. 140 individuals (4.2%) are *movers up*; those individuals left their teaching position to “move up” in elementary or secondary education occupation (e.g. administrators, counselors, curriculum coordinators) or who left teaching to pursue an educational occupation outside of elementary or secondary levels (e.g. postsecondary instructors). And, 630 individuals (19.2%) are *leavers*.

Typically, teacher turnover regression models do not differentiate between these multinomial turnover outcomes, although there are studies that examine inter-district movement (e.g. Betts et al., 2000; Lankford et al., 2002; Plecki et al., 2005). In order to assess the implications for strategically managing teacher talent in schools and districts by supporting teachers and their work, this study is interested in examining how the relationships between the factors vary for stayers, movers in, movers out, movers up and leavers.

⁴ A small percentage of these teachers movement is likely involuntarily. However, it is not possible to identify involuntary transfers other than through teachers reported dissatisfaction with an involuntary transfer, which likely slightly underestimates the overall percentage of teachers that are involuntarily transferred.

Given the complexity of the models, the sample size is adequate. Jackson (2003) provided a useful rule of thumb, referred to as $N:q$ rule, concerning the relationship between sample size and model complexity, which is appropriate for estimation methods using maximum likelihood. This formula suggests sample size be considered in terms of a ratio, in which N refers to the number cases and q refers to the number of model parameters that require statistical estimates, with an ideal minimum sample size being 20:1. The most complex model in this study (shown in chapter 4 in figure 4.21) has 61 parameters, yielding a ratio roughly of 54:1.

Method: Structural Equation Modeling

A structural equation modeling (SEM) approach is the primary statistical method used in this study. SEM is a collection of statistical techniques that allow a set of relationships between multiple independent and dependent variables to be examined (Tabachnick & Fidell, 2007), which has proven to be a useful analytical framework for examining complex, interrelated, and multidimensional models (Tomarken & Waller, 2005). And, theoretical constructs that cannot be observed directly, referred to as *latent factors*, can be assessed with SEM. In this study, the latent factors are job satisfaction, organizational commitment, and turnover intentions. Assessment of these unobserved (latent) variables is determined by direct measurement of observed variables, thus providing an indirect measure of an unobserved variable (Byrne, 2012). In other words, these manifest variables serve as indicators of an underlying construct that they are meant to represent (Byrne, 2012).

A primary advantage of SEM is that it can simultaneously estimate both the measurement issues (i.e. the measurement models) and the causal relationships (i.e. the structural model) in one full model, which statistically and visually represents the complex relationships between variables (Bollen, 1989; Kline 2011). Using one of several estimation techniques, SEM simultaneously derives estimates from the measurement and structural parameters. Omnibus fit

indices and parameter estimates were used to judge the model fit, with acceptable fit statistics supporting the overall latent factor model, significant factor loadings upholding the measurement models, and significant causal parameters supporting the structural model. SEM captures the direct effects as well as the indirect effects among latent variables allowing for an estimate of a combined effect. In an analysis using multiple regressions, when a hypothesized direct effect is insignificant, the variable is dismissed, consequentially ignoring any indirect effects. Thus, SEM provides a more holistic approach compared to alternative statistical methods (e.g. multiple regression) that provide mini-tests of model components on an equation by equation basis (Tomarken & Waller, 2005).

Compared to other methods, SEM analysis can more accurately estimate the effects of constructs in turnover models by controlling for random and systematic errors (Griffeth, 1995). In the social sciences, there is often bias due to measurement error associated with using imperfect measures; SEM compensates for this by using multiple indicators for latent variables and by assessing measurement error via explicit estimates of error variance parameters (Byrne, 2012).

Additionally, an SEM approach may develop an integrative approach in which models are combined to eliminate superfluous models and generate more parsimonious explanations (Griffeth, 1995). While most examinations of theory attempt to validate a single turnover model, untested alternatives may provide a closer fit (Hom, Caranikis-Walker, Prussia, & Griffeth, 1992), comparing competing models may help establish relative validity of the model (Platt, 1964). Instead of just examining predicative validity, SEM analysis can assess the relative substantive validity across models, using parameter estimates and omnibus fit indices (James, Mulaik, & Brett, 1982). Additionally, SEM can statistically compare competing models that are nested (Netemeyer, Johnson, & Burton, 1990).

Finally, for a clearer conceptualization of the theories of the relationships between the constructs, SEM presents the direction of each effect and the correlations among all of the variables in one complete picture (Hair et al., 1998; Kline, 2011). For all of these reasons, SEM is an appropriate and suitable approach for examining the relationships between the determinants, latent factors and teacher turnover.

Data Analysis Procedures

The six basic steps outlined in Kline (2011) for SEM were followed, which are: specifying the model, evaluating model identification, selecting the measures (includes collecting, preparing, and screening the data), estimating the model, respecifying the model, and reporting the results. Additionally, the analytic approach in this study follows what Kline (2011) refers to as model generation, that is, if and when the initial model did not fit the data, it was modified, with the goal of “discovering” a model that makes theoretical sense, fits the data, and is relatively parsimonious.

The original data was screened for problems including, collinearity, outliers, and missing data by the guidelines presented in Kline (2011). Moreover, since SEM assumes multivariate normality, published recommendations were followed for examining the data for multivariate and univariate normality (e.g. Kline, 2011; Tabachnick & Fidell, 2007). During this process, some items were reverse coded or recoded. In general, lower values indicate more favorable conditions while higher values indicate less favorable conditions, except on items that are negatively phrased. (See appendix A for all variables and recoding.) The data was analyzed with PSAW statistics 18 (a version of SPSS) and Mplus 7.

The analysis was approached in a two-staged process, that is, by testing and refining the measurement models before evaluating the structural model. To control for measurement error, each construct was assessed with multiple indicators, and then a measurement model was

estimated. Subsequently, the structural model was evaluated. This two-stage process of testing and refining the measurement model, before assessing the structural model can develop more support for the theory (Anderson and Gerbing, 1988), with prior validation of determinants enhancing substantive validity (Schwab, 1980).

The general SEM model consists of two submodels: a measurement model and a structural model. The measurement sub models prescribe a factor loading between indicators and latent factors, thus defining the relations between the observed and unobserved variables. The structural sub model of the latent factors depicts the theorized structural relations among the factors and defines the relations among the latent variables by specifying the manner by which the latent variables directly or indirectly influence changes in certain other latent variables (Byrne, 2012).

Development of the Measurement Models

Confirmatory factor analysis (CFA) was conducted to test the factor structure of the latent factors. Using CFAs, observed variables were tested to determine if their factor loadings were significant and appropriately placed. Stevens (1992) provided a table of critical values against which loadings can be compared. For sample sizes over 1000, Stevens (1992) recommended values greater than .162. Items with loadings of .40 or above were considered for inclusion in the subscales (Hair et al, 1998; Ingersoll, 2001; Ingersoll & May, 2010). And, Cronbach's alpha values of .6 and above for each full scale were considered acceptable.

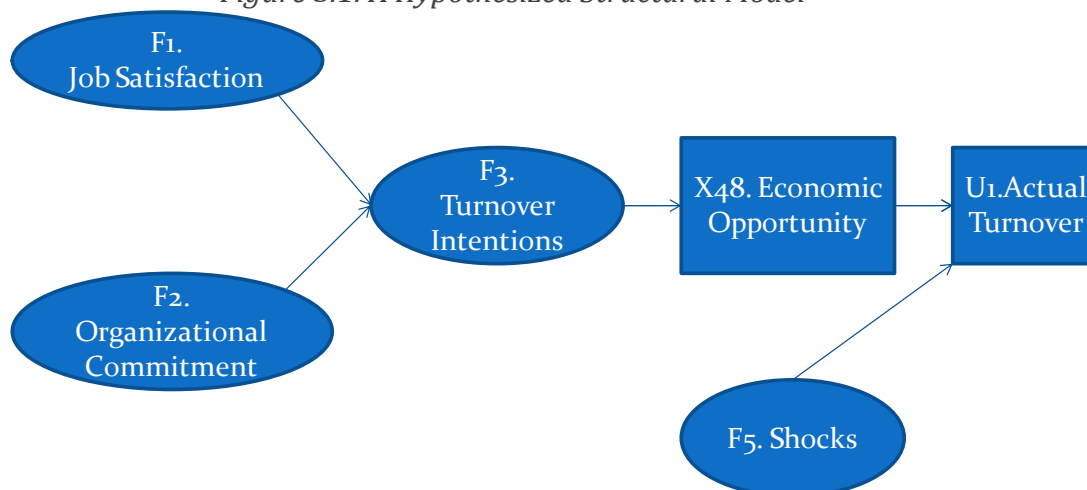
Following Anderson and Gerbing's (1988) suggestion, first the measurement models were examined using exploratory, separate estimation, and respecification techniques, to find the best fitting models. This process was conducted prior to assessing the structural model to reduce "interpretational confounding" (Gerbing, 1988).

Once overall fit of the models was established, the construct validity, error variance, indicator reliability, Cronbach's alpha, and construct reliability were assessed. The construct validity was assessed on the standardized factor loadings, which measures the amount of scale score variance that is accounted for by the underlying factors. The indicator reliability, that is, the square of the standardized factor loadings, was used to assess the variation in the variable explained by the construct which it is supposed to measure. And, Cronbach's alpha was used to measure internal consistency. The results of the CFAs that yield the factor structure of the indicators and latent constructs were incorporated into the structural model.

Development of the Structural Model

The substantive theory is embodied within the structural submodel (Hom & Griffeth, 1995). The proposed model indicates organizational commitment and job satisfaction are negatively related to turnover intentions, which is positively related to actual turnover, but moderated by economic opportunity. Additionally, shocks are expected to account for some turnover regardless of economic opportunity. This is consistent with integrative turnover process models and research (see Hom & Griffeth, 1995; Holtom et. al. 2008, for a review), although distinguishing between different types of quits with multi-nominal turnover outcomes is unique. Figure 3.1 shows the hypothesized structural model for the relationships among the latent variables in the study, along with the measured multi-nominal turnover outcomes.

Figure 3.1: A Hypothesized Structural Model



5

The proposed structural model can be summarized as follows:

Job Satisfaction = f (Determinants of Job Satisfaction (i.e. role stress, leader member exchange, compensation, group cohesion, psychological uncertainty.)

Organizational commitment = f (Determinants of Organizational Commitment)

Turnover intention = f (Job Satisfaction and Organizational commitment, E_1)

Shocks = f (Personal and Assignment/Credential factors, E_2)

Economic opportunity = f (Unemployment rates, E_3)

Actual turnover = f (Job satisfaction, Organizational commitment, Turnover intention, Economic opportunity, Shocks, E_4)

Steps for developing a full structural model were conducted according to Kline (2011).

To evaluate model identification, steps were taken to confirm that the model is theoretically able to be identified, that is, it is possible to derive a unique estimate of every model parameter (Kline, 2011). Prior to analyzing the data, the model identification was evaluated using identification heuristics. This identification process entailed examining the total number of parameters that can be estimated, by assessing the model degrees of freedom based on the $df_M = p -$

⁵ This study will use the notation adopted by Mplus; for a full explanation of this notation, see Muthén & Muthén, 1998-2010.

q rule, where p is the number of observations (number of observations equals, $v(v+1)/2$, when means are not analyzed) and q is the number of estimated parameters (i.e. the direct effect on endogenous variables from other variables, and the variances and covariances of exogenous variables). Steps will also be taken to avoid empirical underidentification (Kenny, 1979), in which highly correlated variables reduce the number of effective observations (provided by $v(v+1)/2$).

Estimation of the model entailed: evaluating the model fit, interpreting the parameter estimates, and considering equivalent or near-equivalent models. When the initial data did not fit the data well, the model was respecified and reanalyzed. During this respecification process, possible alternatives in the proposed model due to theory or empirical results (e.g. shocks direct or indirect effects on actual turnover) were considered. Once satisfactory fit were achieved, then the parameter estimates were examined to determine whether estimates of the parameters were meaningful.

To assess the model fit, a combination of absolute, incremental (also referred to as comparative), and predictive indices of fit were used. The commonly used chi-square test was not included due to the fact that this model fit test is not available in Mplus 7 when replicate weights are used in the analysis. Absolute indices of fit assess the extent to which an a priori model reproduces the sample data; whereas, incremental indices measure the proportionate improvement in fit of a hypothesized model compared to a baseline model (Hu & Bentler, 1999). Absolute fit indices indicate only how well the hypothesized model fits the data and decrease as goodness-of-fit improves, attaining their lower-bound value of zero when model fit is perfect (Browne et al., 2002).

In this analysis, the two absolute fit indices commonly used are the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR).

MaCallum and Austin (2000) strongly recommended the use of RMSEA for three reasons: 1) It is adequately sensitive to model misspecification, 2) there are common interpretative guidelines, and 3) it is possible to build confidence intervals around RMSEA values. For RMSEA values less than .05 indicate good fit, and values as high as .08 represent reasonable errors of approximation in the population (Browne & Cudeck, 1993). Similarly, MacCallum et al. (1996) noted that RMSEA values ranging from .08 to .10 indicate mediocre fit.

The Root Mean Square Residual (RMR) represents the average residual value derived from the fitting of the variance-covariance matrix for the hypothesized model to the variance-covariance matrix of the sample data. However, because these residuals are relative to size of observed variables, the residuals are best interpreted in the metric of the correlation matrix (Hu & Bentler, 1995), which is represented by the SRMR. In a well fitting model the SRMR value will be .05 or less. The loglikelihood values report two values—one for the hypothesized model (H_0) and one for the baseline model (H_1). These values are used in the computation for two model fit indices, the AIC (Akaike, 1987) and BIC (Raftery, 1993).

For the analysis of the models, maximum likelihood was used for the estimation method. One approach to modeling complex survey data is to compute the standard errors and a chi-square test of model fit taking into account stratification, and non-independence of observations due to unequal probability of selection. In this approach, sampling weights are used to estimate parameters by maximizing a weighted loglikelihood function and standard error computations use a sandwich estimator (Muthén & Muthén, 1998-2010). When it was possible the weights and replicate weights were used in the analysis.

The hypothesized full model was used to test the relative weights of the determinants of job satisfaction and organizational, and to examine the associations between the latent constructs of job satisfaction, organizational commitment, turnover intentions and actual turnover.

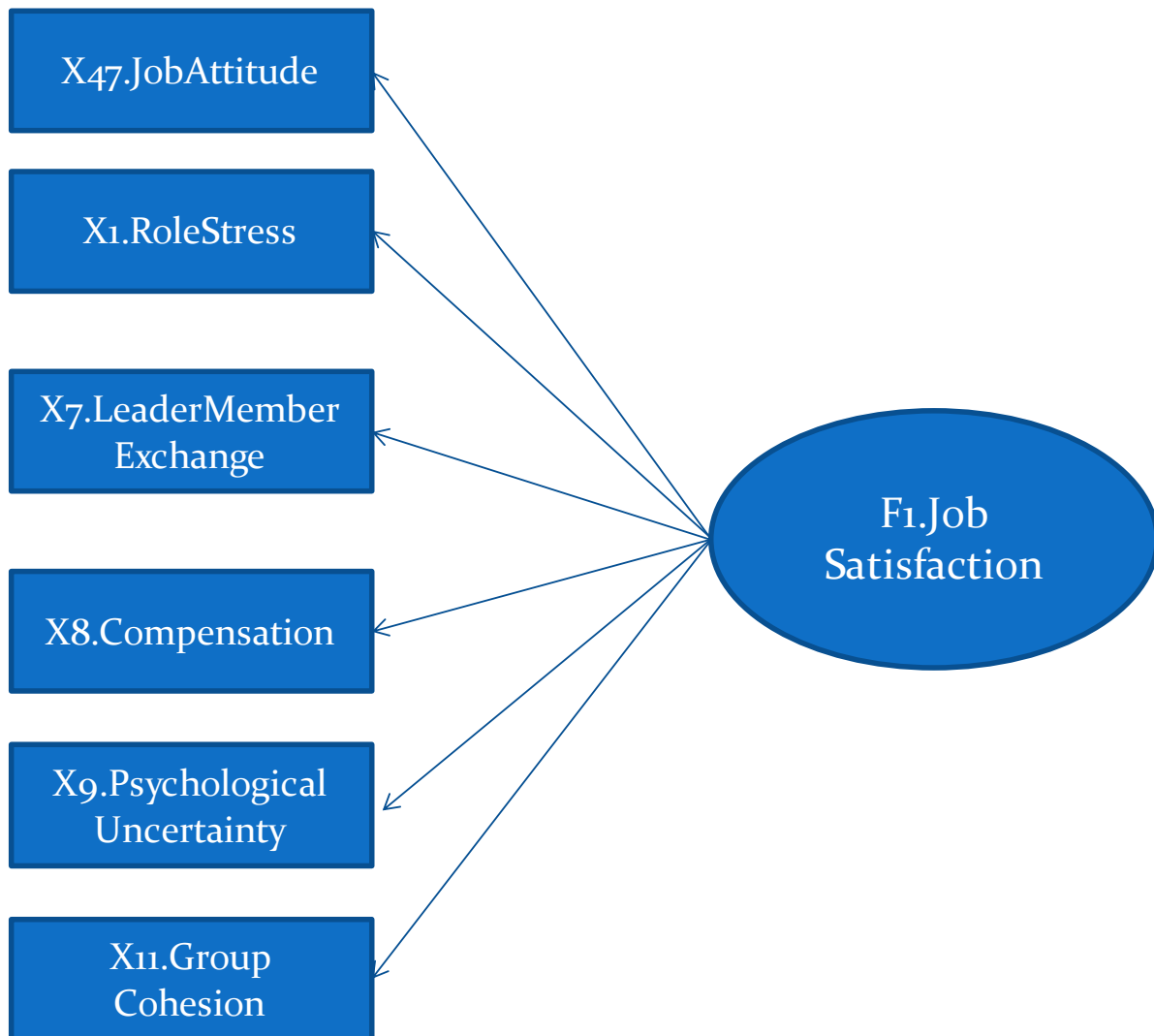
Latent Factors and Indicators

Prior to conducting the factor analysis, items from the survey were selected to represent the constructs based on previous theory and empirical evidence. The proposed measurement models for the latent factors follow below.

Determinants of Job Satisfaction

Job satisfaction is defined as the degree to which employees are content with their job. In this study, this construct is treated as a latent factor with effect indicators, that is, the latent factor explains variance in the measured indicator variables. As depicted in the proposed measurement model (see figure 3.2 below), the determinants of job satisfaction are: job attitude, role stress, leader-member exchange (LMX), compensation, psychological uncertainty, and group cohesion. (The corresponding survey items are listed in appendix A.)

Figure 3.2: Proposed Measurement Model of Job Satisfaction



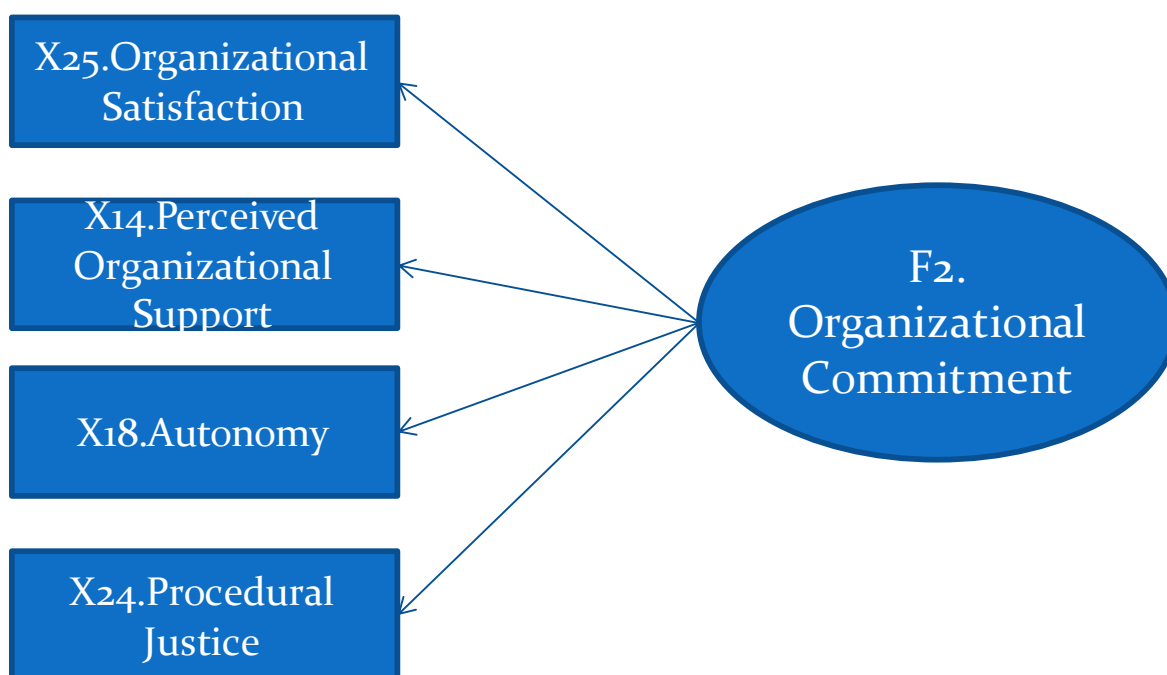
The first variable was used to scale the latent factor in the model. The first question asks teachers to rank their overall job satisfaction (“I am generally satisfied with being a teacher at this school”) on a four point Likert scale (1=Strongly agree to 4= strongly disagree).

Determinants of Organizational Commitment

Organizational commitment is a construct with three dominant dimensions: 1) attitudinal, 2) calculative and 3) normative (Hom & Griffeth, 1995). H. Becker’s (1960) side-bet concept of

organizational commitment focuses on its cost based (calculative) nature, that is, the costs associated with leaving the organization. However, the measures provided in the SASS data pertain more directly to the affective dimension; accordingly several determinants were assessed, including: organizational satisfaction, perceived organizational support, autonomy, and procedural justice. The proposed measurement model for organizational commitment is presented in figure 3.3. (The corresponding survey items for the variables are listed in appendix A.)

Figure 3.3: Proposed Measurement Model of Organizational Commitment



The first variable was used to scale the latent factor and was constrained to one. All of these items are also scaled on a four-point Likert scale. Only autonomy was reverse coded.

Turnover Intention

Turnover intention is a construct that represents a conscious and calculated willingness to leave an organization (Tett & Meyer, 1993) and entails thoughts of quitting (e.g. Mobley, Horner

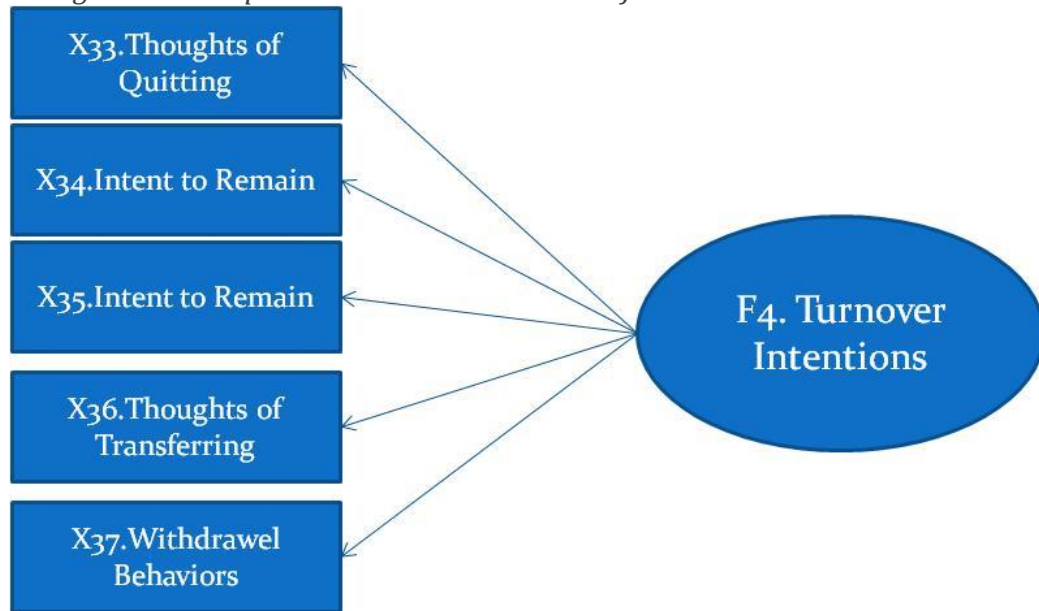
& Hollingsworth, 1978). In the analysis, this construct is treated as a latent factor with multiple effect indicators, implying that the latent factor explains variance in the measured indicators.

To measure the latent factor of turnover intention and reflect individuals' intent to remain, thoughts of quitting and their withdrawal behaviors, five items were used as effect indicators. The first item asks "How long do you intend to remain in teaching?" and has nine response options, several of which regarding retirement benefits will be grouped. The main response options include: 1) as long as I am able, 2) until eligible for benefits, 3) undecided at this time, 4) until a specific life event, 5) until a more desirable job opportunity comes along, and 6) definitely plan to leave as soon as I can. Several responses were combined and recoded; for the recoding categories, see appendix A. The second item asks, "If you could go back to your college days and start over again, would you become a teacher or not?" This item has five potential responses ranging from "certainly would become a teacher" to "certainly would not become a teacher".

Two of the five items reflect individuals' thoughts of quitting. Both variables are scored on a 4-point Likert scale (1=strongly agree to 4=strongly disagree) and ask "I think about transferring to another school" (item T0317) and "If I could get a higher paying job I'd leave teaching as soon as possible" (item T0316). These four items capture thoughts of quitting at the school and professional level. The last item is used in the model to reflect individuals' withdrawal responses. This item ask respondents to rank on a 4-point Likert scale the following comments: "I don't seem to have as much enthusiasm now as I did when I began teaching."

All together the effect indicators represent a latent to manifest (Grace and Bollen, 2008) measurement model for turnover intention. The proposed reflective measurement model is:

Figure 3.4: Proposed Measurement Model of Turnover Intentions



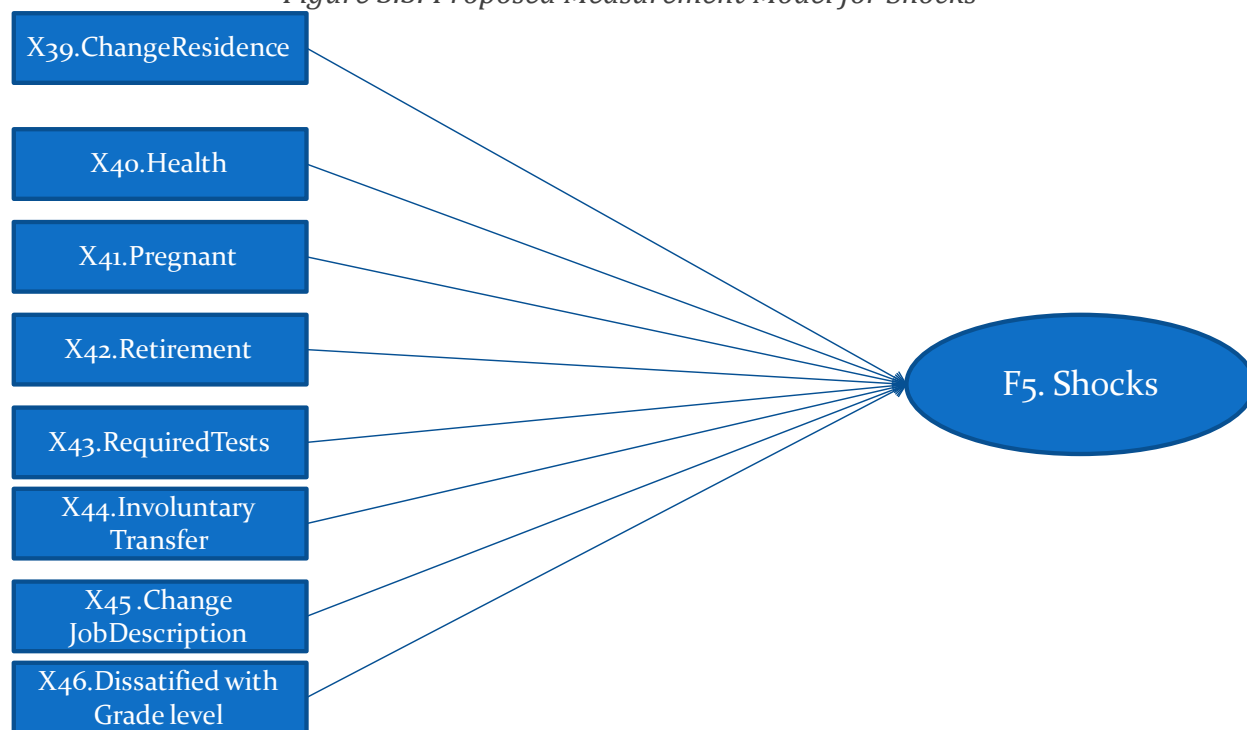
Shocks

Shocks is a construct which intends to capture some particularly jarring event that may initiate the process of quitting or induce image violations (Lee & Mitchell, 1994). Due to the nature of shocks and its indicators, in several of the models, shocks is treated as an emergent factor with cause indicators (also referred to as a formative indicator model) in which the direction of causality is from the observed measures to the construct (Bollen, 1989). In addition to the difference in the relationship between the construct-indicator, formative indicator models differ from reflexive models in several ways: 1) correlations between the indicators is not relevant to the model, 2) eliminating formative indicators from the model is apt to change the meaning of the composite construct, and 3) measurement error is taken into account at the construct level, not at the indicator level.

The indicators for shocks consist of eight items ranked by a 5-point Likert scale (1=Not at all important to 5=Extremely important) included in the TFS. These items are categorized by

personal life factors and assignment/credential factors. Personal life factors include: because “I had a change in residence or wanted to take a job more convenient to my home”, “I was pregnant or needed more time to raise my children”, “My health or the health of a loved one required that I leave the profession”, and “I decided it was time to retire”. Assignment/credential factors include: because, “I have not taken or could not pass the required tests”, “I was being involuntarily transferred and did not want the offered assignment”, and “I was dissatisfied with changes in my job description or responsibilities at last year’s school”. It is hypothesized that a teacher turning-over due to personal factors follows a script, that is, a pre-existing plan of action and does not consider the labor market conditions, and thus would load directly onto actual turnover. The proposed measurement model for shocks is:

Figure 3.5: Proposed Measurement Model for Shocks



Due to the design of the survey, not all individuals responded to these items. For example, stayers were not asked any of these items, and only former teachers responded to items

X41 and X42. To analyze how shocks may influence actual turnover, a logistic regression was conducted.

Economic Opportunity

The economic opportunity variable represents objective conditions of the labor market. In this study, economic opportunity for teachers is represented by unemployment rates in their respective counties. Teachers were matched to the 2008 average unemployed rate in their county by imputing data from the U.S. Bureau of Labor Statistics, which provides statistical information on local area unemployment.

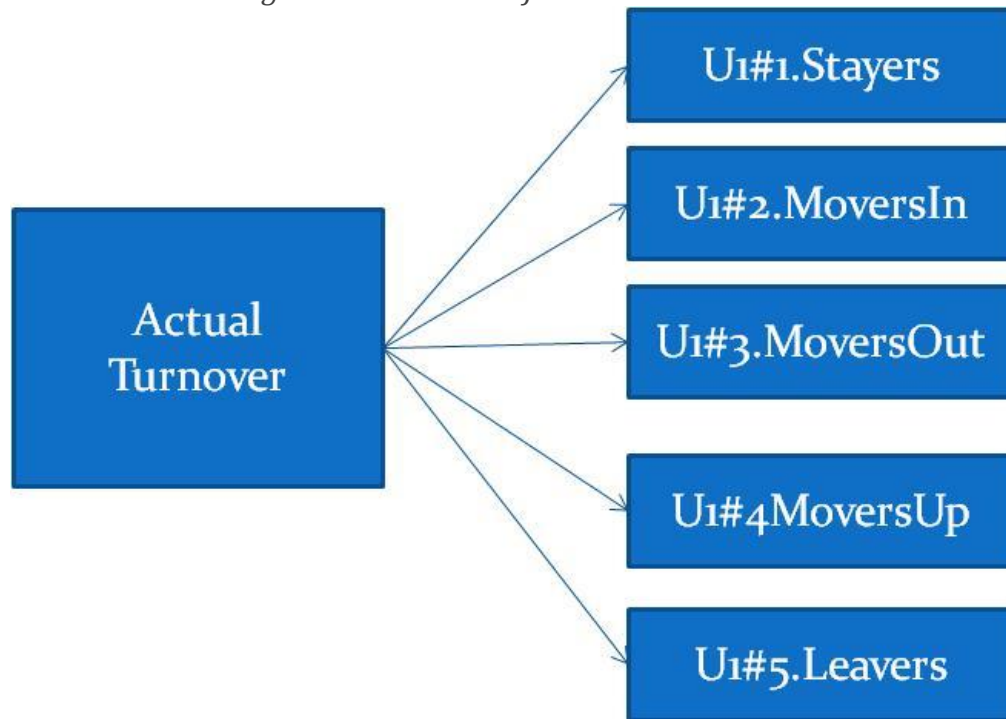
Actual Turnover

Actual turnover is treated as a multi-nominal (unordered categorical) mobility outcome. The 2007-08 TFS differentiates between *stayers*, *movers in*, *movers out* and *leavers* with a combination of several items from the TFS. The first item (MVTYP) in the current TFS asks “Which of the following best describes your move from last year’s school to your current school?” and has two response options of interest: 1) “moved from one public school to another public school in the same school district”, which are categorized as *movers in*, and 2) “moved from one public school district to another public school district”, which are categorized as *movers out*. Individuals that moved from a private school to a public school, and individuals that moved from a one private school to other were excluded from the study; while individuals that moved from a public school to a private school are categorized as *leavers*.

The second item (REGCL) is on the former TFS and asks, “Do you currently teach any regularly scheduled class(es) in any grades pre-K-12?”. Individuals that respond “no” to that item and, are not currently on leave of any sort, are termed *leavers*. Additionally, individuals that are working in a school or school district, as an administrator or professional staff, and/or in a

position in the field of pre-k or postsecondary, are considered *movers up*. Figure 3.6 shows the multinomial mobility outcomes.

Figure 3.6: Outcomes for Actual Turnover



The next chapter presents the results of the analysis including the descriptive statistics for the sample and indicators, along with the measurement and the structural models.

Chapter IV: Results

This chapter provides basic descriptive data on the sample and the variables, and reports the results of the measurement and structural models. It provides the relative importance of the variables affecting job satisfaction, organizational commitment, turnover intention, shocks and actual turnover. Subsequently, it presents the findings from the structural models with the relationships between job satisfaction, turnover intention, economic opportunity, and actual turnover. Lastly, an analysis is conducted on a specific subset of beginning teachers working in schools in urban locales.

Descriptive Results

This section presents basic descriptive statistics on the sample and the variables. These descriptive statistics include: means, standard deviations, and frequencies. Basic teacher characteristics are presented including gender, race, highest degree, subject area, certification, teacher experience, and age by the teacher mobility outcomes, that is, stayers, movers in, movers out, and leavers. Both the weighted and unweighted percentages are provided since some of the models use the weights and some does not. Additionally, the weighted data is representative of the national teaching force, while the unweighted data strictly applies to this sample.

Teacher Characteristics

Overall, using unweighted estimates, nearly 60% of the sample stayed in their respective schools from 2007-08 to 2008-2009. Approximately 8% of the sample changed schools within their school districts and almost 9% changed their school district from one year to the next. Roughly 4% of the teachers in the sample moved up (or horizontally) within the public education system. Lastly, about 19% of the teachers left teaching and the public education system altogether. When the weights from the TFS are applied these percentages change significantly:

86.3% of the sample are stayers, 3.6% of the sample are movers in, 3% of the sample are movers out, 1.6% of the sample are movers up, and 5.5% of the sample are leavers. Table 4.1 presents the weighted and unweighted distribution of the mobility outcomes by gender, education levels, and experience.

Table 4.1: Weighted and Unweighted Distribution of Sample by Gender, Education Levels and Experience

| | Stayers | | Movers In | | Movers Out | | Movers Up | | Leavers | |
|---|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
| | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted |
| Observations | 59.8% | 86.3% | 8.1% | 3.6% | 8.7% | 3.0% | 4.2% | 1.6% | 19.2% | 5.5% |
| Gender | | | | | | | | | | |
| Male | 28.6% | 23.0% | 25.4% | 19.7% | 28.2% | 29.7% | 27.7% | 24.3% | 24.2% | 22.8% |
| Female | 71.4% | 77.0% | 74.6% | 80.3% | 71.8% | 70.3% | 72.3% | 75.7% | 75.8% | 77.2% |
| Highest Degree | | | | | | | | | | |
| Associate's or No Degree | 1.6% | 1.1% | 0.4% | 0.2% | 0.0% | 0.0% | 0.7% | 0.1% | 1.6% | 4.7% |
| Bachelor's | 64.6% | 47.4% | 55.2% | 49.4% | 67.4% | 60.6% | 43.8% | 33.8% | 45.3% | 44.8% |
| Master's | 29.7% | 45.5% | 36.9% | 39.9% | 27.5% | 33.7% | 46.0% | 59.1% | 44.3% | 40.5% |
| Doctorate or Professional | 1.0% | 0.8% | 0.7% | 0.3% | 0.3% | 1.0% | 1.5% | 1.2% | 1.6% | 1.2% |
| Education Specialist or Advanced Graduate Studies | 3.1% | 5.2% | 6.7% | 10.1% | 4.8% | 4.6% | 8.0% | 5.9% | 7.3% | 8.8% |
| Experience (Yrs teaching in public school-FT) | | | | | | | | | | |
| 0 years | 0.6% | 0.1% | 0.0% | 0.0% | 1.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1 year | 61.6% | 6.4% | 23.1% | 8.7% | 39.4% | 13.5% | 24.1% | 7.0% | 15.8% | 5.4% |
| 2 to 5 years | 10.0% | 23.1% | 25.0% | 26.9% | 27.2% | 37.7% | 21.2% | 42.1% | 11.4% | 19.8% |
| 6 to 10 years | 8.4% | 20.9% | 19.0% | 17.8% | 17.4% | 28.9% | 22.6% | 19.0% | 11.9% | 22.8% |
| 11 to 20 years | 10.5% | 27.3% | 19.0% | 22.9% | 9.1% | 11.2% | 17.5% | 23.0% | 13.6% | 12.5% |
| 21 years and above | 9.0% | 22.2% | 13.8% | 23.7% | 5.9% | 8.4% | 14.6% | 8.9% | 47.3% | 39.4% |

A strong majority of teachers in the analytic sample are female (72.6%) and white (82.9%). Compared to their overall percentage of the workforce, females have slightly higher attrition rates than males; 22.8% of the leavers are males and 77.2% are females, versus their overall percentages of 27.4% and 72.6%.

A majority (59.5%) of the sample have a bachelor's degree and 33.6% have a master's. These percentages change slightly to 47.5% and 44.9% respectively when the weights are applied. Compared to their overall percentage of the workforce, teachers with a bachelor's degree stay at one school from one year to the next at slightly higher rates (64.6%) as opposed to teachers with a master's degree, who stay at slightly lower rates (29.7%).

In the sample, approximately 6% have a doctorate (or professional) or education specialist degree, and 19.8% have an alternative certification. Additionally, 18.1% have national board certification and 11.5% are in the process of obtaining their national board certification. A majority of teachers (62.3%) with national board certification stay at their respective school from one year to the next. Although, compared to their overall percentage of the workforce, teachers with national board certification moved between districts at a higher rate (21.6%).

Almost half, that is, 46.2% (unweighted) of the sample have one year of teaching experience in public schools. This percentage changes significantly when the final TFS weights are applied. Approximately 30% (weighted) of the teachers in the sample have between zero and five years of experience as a full time teacher in public schools and 21.1% (weighted) have six to ten years of experience. Nearly 80% (unweighted) of the teachers with one year of experience stayed at the same school from year to the next. A table that summarizes the other basic characteristics (e.g. certification type, race) of the sampled teachers by their mobility status is included in appendix B.

School Characteristics

A slight majority of sampled teachers worked in secondary schools (59.4%, unweighted). In regards to locale the teachers are fairly evenly dispersed with 25% in cities, 27% in suburbs, and 31.5% in rural areas; although only 16.4% are in towns. The percentage of leavers maps onto the overall locale dispersion very closely at 26.1%, 26.4%, 31.2% and 16.3% respectively.

About half of the sampled teachers work in schools with 35% or less of minority students. Teachers in schools with higher rates of minority students displayed slightly higher rates of movement between schools, districts and out of teaching. This trend is not readily apparent with teaches serving higher rates of students with IEPs. For this category, the most notable difference is that teachers with greater than 15% of students with IEPs move out of their

district at slightly a larger percentage (25.1%) than their overall distribution (21.9%). Table 4.2 presents the unweighted distribution of the mobility outcomes by these school characteristics.

Table 4.2: Mobility Outcomes by School Characteristics (unweighted)

| | All | Stayers (n=1970) | Movers In (n=270) | Movers Out (n=290) | Movers Up (n=140) | Leavers (n=630) |
|---|-------|---------------------|-------------------------|--------------------------|-------------------------|--------------------|
| School level | | | | | | |
| Elementary | 40.6% | 37.4% | 50.7% | 37.3% | 46.0% | 46.8% |
| Secondary | 59.4% | 62.6% | 49.3% | 62.7% | 54.0% | 53.2% |
| Percent Minority Students | | | | | | |
| 10% | 24.0% | 24.4% | 14.9% | 20.2% | 24.8% | 28.3% |
| 10.1% to 35% | 25.2% | 26.3% | 21.6% | 23.0% | 19.0% | 25.5% |
| 35.1 to 80% | 26.7% | 25.0% | 32.1% | 30.3% | 28.5% | 27.4% |
| >80% | 24.1% | 24.3% | 31.3% | 26.5% | 27.7% | 18.8% |
| Percent IEP | | | | | | |
| 0% to %3 | 19.5% | 19.7% | 22.8% | 16.7% | 21.2% | 18.0% |
| 4% to 7% | 19.1% | 19.1% | 15.7% | 22.6% | 8.0% | 21.5% |
| 8% to 15% | 25.4% | 25.5% | 22.8% | 23.3% | 29.2% | 26.6% |
| >15% | 21.9% | 22.0% | 21.6% | 25.1% | 22.6% | 20.1% |
| Missing | 14.1% | 13.7% | 17.2% | 12.2% | 19.0% | 13.8% |
| Locale Code | | | | | | |
| City, Large, Midsize, Small (11, 12, 13) | 25.0% | 24.7% | 35.1% | 18.8% | 19.0% | 26.1% |
| Suburb, Large, Midsize, Small (21,22,23) | 27.0% | 26.7% | 29.1% | 26.1% | 32.8% | 26.4% |
| Town, Fringe, Distant, Remote (31,32,33) | 16.4% | 17.3% | 7.1% | 18.5% | 18.2% | 16.3% |
| Rural, Fringe,Distant Remote (41,42,43) | 31.5% | 31.4% | 28.7% | 36.6% | 29.9% | 31.2% |

Job Satisfaction

In general, teachers that stayed in the same school tended to agree more strongly with positive conditions and to more strongly disagree with factors associated with negative conditions than the other mobility categories. Conversely, teachers that moved to teach in another district tended to agree more strongly with less favorable conditions and disagree more strongly with more favorable conditions. Table 4.3 presents the descriptive statistics for

indicators used to reflect the latent factor of job satisfaction. (A full version with confidence intervals, skew, and kurtosis is included in appendix C.)

Table 4.3: Descriptive Statistics for Job Satisfaction Indicators (unweighted)

| Indicator | All (n=3290) | | Stayers (n=1970) | | Movers In (n=270) | | Movers Out (n=290) | | Movers Up (n=140) | | Leavers (n=630) | |
|------------------------------|--------------|-------|------------------|-------|-------------------|-------|--------------------|-------|-------------------|-------|-----------------|-------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| General Satisfaction x47 | 1.538 | 0.716 | 1.41 | 0.62 | 1.75 | 0.776 | 1.9 | 0.845 | 1.54 | 0.619 | 1.67 | 0.817 |
| Role Stress x1 | 3.233 | 0.857 | 3.37 | 0.776 | 3.09 | 0.932 | 2.95 | 0.901 | 3.18 | 0.83 | 3.01 | 0.954 |
| Leader Member Exchange x7 | 1.561 | 0.763 | 1.51 | 0.73 | 1.76 | 0.846 | 1.68 | 1.77 | 1.46 | 0.675 | 1.62 | 0.813 |
| Compensation x8 | 2.558 | 0.988 | 2.49 | 0.966 | 2.78 | 0.98 | 2.77 | 1.013 | 2.57 | 0.998 | 2.58 | 1.018 |
| Psychological Uncertainty x9 | 2.941 | 0.944 | 2.92 | 0.926 | 2.76 | 1.007 | 2.93 | 0.964 | 2.97 | 0.931 | 3.09 | 0.95 |
| Group Cohesion x11 | 1.773 | 0.776 | 1.72 | 0.746 | 1.95 | 0.833 | 1.97 | 0.86 | 1.8 | 0.806 | 1.76 | 0.776 |

Figure 4.1 displays the teachers' responses for the indicators of job satisfaction that are associated with favorable conditions by the mobility outcomes. This data shows a similar trend with a strong majority of stayers (94.9%) indicating that they "strongly agree" or "somewhat agree" that they are generally satisfied with being a teacher at their current school (variable *x47*), opposed to only 80.8% of teachers that moved out of their district. A strong majority of all mobility groups "strongly" or "somewhat" agreed that their principal knew the type of school he or she wanted and communicated that to the staff (90.1% of stayers, 84.7% of movers in, 86.4% of movers out, 94.2% of movers up, and 87.0% of leavers). There is less overall consensus on satisfaction with compensation (variable *X8*), for which, only 47.0% of the whole sample indicated they "somewhat" or "strongly" disagreed that they were satisfied with their compensation. And, by mobility group, the responses ranged from 43.6% (stayers) to 57.1% (movers in) that "somewhat" or "strongly" disagreed. Lastly, in regards to group cohesion (variable *X11*), a strong majority (84.3%) of the sample indicated that they "strongly" or "somewhat" agreed that there was a great deal of cooperative effort at their school. On the same item, but by mobility, the percentage of the responses ranged from 77.6% (movers in) to 86.1% (stayers), with movers up and leavers being close to the mean at 83.2% and 84.3% respectively.

Figure 4.1: Favorable Job Satisfaction Indicators by Mobility Outcomes

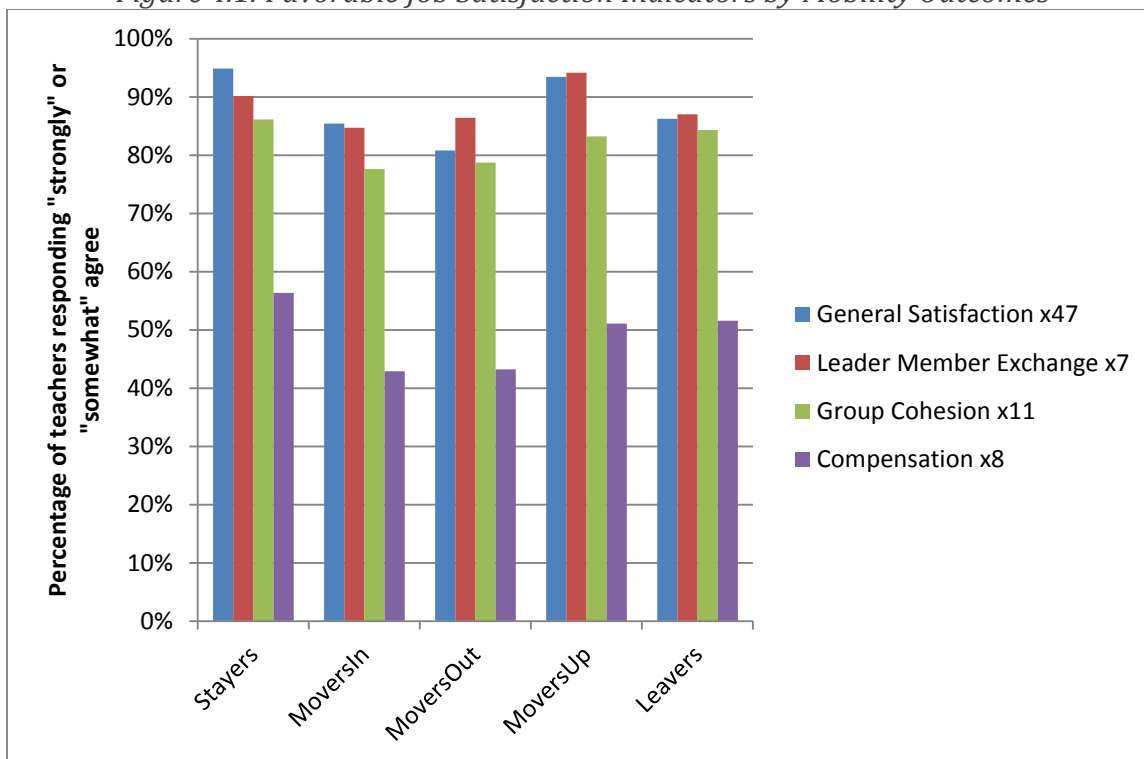
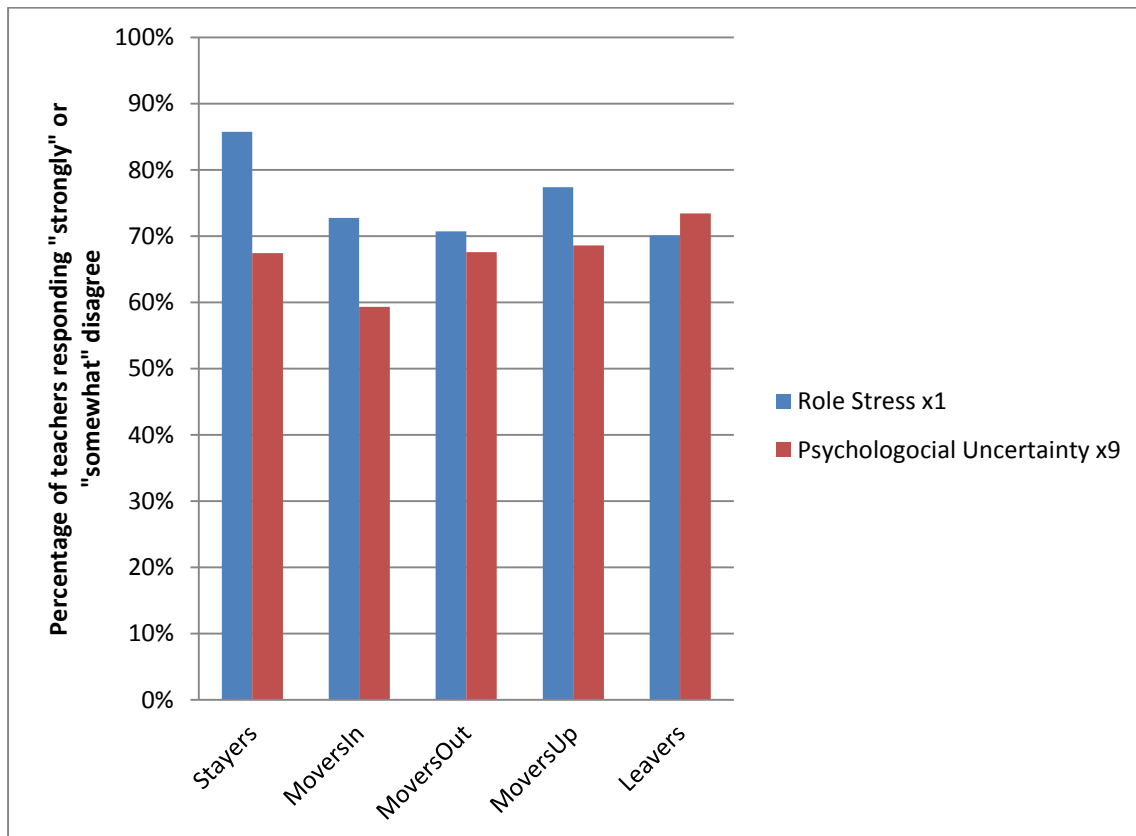


Figure 4.2 shows similar information but consists of the indicators that capture negative conditions, so it shows the percentage of teachers that “strongly disagree” or “somewhat disagree”. A substantial majority of stayers (85.8%) “strongly disagree” or “somewhat disagree” that the stress and disappointment in teaching are not worth it (variable *x1*). Conversely, only 14.2% of stayers “strongly agree” or “somewhat agree” that the stress and disappointments in teaching are not worth it, compared to 29.3% of movers out and 29.9% of leavers.

The teachers also had somewhat of a mixed response on indicator *X9*, which inquires about job security in relation to student performance. Overall, 32% of the sample indicated that they “strongly” or “somewhat” agreed that they worried about their job security because of their students’ performance (See appendix D for the crosstab tables of the indicators for job satisfaction.). By mobility group, leavers had the highest percentage of teachers that “strongly” or “somewhat” disagreed with item *X9* at 73.4%, and movers in had the lowest percentage at

59.3%. Stayers, movers out and movers up all were around the mean at 32.6%, 32.4% and 31.4% respectively.

Figure 4.2: Unfavorable Job Satisfaction Indicators by Mobility



The correlations between the indicators of job satisfaction are presented in table 4.4.

General satisfaction is negatively correlated with role stress ($r=-.496$) and psychological uncertainty ($r=-.218$), and positively correlated with leader-member exchange ($r=.42$), satisfaction with compensation ($r=.229$), and group cohesion ($r=.396$). Leader-member exchange, satisfaction with compensation, and group cohesion are all positively correlated. And, role stress is positively correlated with psychological uncertainty ($r=.281$).

Table 4.4: Correlations among Indicators for Job Satisfaction (weighted)

| Indicator | x1 | x7 | x8 | x9 | x11 | x47 |
|------------------------------|---------|--------|---------|---------|--------|-----|
| Role Stress x1 | 1 | | | | | |
| Leader-member exchange x7 | -.239** | 1 | | | | |
| Compensation x8 | -.161** | .113** | 1 | | | |
| Psychological uncertainty x9 | .281** | -.07** | -.108** | 1 | | |
| Group cohesion x11 | -.236** | .411** | .145** | -.086** | 1 | |
| General satisfaction x47 | -.496** | .42** | .229** | -.218** | .396** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Organizational Commitment

Overall, when examining the means, there is a general trend for teachers that stayed in the same school to respond most strongly (favorably) to the items, then teachers that moved up (or horizontally), followed by teachers that left teaching, teachers that moved within a district, and lastly teachers that moved out of a district. In other words, teachers that moved between districts responded least favorably to the items. Table 4.5 displays the descriptive results for the indicators of organizational commitment by mobility outcome. (See appendix C for the full table.)

Table 4.5: Descriptive Results for Organizational Commitment Indicators (unweighted)

| Indicator | All (n=3290) | | Stayers (n=1970) | | Movers In (n=270) | | Movers Out (n=290) | | Movers Up (n=140) | | Leavers (n=630) | |
|-------------------------------------|--------------|-------|------------------|-------|-------------------|-------|--------------------|-------|-------------------|-------|-----------------|-------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Organizational Satisfaction x25 | 1.95 | 0.857 | 1.84 | 0.81 | 2.19 | 0.881 | 2.28 | 0.88 | 1.91 | 0.794 | 2.07 | 0.918 |
| Perceived Organizational Supportx14 | 1.56 | 0.784 | 1.46 | 0.705 | 1.75 | 0.886 | 1.83 | 0.901 | 1.54 | 0.738 | 1.69 | 0.863 |
| Autonomy x18 | 2.4 | 1.07 | 2.42 | 1.054 | 2.63 | 1.068 | 2.57 | 1.091 | 2.26 | 1.038 | 2.19 | 1.079 |
| Procedural Justice x24 | 1.91 | 0.84 | 1.82 | 0.799 | 2.04 | 0.867 | 2.13 | 0.892 | 1.93 | 0.769 | 2.03 | 0.898 |

Overall, a majority of teachers responded favorably to the items for organizational commitment with 78% to 89.2% indicating that they “strongly” or “somewhat” agreed with the statements. Except for item X18, for which only 53.5% indicated that they had “a great deal of control” or “moderate control” of selecting instructional materials. (See appendix D for the cross tabs of responses for each indicator by mobility outcome.)

The teachers' responses by mobility outcome are presented in figure 4.3. When examining stayers, movers in, and movers out, there is a general downward sloping trend with movers in and movers out responding less favorably to the variables. Movers out report the least amount of agreement on all the variables except for autonomy, for which, movers in report lower levels. Leavers report similar levels of agreement on the variables as movers in, except on autonomy, for which 61% report a "great deal" or "moderate" control.

Figure 4.3: Organizational Commitment Indicators by Mobility

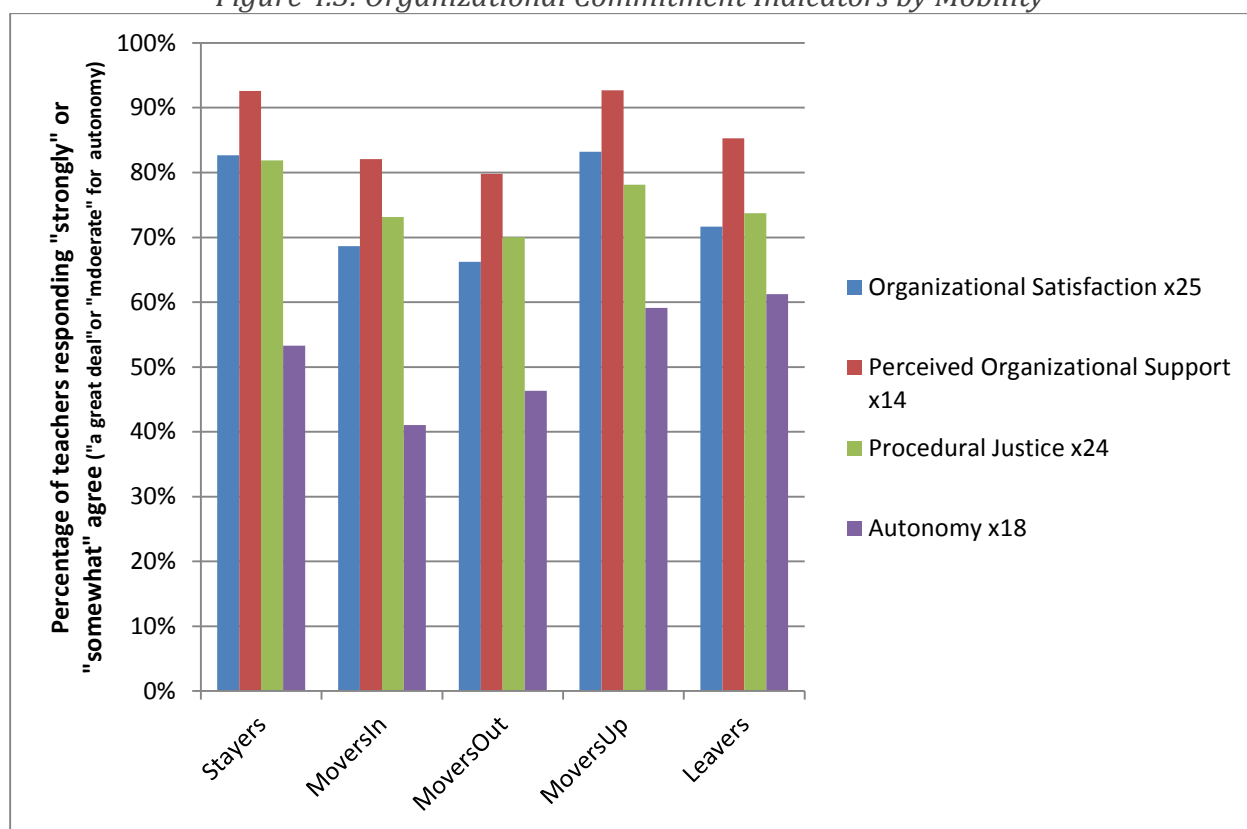


Table 4.6 shows the correlations among the indicators for organizational commitment. All of the correlations are positively related and are significant at $p = <0.01$. The values range from $r=.104$ to $r=.616$. The two highest correlation values are organizational satisfaction with perceived organizational support ($r=.616$), and with procedural justice ($r=.564$). Autonomy and procedural justice share the least amount of correlation at $r=.104$.

Table 4.6: Correlations among Indicators for Organizational Commitment (weighted)

| Indicator | x14 | x18 | x24 | x25 |
|--------------------------------------|--------|--------|--------|-----|
| Perceived organizational support x14 | 1 | | | |
| Autonomy x18 | .255** | 1 | | |
| Procedural justice x24 | .554** | .104** | 1 | |
| Organizational satisfaction x25 | .616** | .161** | .564** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Turnover Intentions

When examining the means of the survey items, stayers have the highest means for item X33, x36, and x37, indicating that they more strongly disagree with having thoughts of quitting, having thoughts of transferring, and exhibiting withdrawal behaviors (i.e. too tired to go to school). And, they have the lowest means for item x34 and x35, suggesting they have the strongest intentions to remain in the teaching profession. Table 4.7 presents the descriptive statistics for the variables for turnover intention by mobility outcome. (For a full version, see appendix C.)

Table 4.7: Turnover Intentions Descriptive Results (unweighted)

| Indicator | All (n=3290) | | Stayers (n=1970) | | Movers In (n=270) | | Movers Out (n=290) | | Movers Up (n=140) | | Leavers (n=630) | |
|------------------------------|--------------|-------|------------------|-------|-------------------|-------|--------------------|-------|-------------------|-------|-----------------|-------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Thoughts of quitting x33 | 3.108 | 0.954 | 3.24 | 0.874 | 2.98 | 0.981 | 2.89 | 1.019 | 2.85 | 1.019 | 2.89 | 1.058 |
| Professional acclamation x34 | 1.941 | 1.126 | 1.75 | 1.013 | 2.14 | 1.206 | 2.05 | 1.141 | 2.23 | 1.256 | 2.33 | 1.251 |
| Intent to remain x35 | 1.981 | 1.217 | 1.75 | 1.077 | 1.99 | 1.19 | 2.11 | 1.333 | 2.51 | 1.425 | 2.15 | 1.323 |
| Thoughts of transferring x36 | 3.06 | 1.041 | 3.2 | 0.947 | 2.5 | 1.117 | 2.3 | 1.056 | 3.06 | 1.042 | 3.19 | 1.055 |
| Withdrawal behavior x37 | 2.978 | 1.045 | 3.2 | 0.942 | 2.75 | 1.113 | 2.76 | 1.085 | 2.8 | 1.07 | 2.52 | 1.102 |

As to be expected, teachers that stayed in the same school from one year to the next reported the lowest overall levels of turnover intentions. Compared to the other mobility outcomes, stayers had the lowest percentages of teachers that “strongly” or “somewhat” agree that they had thoughts of quitting for better pay thoughts of transferring, and withdrawal behaviors (18.7%, 25.0%, and 24.2%), and had the highest percentages of teachers that indicated

they planned to stay in teaching (80.8%) and that they would become a teacher again (79.0%).

This information is depicted in figure 4.4 and 4.5.

Figure 4.4: Indicators of Turnover Intentions by Mobility Outcome

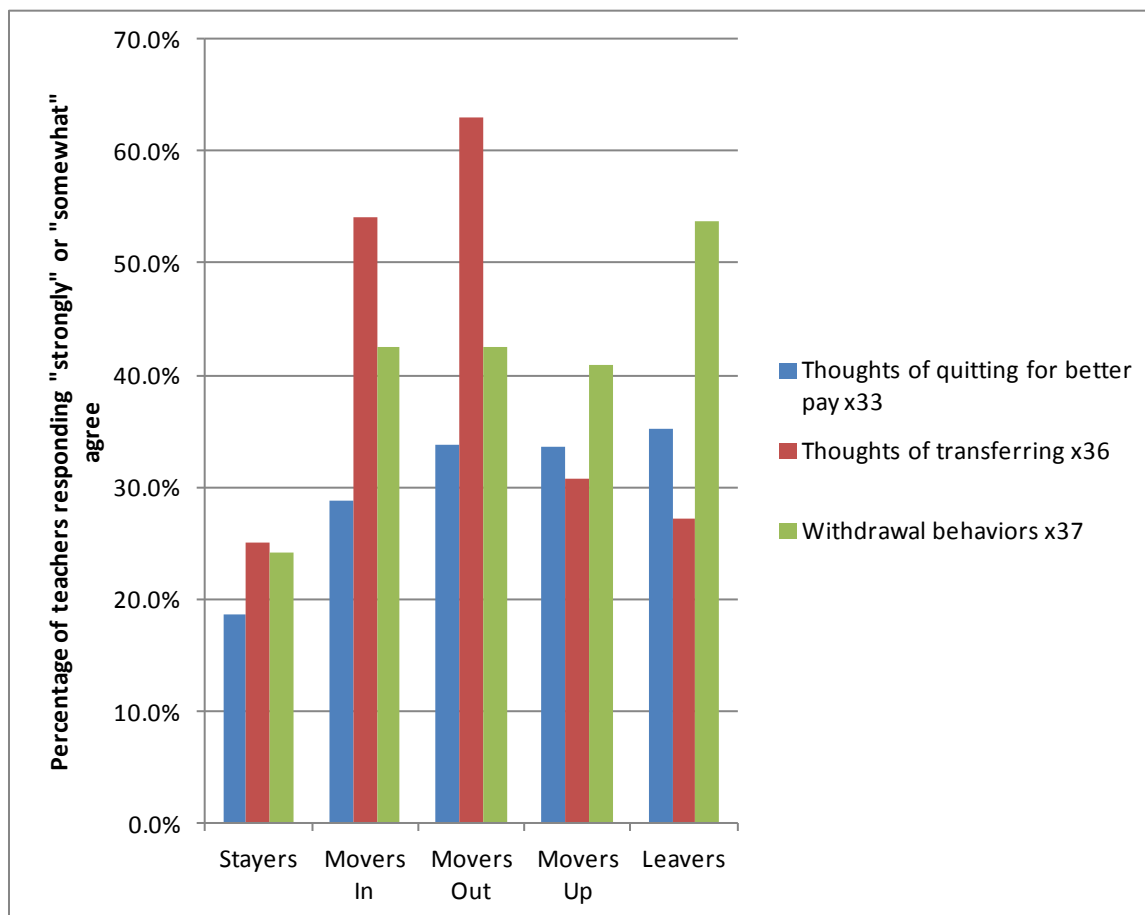
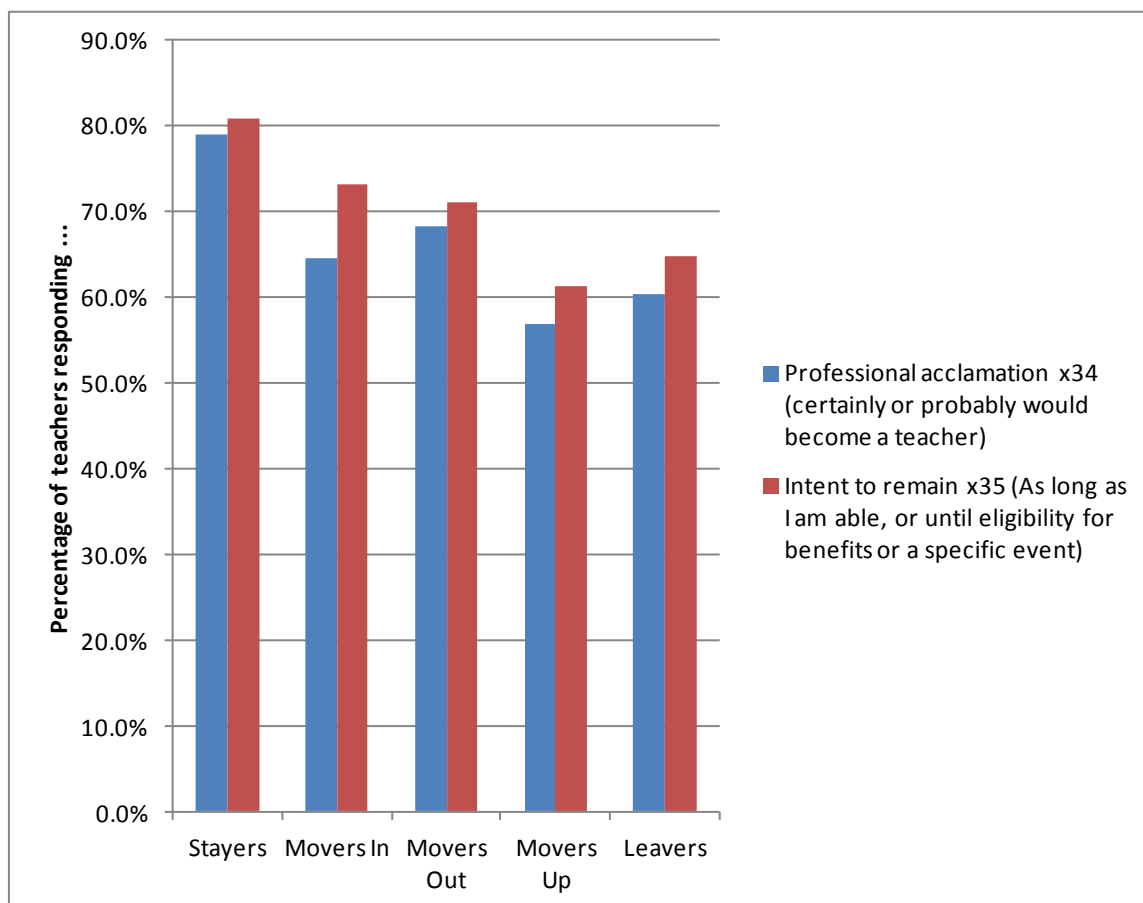


Figure 4.5: Indicators of Turnover Intentions by Mobility Outcomes: Professional acclamation and Intent to Remain



In regards to the other mobility outcomes, the responses on the variables for turnover intentions are mixed but the responses on certain items fit the mobility outcomes. When examining the teachers' responses by the percentage that "strongly" or "somewhat" agreed, movers in and movers out had the two highest percentages at 54.1% and 63.1% of having thoughts of transferring, which is indicative of their mobility outcomes. While movers out reported the most agreement with having thoughts of transferring to another school, they also indicated the second strongest levels of professional acclamation and 71.1% reported that they intend to stay in the teaching profession. Similarly, movers in reported strong intentions to stay

in teaching with 73.1% reporting that they plan to stay in teaching for as long as possible. And, movers in and movers out had relatively higher percentage of teachers that indicated they would certainly become a teacher again (64.6% and 68.3%); although, a substantial percentage (42.53% and 42.51%) of movers in and movers out somewhat or strongly agreed with having withdrawal behaviors.

Movers out, movers up, and leavers all have a close percentage of teachers (33.8%, 33.6% and 35.1%) that indicate they have thoughts of quitting for better pay. But, movers up and leavers report relatively lower levels (compared to movers in and movers out) of only transferring to a new school, which suits their mobility pattern of changing professions. Additionally, movers up reported the least amount of agreement with intentions to remain in teaching with only 61.3% reporting they intended to stay in teaching for as long as possible, and with 56.9% affirming that they would become a teacher again. Similarly, leavers indicated the highest levels of withdrawal behaviors with 53.8% reporting less enthusiasm for teaching and they had the second lowest percentage (60.4%) of teachers that reported they would become a teacher again. However, fitting to their mobility pattern, only 30.7% of leavers report having somewhat or strong inclinations to only transfer schools. (See appendix D for a crosstab table of the indicators of turnover intentions.)

In regards to the correlations between these indicators, intent to remain in teaching and professional acclamation are positively correlated with each other ($r=.427$) and are each negatively correlated with the other indicators. Thoughts of quitting for better pay, thoughts of transferring, and withdrawal behaviors are all positively correlated. The correlations among the indicators for turnover intentions are presented in table 4.8.

Table 4.8: Correlations among Indicators for Turnover Intentions (weighted)

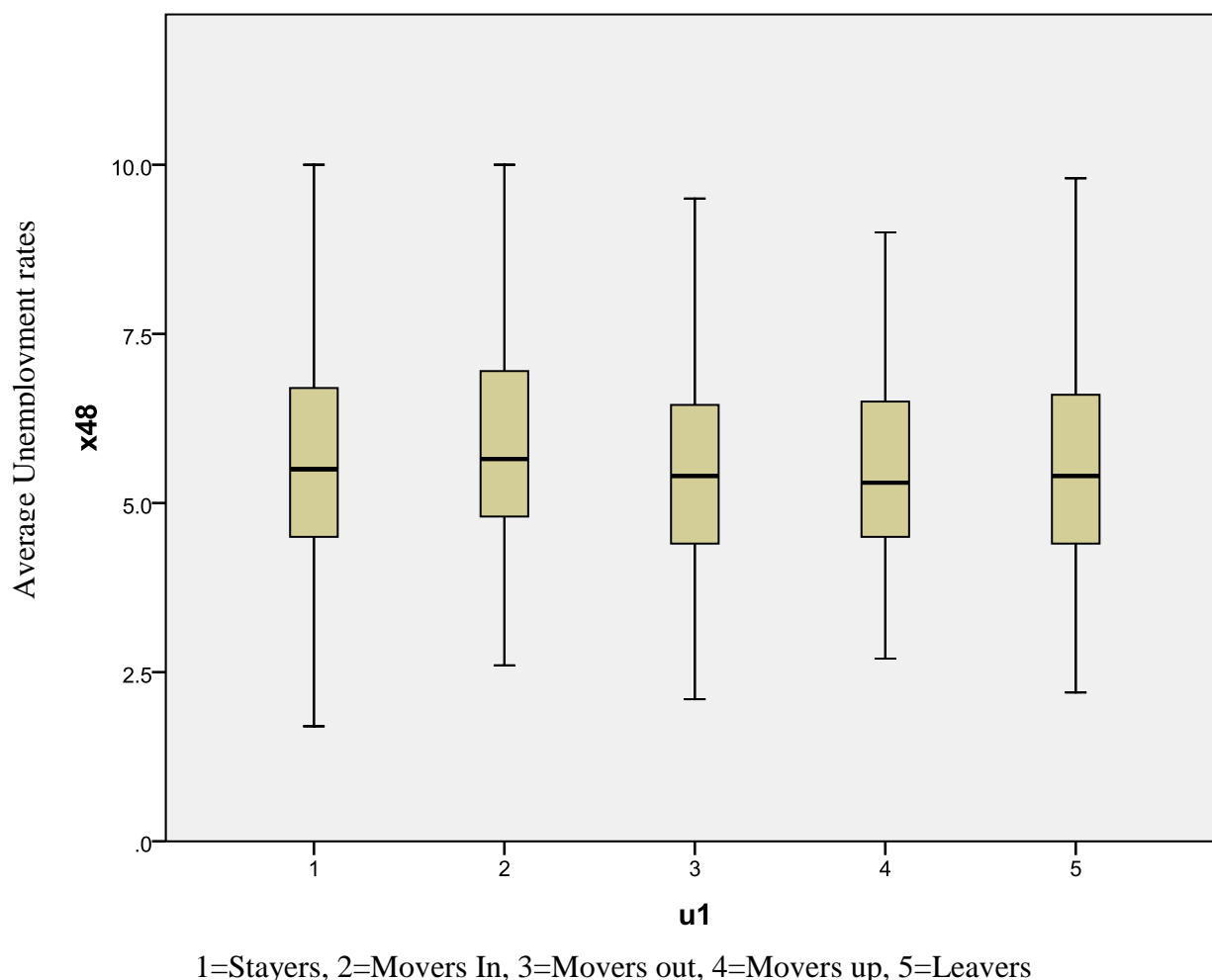
| Indicator | x33 | x34 | x35 | x36 | x37 |
|------------------------------|---------|---------|---------|--------|-----|
| Thoughts of quitting (for | 1 | | | | |
| Professional acclamation x34 | -.502** | 1 | | | |
| Intent to remain x35 | -.363** | .427** | 1 | | |
| Thoughts of transferring x36 | .353** | -.242** | -.204** | 1 | |
| Withdrawal behaviors x37 | .449** | -.400** | -.345** | .334** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Economic Opportunity

There are some slight differences between the means of regional unemployment rates for the various mobility outcomes. Compared to the overall mean of 5.72, movers out and leavers are associated with a slightly lower average unemployment rates ($m=5.57$ and $m=5.64$ respectively). This data fits with the hypothesis that during times of or in areas with lower unemployment rates teachers may be more able to change positions more easily. Teacher intradistrict movement, on the other hand, is associated with relatively higher rates of unemployment ($m=5.91$), that is, relatively less economic opportunity, which suggests that economic opportunity may temper teachers' efforts to move out of their school district. The average unemployment rate for stayers ($m=5.74$) is just slightly above the average overall mean. In other words, a large percentage of teachers (50.3%) stay in their respective schools despite relatively higher levels of economic opportunity (less than 5.5). Figure 4.6 depicts the unemployment rates by mobility. (See appendix C for the descriptive statistics on economic opportunity.)

Figure 4.6: Economic Opportunity by Mobility

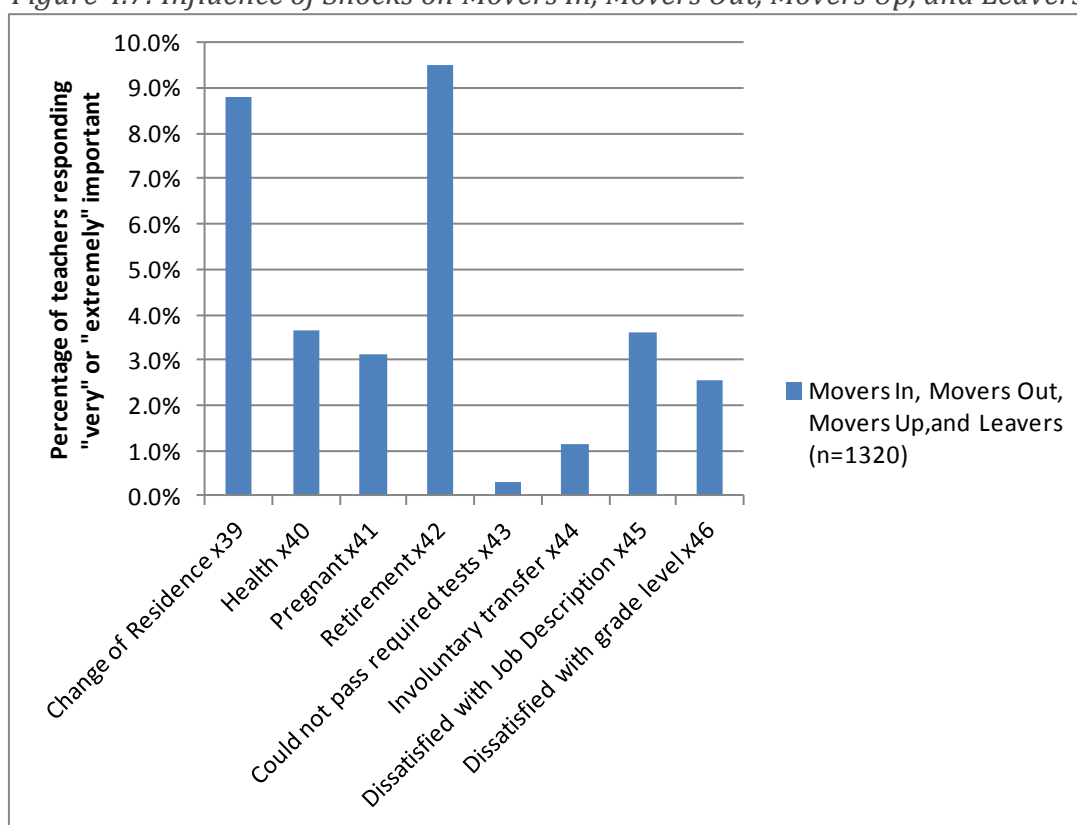


Shocks

Due to the design of the survey, only a subgroup (n=1320) of the total sample were asked to answer questions regarding personal and assignment related factors in regards to their turnover. Since stayers did not leave their previous school they were not asked to rank the level of importance of any of the shock variables, which means the subgroup consists of teachers involved in some form of mobility. Additionally, only the former teachers (n=750) were asked about the relative importance of pregnancy (and/or time for child rearing) and retirement in their decisions to leave their previous schools (items X41 and X42). Of the teachers that are involved with some form of mobility, 33% reported that one of the variables for shocks was “very” or

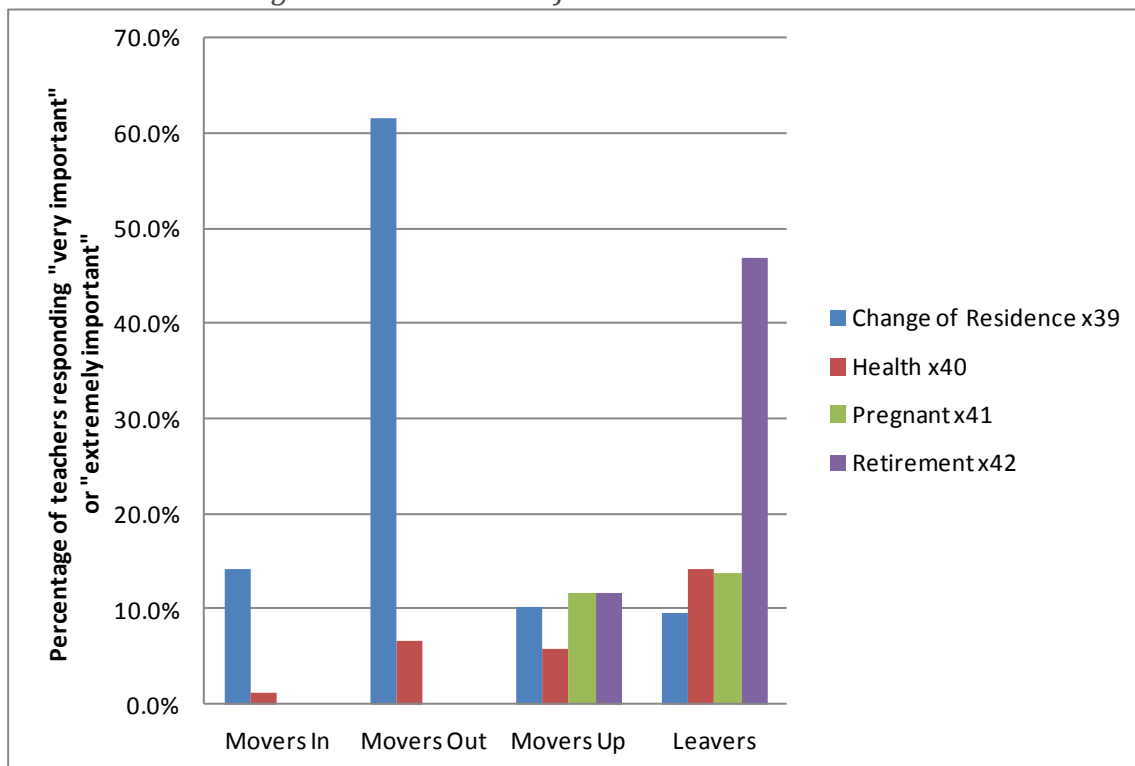
“extremely” important in their decision to leave their previous school. Out of the variables, a change in residence (x39) and retirement (x42) are the most significant with 8.8% and 9.5% of teachers responding that these were “very” or “extremely” important in their decisions. A similar percentage of teachers (roughly 3%) indicated health, pregnancy leave, and dissatisfaction with job description or grade level as influential in their mobility. Figure 4.7 shows the percentage of teachers that indicated these variables as “very” or “extremely” important in their decision

Figure 4.7: Influence of Shocks on Movers In, Movers Out, Movers Up, and Leavers



When examining these variables by mobility outcomes, specific influences are more strongly associated with certain types of turnover. One of the most striking examples is that for movers out, 61.7% (180 of 290) indicated that a change of residence was “very” or “extremely” important in their decision to leave their previous school. This information is depicted in figure 4.8, which shows the personal indicators of shocks by mobility outcome.

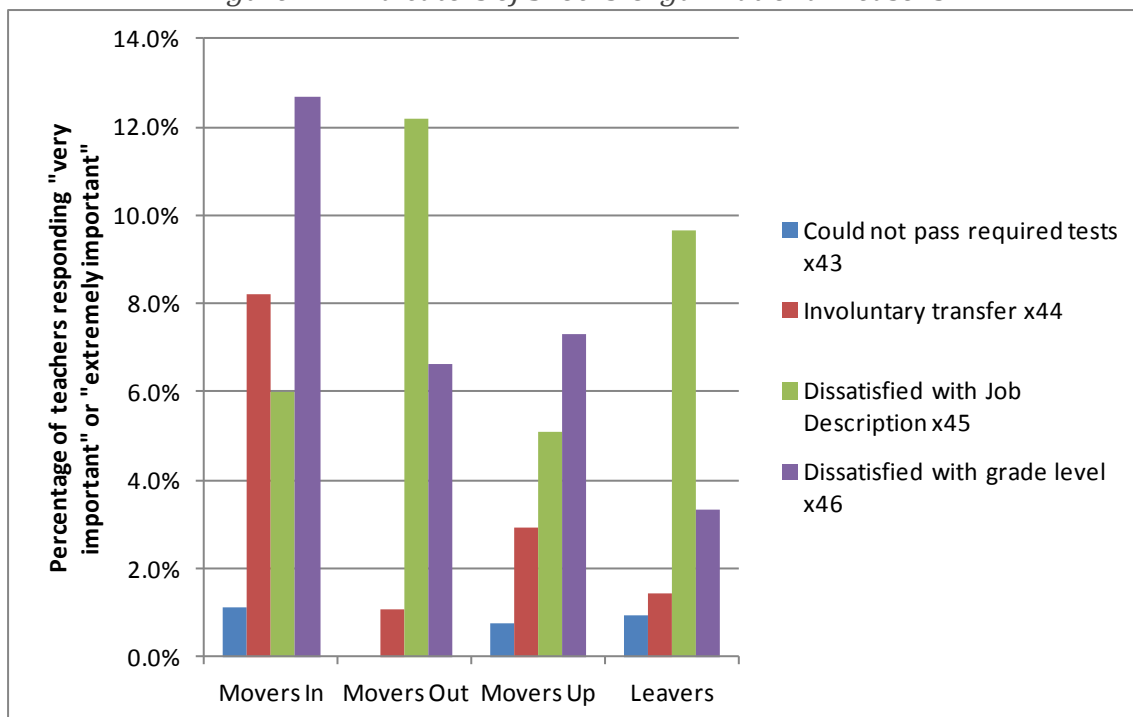
Figure 4.8: Indicators of Shocks-Personal Reasons



And, while, for movers out, a total of 88.2% indicated that one of the shock variables was “very” or “extremely” important in their decision to leave, for over a majority (68.3%), the reasons were personal, largely consisting of a change in residence (61.7%).

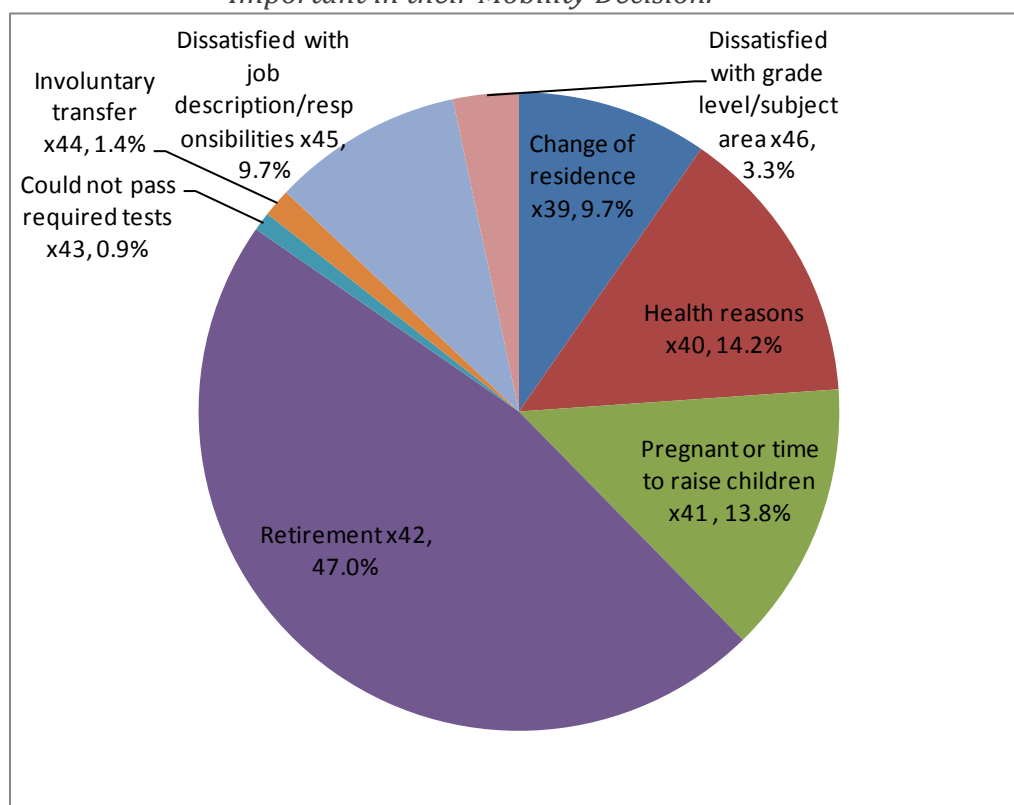
For movers in, a total of 43.3% reported that one of the variables was “very” or “extremely” important in their decision to leave last year’s school. Compared to movers out, movers up, and leavers, a larger percentage of movers in (26.9%) reported an assignment reason (x44, x45, and x46) as being influential in their decision to leave their last school. Though, a very close percentage of movers in and movers out (18.7% and 18.8%) denoted dissatisfaction with job description and grade level as being influential in their mobility decisions. This information is displayed in Figure 4.9, which shows the teachers’ responses by mobility outcome for the organizational indicators of shocks.

Figure 4.9: Indicators of Shocks-Organizational Reasons



Of the leavers, across all eight variables, 100% reported that one of the variables was either “very” or “extremely” important in their decision to leave. 240 (37.6%) of the leavers indicated that a change in residence, health reasons, or pregnancy was “very” or “extremely” important in their decision to leave, and 300 (46.9%) indicated that retirement was “very” or “extremely” important in their decision to leave last year’s school. Taken together 84.6% of the leavers (n=540) indicated that personal reasons and retirement were “very” or “extremely” important in their decision to leave last year’s school. The remaining 100 (15.3%) reported that assignment reasons including dissatisfaction with grade level, subject, job description, involuntary transfer, or because they could not pass the required tests were “very” or “extremely” important in their decision to leave last year’s school. Figure 4.10 displays the contribution of each influence for leavers.

Figure 4.10: Percentage of Leavers Indicating the following Reasons as “very” or “extremely” Important in their Mobility Decision.



A strong majority of leavers (84.6%) report that their turnover was a result of reasons that could be considered unavoidable turnover, that is, an organization cannot be expected to mitigate those types of turnover, and only 15.3% report reasons that may be considered avoidable turnover from an organization’s perspective. Compared to leavers, relatively more (28%) of the teachers that moved within school districts contribute their mobility to assignment reasons. (See appendix D for the crosstab of the indicators for shocks by the teacher mobility outcomes.)

The information provided by the descriptive statistics highlights some interesting differences between the various mobility outcomes. There is some slight variation in the levels of satisfaction and organizational commitment between the groups, though the teachers’ responses on the items by mobility outcome are generally within a 10% range of each other. And, turnover intentions signal some indicative patterns of the mobility groups, particularly stayers. But, the

construct of these latent factors needs to be tested and confirmed before moving onto examining and determining their relative influence on teacher turnover. The next section addresses this issue.

Results of the Measurement Models

This section presents information on the factor structures of: job satisfaction, organizational commitment, turnover intentions, and shocks. The results indicate that all of the determinants significantly load onto the factors; however, job satisfaction and organization commitment are highly correlated with each other, suggesting that the indicators capture one general latent factor, namely, job satisfaction. The model for turnover intentions is well-fitting with indicators of intentions to remain and withdrawal behaviors adequately capturing one's turnover intentions. The confirmatory factor analysis with job satisfaction and turnover intentions indicates a negative relationship between the two latent constructs.

Before proceeding with the results of the confirmatory factor analysis, it is important to note that this study uses the notation adopted by Mplus. In general, Mplus considers all variables as measured (observed) variables or unmeasured (unobserved, latent) variables. Measured variables can be either background variables, labeled as x , or outcome variables labeled as y for continuous outcomes and u for nominal outcomes. Similarly, Mplus labels continuous latent variables as f . In figure 4.11 the latent variable is labeled $f1$. Measurement and residual errors are represented and labeled using a single-headed arrow. In the model, latent factors are depicted as ovals and the manifest variables (indicators) as rectangles. Straight arrows from the circles to the boxes are path coefficients for regression of an observed variable onto an unobserved latent variable, representing indicator loadings on the latent variables; straight arrows among ovals are path coefficients for regression of one factor onto another, representing causal effects among latent variables. Curved arrows represent correlations among exogenous causes, with short

arrows with no source indicating measurement error. Arrows impinging on the ovals signify disturbances. (For a full explanation of notation see Muthén & Muthén, 1998-2010).

Factor Structure of Job Satisfaction

A confirmatory factor analysis was conducted on job satisfaction as a 1st order factor with six indicator variables (*X47*, *X1*, *X7*, *X8*, *X9*, and *X11*). The fit indices are presented in table 4.9.

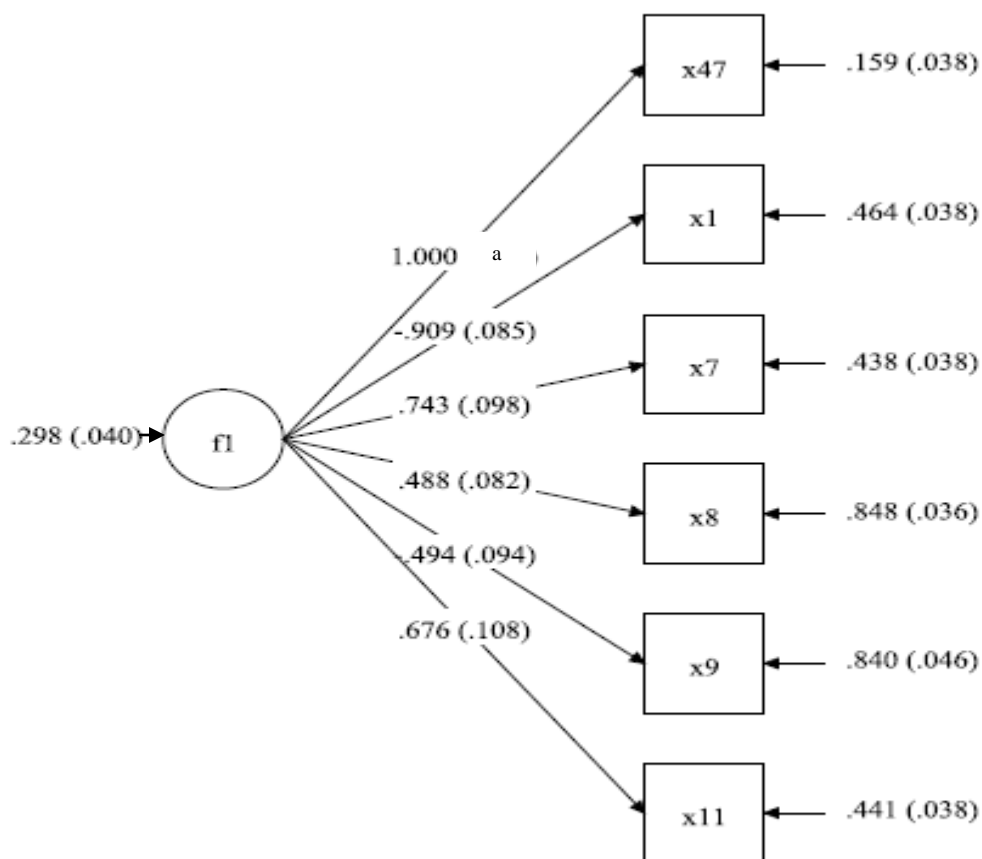
Table 4.9: Fit Indices of Confirmatory Factor Analysis of Job Satisfaction

| CFA Model | Results of CFA for JS-Model fit (weighted) | | | | | | | | | |
|-------------------------|--|----------|----------------------|-------|-----------|----------------------|-------|----------|----------|-----------------|
| | loglikelihood | | # Free Parameters | RMSEA | 90 C.I. | Probability RMSEA | SRMR | AIC | BIC | Adjusted BIC |
| | H0 | H1 | | | | | | | | |
| Model A-6 Indicators | -22848 | -22690.5 | 18 | 0.102 | .092-.111 | <.05 | 0.046 | 45732.03 | 45841.81 | 45784.61 |

The goodness-of-fit indices of job satisfaction with six indicators are RMSEA=.102 and SRMR=.046. The RMSEA (.10) value indicates mediocre fit; however, the upper bound value of the 90% confidence interval is in the poor fit range. But the SRMR value of .046 represents a well-fitting model, which can be interpreted as the model explains the correlations to within an average error of .046.

Next, the fit of the individual parameters in the model are discussed in regards to the appropriateness of the estimates and their statistical significance. Figure 4.11 displays the 1st order confirmatory factor model for Job Satisfaction with the weights and replicate weights. The latent factor of Job satisfaction is scaled by the first variable (*X47*), that is, its parameter is fixed at 1. All of the parameter estimates and residuals are presented in unstandardized format.

Figure 4.11: Confirmatory Factor Analysis of Job Satisfaction with Six Indicators



f1=Job satisfaction, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, and x11=Group cohesion

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

All factor loadings are significant at the .05 level, ranging from positive values of .488 to .743 and negative values of -.494 to -.909. Role stress has the highest factor loading (-.909) and negatively loads onto job satisfaction. Leadership-membership exchange has the second highest loading at .743. Satisfaction with compensation and psychological uncertainty have similar values, though in opposite directions (.488 and -.494 respectively). The standard errors range from .082 (variable X8) to .108 (variable X11). And, the estimates of the residual variances

range from .159 (variable *X47*) to .848 (variable *X8*). The estimate of the variance of job satisfaction is .298 with a standard error of .040 and significant at $p = <.05$.

Factor Structure of Organizational Commitment

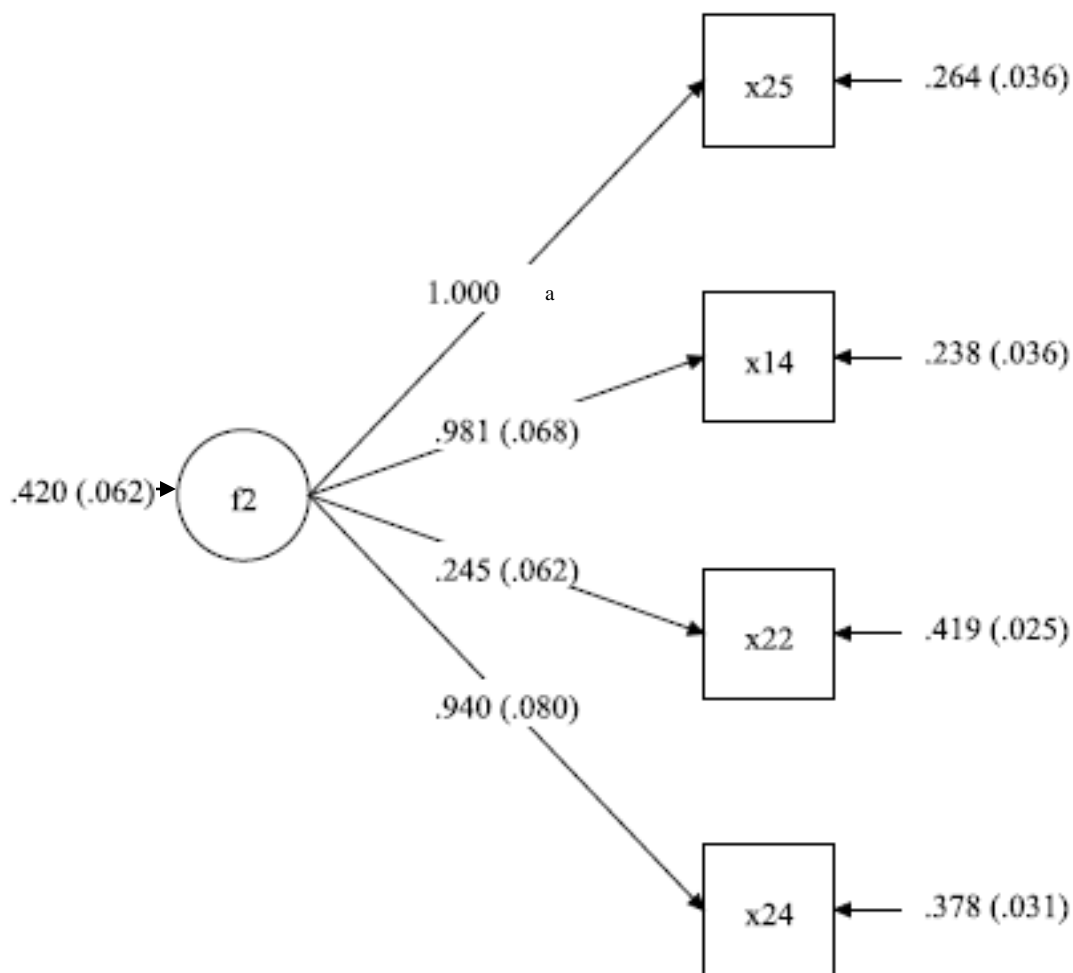
A confirmatory factor analysis was conducted on organizational commitment as a 1st order factor with four indicators with the weights and replicate weights. Table 4.10 shows the fit indices. The goodness-of-indices for organizational commitment with 4 indicators are RMSEA=.10 and SRMR=.026. The RMSEA value (.10) suggests a mediocre fitting model, but the upper bound value of the 90% confidence interval (.129) is in the poor fitting range. The SRMR value (.026) represents a well-fitting model, indicating that the model explains the correlations to within an average error of .026.

Table 4.10: Fit Indices of Confirmatory Factor Analysis of Organizational Commitment

| Results of CFA for OC-Model fit (weighted) | | | | | | | | | | |
|--|---------------|----------|-------------------|-------|-----------|----------------------|-------|----------|---------|-----------------|
| CFA Model | loglikelihood | | # Free Parameters | RMSEA | 90 C.I. | Probability RMSEA | SRMR | AIC | BIC | Adjusted BIC |
| | H0 | H1 | | | | | | | | |
| Model A-4 Indicators | -13843.8 | -13804.6 | 12 | 0.108 | .088-.129 | <.05 | 0.026 | 27711.52 | 27784.7 | 27746.57 |

Figure 4.12 displays the 1st order confirmatory factor model for Organizational commitment with the factor loadings, standard errors, and residuals.

Figure 4.12: Confirmatory factor Analysis of Organizational Commitment



$f2$ =Organizational commitment, $x25$ =Organizational satisfaction, $x14$ =Perceived organizational support, $x22$ =Autonomy, and $x24$ = Procedural justice

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

In the model for organizational commitment with four indicators, the standardized factor loadings are .245 (variable $X22$), .94 (variable $X24$) .981 (variable $X14$) and are all significant at .05. The standard errors range from .062 (variable $X22$) to .08 (variable $X24$). The residual

variances range from .238 to .419 and are all significant. The estimated variance of organizational commitment (F2) is .42 with a standard error of .062 and is significant at $p = <.05$.

Factor Structure of Turnover Intentions

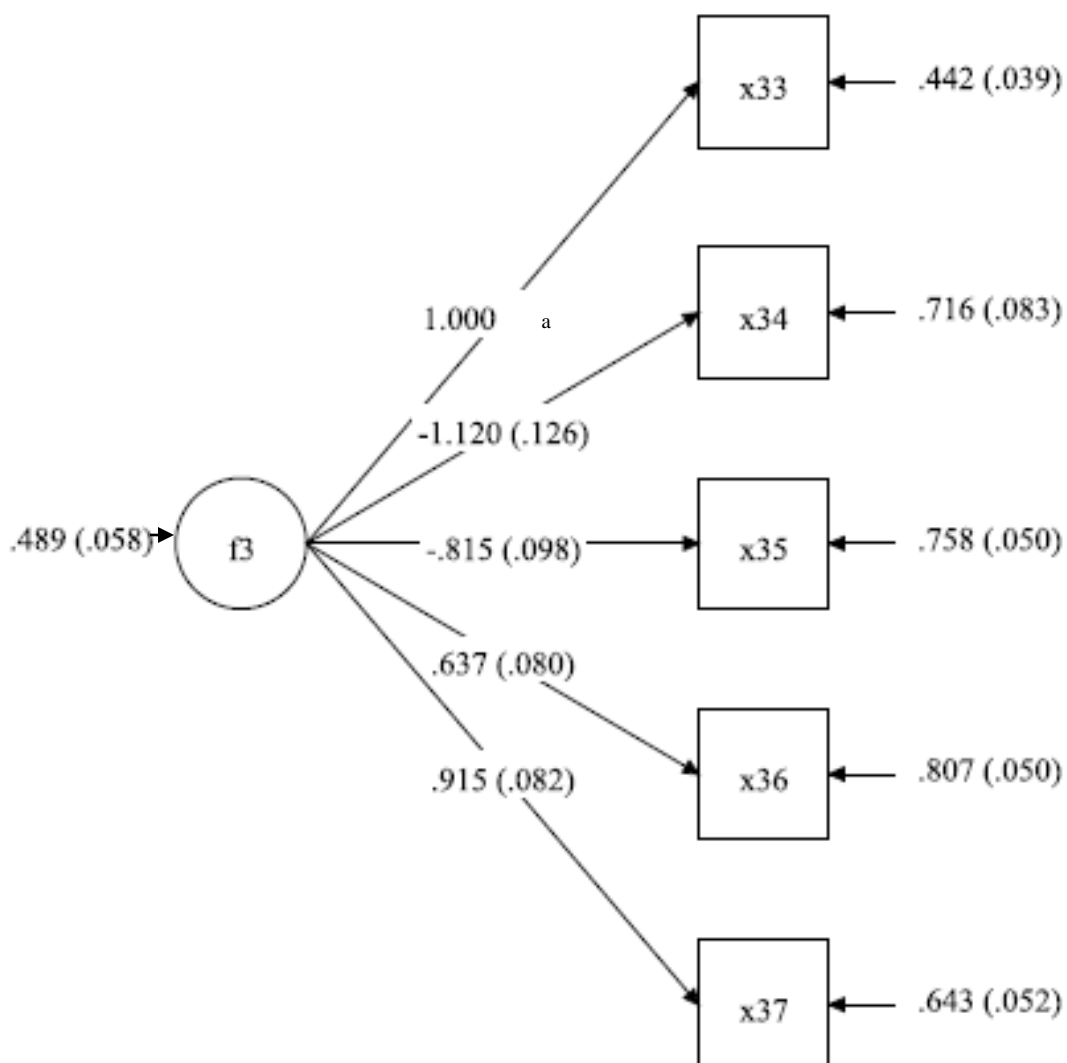
A confirmatory factor analysis was conducted on turnover intention as a 1st order factor with five indicators. Table 4.11 shows the fit indices. The goodness-of-fit indices for turnover intention with five indicators are RMSEA=.079 and SRMR .027. The RMSEA value (.079) represents reasonable errors of approximation in the population, and the lower bound value of the 90% confidence interval (.067) is indicative of good fit while the upper bound value of the 90% confidence interval (.093) indicates mediocre fit. The SRMR value (.027) indicates good fit with correlations being explained to within an average error of .027.

Table 4.11: Fit Indices of Confirmatory Factor Analysis of Turnover Intentions

| CFA Model | Results of CFA for TI-Model fit (weighted) | | | | | | | | | |
|-----------|--|----------|-------------------|-------|-----------|----------------------------|-------|----------|----------|-----------------|
| | loglikelihood | | # Free Parameters | RMSEA | 90 C.I. | Probability RMSEA <=.05 | SRMR | AIC | BIC | Adjusted BIC |
| | H0 | H1 | | | | | | | | |
| ModelA | -22305.5 | -22251.4 | 15 | 0.079 | .067-.093 | <.01 | 0.027 | 44640.98 | 44732.46 | 44684.8 |

Figure 4.13 displays the 1st order confirmatory factor model for turnover intention with the factor loadings, standard errors, and residuals.

Figure 4.13: Confirmatory Factor Analysis of Turnover Intentions



f3=Turnover intentions, x33=Thoughts of quitting, x34= Professional acclamation, x35=Intent to remain, x36=Thoughts of transferring, and x37=Withdrawal behavior

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

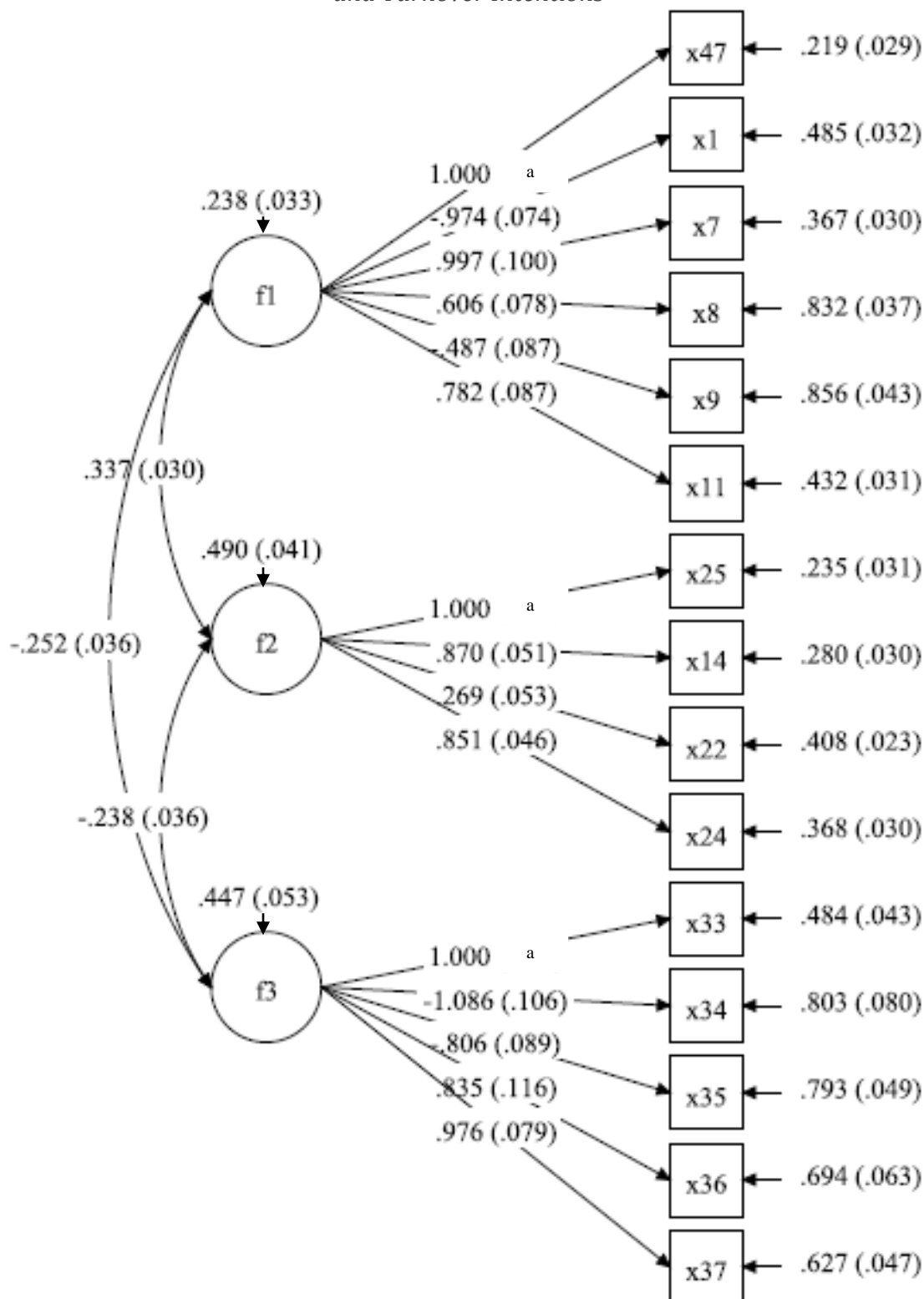
In the measurement model of the latent factor turnover intentions, the positive standardized factor loadings are .637 (variable X36) and .915 (variable X37), and the negative standardized factor loadings are -.815 (variable X35) and -1.102 (variable X34); all of the factor

loadings are significant at .05. The standard errors range from .08 (variable X36) to .126 (variable X34). The residual variances range from .442 (variable X33) to .807 (variable X36), and are all significant at .05. The estimated variance for turnover intentions (F3) is .489, $SE = .058$, $p = .05$.

Job satisfaction, Organizational Commitment and Turnover Intentions

Figure 4.14 presents the confirmatory factor analysis of job satisfaction, organizational commitment. The goodness-of-fit statistics are $RMSEA = .092$, 90% $CI [.089, .095]$, $p < .01$, $SRMR = .072$. The fit statistics indicate good fit of the model with the data; however, the latent variable covariance matrix (PSI) is not positive definite, indicating linear dependency among two latent variables. The curved double headed arrows connecting ovals represent the covariance among latent factors. The estimated correlation matrix for the latent variable indicates a correlation between F1 and F2 of .988, which may be the source of the linear dependency.

Figure 4.14: Confirmatory Factor Analysis of Job Satisfaction, Organizational Commitment and Turnover Intentions

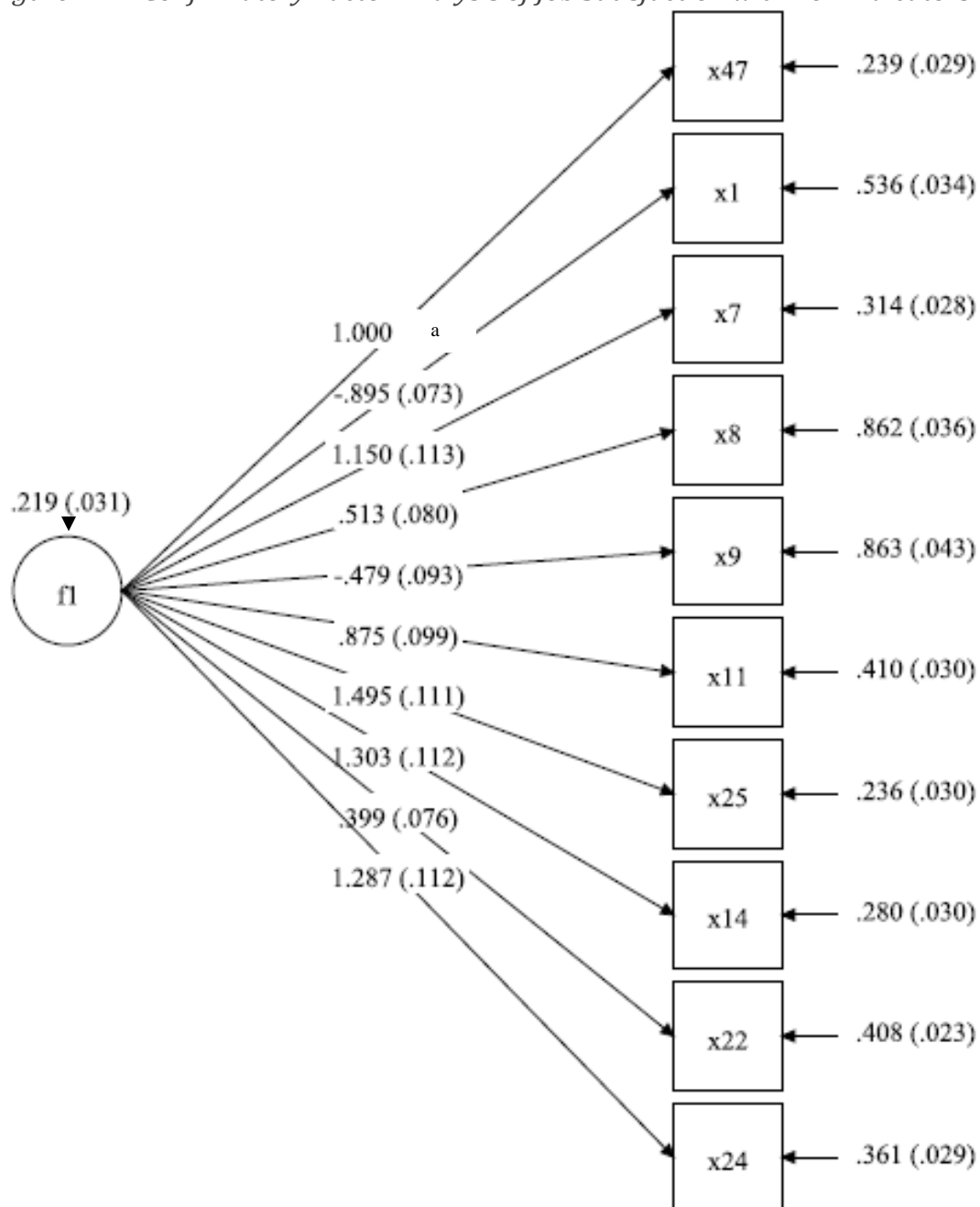


f1=Job satisfaction, f2=Organizational commitment, f3=Turnover intentions, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, x11=Group cohesion, x25=Organizational satisfaction, x14=Perceived organizational support, x22=Autonomy, x24= Procedural justice, x33=Thoughts of quitting, x34= Professional acclamation, x35=Intent to remain, x36=Thoughts of transferring, and x37=Withdrawal behavior

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

To address the linear dependency, instead of modeling job satisfaction and organizational commitment as separate factors, the next model combines the indicators as one factor. Figure 4.15 displays the confirmatory factor analysis for job satisfaction with ten indicators. The goodness-of-fit statistics, $RMSEA = .087$, 90% $CI [.082, 092]$, $p < .01$, $SRMR = .048$, indicate mediocre fit.

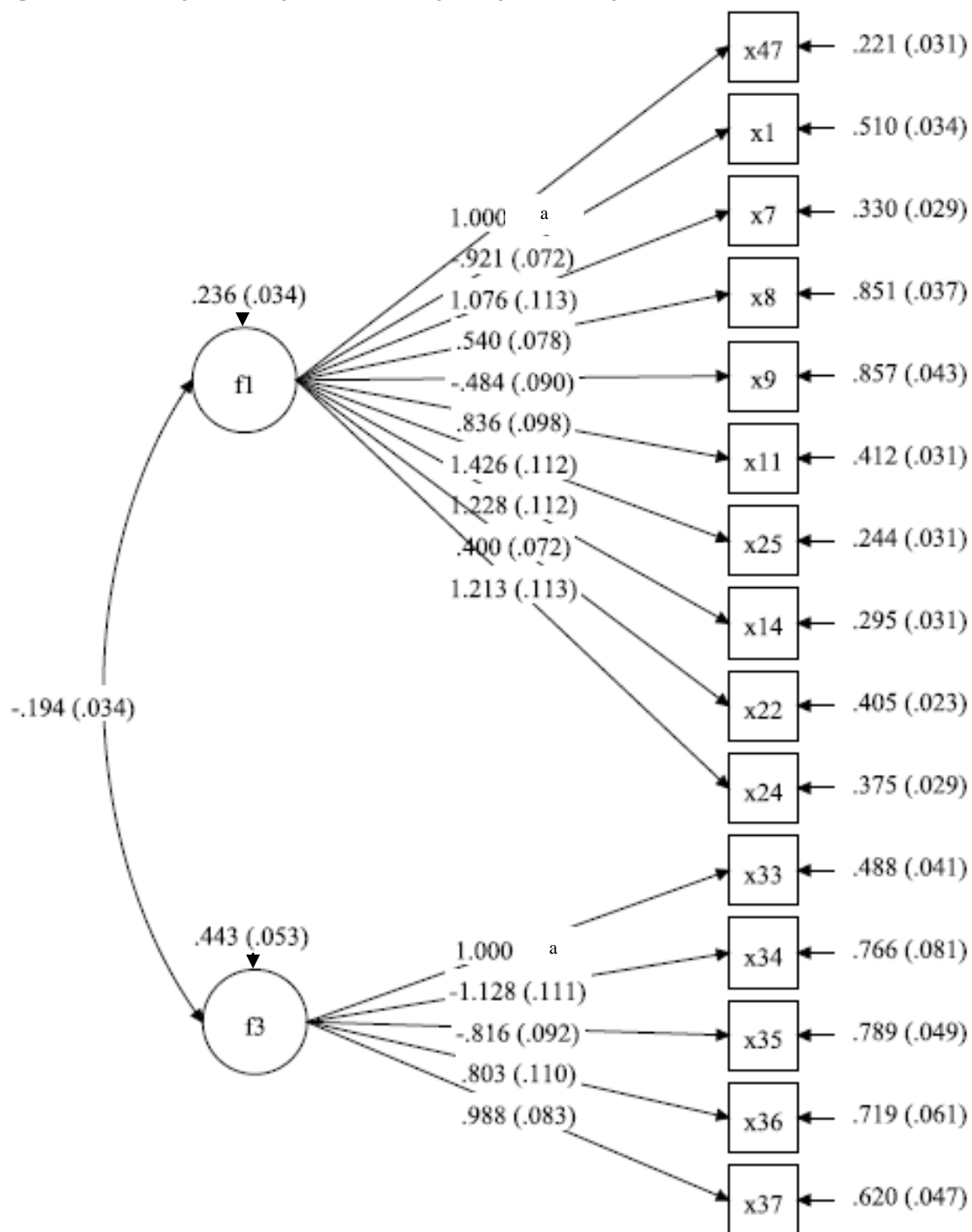
Figure 4.15: Confirmatory Factor Analysis of Job Satisfaction with Ten Indicators



f1=Job Satisfaction, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, x11=Group cohesion x25=Organizational satisfaction, x14=Perceived organizational support, x22=Autonomy, and x24= Procedural
^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

The next confirmatory factor analysis moves forward with job satisfaction with ten indicators and combines turnover intention. Figure 4.16 displays the confirmatory factor analysis for job satisfaction with nine indicators and turnover intention. The goodness-of-fit statistics of $RMSEA = .097$, 90% $CI [.094, .10]$, $p < .01$, $SRMR = .080$ indicate mediocre fit. The correlation between the factors is $r = -.058$.

Figure 4.16: Confirmatory Factor Analysis of Job Satisfaction and Turnover Intentions



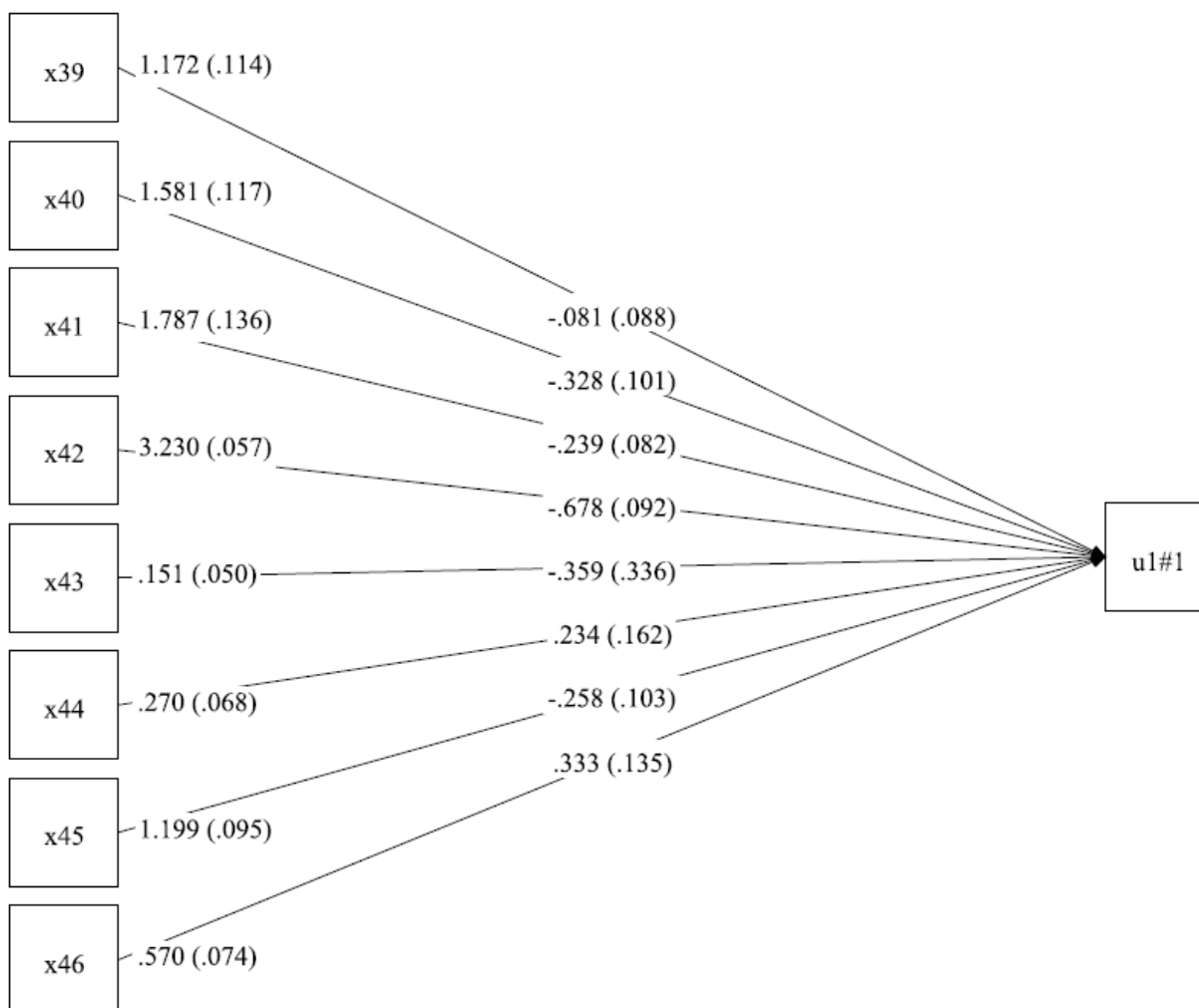
f_1 =Job satisfaction, f_3 =Turnover intentions, x_{47} =General satisfaction, x_1 =Role stress, x_7 =Leader-member exchange, x_8 =Compensation, x_9 =Psychological Uncertainty, x_{11} =Group cohesion, x_{25} =Organizational satisfaction, x_{14} =Perceived organizational support, x_{22} =Autonomy, x_{24} =Procedural justice, x_{33} =Thoughts of quitting, x_{34} = Professional acclamation, x_{35} =Intent to remain, x_{36} =Thoughts of transferring, and x_{37} =Withdrawal behavior

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

In regards to modeling shocks, there are several difficulties. Firstly, due to the nature of the shocks, it should be modeled as an emergent factor with cause indicators; however, modeling constraints do not allow for scaling an emergent factor with multi-nominal outcomes. Thus, the measurement model simply becomes a multi-nominal logistic regression. And, because of the design of the survey, the turnover outcomes that can be modeled change with various indicators.

The first logistic regression, figure 4.17, shows shocks with eight cause indicators loading onto actual turnover. In this model, only the movers up and leavers (n=748) are included in the analysis, due to the fact that only these individuals were asked all eight items. In the logistic regression model, the U1#1 refers to the leavers, with the movers up being the reference category. The odds ratio is the change in odds of being in one of the mobility outcomes when the value of an indicator increases by one unit. The relative odds ratio for a one-unit increase in the variable *x46* (dissatisfaction with grade level) is 1.395. That is, being in the movers up outcome is 1.395 as likely as the leavers group, and the odds increase by 39.5%, with a one unit increase in *x46*. Table 4.12 presents the statistics pertaining to this logistic regression model.

Figure 4.17: A Logistic Regression Model of Shocks with Eight Indicators on Movers Up and Leavers



x39=Change of residence, x40= health reasons, x41=pregnant, x42= retirement, x43= could not pass required tests, x44= involuntary transfer, x45=dissatisfied with job description , x46= dissatisfied with grade level, parameter estimates and residuals are unstandardized

*Note-Analysis includes only movers up and leavers

Table 4.12: Results of Logistic Regression Model of Shocks with Eight Indicators on Movers Up and Leavers

| Variables | Estimate | Standard Error (SE) | Estimate/SE | p-value | OddsRatio |
|--------------------------|----------|---------------------|-------------|---------|-----------|
| Change of residence x39 | -0.081 | 0.088 | -0.921 | 0.357 | 0.922 |
| Health reasons x40 | -0.328 | 0.101 | -3.261 | 0.001 | 0.7204 |
| Pregnancy leave x41 | -0.239 | 0.082 | -2.902 | 0.004 | 0.7874 |
| Retirement x42 | -0.678 | 0.092 | -7.333 | <.001 | 0.508 |
| Could not pass Required | -0.359 | 0.336 | -1.068 | 0.286 | 0.698 |
| Involuntary transfer x44 | 0.234 | 0.162 | 1.441 | 0.149 | 1.2636 |
| Dissatisfied with job | -0.258 | 0.103 | -2.497 | 0.013 | 0.758 |
| Dissatisfied with grade | 0.333 | 0.135 | 2.477 | 0.013 | 1.395 |

*Movers up compared to leavers

The next logistic regression includes only six indicators (*x41* and *x42* are removed) so that movers in, movers out, movers up and leavers can all be included in the model. Table 4.13 shows the results of a logistic regression of shocks with six indicators on turnover with four mobility outcomes (i.e. movers in, movers out, movers up, and leavers (U1#4, not shown) as the reference category).

Table 4.13: Results of Logistic Regression Model of Shocks with Six Indicators on Movers In, Movers Out, Movers Up, and Leavers.

| Variables | Estimate | Standard Error (SE) | Estimate/SE | Two-tailed p-value | Odds Ratio |
|---------------------------------------|----------|---------------------|-------------|--------------------|------------|
| Movers In | | | | | |
| Change of residence x39 | 0.171 | 0.064 | 2.673 | 0.008 | 1.186 |
| Health reasons x40 | -0.955 | 0.192 | -4.986 | <.001 | 0.385 |
| Could not pass Required tests x43 | -0.164 | 0.190 | -0.867 | 0.386 | 0.848 |
| Involuntary transfer x44 | 0.563 | 0.120 | 4.678 | <.001 | 1.756 |
| Dissatisfied with job description x45 | -0.266 | 0.085 | -3.121 | 0.002 | 0.766 |
| Dissatisfied with grade level x46 | 0.512 | 0.083 | 6.160 | <.001 | 1.669 |
| Movers Out | | | | | |
| Change of residence x39 | 0.799 | 0.053 | 15.047 | <.001 | 2.223 |
| Health reasons x40 | -0.320 | 0.092 | -3.480 | 0.001 | 0.726 |
| Could not pass Required tests x43 | -1.235 | 0.646 | -1.912 | 0.056 | 0.291 |
| Involuntary transfer x44 | -0.020 | 0.203 | -0.097 | 0.922 | 0.98 |
| Dissatisfied with job description x45 | 0.045 | 0.088 | 0.510 | 0.610 | 1.046 |
| Dissatisfied with grade level x46 | 0.143 | 0.106 | 1.343 | 0.179 | 1.154 |
| Movers Up | | | | | |
| Change of residence x39 | 0.076 | 0.079 | 0.959 | 0.337 | 1.079 |
| Health reasons x40 | -0.274 | 0.100 | -2.753 | 0.006 | 0.760 |
| Could not pass Required tests x43 | -0.222 | 0.290 | -0.766 | 0.444 | 0.801 |
| Involuntary transfer x44 | 0.223 | 0.161 | 1.389 | 0.165 | 1.250 |
| Dissatisfied with job description x45 | -0.198 | 0.092 | -2.149 | 0.032 | 0.820 |
| Dissatisfied with grade level x46 | 0.283 | 0.104 | 2.733 | 0.006 | 1.328 |

The results indicate that for an increase of one unit in involuntary transfer (x_{44}), the log odds of being a mover in versus a leaver increases by 6.295. The corresponding odds ratio is 1.756. That is, movers in are 1.756 as likely to be dissatisfied with grade level with a one unit increase in x_{46} ; meaning the odds increase by 75.6%. And, for an increase of one unit in change of residence (x_{39}), the log odds of being a mover out versus a leaver increases by .258; meaning that with a one unit increase in x_{39} the outcome of moving out is 2.223 as likely as leaving.

In summary, the results indicate that variables for job satisfaction and organizational commitment are too closely related to warrant distinguishing between them. Hence, moving

forward, the nine indicators will be representative of job satisfaction as one overall latent construct, which is negatively correlated with turnover intentions. And, due to the nature of shocks, it will not be possible to include it in the structural modeling as an emergent latent factor. As a result, the extent of shocks relationship with the other factors will be limited to the descriptive data previously discussed. Taken as a whole, these results limit the analysis of the structural model to job satisfaction, turnover intentions, economic opportunity and the multinomial turnover outcomes.

Results of the Structural Models

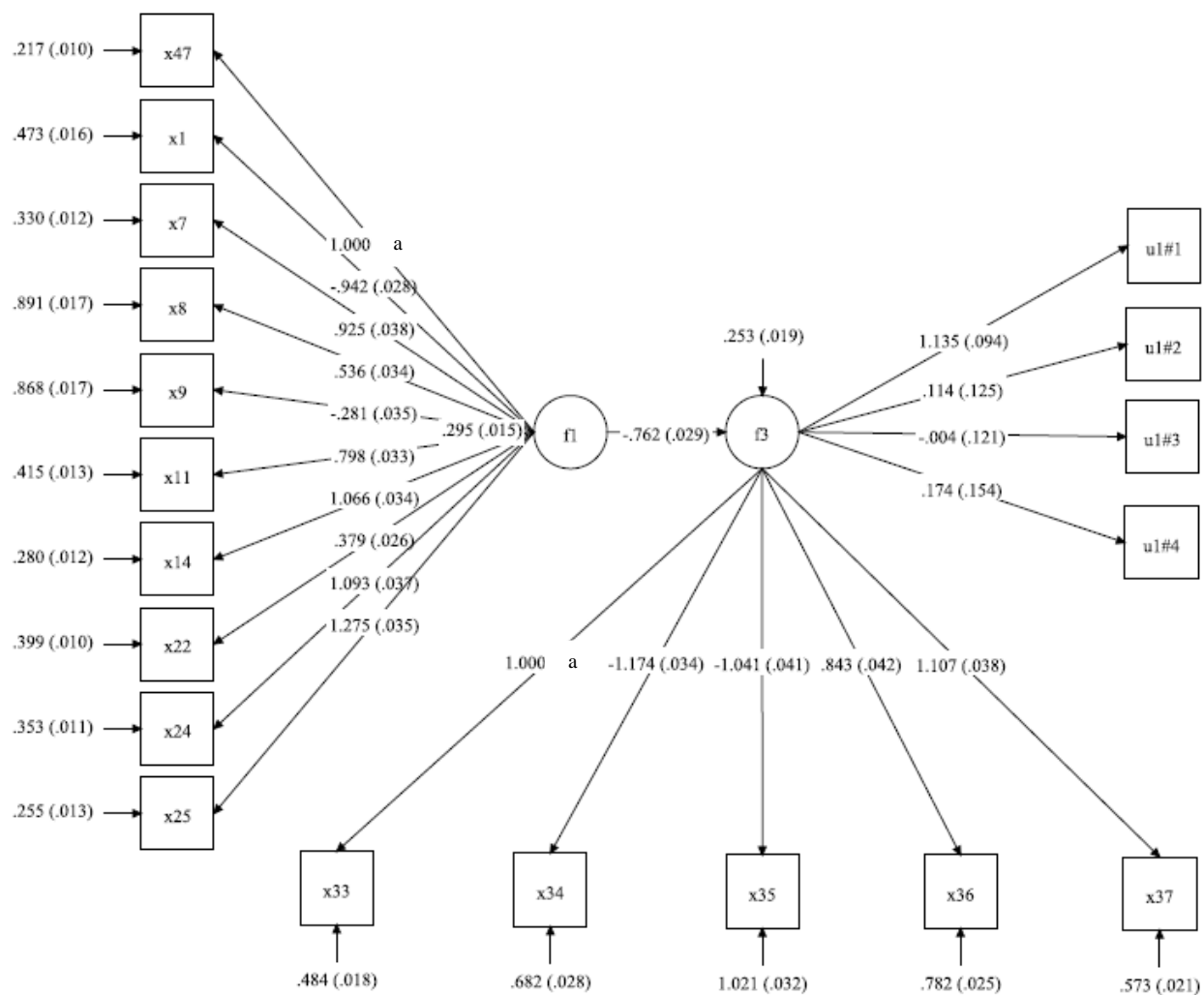
This section presents the structural relationships between the latent constructs of job satisfaction, turnover intentions, and multinomial turnover outcomes. The results indicate a significant, negative relationship between job satisfaction and turnover intentions. And, in turn, turnover intentions significantly predict teachers that stay in their respective schools. However, the model does not significantly predict the other mobility outcomes, except for movers in when economic opportunity is included in the model. A final structural model is presented based on the results of the tests.

For these models the weights and replicate weights are not used in the analysis due to the fact that this analysis option is not available in Mplus, that is, it is not possible to conduct a multi-nominal logistic regression model with complex survey data using weights and replicate weights; they are only available for continuous outcomes with maximum likelihood and for categorical outcomes with weighted least squares which gives probit regression (Muthén & Muthén, 1998-2010).

Figure 4.18 displays the model for mobility regressed on turnover intentions, and turnover intentions regressed on job satisfaction. The fit statistics are *loglikelihood* $H0 = -$

61068.36, $AIC=122,244.720$, $BIC=122574.04$. The parameter estimates and residuals are unstandardized.

Figure 4.18: Model of Actual Turnover on Turnover Intentions, Turnover Intentions on Job Satisfaction



f_1 =Job satisfaction, f_3 =Turnover intentions, x_{47} =General satisfaction, x_1 =Role stress, x_7 =Leader-member exchange, x_8 =Compensation, x_9 =Psychological Uncertainty, x_{11} =Group cohesion, x_{25} =Organizational satisfaction, x_{14} =Perceived organizational support, x_{22} =Autonomy, x_{24} =Procedural justice, x_{33} =Thoughts of quitting, x_{34} =Professional acclamation, x_{35} =Intent to remain, x_{36} =Thoughts of transferring, x_{37} =Withdrawal behavior, $u1\#1$ =Stayers, $u1\#2$ =Movers In, $u1\#3$ =Movers Out, $u1\#4$ =Movers Up, and $u1\#5$ (not pictured) = Leavers (reference category)
^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

The structural regression coefficient for turnover intentions on job satisfaction is significant at -0.762 , $SE = 0.029$, $p < .01$. Turnover intentions is significant at 1.135 , $SE = 0.094$, $p < .01$. The other estimates for turnover intentions on mobility outcomes are not significant at $p < .05$. The estimates are displayed in table 4.14. For an increase of one unit in turnover intentions the log odds of being a leaver versus stayer increases by 1.135. The corresponding odds increase is 3.112. That is, the outcome of leaving is 3.1 times more likely with a one unit increase in turnover intentions. The odds ratios for turnover intentions on all of the mobility outcomes are displayed in table 4.15.

Table 4.14: Results of Mobility Outcomes on Turnover Intention, Turnover Intention on Job Satisfaction

| Variables | Estimate | Standarda Estimate/SE | p - value | |
|---|----------|-----------------------|-------------|-------|
| Turnover Intentions (F3) on Job Satisfaction (F1) | -0.762 | 0.029 | -26.42 | <.01 |
| Stayers (U1#1) | 1.135 | 0.094 | 12.108 | <.01 |
| Movers In (U1#2) | 0.114 | 0.125 | 0.911 | 0.362 |
| Movers Out (U1#3) | -0.004 | 0.121 | -0.031 | 0.976 |
| Movers Up (U1#4) | 0.174 | 0.154 | 1.124 | 0.261 |

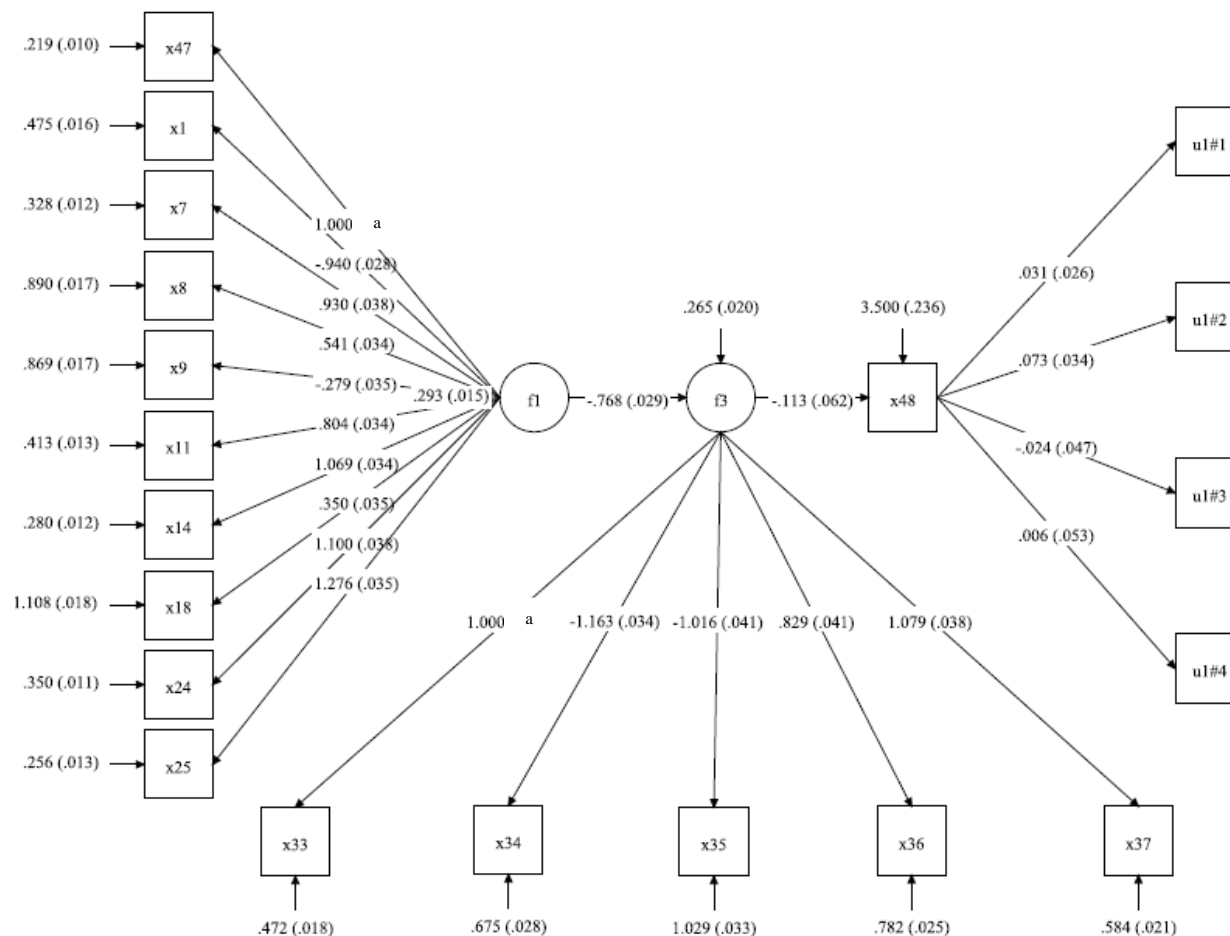
Table 4.15: Odds Ratios for Mobility Outcomes on Turnover Intention

| Variables | Odds ratio |
|---|------------|
| Stayers (U1#1) on Turnover intentions (F3) | 3.112 |
| Movers In (U1#2) on Turnover intentions (F3) | 1.12 |
| Movers Out (U1#3) on Turnover Intentions (F3) | 0.996 |
| Movers Up (U1#4) on Turnover Intentions (F3) | 1.19 |
| Leavers (U1#5) | reference |

In the next model, economic opportunity is regressed onto turnover intentions, and mobility is regressed onto economic opportunity. Figure 4.19 shows economic opportunity added to the model. (The model is unweighted.) The fit statistics are *loglikelihood H0 value* = -69605.795, *AIC* = 139325.59, *BIC* = 139673.213. Turnover intentions significantly loads onto job satisfaction -0.768 , $SE = 0.029$, $p < .01$. Of the mobility outcomes, only movers in (U1#2) significantly loads onto economic opportunity 0.073 , $SE = 0.034$, $p < .05$. The odds ratio for a one-

unit increase in economic opportunity is 1.076 for being in the movers in vs. the leavers group. That is, being in the movers in group is .076 as likely as being in the leavers group with a one unit increase in economic opportunity.

Figure 4.19: Model of Actual Turnover on Economic Opportunity, Economic Opportunity on Turnover Intentions, and Turnover Intentions on Job Satisfaction

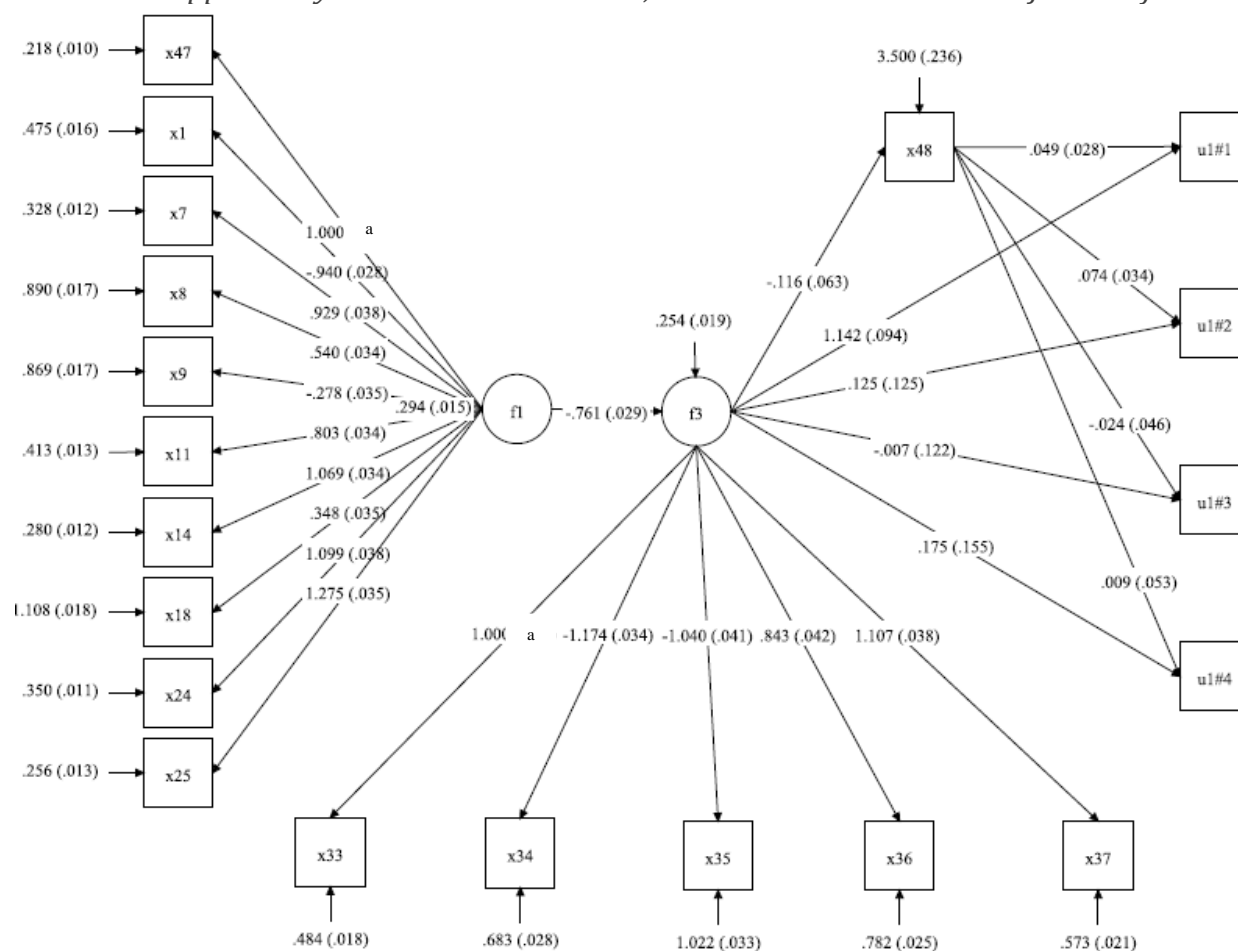


f1=Job satisfaction, f3=Turnover intentions, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, x11=Group cohesion, x25=Organizational satisfaction, x14=Perceived organizational support, x22=Autonomy, x24=Procedural justice, x33=Thoughts of quitting, x34= Professional acclamation, x35=Intent to remain, x36=Thoughts of transferring, x37=Withdrawal behavior, x48=economic opportunity, u1#1=Stayers, u1#2=Movers In, u1#3=Movers Out, u1#4=Movers Up, and u1#5 (not pictured) =Leavers (reference category)

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

The next model, pictured in figure 4.20, shows the mobility outcomes regressed on both economic opportunity and turnover intentions. The fit statistics are *loglikelihood H0 value* = -69461.925, *AIC* = 139045.925, *BIC* = 139417.942. (Again, all parameter estimates and residuals are unstandardized and the model does not use the weights and replicate weights.) Economic opportunity does not significantly load onto turnover intentions, $-.116$, $SE = .063$, $p = > .05$. U1#1 loads significantly onto turnover intentions 1.142 , $SE = .094$, $p < .01$ and U1#2 load significantly onto economic opportunity $.074$, $SE = .034$, $p < .05$. The odds ratios for U1#1 on turnover intentions and U1#2 on economic opportunity change only slightly in this model (3.132 and 1.077, respectively)

Figure 4.20: Model of Actual Turnover on Economic Opportunity and Turnover Intentions, Economic Opportunity on Turnover Intentions, and Turnover Intentions on Job Satisfaction

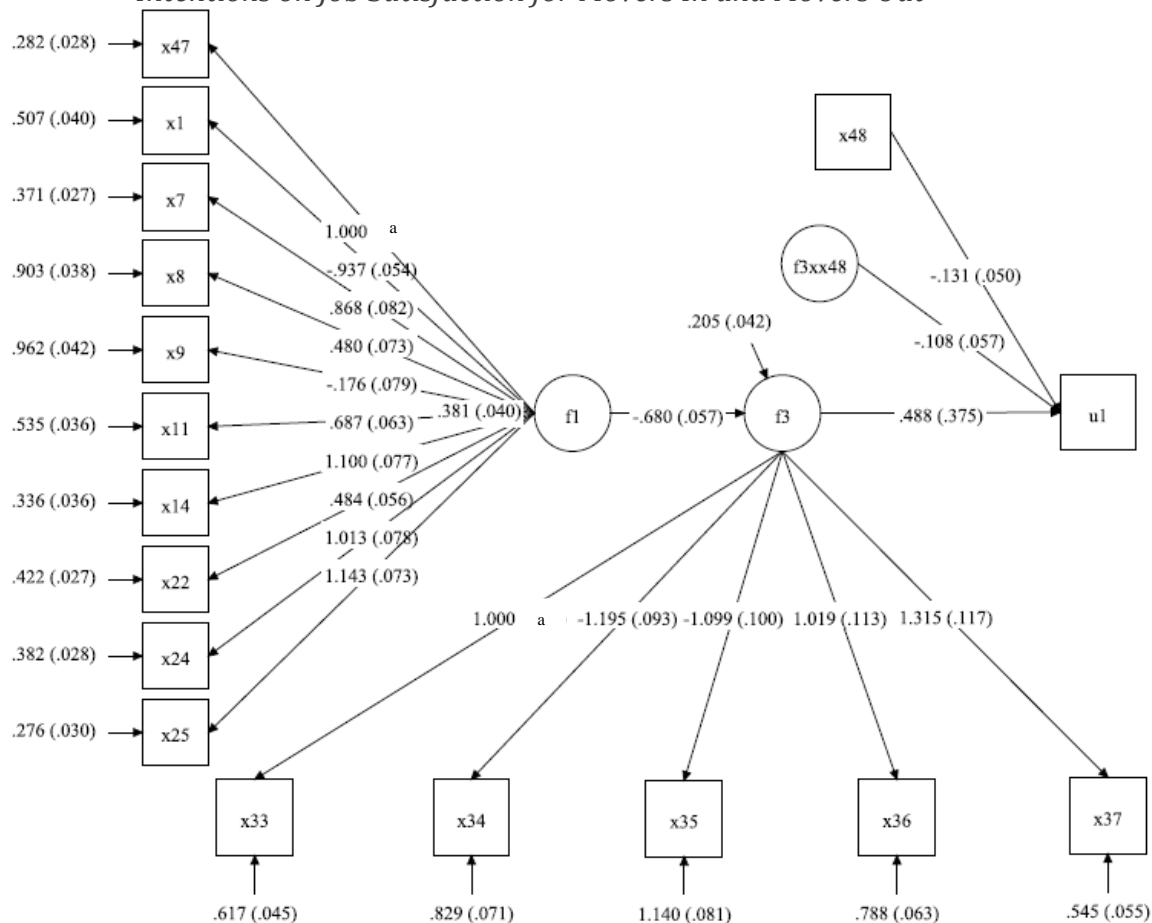


f1=Job satisfaction, f3=Turnover intentions, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, x11=Group cohesion, x25=Organizational satisfaction, x14=Perceived organizational support, x22=Autonomy, x24=Procedural justice, x33=Thoughts of quitting, x34= Professional acclamation, x35=Intent to remain, x36=Thoughts of transferring, x37=Withdrawal behavior, x48=economic opportunity, u1#1=Stayers, u1#2=Movers In, u1#3=Movers Out, u1#4=Movers Up, and u1#5 (not pictured) =Leavers (reference category)

According to the results, the best fitting model, though only slightly, is with the mobility outcomes only regressed onto turnover intentions (i.e. figure 4.18). This model only successfully significantly predicts teacher retention (i.e. stayers) and does not distinguish between the other types of teacher mobility. When economic opportunity is added to the model, the relative fit statistics slightly increase, but then, the model is able to significantly predict teacher movement within district, and to only a slight degree.

The next model (depicted in figure 4.20) examines the interaction effect of economic opportunity and turnover intentions on actual outcomes. However, due to modeling constraints the model only includes the movers in and movers out. Hence, the model tests the moderating effect of economic opportunity between turnover intentions and actual turnover, along with the direct effects of economic opportunity and turnover intentions on actual turnover (In this case, moving within or between a school districts.) The fit statistics are *loglikelihood H0 value* = -10519.012, *AIC* = 21138.025, *BIC* = 21353.973. Parameter estimates and residuals are presented in unstandardized format.

Figure 4.21: Model of Actual Turnover on Economic Opportunity and Turnover Intentions with an Interaction between Economic Opportunity and Turnover Intentions, and Turnover Intentions on Job Satisfaction for Movers In and Movers Out



f1=Job satisfaction, f3=Turnover intentions, x47=General satisfaction, x1=Role stress, x7=Leader-member exchange, x8=Compensation, x9=Psychological Uncertainty, x11=Group cohesion, x25=Organizational satisfaction, x14=Perceived organizational support, x22=Autonomy, x24=Procedural justice, x33=Thoughts of quitting, x34=Professional acclamation, x35=Intent to remain, x36=Thoughts of transferring, x37=Withdrawal behavior, x48=economic opportunity, f3x48=interaction between f3 and x48, u1#1=Movers In, u1#2(not pictured)=Movers Out (reference category)

^a fixed at 1 as reference indicator for factor, parameter estimates and residuals are unstandardized

Table 4.16 Corresponding Odds Ratio for Model of Actual Turnover on Economic Opportunity and Turnover Intentions with an Interaction between Economic Opportunity and Turnover Intentions, and Turnover Intentions on Job Satisfaction for Movers In and Movers Out

| Variables | Odds ratio |
|---|------------|
| U1 on | |
| Economic opportunity X turnover intentions (F3xX48) | 0.898 |
| Turnover intentions (f3) | 1.629 |
| Economic opportunity (x48) | 0.877 |

The odds ratio for the interaction term between economic opportunity and turnover intentions is .898. Hence, the outcome of moving to a new school district is 1.629 more likely with a one unit increase in turnover intentions. However, when turnover intentions are moderated by economic opportunity the outcome of moving to a new school district is only .898 as likely. This model provides some evidence that teachers' mobility is moderated by their economic opportunity.

The next section takes a subsample of beginning teachers in urban schools to examine if, and how, the relationships between the constructs and mobility may vary.

Subsample Analysis: Beginning Teachers in Urban Schools

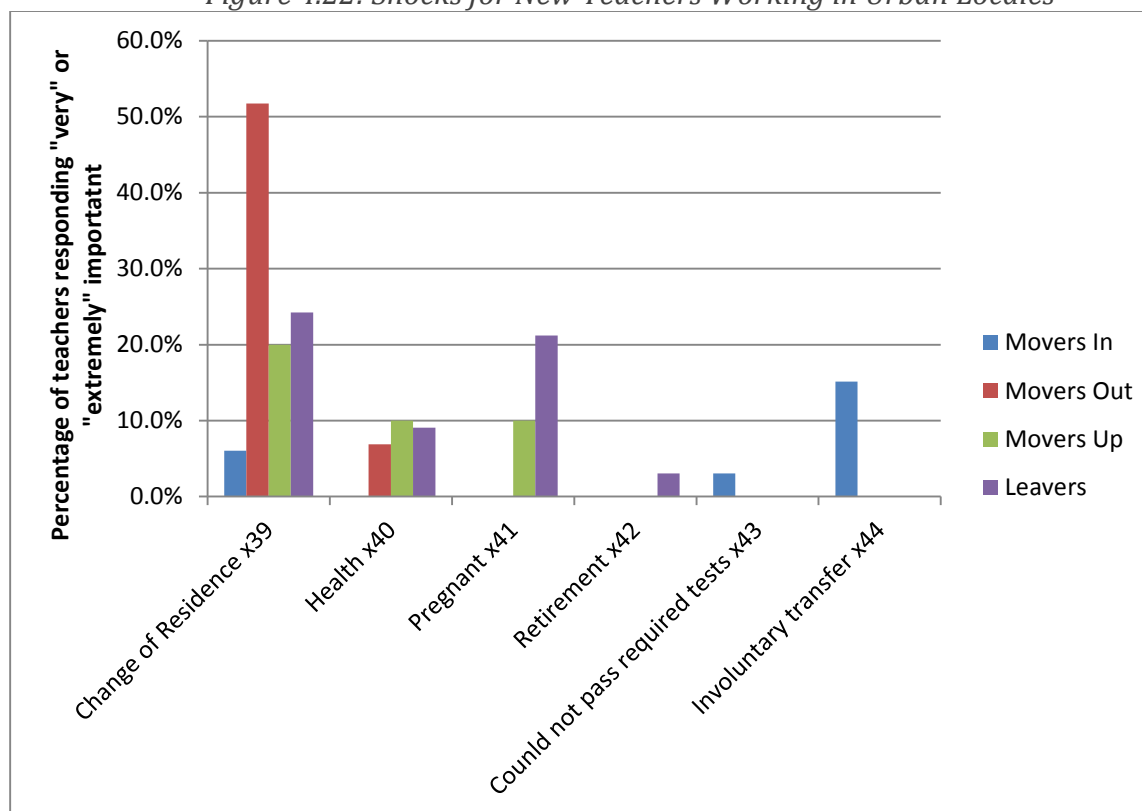
As Guarino and colleagues (2006) noted, urban schools and schools with high percentages of minority students are the most difficult to staff, and teachers tend to leave these schools when more attractive job opportunities arise. In order to examine how the relationships between the indicators and mobility outcomes may vary for this specific group of teachers working in these types of schools, a subsample of new teachers in urban locales was pulled from the sample. This analysis focuses on beginning teacher mobility in urban locales. These teachers have three or less years of experience and work in schools located in cities. The following

section briefly discusses the process for selecting the subsample, and provides a short analysis using the indicators of job satisfaction and turnover intentions.

Subsample

The subsample includes new teachers working in urban locales. In this analysis new teacher were selected using the NCES new teacher flag, which identifies teachers with three or less years of experience. The urban locale is based on the collapsed urban-centric school locate code provided by NCES which consists of three categories: city, large; city, midsize; and city, small. A total of 400 teachers, consisting of 290 stayers, 30 movers in, 30 movers out, 10 movers up, and 30 leavers, fit these criteria. Additionally, to account for shocks prior to analyzing the variables, teachers that reported one of the shocks variables, except for dissatisfaction with job description or grade level, as “very” or “extremely” important were removed from the sample. Figure 4.22 shows the percentages of teachers’ responses indicating these variables as “very” or “extremely” important. Due to the nature of the survey, teachers could have responded that more than one of these variables was an important factor, so cumulating the percentages are not fully indicative of the remaining sample. In the end, this process left all the stayers (n=290), 30 of the movers in, 10 of the movers out, 10 of the movers up and 20 of the leavers, for a total of 360.

Figure 4.22: Shocks for New Teachers Working in Urban Locales



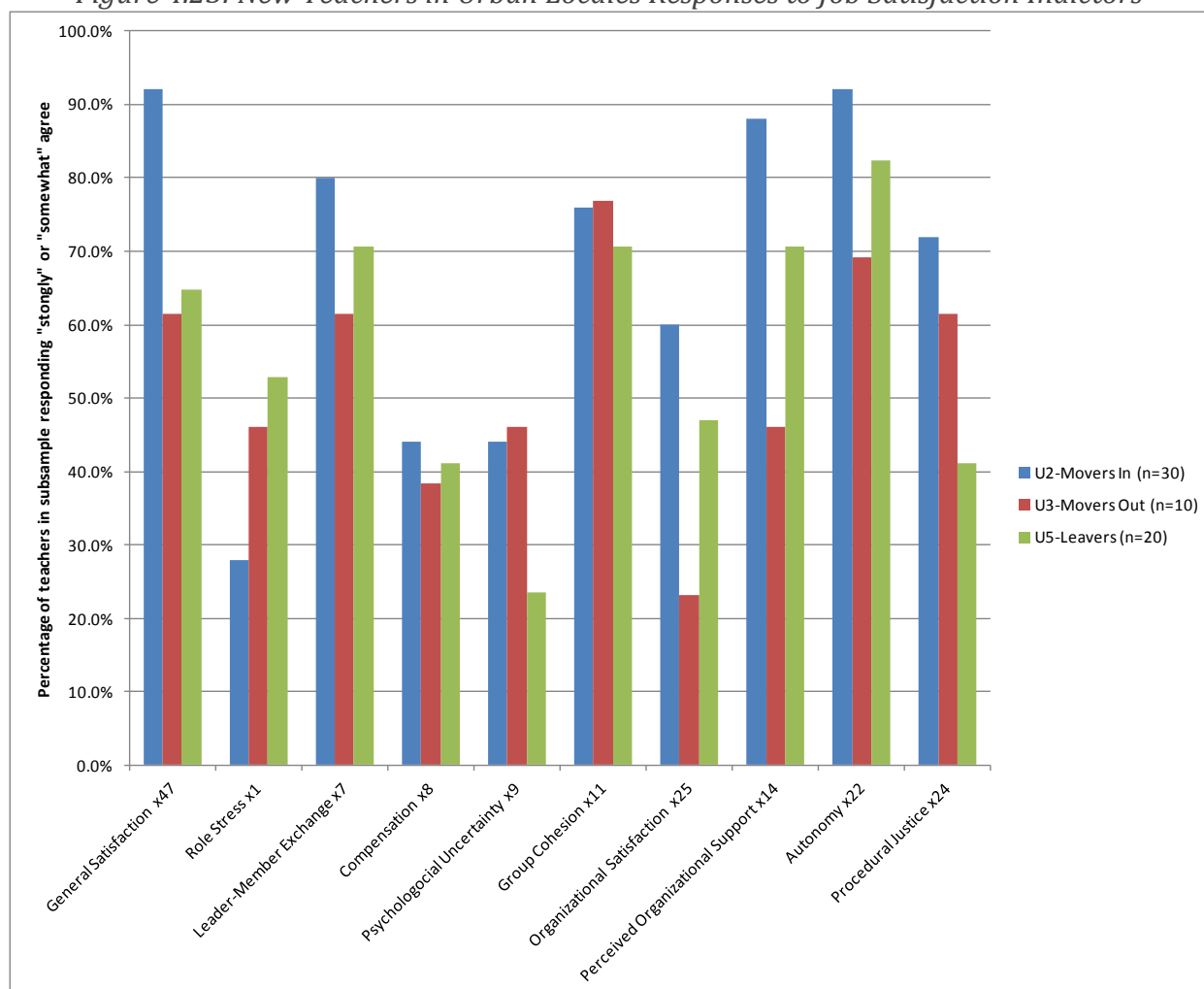
The following analysis compares the responses of the teachers across mobility groups, that is, the teachers that move within or between districts, or exit the public teaching profession. Descriptive statistics are provided for this sample, but due to the small sample size the results may be heavily influenced by outliers.

Job Satisfaction Variables for Subsample

The results indicate similar patterns between the variables and mobility patterns for new teachers working in urban schools. Movers in typically have the second highest rates of agreement with items representing favorable conditions, and on variables *x47*, *x14*, and *x22* they closely parallels stayers' responses. Movers out are the least satisfied reporting the lowest levels of agreement with both *x47* and *x25*. And, they feel the least supported by administrative staff (*x14*), have slightly the highest levels of psychological uncertainty (*x9*), and are the least satisfied with their compensation (*x8*). Though, by and large, there is the least amount of satisfaction with

compensation across all of the groups. Lastly, leavers respond slightly more favorably to most of the items than movers out, for example, except on group cohesion and procedural justice. Additionally, leavers have the highest rates of agreement with role stress, though, not psychological uncertainty. The new teachers' responses are depicted in figure 4.23.

Figure 4.23: New Teachers in Urban Locales Responses to Job Satisfaction Indictors



Turnover Intentions for Subsample

Turnover intentions for new teachers working in urban locales are similar to the sample at large. Leavers indicate relatively stronger intentions to quit for a better paying job, and likewise, they have the highest percentage (41.2%) of responses signaling that they intend to leave teaching as soon as possible. The same percentage (41.2%) of leavers also would not become a

teacher again. As opposed to wanting to leave the profession and regretting becoming a teacher, movers in and movers out have the strongest intentions to transfer, with 52.0% and 61.5% “somewhat” or “strongly” agreeing with having thoughts of transferring. Though, movers out, movers in, and leavers do have similar percentages of teachers that “strongly” or “somewhat” agree with having less enthusiasm about teaching. The new teachers’ responses on the turnover intention indicators are depicted in figures 4.24 and 4.25.

Figure 4.24: Turnover Intentions of New Teachers in Urban Locales (1 of 2)

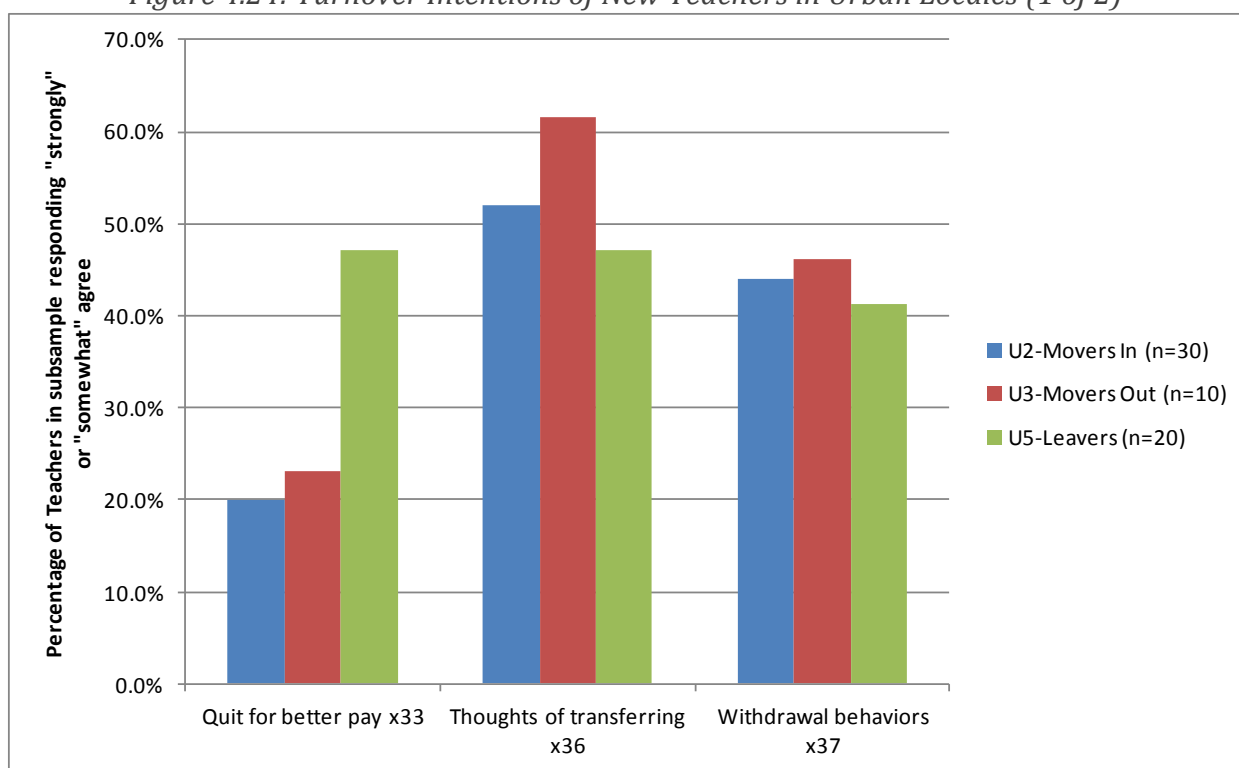
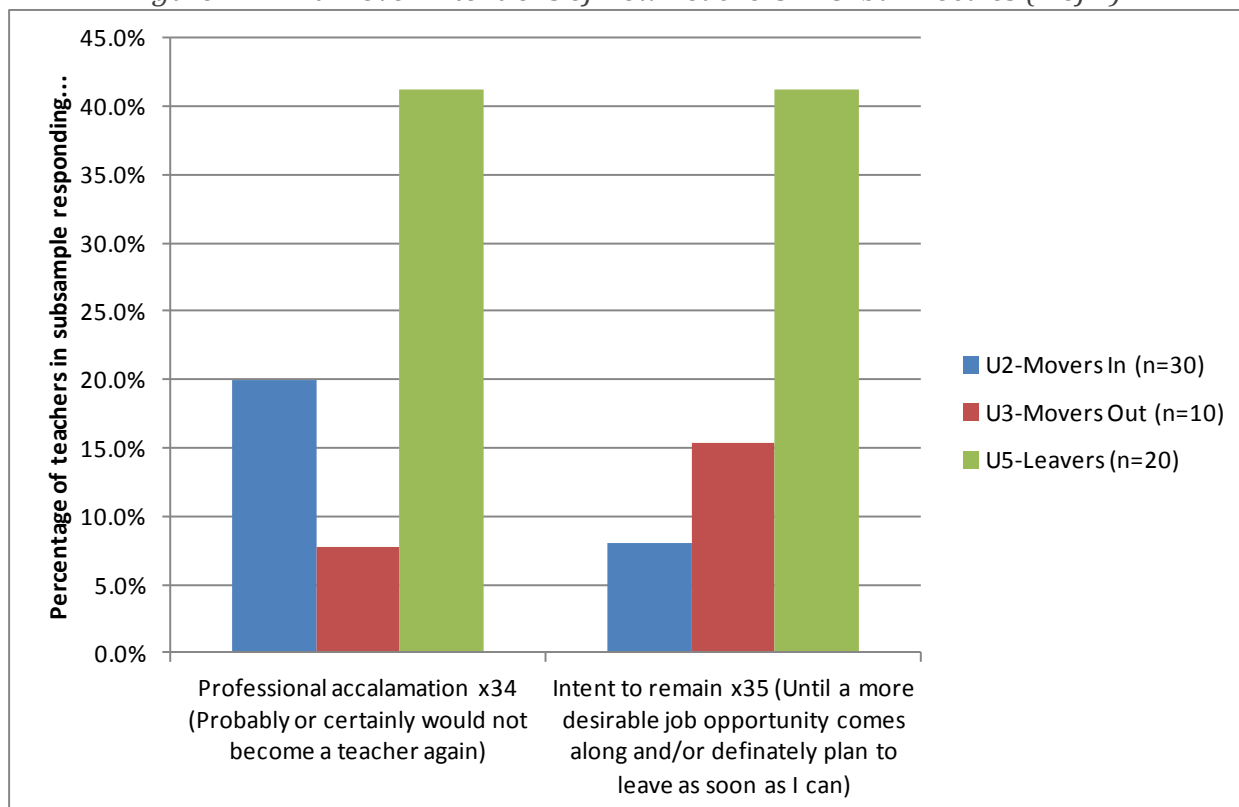


Figure 4.25: Turnover Intentions of New Teachers in Urban Locales (2 of 2)



The next section merges the findings from the analysis into a general theme and relates some of the findings back to policy recommendations for strategically managing human capital.

Chapter V: Discussion

Teacher quality in the classroom is a critical issue facing the public education systems in the United States; directly related to this matter is teacher retention and mobility. Given the strength of the effects of teachers on student performance (e.g. Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008), attracting and retaining highly qualified and/or effective teachers is a central tenant in educational reform efforts (e.g. Public Advocates, 2011). A major focus of research and policy is on restructuring and improving financial incentives, working conditions, and support environments (Darling-Hammond, 2010). Identifying the influences of these factors on teacher mobility is a first step towards strategically managing human capital.

To unpack the nature of teacher turnover and expand our understanding of it, this study sought to conceptually reframe teacher mobility as a result of attitudinal constructs influenced by factors stemming from the three interrelated conditions of teacher quality. To accomplish this aim, this study aimed to identify the determinants of the latent factors job satisfaction, organizational commitment, and turnover intentions, and, in turn, identify the influences of these latent factors on various types of teacher turnover in an integrative teacher turnover model.

Summary of Findings

A broad theme emerges from the findings, which provides insight into the various types of teacher mobility: *Teachers move between schools and school districts, and exit the public school teaching profession for various reasons; however, they stay in their respective schools for similar reasons.* In short, *stayers* stay for similar reasons, *movers in* fine tune, *movers out* reset, and *leavers* move on.

Teachers that stay in their respective schools from one year to the next report being satisfied with numerous organizational factors, and unsurprisingly, these teachers display relatively higher levels of job satisfaction and lower levels of turnover intentions. Determinants

that were found to significantly influence job satisfaction include: leader-member exchange, role stress, compensation, psychological uncertainty, group cohesion, perceived organizational support, autonomy, and procedural justice. This finding is consistent with other research that indicates these factors influence teacher retention (e.g. Hirsch et al., 2007; Ingersoll, 2001a; Loeb, Darling-Hammond, & Luczak, 2005; Loeb & Page, 2000; Marvel et al., 2007). In this analysis, job satisfaction was significantly, negatively related to turnover intentions (-0.762), which in turn, significantly predicted teachers that stay in their school. Accordingly, teachers that stay in their schools report lower levels of turnover intentions, that is, higher levels of professional attachment to the occupation, similar to Cha (2008), and lower levels of withdrawal behaviors.

Teachers that move in their school districts seem to be fine tuning their working environments and job satisfaction. These teachers are generally satisfied, but they are slightly discontent with some specific, though not necessarily similar, environmental conditions. And, they report relatively strong intentions to remain in the profession, but have intentions of transferring between schools. It is possible that these intentions are stifled by the lower levels of economic opportunity that this movement is associated with. Since costs of quitting are relatively higher due to relatively higher unemployment rates, it is possible that these teachers have lower expected utility of seeking employment in another district and perhaps due to some specific investments made by these individuals.

Teachers that move out of their school districts are seeking substantial changes in their working environment. This type of mobility is associated with relatively more dissatisfaction with numerous organizational conditions, linked to strong intentions to transfer schools, and coupled with higher rates of economic opportunity. However, these teachers report being relatively satisfied with the teaching profession and intend to remain in the occupation.

Teachers that leave the public school teaching profession move on from the occupation. These teachers are relatively satisfied, but, nonetheless, they report lower levels of attachment to the teaching profession, are more withdrawn, and have little intention of only transferring between schools. Additionally, a substantially large percentage (84.6%) of these teachers report personal factors as significant influences in their decision to exit the profession.

There is not as strong a trend for teachers that move up into various roles in the public education system. Nonetheless, teachers that move into administrative roles or support roles are relatively satisfied, but they have little intention of remaining in the teaching profession and report higher inclinations to leave for higher pay.

In regards to the specific question asked about the determinants of the latent factors, all of the determinants were found to be significant in the measurement models. However, the indicators could not distinguish between job satisfaction and organizational commitment; hence all of the indicators were used to reflect job satisfaction. And, in regards to turnover intentions, the model adequately fit the determinants used to reflect this construct, indicating that intent to remain in the teaching profession, professional attachment, thoughts of turnover, and withdrawal behaviors all reflect teachers' turnover intentions. And, in job satisfaction was negatively related to turnover intentions which reliably predicted teachers that stayed at their school, but it could not distinguish between the other mobility outcomes, except for movers in when economic opportunity was added to the model.

Given the strength of findings regarding economic opportunity and turnover, it is surprising that regional unemployment rates did not have a stronger relationship with teacher turnover. In particular, economic opportunity was most strongly associated with teachers that moved within their district, suggesting that during times of higher unemployment rates teacher

mobility is more constrained to intra-district movement. This is consistent Mobley's (1977) theory that these individuals diminish expected utility of job seeking which limits mobility.

Based on the overall findings the original framework provides some valuable insights; however, there are some serious modeling constraints that arose from it. In particular, accounting for the multi-nominal nature of teacher mobility limits the modeling that can be done. For example, it is not possible to model complex survey data using the weights and replicate weights or to model indirect effects with unordered categorical outcomes (Muthén & Muthén, 1998-2010). Furthermore, modeling shocks as a composite factor was not possible, ultimately eliminating it from the structural model. However, in the future, removing the teachers that reported those variables as being influential in mobility decision from the sample used for the modeling would be beneficial and would better account for the shocks factor, as was done with the subsample analysis.

The following section discusses the implications of these findings for strategically managing teacher retention and provides several recommendations for processes designed to identify unwanted turnover, diagnose causes, and develop retention strategies.

Policy Recommendations: Implications for the Strategic Management of Human Capital

One of the central tenants of strategic management of human capital (SMHC) is designing and implementing management reforms that are focused on the retention of teacher talent (Odden, 2011; Odden & Kelly, 2008). To inform strategic teacher management policies, this study provides an alternative conceptual framework to examine teacher retention and mobility. In terms of strategically managing teacher turnover, this study has several recommendations:

1. *Benchmark and monitor the extent of unwanted turnover, keeping in mind avoidable, voluntary, dysfunctional turnover and the various types of mobility.*

Turnover rates must be benchmarked and monitored to identify the extent of unwanted turnover. There is theoretically a healthy and unhealthy level of teacher turnover; however, determining these benchmarks is a complex task, which no single method or measure can achieve. Yet, through a combination of strategies we can gain a sense of the relative size of the aggregate level of teacher turnover. A typical strategy is to evaluate teacher turnover against employee turnover in comparable industries, such as, nursing, accounting, social work. But, this type of research has provided mixed results on the relative size of teacher turnover and failed to reach a consensus (For an example of this debate, see Harris & Adams, 2007.).

Although debating this issue is not the explicit purpose of this study, it is connected to the theory of the problem, which frames unhealthy teacher turnover as more of a mobility problem than a problem of overall attrition. In support of this perception of the problem, evidence from the 2007-2008 SASS and 2008-2009 TFS data suggests that at the aggregate level teacher turnover rates are similar to comparable professions. With 86.3% of teachers staying in the same school from one year to the next and only 5.5% of teachers leaving the public education system, the teaching profession seems relatively similar to comparable occupations, such as, nursing, social work and accounting based on information provided by Harris and Adams (2007), in which they estimated an overall teacher turnover rate of 7.73 using the 1992-2001 March Current Population Survey (CPS) and found that the aggregate teacher turnover rate is similar to those professions. Although this analysis suggest overall turnover rate is relatively low, it only offers a one year snapshot, and it does not account for comparisons by specific groups (e.g. age), for which, comparisons can vary widely (Harris & Adams, 2007).

In regards to specific types of turnover, it is informative to note that, of the teachers that leave the public teaching profession, 84.6% report unavoidable factors (e.g. full-time care for family members, family moves, and pregnancy leave) as being influential in their decisions to quit. Following retirement, health and pregnancy leave have the highest percentage of teachers (14.2% and 13.8%) indicating these variables as influential in their mobility decisions. Since these separations are typically viewed as uncontrollable from an employer's perspective, this evidence suggests SMHC teacher retention policies should focus on avoidable teacher turnover, in this case, primarily consisting of inter and intra school district movement.

However, this type of analysis is only informative about national trends; it provides little relevant information for educators, researchers and stakeholders at the state and local level, which may face somewhat different circumstances. Even though there is not a clear aggregate teacher retention problem, certainly high turnover is an important problem facing certain school districts, schools and even specific subject areas. Therefore, teacher retention levels must continue to be monitored at the state, district, and school level; though stronger efforts need to be made to distinguish avoidable, dysfunctional teacher turnover from other types of turnover. Additionally, acceptable and desirable levels of teacher turnover need to be established to set targets and triggers for action.

2. *Consider policy amendable causes and determinants of the different teacher turnover outcomes using a variety of frameworks and methods.*

Before beginning a specific analysis, it is beneficial to review the relationships between the needs of teachers, the causes of teacher turnover, and specific potential teacher retention strategies. This study framed teacher turnover decisions as a response to factors associated with job satisfaction, organizational commitment, turnover intentions, and economic opportunity. Variables chosen to indicate job satisfaction and organizational commitment were based on an

extensive review of the relationship between employee needs and employee turnover, and, more specific to education, the relationship between the support for teachers and their work and teacher mobility. Significant factors associated with teacher retention in this study, including perceived organizational support, autonomy, leadership, compensation, role stress, group cohesion, are all indicators of the type and amount of support teachers receive for their work and, to varying degrees, are regarded as policy amendable.

Additionally, considering the different types of teacher turnover can be beneficial for linking different determinants to different turnover outcomes. Evidence from this study suggests that dissatisfaction with factors that are policy amendable is most strongly connected to teacher intra- and inter district movement. For example, teachers that follow this movement pattern report relatively higher levels of role stress, less group cohesion, and lower levels of leader member exchange. These teachers also report relatively lower levels of satisfaction with salary. Since SMHC retention policies can be designed to target these forces, these policies may be relatively more productive by targeting this type of movement.

And, although the findings provide little clarification on movers up, this mobility pattern is an important component of the educational system. Many principal candidates work their way into an administrative role by beginning in teaching (Gates et al., 2003). Thus, it is expected that some percentage of teachers would leave teaching to pursue an administrative role, and other supporting roles (e.g. instructional coaches). And, hence, classifying these individuals as leavers overrates teacher turnover in the educational system.

The results from this study indicate relationships between variables and constructs for a representative sample of teachers, but the results are not generalizable to any specific schools or districts. Additionally, this analysis represents only one form of inquiry and one type of evidence that can provide information on teacher retention and mobility. For educational leaders,

researchers and stakeholders at the state and local level, although a survey is a common instrument and a typical starting point for studying turnover, elaborating on this initial data is critical. Other methods that can be used in conjunction with surveys and provide further insight into the causes of turnover include interviews, focus groups, and exit interviews. In a survey administered by the Society for Human Resource Management, 87% of organizations reported using exit interviews to determine employees' reasons for leaving, and more than 50% of these organizations initiated changes based on the information. (Society for Human Resource Management, 2000). However, it is not clear to what extent exit interviews are used in education, and if they initiate successful changes in practices. A variety of tools are required to thoroughly and accurately analyze turnover so that retention solutions can be identified and matched to a particular cause.

3. *Match strategic management solution sets to policy amendable determinants specifically targeting avoidable, involuntary, and dysfunctional turnover*

After benchmarking turnover and identifying causes, the next step is to explore the range of retention solutions and match those solutions to determined needs (Phillips & Connell, 2003). The results from this study indicate retention strategies can target to two broad areas for supporting teachers and their work, that is, developing an appropriate work environment and enhancing motivation and commitment. Determinants found to be significant in this study with teacher retention signal each of these solution sets as potential areas to target when designing teacher retention policies.

To satisfy the need for an appropriate work environment, education leaders can focus on a variety of critical issues, such as, job satisfaction, job security, and culture. And, to build motivation and commitment, education leaders can focus quality of the leadership, autonomy and

collegiality. Each of these components is multifaceted and multidimensional, but determinants connected to each were found to be significantly related to teacher retention.

Common factors assessed with job satisfaction include pay, supervision, and relationships with coworkers (Nagy, 2002). In this study compensation, leader-member exchange, and group cohesion were each found to be associated with teacher retention. There are numerous employee retention strategies that target each of these areas that have been tested in the private sector and some of which have been applied in education.

Teachers in this study report overall relatively lower satisfaction levels with their compensation. Teacher compensation levels matter for the level of quality of individuals deciding to enter and remain in teaching (Milanowski, 2008). Hence, teacher salaries need to be competitive. Comparing teachers' wages to comparable professions, Allegretto, Corcoran, and Mishel (2008) found that on average teacher nationally earn about \$10,000 below individuals in comparable jobs. But across-the-board increases are unlikely to bring changes in teacher quality except over the very long term (Ballou & Podgursky, 1997). SMHC recommendations argue that teachers' average wages should be hiked roughly between \$5,000 and \$10,000, but that adjustments should be considered on a state-by-state basis and within state on regional basis, and that this should be done through newly designed teacher wage structures (Odden, 2011). With a new generation of teachers wanting increased responsibilities, instructional leadership, and performance linked to their pay system (Johnson & Papay, 2010), these teachers may find more satisfaction with alternative compensation structures.

For improving supervision through leader-member exchange, Scandura & Graen (1984) designed a leadership program to instruct managers on how to form high-quality social exchanges with subordinates. More specific to education, performance evaluations regarding principal leadership competencies should include a communications component, part of which

should focus on fostering communications. By improving working relationships, enhancements in LMX may boost teacher retention levels.

Improvements to group cohesion can be achieved by socialization tactics, which can be used to assimilate newcomers and/or develop collegial working relationships. A common example of a socialization process for teachers is beginning teacher support programs. Teachers who experience induction and mentoring support are less likely to leave teaching (Smith & Ingersoll, 2004). Additionally, building collegial communities can enhance group cohesion. One way this could take place is by forming collaborative work teams, often referred to as Professional Learning Communities (PLCs), which focus on continuously improving instructional practice. Teachers enjoy being on a staff with a great deal of cooperative effort and value the opportunity to work collaboratively with their colleagues. Being part of a supportive, productive team can build motivation and commitment, and in turn, retention.

Supervisors can also take steps to mitigate role stress, which was found to be significantly, negatively related to job satisfaction in this study. Results from studies have indicated that superiors can take actions to reduce role conflict and ambiguity, and thereby reduce turnover (e.g. Jones, Katak, Futrell, & Johnston, 1996). More specific to education, according to SMHC strategies for talent retention, one of the first steps principals and school leaders can take is to identify and address work environment problems that hinder and/or frustrate staff (Odden, 2011). Addressing problematic working conditions that contribute to role stress may reduce teacher turnover.

Quality of leadership can also influence employees' motivation and commitment. In this study, perceived organizational support and leadership-member exchange are both aimed at school leadership. School leaders have much to do with teachers' desire to stay in a school and they have specific ways they can support teachers. As Kaye and Jordan-Evans (2005) stated,

people quit bosses, not companies. While it is well beyond the scope of this paper to address how to develop effective leadership in schools, a good place to start is by considering performance management plans with principal competency models (Odden, 2011), because certainly, quality leadership is a key to teacher retention (Brown & Wynn, 2009; Guarino, Santibanez, Daley, & Brewer, 2004; Milanowski, Heneman, & Kimball, 2009).

Job security provides employees with stability, and conversely, a lack of job stability may diminish an employee's sense of attachment and responsibility to an organization (Ashford, Lee, & Bobko, 1989). In this study, evidence was found to link psychological uncertainty to lower levels of job satisfaction, as opposed to organizational commitment, but nonetheless teachers that worry about their job because of their students' performance are more likely to not stay at their respective schools. This reasoning offers a potential partial explanation for Clotfelter and colleagues (2004) finding that a statewide accountability policy was associated with attrition in lower performing schools. This factor captures some potential inadvertent influences of accountability policies and suggests that the potential negative influences of psychological uncertainty on turnover need to be considered when designing accountability policies. A closely related matter is that of teacher tenure. Not a lot can be said, other than, policymakers need to be weary of designing tenure plans that may disproportionately create more job uncertainty for teachers in certain types of schools. More specifically, if performance measures are used to decide a teacher's tenure status, these measures need to be valid, reliable, and stable across a wide range of learners, so as to not create an undue level of psychological uncertainty for teachers in diverse and challenging settings.

Teacher autonomy or empowerment is also another complex issue, yet clearly tied to teacher retention. Numerous studies examining the SASS data have linked a form of autonomy to teacher retention (e.g. Ingersoll, 2001a; Shen, 1997; Weiss, 1999). And, research on human

capital management by Kimball, Milanowski, & Heneman, (2010) provides evidence that principals aiming to retain priority teachers increased teachers' autonomy as a tool to do so.

Each of these strategies could be used to target significant factors influencing teacher turnover, essentially by providing more and/or different support to teachers for their work. However, these are broad guidelines elaborated on with some specific examples from talent retention and SMHC literature, they are not specific blueprints. Evidence from one survey that is self-reported does not offer ample and sufficient information for developing retention plans at any level in the educational organization. And, although the determinants point to some policy amendable aspects of schools and districts, they do not provide information on specific components or enough detail for matching retention solutions to teachers' needs.

Nonetheless this study does provide some evidence to extend on teacher retention conversations by focusing on factors and conditions that influence the quality of support for teachers' and their work. Educators and stakeholders at the state and local level can use these suggestions to begin to address teacher retention issues in their respective locales; but they will need to consider what the implications are within their respective purviews.

Comments for Future Research

In this final section, some of the problematic issues of this study are highlighted and discussed to inform future research. Potential solutions are offered for capturing organizational commitment and economic opportunity, and further research is suggested for examining if, and how, organization commitment may mitigate teacher turnover induced by shocks.

Although some studies provide evidence that teachers' organizational commitment is a significant predictor of teachers' intent to stay in teaching (e.g. Billingsley & Cross, 1992; Ingersoll & Alsalam, 1997), in this study, a unique factor structure for organizational commitment was not found. This is most likely a result of how the construct was operationalized

with the measured variables, and, hence not capturing attitudinal and behavioral measures of commitment. Although job satisfaction and organizational commitment have been found to be separate, unique predictors of actual turnover (e.g. Tett & Meyer, 1993), this study could not differentiate between the two constructs, and ultimately, could not assess the relationship between organizational commitment and actual turnover. Future studies could address this problem by examining variables that more clearly capture affective, continuance, or normative commitment. For example, asking questions that directly target an individuals' sense of emotional attachment to the organization, cost assessment of leaving the organization or feelings of obligation to the employer. These types of questions may yield important insights into the structural nature of teachers' organizational commitment and its influence on teacher movement patterns.

Economic opportunity is not typically included in teacher mobility studies; however, research in other fields (e.g. Carsten & Spector, 1987; Muchinsky & Morrow, 1980) indicates that it moderates the relationship between turnover intention and actual turnover. Evidence from this analysis provides little empirical evidence that supports a strong relationship between economic opportunity and the different types of teacher turnover, or a moderating effect between turnover intentions and actual turnover. In future research, occupational unemployment rates may provide some evidence that economic opportunity moderates the relationship between turnover intentions and actual turnover, since Hom et. al. (1992) found occupational unemployment to moderate the pathway between turnover intention and actual turnover more so than other unemployment indices.

For individuals that left their previous school, whether moving to a new school district or leaving the public teaching profession, shocks represent a substantial set of forces that individuals' reported as influential in their mobility decisions. A majority of the turnover

influenced by shocks is attributed to personal factors (25.1%), as opposed to assignment/credential factors (7.6%), indicating that it may be unavoidable turnover for the organization. As Mitchell and Lee (2001) point out, employees do not always leave for job-related reasons, or overall dissatisfaction with a job, nor does money make them stay. It is possible that an employees' sense of fit and commitment to the organization may moderate the influence of shocks; however, due to some limitations in the data, this study did not examine how an employee's sense of commitment to the organization may moderate the influence of shocks on actual turnover.

While there are many questions still unanswered, this study attempts to provide further insight into the nature of teacher turnover by merging research from voluntary employee turnover and, teacher retention and mobility literature. The end result is an alternative conceptual framework to examine teacher retention and mobility that signals strategic management policies targeted at supporting teachers and their work, suggesting that teacher retention polices may be more productive by aiming at factors that not only improve teacher retention, but that simultaneously enhance teaching quality. Ultimately, the essence of teacher talent management is about the bond between teacher retention and the quality of teaching in the classroom.

Appendix A: The 2007-2008 SASS Items and Coding

| Multinomial Teacher Turnover Outcomes | | | | | | |
|--|----------------|------------|---|--|-------------------------------|---|
| Construct | SASS Code | Mplus Code | Content | Scale | Coding | RecodedVariables |
| Actual Turnover | | | | | | |
| Status for Stayers | CTFS.3a-MOVYN | | Are you currently teaching in the SAME SCHOOL as you were last year (2007-08) | 1= Yes, 2=No | Select Yes (1) | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| Status for Movers In | CTFS.3a-MOVYN | U1 | Are you currently teaching in the SAME SCHOOL as you were last year (2007-08) | 1= Yes, 2=No 1=moved from one public school to another public school in the same school district 2= Moved form one Public school district to another public school district 3=moved from a private school to a public school 4=moved from one private school to another private school 5= moved from a public school to a private school | Select No (2) | |
| | CTFS.6-MVTYP | | Which of the following best describes your move form last year's school to your current school? | | Select 1 | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| Status for Movers Out | CTFS.3a-MOVYN | U2 | Are you currently teaching in the SAME SCHOOL as you were last year (2007-08) | 1= Yes, 2=No 1=moved from one public school to another public school in the same school district 2= Moved form one Public school district to another public school district 3=moved from a private school to a public school 4=moved from one private school to another private school 5= moved from a public school to a private school | Select No (2) | |
| | CTFS.6-MVTYP | | Which of the following best describes your move from last year's school to your current school? | | Select 2 | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| Status for Movers Up | | U3 | | 1=working for a school or school district in a position in the field of k-12 education, but not as a k-12 classroom teacher 2=working in a position in the field of pre-k or postsecondary education 3=working in an occupation outside the field of education, including military service 4=student at a college or university 5=caring for family members 6=retired 7=disabled 8=unemployed and seeking work 9=other | | |
| | FTFS.3-OCST | | What is your current MAIN occupational status? | 1=principal 2=assistant principal 3=school district administrator 4=librarian 5=library technician 6=audio-visual collections specialist 7=instrucational coordinator 8=teacher assistant 9=counselor or school psychologist 10=short-term substitute 11=teacher aide 12=other occupation | Select 1 and 2 | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| | FTFS.6a-SCOCC | | Is your current main occupation a- | | Select 1,2,3,7,9 | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| Status for Leavers | CTFS.3a-MOVYN | U4 | Are you currently teaching in the SAME SCHOOL as you were last year (2007-08) | 1= Yes, 2=No 1=moved from one public school to another public school in the same school district 2= Moved form one Public school district to another public school district 3=moved from a private school to a public school 4=moved from one private school to another private school 5= moved from a public school to a private school | Select No (2) | |
| | CTFS.6-MVTYP | | Which of the following best describes your move form last year's school to your current school? | | Select 4 and 5 | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| | FTFS.1a-REGCL | | Do you currently teach any regularly scheduled class(es) in any of grades pre-K-12? | 1= Yes, 2=No | Select No (2) | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| | FTFS.1a-ONLVE | | Are you currently on: maternity or patrnity leave, disability leave or sabbatical from teaching? | 1= Yes, 2=No | Select No (2) | MOB (1=Stayer 2=Moving In 3=Moving Out 4=Mover Up 5=leaver) |
| Exclusions (These groups deleted from sample) | | | | | | |
| | FTFS.11a-LCNYN | | Did you change schools because your contract was NOT renewed at last year's school? | 1=Yes, 2=No 1=moved from one public school to another public school in the same school district 2= Moved form one Public school district to another public school district 3=moved from a private school to a public school 4=moved from one private school to another private school 5= moved from a public school to a private school | Select Yes (1) | |
| | CTFS.6-MVTYP | | Which of the following best describes your move form last year's school to your current school? | | Select 3 | |
| | FTFS.1a-ONLVE | | Are you currently on: maternity or patrnity leave, disability leave or sabbatical from teaching? | 1= Yes, 2=No 1=regular teacher 2=itinerant teacher 3=long term substitute 4= administrator 5=library media specialist 6= other professional staff 7=support staff 8=short-term substitute 9=student teacher 10=teacher aide | Select Yes (1) | |
| | FTFS.1c-POSSC | | How do you classify your position at your current school, that is, the activity at which you spend most of your time during this school year? | | Select 3,5,6,8,9,10 | |
| | FTFS.6b-SCTYP | | Is this position in public school education or private school education? | 1=Public School, 2=private school | Select private school (2) | |
| | FTFS.7-OCFCP | | Are you employed full-time or part-time? | 1=employed full-time, 2=employed part-time | Select employed part time (2) | |

| Constructs and Determinants (Indicators) | | | | |
|--|---------------------------------|---|--|--|
| Constructs and determinants | SASS Code | Content | Scale | Recode |
| Job Satisfaction F1 | | | | |
| Role Stress X1 | SASS-T0313 | The stress and disappointments involved in teaching at this school aren't really worth it | 1=Strongly agree~4=Strongly disagree | |
| Leader-Member Exchange X7 | SASS-T0295 | The principal knows what kind of school he or she wants and has communicated it to the staff. | 1=strongly agree~4=strongly disagree | |
| Compensation X8 | SASS-T0287 | I am satisfied with my salary | 1=strongly agree~4=strongly disagree | |
| Psychological Uncertainty X9 | SASS-T0298 | I worry about the security of my job because of the performance of my students on state and/or local tests | 1=strongly agree~4=strongly disagree | |
| Group Cohesion X11 | SASS-T0296 | There is a great deal of cooperative effort among the staff members | 1=strongly agree~4=strongly disagree | |
| General Satisfaction X47 | SASS.55q-T0302 | I am generally satisfied with being a teacher at this school | 1=Strongly agree~4=Strongly disagree | |
| Organizational Commitment F2 | | | | |
| Perceived organizational support X14 | SASS-T0286 | The school administration's behavior toward the staff is supportive and encouraging | 1=strongly agree~4=strongly disagree | |
| Autonomy (X18, X22) | | How much actual control do you have IN YOUR CLASSROOM at this school over the following areas of your planning and teaching?: | | |
| X18 | SASS-T0280_rv | Selecting textbooks and other instructional materials | 1=No control~4=A great deal of control | Reverse code |
| X22 | SASS-T0284_rv | Disciplining students | 1=No control~4=A great deal of control | Reverse code |
| Procedural Justice X24 | SASS-T0297 | In this school staff members are recognized for a job well done | 1=strongly agree~4=strongly disagree | |
| Organizational Satisfaction X25 | SASS-T0315 | I like the way things are run at this school | 1=strongly agree~4=strongly disagree | |
| Turnover Intentions F3 | | | | |
| Thoughts of Quitting for higher paying job X33 | SASS.57d-T0316 | If I could get a higher paying job I'd leave teaching as soon as possible. | 1=Strongly agree~4=Strongly disagree | |
| Professional acclamation X34 | SASS.58a-T0320 | If you could go back to your college days and start over again, would you become a teacher or not? | 1=certainly would become a teacher 2=probably would become a teacher 3=chances about even for and against 4=probably would not become a teacher 5=certainly would not become a teacher | |
| Intent to Remain X35 | SASS.58b-T0321_rc | How long do you plan to remain in teaching? | 1=as long as I am able 2=until I am eligible for retirement benefits from this job 3=until I am eligible for retirement benefits from previous job 4=until I am eligible for social security benefits 5=until a specific life event occurs 6=until a more desirable job opportunity comes along 7=definitely plan to leave as soon as I can 8=undecided at this time | Recoded 1=1; 2,3,4,=2; 8=3; 5=4; 6,7,=5; |
| Thoughts of Transferring X36 | SASS.-T0317 | I think about transferring to another school | 1=Strongly agree~4=Strongly disagree | |
| Withdrawal Response X37 | SASS.57f-T0318 | I don't seem to have as much enthusiasm now as I did when I began teaching | 1=Strongly agree~4=Strongly disagree | |
| Shocks F4 | | | | |
| Change in Residence X39 | FTFS.12a-LVHOM, CTFS.9a-MVHOM | Indicate the level of importance EACH of the following played in your decision to leave LAST YEAR'S SCHOOL. Because I had a change in residence or wanted to take a job more convenient to my home | 1=Not at all~5=Extremely important | combined |
| Health Reasons X40 | FTFS.12c-LVEA, CTFS.9b-MVHEA | Because my health or the health of a loved one required that I leave the profession | 1=Not at all~5=Extremely important | combined |
| Pregnant and/or raise children X41 | FTFS.12b-LVCHI | Because I was pregnant or needed more time to raise my child(ren). | 1=Not at all~5=Extremely important | |
| Retirement X42 | FTFS.12d-LVRET | Because I decided it was time to retire | 1=Not at all~5=Extremely important | |
| Assignment Factors | | | | |
| Required tests X43 | FTFS.12e-LVTES, CTFS.9c-MVTES | Because I have not taken or could not pass the required tests | 1=Not at all~5=Extremely important | combined |
| Involuntary transfer X44 | FTFS.12f-LVITR, CTFS.9d-MVITR | Because I was being involuntarily transferred and did not want the offered assignment. | 1=Not at all~5=Extremely important | combined |
| Dissatisfied with job description/responsibilities X45 | FTFS.12g-LVDES, CTFS.9e-MVDES | Because I was dissatisfied with changes in my job description or responsibilities at last year's school | 1=Not at all~5=Extremely important | combined |
| Dissatisfied with grade level/subject area X46 | FTFS.12h-LVGUSU, CTFS.9f-MVGUSU | Because I was dissatisfied with the grade level or subject area I taught at last year's school | 1=Not at all~5=Extremely important | combined |
| Economic Opportunity X48 | na | Unemployed rate by county, annual average 2008 | scale | |

Appendix B: Teacher Sample Demographics by Mobility

| Teacher Demographics by Teacher Mobility (unweighted) | | | | | | |
|---|--------|---------------------|-------------------------|--------------------------|-------------------------|--------------------|
| Category | All | Stayers (n=1970) | Movers In (n=270) | Movers Out (n=290) | Movers Up (n=140) | Leavers (n=630) |
| Observations | 100.0% | 59.8% | 8.1% | 8.7% | 4.2% | 19.2% |
| Race | | | | | | |
| Hispanic (collasped) | 6.1% | 6.6% | 9.3% | 6.3% | 7.3% | 3.0% |
| Non-Hispanic Black (collasped) | 7.1% | 6.4% | 14.2% | 6.3% | 7.3% | 6.3% |
| Non-Hispanic, White (collasped) | 84.0% | 84.6% | 73.1% | 83.6% | 81.8% | 87.3% |
| Non-Hispanic, Asian (collasped) | 1.6% | 1.3% | 1.9% | 1.7% | 2.9% | 1.9% |
| Non-Hispanic, American Indian | 0.9% | 0.9% | 0.4% | 0.7% | 0.7% | 1.1% |
| Non-Hispanic, Hawaiian Native (collasped) | 0.4% | 0.3% | 1.1% | 1.4% | 0.0% | 0.3% |
| Age | | | | | | |
| <25 | 18.1% | 23.2% | 9.7% | 22.3% | 8.8% | 5.9% |
| 25-30 | 24.3% | 25.8% | 22.8% | 34.1% | 27.7% | 14.9% |
| 31-40 | 19.4% | 19.9% | 29.1% | 20.6% | 30.7% | 10.8% |
| 41-50 | 14.5% | 16.0% | 19.0% | 13.2% | 17.5% | 8.1% |
| 51-60 | 18.1% | 12.8% | 17.9% | 8.7% | 12.4% | 40.3% |
| 61+ | 5.6% | 2.3% | 1.5% | 1.0% | 2.9% | 20.1% |
| Certification | | | | | | |
| Alternative | 19.8% | 22.0% | 18.7% | 21.3% | 19.0% | 12.7% |
| NationalBoardCertificatic | 11.5% | 14.3% | 10.1% | 9.4% | 7.3% | 5.4% |
| NationalBoardCertificatic | 18.1% | 18.9% | 16.8% | 21.6% | 15.3% | 15.3% |

Appendix C: Descriptive Statistics for Indicators and Economic Opportunity

| Descriptive Statistics for Indicators of Job Satisfaction (unweighted n=3290) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------|-------|---------|--------|----------|------------------|-------------|-------|--------|----------|-------------------|-----------|-------|--------|----------|--------------------|-----------|-------|--------|----------|-------------------|-------------|-------|--------|----------|-----------------|-------------|-------|--------|----------|
| Indicator | All | | | | | Stayers (n=1970) | | | | | Movers In (n=270) | | | | | Movers Out (n=290) | | | | | Movers Up (n=140) | | | | | Leavers (n=630) | | | | |
| | Mean | SD | Min/Max | Skew/ | Kurtosis | Mean | CI | SD | Skew | Kurtosis | Mean | CI | SD | Skew | Kurtosis | Mean | CI | SD | Skew | Kurtosis | Mean | CI | SD | Skew | Kurtosis | Mean | CI | SD | Skew | Kurtosis |
| General Satisfaction x47 | 1.538 | 0.716 | 1 to 4 | 1.3 | 1.442 | 1.41 | 1.396-1.424 | 0.62 | 1.472 | 2.119 | 1.75 | 1.70-1.80 | 0.776 | 0.862 | 0.338 | 1.9 | 1.85-1.95 | 0.845 | 0.79 | 0.146 | 1.54 | 1.487-1.599 | 0.619 | 0.697 | -0.468 | 1.67 | 1.638-1.702 | 0.817 | 1.137 | 0.742 |
| Role Stress x1 | 3.233 | 0.857 | 1 to 4 | -0.388 | -0.206 | 3.37 | 3.34-3.41 | 0.776 | -1.02 | 0.262 | 3.09 | 2.98-3.20 | 0.932 | -0.627 | -0.682 | 2.95 | 2.84-3.05 | 0.901 | -0.474 | -0.602 | 3.18 | 3.03-3.32 | 0.83 | -0.574 | -0.685 | 3.01 | 2.93-3.08 | 0.954 | -0.54 | -0.776 |
| Leader Member Exchange x7 | 1.561 | 0.763 | 1 to 4 | 1.314 | 1.231 | 1.51 | 1.47-1.54 | 0.73 | 1.4 | 1.477 | 1.76 | 1.66-1.86 | 0.846 | 1.046 | 0.562 | 1.68 | 1.59 | 1.77 | 0.995 | 0.478 | 1.46 | 1.35-1.57 | 0.675 | 1.601 | 2.865 | 1.62 | 1.56-1.68 | 0.813 | 1.26 | 0.991 |
| Compensation x8 | 2.558 | 0.988 | 1 to 4 | 0.112 | -1.066 | 2.49 | 2.45-2.53 | 0.966 | 0.207 | -0.959 | 2.78 | 2.66-2.89 | 0.98 | -0.139 | -1.121 | 2.77 | 2.65-2.88 | 1.013 | -0.169 | -1.166 | 2.57 | 2.4-2.74 | 0.998 | 0.053 | -1.075 | 2.58 | 2.5-2.66 | 1.018 | 0.056 | -1.148 |
| Psychological Uncertainty x9 | 2.941 | 0.944 | 1 to 4 | -0.442 | -0.822 | 2.92 | 2.88-2.96 | 0.926 | -0.395 | -0.807 | 2.76 | 2.64-2.88 | 1.007 | -0.238 | -1.07 | 2.93 | 2.82-3.05 | 0.964 | -0.457 | -0.843 | 2.97 | 2.81-3.13 | 0.931 | -0.441 | -0.819 | 3.09 | 3.01-3.16 | 0.95 | -0.683 | -0.604 |
| Group Cohesion x11 | 1.773 | 0.776 | 1 to 4 | 0.781 | 0.131 | 1.72 | 1.69-1.75 | 0.746 | 0.781 | 0.113 | 1.95 | 1.85-2.05 | 0.833 | 0.608 | -0.183 | 1.97 | 1.87-2.07 | 0.86 | 0.731 | 0.025 | 1.8 | 1.66-1.93 | 0.806 | 0.818 | 0.188 | 1.76 | 1.7-1.82 | 0.776 | 0.783 | 0.108 |

| Descriptives for Organizational Commitment Results of OC descriptives (unweighted n=3290) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------|-------|---------|-------|----------|------------------|------------|-------|---------|-------|-------------------|------|------------|-------|---------|--------------------|----------|------|------------|-------|-------------------|--------|----------|------|------------|-----------------|---------|-------|----------|------|-----------|-------|--------|-------|--------|
| Indicator | All | | | | | Stayers (n=1970) | | | | | Movers In (n=270) | | | | | Movers Out (n=290) | | | | | Movers Up (n=140) | | | | | Leavers (n=630) | | | | | | | | | |
| | Mean | SD | Min/Max | Skew | Kurtosis | Mean | CI lower-u | SD | Min/Max | Skew | Kurtosis | Mean | CI lower-u | SD | Min/Max | Skew | Kurtosis | Mean | CI lower-u | SD | Min/Max | Skew | Kurtosis | Mean | CI lower-u | SD | Min/Max | Skew | Kurtosis | | | | | | |
| Organizational Satisfaction x25 | 1.95 | 0.857 | 1 to 4 | 0.685 | -0.109 | 1.84 | 1.81-1.88 | 0.81 | 1 to 4 | 0.794 | 0.205 | 2.19 | 2.08-2.3 | 0.881 | 1 to 4 | 0.446 | -0.428 | 2.28 | 2.17-2.38 | 0.88 | 1 to 4 | 0.426 | -0.442 | 1.91 | 1.77-2.04 | 0.794 | 1 to 4 | 0.798 | 0.54 | 2.07 | 2-2.14 | 0.918 | 1 to 4 | 0.542 | -0.52 |
| Perceived Organizational Support x14 | 1.56 | 0.784 | 1 to 4 | 1.414 | 1.542 | 1.46 | 1.43-1.46 | 0.705 | 1 to 4 | 1.635 | 2.558 | 1.75 | 1.65-1.86 | 0.886 | 1 to 4 | 1.024 | 0.236 | 1.83 | 1.73-1.94 | 0.901 | 1 to 4 | 0.886 | -0.037 | 1.54 | 1.42-1.66 | 0.738 | 1 to 4 | 1.532 | 2.499 | 1.69 | 1.62-1.76 | 0.863 | 1 to 4 | 1.197 | 0.735 |
| Autonomy x18 | 2.4 | 1.07 | 1 to 4 | 0.1 | -1.24 | 2.42 | 2.38-2.47 | 1.054 | 1 to 4 | 0.091 | -1.199 | 2.63 | 2.5-2.76 | 1.068 | 1 to 4 | -0.242 | -1.174 | 2.57 | 2.44-2.69 | 1.091 | 1 to 4 | -0.102 | -1.283 | 2.26 | 2.09-2.44 | 1.038 | 1 to 4 | 0.253 | -1.117 | 2.19 | 2.11-2.28 | 1.079 | 1 to 4 | 0.35 | -1.185 |
| Procedural Justice x24 | 1.91 | 0.84 | 1 to 4 | 0.656 | -0.202 | 1.82 | 1.78-1.85 | 0.799 | 1 to 4 | 0.715 | -0.084 | 2.04 | 1.94-2.15 | 0.867 | 1 to 4 | 0.512 | -0.396 | 2.13 | 2.02-2.23 | 0.892 | 1 to 4 | 0.466 | -0.484 | 1.93 | 1.8-2.06 | 0.769 | 1 to 4 | 0.408 | -0.397 | 2.03 | 1.96-2.10 | 0.898 | 1 to 4 | 0.589 | -0.389 |

| Turnover Intentions Descriptive Results (unweighted) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------|-------|---------|--------|----------|------------------|-----------|-------|--------|----------|-------------------|-----------|-------|--------|----------|--------------------|-----------|-------|--------|----------|------------------------|-----------|-------|--------|----------|---------|-----------|-------|--------|----------|
| Indicator | All | | | | | Stayers (n=1970) | | | | | Movers In (n=270) | | | | | Movers Out (n=290) | | | | | Movers Up (MoversW/In) | | | | | Leavers | | | | |
| | Mean | SD | Min/Max | Skew | Kurtosis | Mean | 95%CI | SD | Skew | Kurtosis | Mean | 95%CI | SD | Skew | Kurtosis | Mean | 95%CI | SD | Skew | Kurtosis | Mean | 95%CI | SD | Skew | Kurtosis | Mean | 95%CI | SD | Skew | Kurtosis |
| Thoughts of quitting x33 | 3.108 | 0.954 | 1 to 4 | -0.773 | -0.447 | 3.24 | 3.2-3.28 | 0.874 | -0.956 | 0.067 | 2.98 | 2.86-3.1 | 0.981 | -0.61 | -0.68 | 2.89 | 2.77-3 | 1.019 | -0.465 | -0.939 | 2.85 | 2.68-3.03 | 1.019 | -0.465 | -0.9 | 2.89 | 2.81-2.98 | 1.058 | -0.465 | -1.063 |
| Professional Acclamation x3 | 1.941 | 1.126 | 1 to 5 | 1.004 | 0.023 | 1.75 | 1.71-1.8 | 1.013 | 1.284 | 0.899 | 2.14 | 2-2.29 | 1.206 | 0.679 | -0.734 | 2.05 | 1.92-2.18 | 1.141 | 0.822 | -0.311 | 2.23 | 2.02-2.45 | 1.256 | 0.452 | -1.167 | 2.33 | 2.23-2.43 | 1.251 | 0.59 | -0.747 |
| Intent to remain x35 | 1.981 | 1.217 | 1 to 5 | 1.116 | 0.281 | 1.75 | 1.71-1.8 | 1.077 | 1.362 | 1.054 | 1.99 | 1.85-2.14 | 1.19 | 1.13 | 0.492 | 2.11 | 1.96-2.27 | 1.333 | 0.917 | -0.367 | 2.51 | 2.27-2.75 | 1.425 | 0.511 | -1.002 | 2.15 | 2.41-2.62 | 1.323 | 0.692 | -0.605 |
| Thoughts of transferring x36 | 3.06 | 1.041 | 1 to 4 | -0.652 | -0.92 | 3.2 | 3.16-3.25 | 0.947 | -0.831 | -0.521 | 2.5 | 2.37-2.63 | 1.117 | 0.089 | -1.355 | 2.3 | 2.18-2.43 | 1.056 | 0.357 | -1.069 | 3.06 | 2.88-3.23 | 1.042 | -0.673 | -0.868 | 3.19 | 3.11-3.28 | 1.055 | -0.92 | -0.597 |
| Withdrawal behavior x37 | 2.978 | 1.045 | 1 to 4 | -0.536 | -1.022 | 3.2 | 3.16-3.24 | 0.942 | -0.845 | -0.451 | 2.75 | 2.61-2.88 | 1.113 | -0.257 | -1.317 | 2.76 | 2.63-2.88 | 1.085 | -0.246 | -1.268 | 2.8 | 2.62-2.98 | 1.07 | -0.292 | -1.221 | 2.52 | 2.44-2.61 | 1.102 | 0.079 | -1.329 |

| Descriptives of Economic Opportunity (unweighted) | | | | | | |
|---|-------|-------------------|--------|----------|-------|----------|
| Mobility | Mean | 95%CI lower-upper | SD | Min/Max | Skew | Kurtosis |
| All | 5.723 | 5.690-7.755 | 1.8725 | 1.7-22.4 | 2.151 | 13.121 |
| Stayers | 5.748 | 5.666-5.831 | 1.8736 | 1.7-22.4 | 2.131 | 12.988 |
| MoversIn | 5.916 | 5.704-6.129 | 1.7669 | 2.6-17.9 | 1.527 | 7.329 |
| MoversOut | 5.571 | 5.334-5.808 | 2.0428 | 2.1-22.4 | 3.27 | 22.897 |
| MoversUp | 5.664 | 5.356-5.971 | 1.8217 | 2.7-12.5 | 1.207 | 2.09 |
| Leavers | 5.645 | 5.502-5.789 | 1.8392 | 2.2-22.4 | 2.021 | 11.963 |

CrossTab of Organizational Commitment Indicators by Mobility Status (unweighted)

| Item/Responses | All | Stayers (n=1970) | Movers In (n=270) | Movers Out (n=290) | Movers Up (n=140) | Leavers (n=630) |
|---|--------|---------------------|-------------------------|--------------------------|-------------------------|--------------------|
| Organizational Satisfaction x25 | | | | | | |
| 1-Strongly agree | 32.8% | 37.5% | 21.6% | 17.4% | 31.4% | 30.2% |
| 2-Somewhat agree | 45.2% | 45.2% | 47.0% | 48.8% | 51.8% | 41.5% |
| 3-Somewhat disagree | 15.7% | 12.9% | 22.0% | 22.6% | 11.7% | 19.6% |
| 4-Strongly disagree | 6.3% | 4.4% | 9.3% | 11.1% | 5.1% | 8.7% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Perceived Organizational Support x14 | | | | | | |
| 1-Strongly agree | 58.3% | 63.9% | 48.5% | 43.6% | 56.9% | 51.7% |
| 2-Somewhat agree | 30.9% | 28.6% | 33.6% | 36.2% | 35.8% | 33.5% |
| 3-Somewhat disagree | 7.0% | 4.9% | 11.9% | 13.6% | 3.6% | 8.9% |
| 4-Strongly disagree | 3.8% | 2.5% | 6.0% | 6.6% | 3.6% | 5.9% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Autonomy x18 | | | | | | |
| 1-A great deal of control | 25.7% | 23.8% | 20.5% | 22.0% | 29.2% | 34.8% |
| 2-Moderate | 27.8% | 29.5% | 20.5% | 24.4% | 29.9% | 26.4% |
| 3-Minor | 27.1% | 27.2% | 34.3% | 28.6% | 26.3% | 23.3% |
| 4-No Control | 19.5% | 19.5% | 24.6% | 25.1% | 14.6% | 15.5% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Procedural Justice x24 | | | | | | |
| 1-Strongly agree | 35.5% | 39.7% | 29.1% | 25.8% | 30.7% | 30.7% |
| 2-Somewhat agree | 42.9% | 42.2% | 44.0% | 44.3% | 47.4% | 43.0% |
| 3-Somewhat disagree | 16.8% | 15.0% | 20.5% | 21.6% | 19.7% | 18.4% |
| 4-Strongly disagree | 4.7% | 3.2% | 6.3% | 8.4% | 2.2% | 7.9% |
| Total | 100.0% | 100.0% | 100% | 100.0% | 100.0% | 100.0% |

CrossTab of Shock Indicators by Mobility Status (unweighted)

| Items | All | Movers In (n=270) | Movers Out (n=290) | Movers Up (n=140) | Leavers (n=630) |
|--------------------------------|--------|-------------------------|--------------------------|-------------------------|--------------------|
| Change of Residence x39 | | | | | |
| 1-Not at all important | 28.8% | 79.5% | 29.6% | 81.0% | 85.1% |
| 2-Slightly important | 1.2% | 2.6% | 3.8% | 3.6% | 2.8% |
| 3-Somewhat important | 1.4% | 3.7% | 4.9% | 5.1% | 2.4% |
| 4-very important | 2.6% | 4.9% | 16.0% | 3.6% | 3.3% |
| 5-extremely important | 6.2% | 9.3% | 45.6% | 6.6% | 6.3% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Health x40 | | | | | |
| 1-Not at all important | 33.7% | 96.6% | 85.0% | 86.9% | 76.9% |
| 2-Slightly important | 1.7% | 1.9% | 4.9% | 5.1% | 4.6% |
| 3-Somewhat important | 1.2% | 0.4% | 3.5% | 2.2% | 4.3% |
| 4-very important | 1.4% | 0.7% | 2.8% | 1.5% | 5.2% |
| 5-extremely important | 2.3% | 0.4% | 3.8% | 4.4% | 9.0% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Pregnant x41 | | | | | |
| 1-Not at all important | 19.2% | 0.0% | 0.0% | 84.7% | 81.5% |
| 2-Slightly important | 0.2% | 0.0% | 0.0% | 0.7% | 0.6% |
| 3-Somewhat important | 0.3% | 0.0% | 0.0% | 2.9% | 0.8% |
| 4-very important | 0.5% | 0.0% | 0.0% | 3.6% | 1.9% |
| 5-extremely important | 2.6% | 0.0% | 0.0% | 8.0% | 11.9% |
| Valid Missing | 77.3% | 100.0% | 100.0% | 0.0% | 3.3% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Retirement x42 | | | | | |
| 1-Not at all important | 11.4% | 0.0% | 0.0% | 86.9% | 40.7% |
| 2-Slightly important | 0.5% | 0.0% | 0.0% | 0.0% | 2.8% |
| 3-Somewhat important | 1.2% | 0.0% | 0.0% | 1.5% | 6.2% |
| 4-very important | 2.9% | 0.0% | 0.0% | 2.2% | 14.4% |
| 5-extremely important | 6.7% | 0.0% | 0.0% | 9.5% | 32.6% |
| Valid Missing | 77.3% | 100.0% | 100.0% | 0.0% | 3.3% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

| | | | | | |
|------------------------|--------|--------|--------|-------|-------|
| Could not pass | | | | | |
| required tests x43 | | | | | |
| 1-Not at all important | 39.7% | 98.9% | 99.7% | 98.5% | 97.9% |
| 2-Slightly important | 0.2% | 0.0% | 0.3% | 0.7% | 0.6% |
| 3-Somewhat important | 0.1% | 0.0% | 0.0% | 0.0% | 0.5% |
| 4-very important | 0.1% | 0.7% | 0.0% | 0.7% | 0.2% |
| 5-extremely important | 0.2% | 0.4% | 0.0% | 0.0% | 0.8% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 98.5% | 97.9% |

| | | | | | |
|--------------------------|--------|--------|--------|--------|--------|
| Involuntary transfer x44 | | | | | |
| 1-Not at all important | 38.6% | 89.2% | 98.3% | 95.6% | 97.6% |
| 2-Slightly important | 0.2% | 0.7% | 0.3% | 1.5% | 0.3% |
| 3-Somewhat important | 0.3% | 1.9% | 0.3% | 0.0% | 0.6% |
| 4-very important | 0.3% | 2.6% | 0.0% | 1.5% | 0.2% |
| 5-extremely important | 0.9% | 5.6% | 1.0% | 1.5% | 1.3% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

| | | | | | |
|------------------------|--------|--------|--------|--------|--------|
| Dissatisfied with Job | | | | | |
| Description x45 | | | | | |
| 1-Not at all important | 31.9% | 82.5% | 79.8% | 80.3% | 77.5% |
| 2-Slightly important | 1.7% | 4.9% | 2.8% | 7.3% | 4.0% |
| 3-Somewhat important | 3.0% | 6.7% | 5.2% | 7.3% | 8.9% |
| 4-very important | 1.7% | 1.1% | 5.6% | 2.2% | 5.5% |
| 5-extremely important | 1.9% | 4.9% | 6.6% | 2.9% | 4.1% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

| | | | | | |
|-------------------------|--------|--------|--------|--------|--------|
| Dissatisfied with grade | | | | | |
| level x46 | | | | | |
| 1-Not at all important | 34.7% | 79.5% | 86.4% | 84.7% | 89.6% |
| 2-Slightly important | 1.4% | 3.4% | 3.5% | 4.4% | 3.2% |
| 3-Somewhat important | 1.6% | 4.5% | 3.5% | 3.6% | 4.0% |
| 4-very important | 1.3% | 5.2% | 2.4% | 5.8% | 2.2% |
| 5-extremely important | 1.2% | 7.5% | 4.2% | 1.5% | 1.1% |
| Valid Missing | 59.8% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Appendix E: Correlations among Indicators by Factors

Correlations among Indicators for Job Satisfaction (unweighted n=3290)

| Indicator | x1 | x7 | x8 | x9 | x11 | x47 |
|------------------------------|---------|---------|---------|---------|--------|-----|
| Role Stress x1 | 1 | | | | | |
| Leader-member exchange x7 | -.272** | 1 | | | | |
| Compensation x8 | -.197** | .125 | 1 | | | |
| Pyschological uncertainty x9 | .182** | -.047** | -.061** | 1 | | |
| Group cohesion x11 | -.268** | .43** | .147** | -.05** | 1 | |
| General satisfaction x47 | -.57** | .447** | .229** | -.151** | .396** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations among Indicators for Job Satisfaction (weighted)

| Indicator | x1 | x7 | x8 | x9 | x11 | x47 |
|------------------------------|---------|--------|---------|---------|--------|-----|
| Role Stress x1 | 1 | | | | | |
| Leader-member exchange x7 | -.239** | 1 | | | | |
| Compensation x8 | -.161** | .113** | 1 | | | |
| Pyschological uncertainty x9 | .281** | -.07** | -.108** | 1 | | |
| Group cohesion x11 | -.236** | .411** | .145** | -.086** | 1 | |
| General satisfaction x47 | -.496** | .42** | .229** | -.218** | .396** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations among Indicators for Organizational Commitment (unweighted)

| Indicator | x14 | x18 | x24 | x25 |
|--------------------------------------|--------|--------|--------|-----|
| Perceived organizational support x14 | 1 | | | |
| Autonomy x18 | .115** | 1 | | |
| Procedural justice x24 | .563** | .098** | 1 | |
| Organizational satisfaction x25 | .619** | .136** | .566** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations among Indicators for Organizational Commitment
(weighted)

| Indicator | x14 | x18 | x24 | x25 |
|--------------------------------------|--------|--------|--------|-----|
| Perceived organizational support x14 | 1 | | | |
| Autonomy x18 | .255** | 1 | | |
| Procedural justice x24 | .554** | .104** | 1 | |
| Organizational satisfaction x25 | .616** | .161** | .564** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations among Indicators for Turnover Intentions (unweighted)

| Indicator | x33 | x34 | x35 | x36 | x37 |
|---|---------|---------|---------|--------|-----|
| Thoughts of quitting (for better pay) x33 | 1 | | | | |
| Professional accalmation x34 | -.536** | 1 | | | |
| Intent to remain x35 | -.395** | .467** | 1 | | |
| Thoughts of transferring x36 | .372** | -.25** | -.197** | 1 | |
| Withdrawal behaviors x37 | .449** | -.463** | -.377** | .348** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations among Indicators for Turnover Intentions (weighted)

| Indicator | x33 | x34 | x35 | x36 | x37 |
|---|---------|---------|---------|--------|-----|
| Thoughts of quitting (for better pay) x33 | 1 | | | | |
| Professional accalmation x34 | -.502** | 1 | | | |
| Intent to remain x35 | -.363** | .427** | 1 | | |
| Thoughts of transferring x36 | .353** | -.242** | -.204** | 1 | |
| Withdrawal behaviors x37 | .449** | -.400** | -.345** | .334** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

References

- Abelson, M. (1987). Examination of avoidable and unavoidable turnover. *Journal of Applied Psychology*, 72, 382-86.
- Adams, J. S. (1963). Toward an understanding of inequity. *Journal of Abnormal Psychology*, 67, 422-436.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, N.J.: Prentice Hall.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52, 317-332.
- Allegretto, S. A., Corcoran, S. P., & Mishel, L. (2008). *The teaching penalty: Teacher pay losing ground*. Washington, D.C.: Economic Policy Institute.
- Allen, N. J., & Meyer, J. P. (1990). The measurement of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1-18.
- Allen, D. G., Shore, L. M., & Griffeth, R. W. (2003). The role of perceived organizational support and supportive human resource practices in the turnover process. *Journal of Management*, 29(1), 99-118. Retrieved from <http://jom.sagepub.com/content/29/1/99>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-23.
- Armknacht, P. A., & Early, J. F. (1972). Quits in manufacturing: A study of their causes. *Monthly Labor Review*, 95(11), 31-37.
- Ashford, S. J., Lee, C., & Bobko, P. (1989). Contention, causes, and consequences of job insecurity: A theory-based measure and substantive test. *Academy of Management Journal*, 32, 803-829.
- Ashton, P., & Webb, R. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York: Longman Inc.
- Asparouhov, T. (2004). Stratification in multivariate modeling. Mplus Web Notes: No. 9. Retrieved from <http://www.statmodel.com/download/webnotes/MplusNote921.pdf>
- Asparouhov, T. (2005). Sampling weights in latent variable modeling. *Structural Equation Modeling*, 12, 411-434. Retrieved from <http://www.statmodel.com/download/webnotes/mplusnote72.pdf>
- Asparouhov, T. (2006). General multi-level modeling with sampling weights. *Communications in Statistics: Theory and Methods*, 35(3), 439-460 (22). Retrieved from <http://www.statmodel.com/download/asparouhovgmms.pdf>

- Asparouhov, T., & Muthén, B. (2006a). Comparison of estimation methods for complex survey data analysis. Retrieved from <http://www.statmodel.com/download/SurveyComp21.pdf>
- Asparouhov, T., & Muthén, B. (2006b). Multilevel modeling of complex survey data. Proceedings of the Joint Statistical Meeting in Seattle, August 2006. ASA section on Survey Research Methods, 2718-2726. Retrieved from <http://www.statmodel.com/download/SurveyJSM1.pdf>
- Bacolod, M. P. (2007). Do alternative opportunities matter? The role of female labor markets in the decline of teacher quality. *Review of Economics and Statistics*, 89(4), 737-751.
- Baker, D., & Smith, T. (1997). Teacher turnover and teacher quality: Refocusing the issue. *Trend 2. Teachers College Record*, 99(1), 29-35.
- Ballou, D., & Podgursky, M. J. (1997). *Teacher pay and teacher quality*. Kalamazoo, MI: Upjohn Institute for Employment Research.
- Barnard, C. I. (1938). *The Functions of the Executive*. Cambridge, MA: Harvard University Press.
- Barnes, G., Crowe, E., & Schaefer, B. (2007). *The cost of teacher turnover in five school districts*. Washington, DC: National Commission on Teaching and America's Future.
- Baysinger, B., & Mobley, W. (1983). Employee turnover: Individual and organizational analysis. In K. Rowland and G. Ferris (Eds.), *Research in Personnel and Human Resources Management* (pp. 269-319). Greenwich, Conn.: JAI Press.
- Becker, G. (1993). *Human capital: A theoretical and empirical analysis with special reference to education*. Chicago: University of Chicago Press.
- Becker, H. S. (1960). Notes on the concept of commitment. *Journal of Sociology*, 66, 32-42.
- Becker, T. E. (1992). Foci and bases of commitment: Are they distinctions worth making? *Academy of Management Journal*, 35, 232-244.
- Betts, J. R., Reuben, K. S., & Danenberg, A. (2000). *Equal resources, equal outcomes? The distribution of school resources and student achievement in California*. San Francisco: Public Policy Institute of California.
- Billingsley, B. S., & Cross, L. H. (1992). Predictors of commitment, job satisfaction, and intent to stay in teaching: A comparison of general and special educators. *The Journal of Special Education*, 25, 453-471.
- Blakemore, A., Low, S., & Ormiston M. (1987). Employment bonuses and labor turnover. *Journal of Labor Economics*, 5, 124-35.

- Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- Bobbitt, S. A. Faupel, E., & Burns, S. (1991). *Characteristics of stayers, movers, and leavers: Results from the Teacher Follow up Survey, 1988-89. Issue brief*. Washington, DC: National Center for Education Statistics.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Bogler, R. (2002). Two profiles of schoolteachers: A discriminant analysis of job satisfaction. *Teaching & Teacher Education, 18*, 6.
- Borman, G., & Dowling, M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *American Educational Research Association, 78*(3), 367-409.
- Borman, G. D., & Kimball, S. (2005). Teacher quality and educational equality: Do teachers with higher standards-based evaluation ratings close student achievement gaps? *Elementary School Journal, 106*, 3-20.
- Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J., (2007). Teacher attrition, teacher effectiveness and student achievement. Presented as March 2007 Annual Conference of the American Education Finance Association in Baltimore, MD.
- Boyd, D., Grossman, P., Lankford, H., Loeb, S. & Wyckoff, J. (2007). *Who leaves? Teacher attrition and student achievement*. Albany, NY: Teacher Policy Research Center, State University of New York-Albany.
- Boyd, D., Lankford, H., Loeb, S., Ronfeldt, M., & Wyckoff, J. (2010) *The Role of Teacher Quality in Retention and Hiring: Using Applications-to-Transfer to Uncover Preferences of Teachers and Schools*. *Journal of Policy Analysis and Management, 30*(1), 88-110
- Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in schools with low-performing students. *American Economic Review, 95*(2), 166-171.
- Bretz, R.D., Boudreau, J.W., & Judge, T.A. (1994). Job search behavior of employed managers. *Personnel Psychology, 47*, 275-301.
- Brewer, D. (1996). Career paths and quit decisions: Evidence from teaching. *Journal of Labor Economics, 14*(2), 313-339.
- Brewer, D. (1996). Career paths and quit decisions: Evidence from teaching. *Journal of Labor Economics, 14*(2), 313-339.
- Brown, K. M., & Wynn, S. R. (2009). Finding, supporting, and keeping: The role of the principal in teacher retention issues. *Leadership and Policy in Schools, 8*(1), 37-63.

- Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (136-162). Newbury Park CA: Sage.
- Browne, M. W., MacCallum, R.C., Kim, C-T, Anderson, B.L., & Glaser, R. (2002). When fit indices and residuals are incompatible. *Psychological Methods*, 7, 403-421.
- Bredeson, P., Fruth, M., & Kasten, K. (1993). Organizational incentives and secondary school teaching. *Journal of Research and Development in Education*, 16(4), 52-58.
- Bryk, A., Lee, V., & Smith, J. (1990). High school organization and its effects on teacher and students: An interpretive summary of the research. In W.H. Clune & J.F. Witte (Eds.), *Choice and control in American education, Volume 1: The theory of choice and control in education*. New York: Falmer Press.
- Bryk, A., & Schneider, B. (2002). *Trust in schools: A core resource for improvement*. New York: Russell Sage Foundation.
- Buckley, J., & Schneider, M., Y. (2005). Fix it and they might stay: School facility quality and teacher retention in Washington, DC. *Teachers College Record* 107(5), 1107-1123.
- Byrne, B. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York, NY: Routledge, Taylor and Francis Group.
- Carsten, J.M., & Spector P.E. (1987). Unemployment, job satisfaction, and employee turnover: A meta-analytic test of the Muchinsky model. *Journal of Applied Psychology*, 72, 374-81.
- Castetter, W., & Heisler, R. (1992). Teacher Compensation: A conceptual design. In L. Frazee (Eds.), *Teacher compensation and motivation* (pp. 105-138). Lancaster: Technomic Publishing.
- Cha, S. (2008). *Explaining teachers' job satisfaction, intent to leave, and actual turnover: A structural equation modeling approach*. (Doctoral dissertation, Florida State University). Retrieved from
- Chambers, J. (1998). *Geographic variations in public school costs* (NCES 98-04). U.S. Department of Education. Washington, DC: National Center for Education Statistics Working paper.
- Clotfelter, C. T., Ladd, H. F., & Vigdor, J., (2007). How and why do teacher credentials matter for student achievement? NBER Working Paper No.12828.
- Clotfelter, C. T., Ladd, H. F., Vigdor, J., & Diaz, R. (2004). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Public Policy Analysis and Management*, 23(2), 251-271.

- Clune, W., & White, P. (1988). *School-based management: Institutional variation, implementation, and issues for future research*. New Brunswick, NJ: Center for Policy Research in Education.
- Cockburn, A. D. (2000). Elementary teachers' needs: Issues of retention and recruitment. *Teaching and Teacher Education, 16*, 223-238.
- Cotton, J., & Tuttle, J.M. (1986). Employee turnover: A meta-analysis and review with implications for research. *Academy of Management Review, 11*, 55-70.
- Corcoran, S. O., Evans, W. N. & Schwab, R.M. (2004). Changing labor market opportunities for women and the quality of teachers, 1957-2000. *American Economic Review Papers and Proceedings, 94*(2), 230-235.
- Cox, S., Parmer, R., Chambers, L., Tourkin, S., & Lyter, D. (forthcoming). *Documentation for the 2008-09 Teacher Follow-up Survey* (NCES 2010-354). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Dalton, D., Todor, W., & Krackhardt, D. (1982). Turnover overstated: A functional taxonomy. *Academy of Management Review, 7*, 117-23.
- Darling-Hammond, L. (1984). *Beyond the commission reports: The coming crisis in teaching*. Santa Monica, CA: RAND Corporation
- Darling-Hammond, L. (1999). *Solving the dilemmas of teacher supply, demand, and standards: How we can ensure a competent, caring, and qualified for every child*. New York, NY: National Commission on Teaching America's Future.
- Darling-Hammond, L. (2000). Teacher Quality and Student Achievement: A review of State Policy Evidence. *Education Policy Analysis Archives, 8* (1).
- Darling-Hammond, L., & Sclan, E. M. (1996). Who teachers and why. In J. Sikula (Eds.), *Handbook of Research on Teacher Education* (pp. 67-101). New York, NY: Simon Schuster Macmillan.
- Deci, E., & Ryan, M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Dembo, M., & Gibbon, S. (1985). Teacher's sense of efficacy: An important factor in school improvement. *The Elementary School Journal, 2*(86), 173-184.
- Dess, G. G., & Shaw, J.D. (2001). Voluntary turnover, social capital, and organizational performance. *Academy of Management Review, 26*, 446-456.
- Dwyer, J. H. (1983). *Statistical models for the social and behavioral sciences*. New York: Oxford University Press.

- Ehrenberg, R., & Smith, R. (2012). *Modern labor economics: Theory and public policy*. Boston, MA: Pearson Education.
- Eisenberger, R., Cummings, J., Armelo, S., & Lynch, P. (1997). Perceived organization support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology*, 82, 812-820.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75, 51-59.
- Eisenberger, R., Rhoades, L., & Cameron, J. (1999). Does pay for performance increase or decrease perceived self-determination and intrinsic motivation? *Journal of Personality and Social Psychology*, 77, 855-868.
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Surcharski, I.L., & Rhoades, L. (2002). Perceived supervisor support: Contributions to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87, 565-573.
- Elfers, A., Plecki, M., & Knapp, M. (2006). *Teacher mobility: looking more closely at "The Movers" within a state system*. Seattle, WA: University of Washington.
- English, F. (1992). History and Critical Issues of Educational Compensation Systems. In L. Frase (Eds.), *Teacher Compensation and Motivation* (pp. 3-25). Lancaster, Pennsylvania: Technomic Publishing AG.
- Evans, L. (1997). Addressing problems of conceptualization and construct validity in researching teachers' job satisfaction. *Educational Research*, 39(3), 319-331.
- Evans, R. (1996). *The human side of school change: Reform, resistance, and the real life problems of innovation*. San Francisco, CA: Josey-Bass Publications
- Fan, X., & Wang, L. (1998). Effects of potential confounding factors on fit indices and parameter estimates for true and misspecified SEM models. *Educational and Psychological Measurement*, 58, 699-733.
- Farkas, S. Johnson, J., & Foleno, T. (2000). *A sense of calling: Who Teachers and why*. New York: Public Agenda.
- Farrell, D., & Rusbult, C.E. (1981). Exchange variables as predictors of job satisfaction, job commitment, and turnover: The impact of rewards, costs, alternatives, and investments. *Organizational Behavior and Human Performance*, 28, 78-95.
- Feistritzer, E. E., & Chester, D. T. (2001). *Alternative certification: A state by state analysis 2001*. Washington, DC: National Center for Education Information.

- Feng, Li. (2010). "Hire Today, Gone Tomorrow: New Teacher Classroom Assignments and Teacher Mobility." *Education Finance and Policy*, 5, 278-316.
- Ferris, G. R. (1985). Role of leadership in the employee withdrawal process: A constructive replication. *Journal of Applied Psychology*, 70(4), 777-81.
- Field, A. (2005). *Discovering statistics using SPSS*. 2nd ed. Thousand Oaks, CA: Sage Publications.
- Figlio, D. (1997). *Teacher salaries and teacher quality*. *Economic letters*, 55, 267-271.
- Firestone, W., & Pennell, J. (1993). Teacher commitment, working conditions, and differentiated policies. *Review of Educational Research*, 63(4), 489-525.
- Firestone, W., & Rosenblum, S. (1988). Building commitment in urban high schools. *Educational Evaluation and Policy Analysis*, 10(4), 285-299.
- Folger, R., & Konovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay-raise decisions. *Academy of Management Journal*, 32, 115-30.
- Fraser, H., Draper, J., & Taylor, W. (1998). The quality of teachers' professional lives: Teachers and job satisfaction. *Evaluation and Research in Education*, 12(2), 61-71.
- Gates, S.M., Ringel, J.S., Santibanez, L., Chung, C.H., & Ross, K.E. (2003). Who is leading our schools? An overview of school administrators and their careers. Santa Monica, CA: RAND.
- Gerhart, B. (1987). How important are dispositional factors as determinants of job satisfaction? Implications for job design and other personnel programs. *Journal of Applied Psychology*, 75, 467-76.
- Glebbeeck, A. C., & Bax, E.H. (2004). Is high employee turnover really harmful? An empirical test using company records. *Academy of Management Journal*, 47, 277-286.
- Goldhaber, D., Gross, B., & Player, D. (2007). *Are public schools really losing their best teachers?* Washington, DC: National Center for Analysis of Longitudinal Data in Educational Research, Urban Institute.
- Goodlad, J. (1984). *A place called school*. New York: McGraw-Hill.
- Gouldner, A.W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, 161-178.
- Grace, J.B., & Bollen, K.A. (2008). Representing general theoretical concepts in structural equation models: The role of composite variables. *Environmental and Ecological Statistics*, 15, 191-213.

- Graen, G. B., Liden, R. & Hoel, W. (1982). Role of leadership in the employee withdrawal process. *Journal of Applied Psychology*, 67, 868-72.
- Graen, G. B., & Scandura, T. A. (1986). A theory of dyadic career reality. In . K. Rowland & Ferris (Eds.), *Research in Personnel and Human Resources Management* (pp. 147-181) Greenwich, Conn: JAI Press.
- Greenhalgh, L., & Rosenblatt, Z. (1984). Job insecurity: Toward conceptual clarity. *Academy of Management Review*, 9, 438-48.
- Greenlee, B., & Brown, J. (2009). Retaining teachers in challenging schools. *Education*, 130 (1), 96-109.
- Griffeth, R. W., & Hom, P. W. (1988). A comparison of different conceptualizations of perceived alternatives in turnover research. *Journal of Organizational Behavior*, 9, 103-11.
- Griffeth, R. W., & Hom, P. W. (2001). *Retaining valued employees*. Thousand Oaks, CA: Sage Publications, Inc.
- Griffeth, R.W. Hom, P.W., & Gaertner S. (2000). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the millennium. *Journal of Management*, 26, 463-488
- Griffeth, R., Steel, R., Allen, D., & Bryan, N. (2005). The development of a multidimensional measure of job market cognitions: the employment opportunity index (EOI). *Journal of Applied Psychology*, 90, 335-349.
- Grissmer, D. W., & Kirby, S. N. (1997). Teacher turnover and teacher quality. *Teachers College Record*, 99(1), 45-56.
- Guarino, C.M., Santibanez, L., & Daley, G.A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of Educational Research*, 76,173-208.
- Guarino, C.M., Santibanez, L., & Daley, G.A., & Brewer, D. (2004). *A review of the research literature on teacher recruitment and retention*. Santa Monica, CA: RAND. Retrieved from http://www.rand.org/pubs/technical_reports/TR164.html
- Guin, K. (2004). Chronic teacher turnover in urban elementary schools. *Educational Evaluation and Policy Analysis*, 12(42), 1-25.
- Gupta, N., & Beehr, T.A. (1979). Job stress and employee behaviors. *Organizational Behavior and Human Performance*, 23(3), 373-87.
- Hackman, J. R., & Oldham G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250-259.

- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5thed.). Upper Saddle River, NJ: Prentice-Hall International.
- Hall, B. W., Pearson, L. C., & Carroll, D. (1992). Teachers' long-range teaching plans: A discriminant analysis. *Journal of Educational Research*, 85(4), 221-225.
- Hamner, W. C., & Tosi, H.L. (1974). Relationship of role conflict and role ambiguity to job involvement measures. *Journal of Applied Psychology*, 59(4), 497-499.
- Hancock, G. R., & Mueller, R. O. (2010). *The Reviewer's guide to quantitative methods in the social sciences*. New York: Routledge
- Hanushek, E., (1986). The economics of schooling-production and efficiency in public schools. *Journal of Economic Literature*, 24, 1141-1177.
- Hanushek, E., Kain, J., O'Brian, D., & Rivkin, S. (2005). The market for teacher quality. NBER Working paper no.11154.
- Hanushek, E., Kain, J., & Rivkin, S. (1999). *Do higher salaries buy better teachers?* (Working Paper No 7082). Cambridge, MA: National Bureau of Economic Research.
- Hanushek, E., Kain, J., & Rivkin, S. (2004a). Why public schools lose teachers. *Journal of Human Resources*, 39(2), 326-354.
- Hanushek, E., Kain, J., & Rivkin, S. (2004b). Revolving door. *Education Next*, Winter 2004.
- Hanushek, E., & Rivkin, S. (2010a). Constrained job matching: Does teacher job search harm disadvantaged urban schools? Working paper No. 15816. Cambridge, MA: National Bureau of Economic Research.
- Hanushek, E. & Rivkin, S. (2010b). Generalizations about using value-added measures of teacher quality. *American Economic Review: Papers and Proceedings*, 100, 267-271.
- Harris, D.N., & Adams, S. (2007). Understanding the level and causes of teacher turnover: A comparison with other professions. *Economics of Education Review*, 26, 325-337.
- Masanori Hashimoto, M (June., 1981). *The American Economic Review*. 3, 475-482. Retrieved at <http://www.jstor.org/stable/1802794>
- Herzberg. (1966). *Work and the Nature of Man*. Cleveland: World.
- Herzberg, F., Mausner, B., & Snyderman, B. (1967). *The Motivation to Work*. New York: John Wiley and Sons.

- Hirsch, E., Emerick, S., Church, K., & Fuller, E. (2007). *Teacher working conditions are student learning conditions: A report on the 2006 North Carolina Teacher Working Conditions*. Hillsborough, NC: The Center for Teaching Quality.
- Hirsch, E., Koppich, J., & Knapp, M. (2001). Revisiting what states are doing to improve the quality of teaching: An update on patterns and trends. (Working Paper No. Document w-01-1) Seattle, WA: University of Washington, Center for the Study of Teaching and Policy. Retrieved from <http://depts.washington.edu/ctpmail/PDFs/States-HKK-02-2001.pdf>
- Holdaway, E. A. (1978). Facet and overall satisfaction of teachers. *Educational Administration Quarterly*, 14(1), 30-47.
- Holtom, B., Mitchell, T., Lee, T., & Eberly, M., (2008). Turnover and retention research: A glance at the past, a closer review of the present, and a venture into the future. *The Academy of Management Annals*. 2:1, 231-274.
- Holtom, B., Mitchell, T., Lee, T., & Inderrieden, E. (2005). Shocks as causes of turnover: What they are and how organizations can manage them. *Human Resource Management*, 44, 337-352.
- Hom, P. W., Caranikis-Walker, F., Prussia, G.E. & Griffeth R.W. (1992). A meta-analytical structural equations analysis of a model of employee turnover. *Journal of Applied Psychology*, 77, 890-909.
- Hom, P. W. Griffeth, R. W. (1991). Structural equations modeling test of a turnover theory: Cross-sectional and longitudinal analyses. *Journal of Applied Psychology*, 76, 350-366.
- Hom, P. W. Griffeth, R. W. (1995). *Employee turnover*. Cincinnati, OH: South-Western College of Publishing
- Hom, P. W., Griffeth, R. W., Palich, L. E., & Bracker, J. S. (1993). Realistic job previews: Two-occupation test of mediating processes. College of Business, Arizona State University, Tempe, Ariz.
- Hoxby, C., & Leigh, A. (2004). Pulled away or pushed out? Explaining the decline of teacher aptitude in the United States. *The American Economic Review*, 94(2), 236-240.
- Hu, L-T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage.
- Hu, L-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.

- Huey, F.L., & Hartley, S. (1988). What keeps nurses in nursing? *American Journal of Nursing*, 88, 181-88.
- Hulin, C. L., Roznowski, M., & Hachiya, D. (1985). Alternative opportunities and withdrawal decisions: Empirical and theoretical discrepancies and an integration. *Psychological Bulletin*, 97, 233-50.
- Ingersoll, R. M. (2001a). Teacher turnover and teacher shortages: An organizational analysis. *American Education Research Journal*, 38, 499–534.
- Ingersoll, R. M. (2001b). *Teacher turnover, teacher shortages, and the organization of schools* (No. R-01-1). Seattle: University of Washington, Center for the Study of Teaching and Policy.
- Ingersoll, R. M. (2002). Holes in the teacher supply bucket. *School Administrator*, 59(3), 42-43.
- Ingersoll, R. M. (2003). *Is there really a teacher shortage?* Seattle: University of Washington, Center for the Study of Teaching and Policy.
- Ingersoll, R.M., & Alsalam, N. (1997). *Teacher professionalization and teacher commitment: A multilevel analysis* (No. NCEES 97-069). Washington, DC: National Center for Education Statistics.
- Ingersoll, R., & May, H. (2010). *The Magnitude, destinations, and determinants of mathematics and science teacher turnover*. The Consortium for Policy Research in Education.
- Ingersoll, R., & Perda, D. (2010). *How high is teacher turnover and is it a problem?* Philadelphia: Consortium for Policy Research in Education, University of Pennsylvania.
- Ingersoll, R. M., & Smith, T.M. (2003). The wrong solution to the Teacher Shortage. *Educational Leadership*, 60, 30-33.
- Jackson, D.L. (2003). Revisiting sample size and number of parameter estimates: Some support for the N:q hypothesis. *Structural Equation Modeling*, 6, 1-55.
- Jackson, S. E., Brett, J. F., Sessa, V. I., Cooper, D. M., Julin, J. A., & Peyronnin, K. (1991). Some differences make a difference: Individual dissimilarity and group heterogeneity as correlates of recruitment, promotions, and turnover. *Journal of Applied Psychology*, 76, 675-89.
- Jackson, S. E., Schwab, R. L., & Schuler, R. S. (1986). Toward an understanding of the burnout phenomenon. *Journal of Applied Psychology*, 71, 630-640.
- James, L. R., Mulaik S. A., & Brett, J. M. (1982). *Causal Analysis: Assumptions, Models, and Data*. Beverly Hills, CA: Sage Publications.

- Johnson, S. (1990). *Teachers at work: Achieving success in our schools*. New York: Basic.
- Johnson, S., & Birkeland, S. (2003). Pursuing a “sense of success”: New teachers explain their career decisions. *American Educational Research Journal*, 40(3), 581-617.
- Johnson, S. M., & Papy, John P. (2010). Merit Pay for a New Generation. *Educational Leadership*, 67 (8), 48-53.
- Jones, E., Katak, D., Futrell, C., & Johnston, M. (1996). Leader behavior, work attitudes, and turnover of salespeople. *Journal of Personal Selling and Sales Management*, 16, 13-23.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141-151.
- Kahn, R.L., & Quinn, R.P. (1970). Role stress: A framework for analysis. In A. McLean (Ed.), *Mental Health and Work Organizations*. Chicago: Rand McNally.
- Kanter. (1983). *The change masters*. New York: Simon and Schuster.
- Katz, D., & Kahn, R.L. (1978). *The social psychology of organizations* (2nd ed). New York: John Wiley.
- Kaye, B., & Jordan-Evans, S. (2005). *Love 'Em or Lose 'Em: Getting Good People to Stay*. San Francisco, California: Berret-Koehler Publishers.
- Keesler, V. (2010). Estimating cause: Teacher turnover and school effectiveness in Michigan. Paper presented at the annual conference of the Society for Research on Educational Effectiveness. Washington, DC.
- Keigher, A. (2010). Teacher attrition and mobility: Results from the 2008-2009 Teacher Follow-up Survey (NCES 2010-353). U.S. Department of Education. Washington, DC: National Center Education Statistics. Retrieved 4/30/2012 from <http://nces.ed.gov/pubsearch>
- Kenny, D.A. (1979). *Correlation and Causality*. New York: Wiley.
- Kiesler, C.A., & Sakumura, J. (1966). A test of a model for commitment. *Journal of Personality and Social Psychology*, 3, 349-53.
- Kimball, S, Milanowski, A., & Heneman, H. G., III. (2010). Principal as Human Capital Manager: Evidence from Two Large Districts. Paper presented at the annual meeting of the American Education Finance Association, Richmond, VA.
- Kimmit, R. (2007, Jan.23) Why job churn is good. *Washington Post* (P.A17).

- Kinicki, A. J., McKee-Ryan, F. M., Schriesheim, C. A., & Carson, K. P. (2002). Assessing the construct validity of the Job Descriptive Index: A review and meta-analysis. *Journal of Applied Psychology*, 87, 14-32.
- Kirby, S., Berends, M., & Naftel, S. (1999). Supply and demand of minority teachers in Texas: Problems and prospects. *Educational Evaluation and Policy Analysis*, 21 (1), 47-66.
- Kline, R.B. (2011). *Principles and practices of structural equation modeling* (3rd Ed.). New York: Guilford Press.
- Lambert, E., Hogan N., & Barton, S. (2001). The impact of job satisfaction on turnover intent: a test of a structural measurement model using a national sample of workers. *The Social Science Journal*, 38(2), 233-250.
- Lankford, H. (1999). A descriptive analysis of the New York State and New York City teaching force. *Report prepared for the New York Supreme Court case Campaign for Fiscal Equity v. New York State*.
- Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis*, 24(1), 38-62.
- Lankford, H., & Wyckoff, J. (2010). Teacher labor markets: An overview. In D. Brewer and P. McEwan (Eds.), *Economics of Education* (pp. 235-242). Elsevier Ltd.
- Lazear, E. (2003). Teacher incentives. *Swedish Economic Policy Review*, 10, 197-213.
- Lawler, E.E. III (1971). *Pay and organizational effectiveness: A psychological approach*. New York: McGraw-Hill.
- Lawler, E.E. III. (1981). *Pay and organization development*. Reading, Mass.: Addison-Wesley.
- Lawler, E. E. (1990). *Strategic pay: aligning organizational strategies and pay systems*. San Francisco: Jossey-Bass.
- Lawler, E. E. (2008). *Talent: Making people your competitive advantage*. San Francisco: Jossey-Bass.
- Lee, T. W., & Mitchell, T. R. (1994). An alternative approach: The unfolding model of voluntary employee turnover. *Academy of Management Review*, 19, 51-89.
- Lee, T. W., & Mowday R. T. (1987). Voluntarily leaving an organization: An empirical investigation of Steers and Mowday's model of turnover. *Academy of Management Journal*, 30, 721-743.
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, 3, 157-189.

- Locke, E. A. (1975). Personnel attitudes and motivation. *Annual Review of Psychology*, 25, 457-80.
- Locke, E. A. (1976). The nature and consequences of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of Industrial Organizational Psychology*. Chicago: Rand McNally.
- Locke, E. A., Cartledge, N., & Knerr, C. (1970). Studies of the relationship between satisfaction, goal-setting, and performance. *Organizational Behavior and Human Performance*, 5, 135-139.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs: Prentice Hall.
- Loeb, S., Darling-Hammond, L., & Luczak, J. (2005). How teaching conditions predict teacher turnover in California Schools. *Peabody Journal of Education*, 80(3), 44-70.
- Loeb, S., Kalogrides, D., & Beteille, T. (2011). Effective schools, teacher hiring, assignment, development, and retention. (Working paper No. 17177). National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w17177>
- Loeb, S., & Myung, J. (2010). Economic Approaches to Teacher Recruitment and Retention. In D. Brewer and P. McEwan (Eds.), *Economics of Education* (pp. 260-267). Elsevier Ltd.
- Loeb, S., & Page, M. (2000). Examining the link between teacher wages and student outcomes: The importance of alternative labor market opportunities and non-pecuniary variation. *Review of Economics and Statistics*, 82(3), 393-408.
- Louis, K. (1991). The effects of teacher quality of work life in secondary schools on commitment and sense of efficacy. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.
- Lyons, T. F. (1971). Role clarity, need for clarity, satisfaction, tension, and withdrawal. *Organizational Behavior and Human Performance*, 6, 99-110.
- Ma, X., & MacMillan, R. (1999). Influences of workplace conditions on teachers' job satisfaction. *The Journal of Educational Research*, 93, 39-47.
- MacCallum, R.C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, 51, 201-236.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1, 130-149.
- Maertz, C.P., & Griffeth, R.W. (2004). Eight motivational forces and voluntary turnover: A theoretical synthesis with implications for research. *Journal of Management*, 30, 667-683.

- Maertz, C. P., Griffeth, R. W., Campbell, N., & Allen D. G. (2007). The effects of perceived organizational support and perceived support on employee turnover. *Journal of Organizational Behavior*, 28, 1059-1075.
- Maslach, C. (1982). *Burnout: The cost of caring*. Englewood Cliffs, NJ: Prentice-Hall.
- Mathieu, J. E. (1991). A cross-level nonrecursive model of the antecedents of organizational commitment and satisfaction. *Journal of Applied Psychology*, 76, 607-18.
- Mathieu, J. E., & Zajac, D. (1990). A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin*, 108, 171-94.
- March, J. G., & Simon, H. A. (1958). *Organizations*. New York: John Wiley
- Marvel, J., Lyter, D. M., Peltola, P. P., Strizek, G. A., & Morton, B.A. (2007). Teacher attrition and mobility: Results from the 2004-05 teacher follow up survey. U.S. Department of Education, National Center for Education Statistics. Washington, DC: US Government Printing Office.
- McCain, B., O'Reilly, C., & Pfeffer, J. (1983). The effects of departmental demography on turnover: The case of a university. *Academy of Management Journal*, 26, 626-641.
- McDonald, R. P., & Ho, M.-H.R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7, 64-82.
- Meek, A. (1998). America's teachers: Much to celebrate. *Educational Leadership*, 55, 12-17.
- Milanowski, A. (2008). How to pay teachers for student performance outcomes. Madison: University of Wisconsin, Wisconsin Center for Education Research, Consortium for Policy Research in Education. Paper prepared for the College Board.
- Milanowski, A., Heneman, H. G. III, & Kimball, S. (2009). *Review of Teaching Performance Assessments for Use in Human Capital Management*. Madison: University of Wisconsin, Wisconsin Center for Education Research, Consortium for Policy Research in Education, Strategic Management of Human Capital.
- Milanowski, A., & Odden, A. (2007). *A new approach to the cost of teacher turnover*. Seattle, WA: Center on Reinventing Public Education.
- Milanowski, A., & Odden, A. (2008). Do teacher pay levels matter? Madison: University of Wisconsin, Wisconsin Center for Education Research, Consortium for Policy Research in Education. Paper prepared for the College Board.
- Miner, J. B. (1980). *Theories of organizational behavior*. Hinsdale, Ill: Dryden Press.

- Miskel, C. G., McDonald, D., & Bloom, S. (1983). Structural and expectancy linkages within schools and organizational effectiveness. *Educational Administration Quarterly*, 38-54
- Miskel, C., & Ogawa, R. (1988). Work motivation, job satisfaction, and climate. In N. Boyan (Ed.), *Handbook of Research on Educational Administration* (p. 279-304). University of California, Santa Barbara: Longman.
- Mitchell, T. R., & Lee, T. W. (2001). The unfolding model of voluntary turnover and embeddness: Foundations for a comprehensive theory of attachment. In B.M. Staw & R. I. Sutton (Eds.), *Research in organizational behavior*, 23, 189-246. Greenwich, CT: JAI Press.
- Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *Journal of Applied Psychology*, 62, 237-240.
- Mobley, W. H. (1982). *Employee turnover: causes, consequences and control*. Reading, MT: Addison-Wesley.
- Mobley, W. H., Griffeth, R.W., Hand, H. H., & Meglino, B. M. (1979). Review and conceptual analysis of the employee turnover process. *Psychological Bulletin*, 86, 493-522.
- Mobley, W. H., Horner, S. O., & Hollingsworth, A. T. (1978). An evaluation of precursors of hospital employee turnover. *Journal of Applied Psychology*, 63, 408-14.
- Mohrman, & Lawler. (1996). Motivation for school reform. In S. H. Fuhrman and J.A. O. day (Eds.), *Rewards and reform: Creating education incentives that work* (pp. 115-143). San Francisco, CA: Jossey-Bass.
- Moorman, R. H., Blakely, G. L., & Niehoff, B. P. (1998). Does perceived organizational support mediate the relationship between procedural justice and organizational citizenship behavior. *Academy of Management Journal*, 41, 351-357.
- Morrell, K., Loan-Clarke, J., & Wilkinson, A. (2004). The role of shocks in employee turnover, *British Journal of Management*, 15, 335-349.
- Motowidlo, S. J. (1983). Predicting sales turnover from pay satisfaction and expectation. *Journal of Applied Psychology*, 68, 484-89.
- Mowday, R., Porter, L., & Steers, R. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. New York: Academic.
- Muchinsky, P. M., & Morrow, P. C. (1980). A multidisciplinary model of voluntary employee turnover. *Journal of Vocational Behavior*, 17(3), 263-90.
- Murnane, R., and Olsen, R. (1989). The effect of salaries and opportunity costs on duration in teaching: Evidence from Michigan. *Review of Economics and Statistics* 71, 347-352.

- Murnane, R., & Olsen, R. (1990). The effects of salaries and opportunity costs on the length of stay in teaching: Evidence from North Carolina. *Journal of Human Resources*, 25, 106-125.
- Murnane, R. J., Singer, J. D., & Willett, J. B. (1989). The influences of salaries and opportunity costs on teachers' career choices: Evidence from North Carolina. *Harvard Educational Review*, 59(3), 325-346.
- Muthén, L. K., & Muthén, B. O. (1998-2010). Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthén & Muthén.
- Nagy, M. S. (March, 2002). "Using a Single-Item Approach to Measure Facet Job Satisfaction." *Journal of Occupational and Organizational Psychology*, 75(1), 77.
- Netemeyer, R. G., Johnson, M. W., & Burton, S. (1990). An analysis of role conflict and role ambiguity in a structural equations framework. *Journal of Applied Psychology*, 75, 148-57.
- Newman, F., Rutter, R., & Smith, M. (1989) Organizational factors that affect school sense of efficacy, community and expectations. *Sociology of Education*, 62, 221-38.
- Nye, B., Spryos, K., & Hedges, L. (2004). How large are teacher effects? *Education Evaluation and Policy Analysis* 26(3), 237-257.
- Odden, A. (2011). Strategic management of human capital in education: Improving instructional practice and student learning in schools. New York, NY: Routledge.
- Odden, A., & Kelley, C. (2002). *Paying teachers for what they know and do: New and smarter compensation strategies to improve schools*. Thousand Oaks: Corwin Press.
- Odden, A., & Kelly, J. (2008). What is SMHC? Madison: University of Wisconsin, Wisconsin Center for Education Research, Consortium for Policy Research in Education.
- O'Reilly, C.A., & Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification, and internalization. *Journal of Applied Psychology*, 71, 492-99.
- Parnes, H. (1954). *Research on Labor Mobility*. New York: Social Science Research Council.
- Parson, D. (1977). Models of Labor Market Turnover: A theoretical and empirical survey. In R. Ehrenberg (Ed.), *Research in Economics* (pp. 185-223). Greenwich, Conn: JAI Pres.
- Perie, M., & Baker, D. P. (1997). *Job satisfaction among America's teachers: Effects of workplace conditions, background characteristics, and teacher compensation* (Statistical Analysis Report No. NCEES 97-471). Washington, DC: National Center for Education Statistics.

- Perrachione, B. A., Rosser, V. J., & Petersen, G. J. (2008). Why do they stay? Elementary teachers' perceptions of job satisfaction and retention. *The Professional Educator*, 32(2), 1-17.
- Pfeffer, J. (1983). Organizational demography. In L. L. Cummings & B. M. Staw (Eds.), *Research in Organizational Behavior* (Vol 2, pp. 299-357). Greenwich, C.T: JAI Press.
- Pfeffer, J. (1994). Managing human resources for competitive advantage: Barriers to change. Paper presented at a conference sponsored by the Industrial Relations Centre, Queen's University, Ontario, Canada
- Pfeffer, J. (2005). Changing mental models: HR's most important task. *Human Resource Management*, 44, 123-128.
- Phillips, J. J., & Connell, A. O. (2003). *Managing employee retention: A strategic accountability approach*. Burlington, MA: Elsevier Butterworth-Heinemann.
- Plecki, M., Elfers, A., & Knapp, M. (2007). *Who's Teaching Washington's Children? A 2006 update*. Seattle, WA: University of Washington.
- Plecki, M. L., Elfers, A. M., Knapp, M. S., Loeb, H., Perkins, C., & Boatright, B. (2003). *Who's teaching Washington's children? What we know—and need to know—about teachers and the quality of teaching in the state*. Seattle, WA: University of Washington.
- Plecki, M. L., Elfers, A. M., Loeb, H., Zahir, A., & Knapp, M.S. (2005). *Teacher Retention and Mobility: A look Inside and Across Districts and Schools in Washington State*. Seattle, WA: University of Washington.
- Podgursky, M., Monroe, R., & Watson, D. (2004). The academic quality of public school teachers: An analysis of entry and exit behavior. *Economics of Education Review*, 23, 507-518.
- Podsakoff, N. P., LePine, J. A., & LePine, M. A. (2007). Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology*, 92, 438-454.
- Porter, L. W., Steers, R. M., Mowday, R. T., & Boulian, P. V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology*, 59, 603-609.
- Prisciotta, I. (2000). *Teacher attitudes in Texas public and private schools*. Texas Public Policy Foundation.
- Price, J. L. (1972). *Handbook of organizational measurement*. Lexington, DC: Heath.
- Price, J. L. (1977). *The study of turnover*. Ames, IA: Iowa State University Press.

- Price, J. L. (1989). The impact of turnover on the organization. *Work and Occupations*, 16, 461-473.
- Price, J. L. (2004). The development of a causal model of voluntary turnover. In R. Griffeth & H. Peter (Eds.), *Innovative theory and empirical research on employee turnover*. Greenwich, Conn: Information Age Publishing Inc.
- Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, 24, 543-565.
- Price, J. L., & Mueller, C. W. (1986). *Absenteeism and turnover of hospital employees*. Greenwich, Conn: JAI Press.
- Raftery, A. E. (1993). Bayesian model selection in structural equation models. In K.A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 163-180). Newbury Park, CA: Sage.
- Reichers, A. E. (1985). A review and reconceptualization of organizational commitment. *Academy of Management Review*, 10, 465-76.
- Reininger, M. (2006). Teachers' location preferences and the implications for schools with different student populations. *Working Paper*.
- Reyes, P., (1990). *Teachers and their workplace: Commitment, performance, and productivity*. Newbury Park, CA: Sage.
- Rhoades, L., Eisenberger, R., & Armeli, S. (2001). Affective commitment to the organization: The contribution of perceived organizational support. *Journal of Applied Psychology*, 86, 825-836.
- Rivkin, S. G., Hanushek, E.A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73, 417-458.
- Rockoff, J. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review* 94, 247-252.
- Rhodes, M., & Ogawa, R. (1992). Teacher Motivation, Work Structures, and organizational change: Perspectives on educational reform and compensation. In *Teacher Compensation and Motivation*, L. Frase (ed.). Lancaster, Pennsylvania: Technomic Publishing Company, Inc.
- Ronfeldt, M., Lankford, H., Loeb, S., & Wyckoff, J. (2011). How teacher turnover harms student achievement. Paper presented at the annual conference of Association of Education Finance and Policy.
- Roseman, E. (1981). *Managing Employee Turnover*. New York: AMACOM.

- Rosenholtz, S. (1989). *Teachers' workplace: The social organization of schools*. New York: Longman.
- Rosenholtz, S. (1989). Workplace conditions that affect teacher quality and commitment: Implications for teacher induction programs. *The Elementary School Journal*, 89, 421-439.
- Rosenholtz, S., & Simpson, C. (1990). Workplace conditions and the rise and fall of teacher commitment. *Sociology of Education*, 63(4), 241-257.
- Rothstein, J. (2009). Student Sorting and Bias in Value-Added Estimation: Selection on observables and unobservables. *Education Finance and Policy*, 4, 537-571.
- Rousseau, D. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. In *Research in Organizational Behavior*, L.L. Cummings & B.M. Staw (ed.), 7, 1-37
- Rusbult, C. E., & Farrell, D. (1983). A longitudinal test of the investment model: The impact on job satisfaction, job commitment, and turnover of variations in rewards, costs, alternatives, and investments. *Journal of Applied Psychology*, 68, 429-627.
- Sanders, W., & Rivers, J. (1996). *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement*. Knoxville, Tennessee: University of Tennessee Value-Added Research and Assessment Center.
- Scafidi, B. Sjoquist, D. & Stinebrickner, T. (2003). Do teachers really leave for higher paying jobs in alternative occupations? *Working Paper*. Georgia State University.
- Scandura, T. A., & Graen, G. B. (1984). Moderating effects of initial leader-member exchange status on the effects of a leadership intervention. *Journal of Applied Psychology*, 69, 428-436.
- Schein, E. H. (1980). *Organizational psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Schwab, D. P. (1980). Construct validity in organizational behavior. In B. Staw & L. Cummings (Eds.), *Research in Organizational Behavior (Vol 2, pp. 3-43)*. Greenwich, Conn: JAI Press.
- Sentovich, C. (2004). *Teacher satisfaction in public, private, and charter schools: A multi-level analysis*. University of South Florida.
- Settoon, R., Bennett, N., & Liden, R. C. (1996). Social exchange in organizations: Perceived organizational support, leader-member exchange, and employee reciprocity. *Journal of Applied Psychology*, 81, 219-227.

- Shen, J. (1997). Teacher retention and attrition in public schools: Evidence from SASS91. *Journal of Educational Research*, 91(2), 81-88.
- Simon, H. A. (1947). *Administrative Behavior*. New York: Free Press.
- Singer, J., & Willet, J. (1988). Detecting involuntary layoffs in teacher survival data: The year of leaving dangerously. *Educational Evaluation and Policy Analysis*, 10, 212-224.
- Smith, T., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681-714.
- Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement*. Chicago: Rand McNally.
- Society for Human Resources Management Retention Practices Survey*. Alexandria, VA: Society for Human Resource Management, 2000.
- Spector, P. E. (1997) *Job satisfaction: Application, assessment, causes, consequences*. Thousand Oaks, CA: Sage.
- Steel, R. P. (2002). Turnover theory at the empirical interface: Problems of fit and function. *Academy of Management Review*, 27, 346-360.
- Steers, R. M. & Mowday, R. T. (1981) Employee turnover and post-decision justification. In L.L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 3, pp. 235-282). Greenwich, CT: JAI Press
- Stevens, J. P. (1992). *Applied multivariate statistics for the social sciences* (2nd Ed.). Hillsdale, NJ: Erlbaum.
- Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences*. (4th Ed.). Mahwah, N.J: Lawrence Erlbaum Associates.
- Stinebrickner, T. R. (2001). Using latent variables in dynamic, discrete choice models: The effect of school characteristics on teacher decisions. *Research in Labor Economics*, 18, 141-176.
- Strauss, V. (2011, January 31). Letter to President Obama: Who is a 'highly qualified' teacher? 1/31/2011 Valerie Strauss. *Washington Post*. Retrieved from <http://voices.washingtonpost.com/answer-sheet/teachers/letter-to-president-obama-who.html>
- Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics* (5th Ed). Boston: Allyn & Bacon.

- Tagiuri, R. (1979). "Notes on the Management of Change: Implications of Postulating a Need for Competence." In J.P. Kotter, L.A. Schlesinger & V. Sathe (Eds.), *Organization: Text, cases and readings on the management of organizational design and change*. Homewood, IL: Irwin.
- Tett, R.P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology*, 46, 259-293.
- Terborg, J. R., & Lee, T. W. (1984). A predictive study of organizational tenure rates. *Academy of Management Journal*, 27, 793-810.
- Tomaken, A. J., & Waller, N. G. (2005). Structural equation modeling: Strengths, limitations, and misconceptions. *Annual Review of Clinical Psychology*, 1, 2.1-2.35.
- Tourkin, S., Thomas, T., Swaim, N., Cox, S., Parmer R., Jackson, B., Cole, C., & Zhang, B. (2010). Documentation for the 2007-2008 Schools and Staffing Survey (NCES 2010-332). U.S. Department of education. Washington, DC: National Center for Education Statistics. Retrieved 5/1/2012 from <http://nces.ed.gov/pubsearch>
- Tsui, M. S., Egan, T. D. & O'Reilly, C. A. (1992). Being different: Relational demography and organizational attachment. *Administrative Science Quarterly*, 37, 549-79.
- U.S. Department of Education. National Center for Education Statistics. *The schools and staffing survey: Recommendations for future*. (NCES 97-596) By Mullens, J., & Kasprzyk, D.. Project officer, Rollefson. Washington, DC: 1996. Retrieved from <http://nces.ed.gov/pubs/97596.pdf>
- Vroom, V. (1964). *Work and motivation*. New York: John Wiley
- Wallace, M. J., & Fay, C. H. (1988). *Compensation theory and practice*. Boston: PWS-KENT Publishing Company.
- Watson, A., Hatton, N., Squires, D., & Soliman, I. (1991). School staffing and the quality of education: Teacher adjustment and satisfaction. *Teaching and Teacher Education*, 7, 63-77.
- Wayne, S. J., Shore, L. M., Bommer, W. H., & Tetrick, L. E. (2002). The role of fair treatment and rewards in perceptions of organizational support and leader-member exchange. *Journal of Applied Psychology*, 87, 590-598.
- Wayne, S. J., Shore, L. M., & Linden, R. C. (1997). Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 40, 82-111.

- Weiss, E. M. (1999). Perceived workplace conditions and first-year teachers' morale, career choice commitment, and planned retention: A secondary analysis. *Teaching and Teacher Education*, 15(8), 861-879.
- Wise, A. E., Darling Hammond, L., & Praskac, A. (1987). Teacher selection in the Hillborough County public schools. In A. E. Wise (Ed.), United States National Institute of Education, and Center for the Study of the Teaching Profession (Rand Corporation) Effective teacher selection: From recruitment to retention—case studies (pp. 122-252). Santa Monica, CA: Rand Center for the Study of the Teaching Profession.
- Wothke, W. (1993). Nonpositive definite matrices in structural equation modeling. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models* (pp.256-293). Newbury Park, CA: Sage.
- Zigarreli, M. A. (1996). An empirical test of conclusions from effective schools research. *The Journal of Educational Research*, 90 (2), 103-109.