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Relationship Between Job Embeddedness and Turnover Intention of High School Math Teachers

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Walden University
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Abstract

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of the Requirements for the Degree of

Doctor of Philosophy

Organizational Psychology

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Abstract

Teacher turnover has been a problem in U.S. public schools, especially among math teachers, and is more prevalent in schools that have a majority of students from low-income families. Teacher turnover has been shown to have a negative effect on student performance. The purpose of this quantitative, nonexperimental study was to investigate on-the job and off-the job embeddedness and its dimensions of links, fit, and sacrifice to determine effects on math teacher turnover intention. The theory of job embeddedness provided the framework for the study. Data were collected from 152 high school math teachers from 17 counties in a western U.S. state using the Job Embeddedness Questionnaire and a demographic survey. Findings from multiple linear regression analysis indicated statistically significant relationships between turnover intention and the sacrifice/job (on-the-job embeddedness) and turnover intention and links/community (off-the-job embeddedness). Findings may be used by administrators and policymakers to develop programs geared toward promoting math teacher retention.

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Dedication

To all the people out there who think they are not smart enough or talented enough. It is never too late to change your life. You only need tenacity and continued belief in yourself. Never give up your dreams!

Acknowledgments

I would like to thank my mother, Diane Davis Olf, and my husband, Dave Osowski, because if not for them, I would not have accomplished this. I would also like to thank my wonderful chair, Dr. Gwynne Dawdy, for all her help and guidance, and also my methods expert, Dr. Michelle Ross. A special thank you to my horse, Taz, who has been my therapist and has helped me keep my sanity, and my cat, Dr. Hugo Munsterberg, who sat with me through many hours of writing and many revisions.

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Chapter 1: Introduction to the Study

For educational institutions, high teacher turnover has been a pressing issue (Peretz & Fried, 2012; Shaw, 2011) because it costs school districts and educational institutions in the United States about $2.2 billion each year (The Alliance for Excellent Education, 2014). Teacher turnover has been a problem in public schools since the 1980s (Ingersoll & Merrill, 2012); the latest turnover rate for public school teachers is almost 16% (DiCarlo, 2015). Moreover, Ingersoll and May (2012) and Curtis (2012) found higher turnover among math and science teachers. One of the reasons this high turnover rate is concerning is because it negatively impacts student performance (Khani & Mirzaee, 2015; Peretz & Fried, 2012; Ronfeldt, Loeb, & Wyckoff, 2013; Shaw, 2011).

Compounding the problem is the fact that high teacher turnover is more prevalent in public school systems that have a majority of students from low-income families (Peretz & Fried, 2012; Shaw, 2011; Stuit & Smith, 2012). Nevada has one of the highest percentages of low-income families (Tyler & Owens, 2012). One result from this situation is that it is difficult to encourage teachers to become effective in teaching students (Shaw, 2011). Therefore, minority and low-income students who attend these schools are frequently taught by the least experienced and least effective teachers (Dawson, Johnson, & Ferdman, 2014; Simon & Johnson, 2013).

In conjunction with the general problem of high turnover of teachers, studies have highlighted the impact of job embeddedness on turnover prevention or employee retention (Jiang, Liu, McKay, Lee, & Mitchell, 2012; Robinson, Kralj, Solnet, Goh, & Callan, 2014; Sablynski, 2014; Lee, Burch, & Mitchell, 2014). Job embeddedness is the

collection of forces that influence employee retention (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001). Embeddedness factors refer to numerous on-the-job or off-the-job forces that are categorized into one of the three dimensions of fit, links, and sacrifice and which enable an employee to become enmeshed within a larger social system. Job embeddedness theory considers these three dimensions within the community (off-the-job) and the workplace (on-the-job) to understand the overall level of individual embeddedness (Mitchell et al., 2001; Zhang, 2013). Fit refers to perceived level of comfort and compatibility that a person has with his or her surroundings, community, or organization (Mitchell et al., 2001). A better fit with an organization means that a person has higher job embeddedness than people who do not fit with the organization (Zhang, 2013). Links refers to the formal and informal connections a person has with the surrounding community and the organization where the person is employed (Mitchell et al., 2001; Zhang, 2013). Having more links with an organization means having higher job embeddedness. Lastly, sacrifice refers to the perceived cost of material or potential opportunity loss that a person may experience when leaving an organization (Mitchell et al., 2001).

Studies involving job embeddedness theory have been conducted in several industries including health care, retail, banking, and sports. These studies have been conducted in several countries including China, Pakistan, India, and the United Kingdom to determine whether job embeddedness can predict employee retention and also whether job embeddedness theory can be generalized to employees of other countries (Mitchell et al., 2001; Holtom & O'Neill, 2004; Ramesh & Gelfand, 2010) Mitchell et al. (2001) and

Ramesh and Gelfand (2010) found that off-the-job factors such as family and community attachments strongly influenced individuals to stay at their jobs, which suggested that the larger social system where a person belongs may impact his or her job embeddedness. The relationship of an individual to a larger social system is defined through three dimensions of job embeddedness: fit, links, and sacrifice (Lee et al., 2014).

In the case of teachers, job embeddedness is focused on how the internal (on-the-job embeddedness) and external (off-the-job embeddedness) factors affect employee turnover or employee retention (Zhang, 2013). Researchers who studied job embeddedness explored the ways in which an employee becomes enmeshed within a larger social system resulting from numerous on-the-job or off-the-job factors (Lee et al., 2014). Sablynski (2014) claimed that unlike organizational commitment or engagement, job embeddedness includes both on-the-job and off-the-job factors, thereby making it a strong predictor of employee turnover.

According to many theorists, an employee's occupational goals and values must fit with the organization; the better the fit a person has with an organization (on-the-job) and the surroundings or community (off-the-job), the greater the likelihood that the individual will stay with his or her organization. A person's links with family, friends outside of work (off-the-job), and colleagues at work (on-the-job) are a web of associations that tie the person to the organization (Holtom, Mitchell, Lee, & Eberly, 2008; Mitchell et al, 2001). Swider, Boswell, and Zimmerman (2011) examined the connection between off-the-job embeddedness and job search, while ten Brummelhuis and Bakker (2012) concentrated on off-the-job embeddedness and off-the-job activities.

However, despite the importance of job embeddedness in improving employee retention, off-the-job embeddedness, which is an important aspect of embeddedness, has been rarely explored or included in embeddedness programs for teachers (Chang & Cheng, 2013; Lev & Koslowsky, 2012; Lee et al., 2014).

Most studies on teacher turnover and retention have focused on on-the-job or organizational factors that relate to turnover decisions (Curtis, 2012; Ingersoll & May, 2012; Robinson et al., 2014; Simon & Johnson, 2013; Stuit & Smith, 2012) but have not addressed off-the-job or non-organizational factors of turnover or retention. Most of these on-the-job or organizational factors that relate to teachers include salary (Curtis, 2012; Ingersoll & May, 2012; Simon & Johnson, 2013), working conditions (Khani & Mirzaee, 2015; Simon & Johnson, 2013), and organizational leadership and support (Curtis, 2012; Ingersoll & May, 2012; Nagar, 2012; Peretz & Fried, 2012). Because off-the-job embeddedness has not been examined with on-the-job embeddedness, the influential factors in the turnover decision of teachers may not be fully understood (Jiang et al., 2012; Khani & Mirzaee, 2015; Nakar, 2012; Peretz & Fried, 2012; Robinson et al., 2014; Sablynski, 2014). Studying off-the-job embeddedness may enable researchers and educators to understand the turnover phenomenon from another angle. The inability to view the turnover phenomenon among teachers in a holistic manner may prevent the development of an effective program to address this phenomenon. Filling this gap in the literature may have implications for future studies on the issue because teachers, educators, and researchers will have an opportunity to understand the phenomenon in

more depth based on the findings in this study. Findings may be especially beneficial in retaining high school math teachers in Nevada.

Background

Several studies have been conducted on turnover, retention, and job embeddedness in the field of education. Ingersoll and May (2012) and Curtis (2012) focused on math teachers and found their tendencies to leave their jobs increased turnover rates within their population of math teachers. Ingersoll and May (2012) used longitudinal data from the National Center for Education Statistics and found that the turnover of math teachers increased significantly over 20 years. Curtis (2012) also used longitudinal data from national surveys but added interview data. The important finding from the Curtis study was that math teachers enter the profession because of love for working with children; however, these teachers are forced to leave because of low income and lack of administrative support.

Ronfeldt et al. (2013) noted the negative impact of teacher turnover on students' academic performance. Ronfeldt et al. used data about student performance and teacher behavior from the New York City Department of Education and the New York State Education Department. The results showed that high teacher turnover intentions lead to lower performance of students (Ronfeldt et al., 2012). This finding highlighted the importance of focusing on teacher turnover in the current study. Building on previous research, Stuit and Smith (2012) and Simon and Johnson (2013) showed that teacher turnover is common for schools where most students come from low-income families. Stuit and Smith recruited teachers to determine the possible reasons for turnover and

found that charter school teachers were twice as likely to leave their jobs than traditional public-school teachers because of lack of support and low levels of certification among teachers. Simon and Johnson did a literature review of recent studies and found that working conditions were the most significant predictor of teachers' satisfaction and retention levels. Other researchers investigated the role of job embeddedness in the context of employee retention and employee turnover (Jiang et al., 2012; Lee et al., 2014; Robinson et al., 2014; Sablynski, 2014; Zhang, 2013). These explored the self-rating of individuals as workers in different industries and found that job embeddedness is a significant predictor of employee turnover (Jiang et al., 2012; Lee et al., 2014; Robinson et al., 2014; Sablynski, 2014; Zhang, 2013.) However, these studies focused on industries that did not include education. Curtis (2012), Ingersoll and May (2012), Robinson et al. (2014), Simon and Johnson, (2013), and Stuit and Smith (2012) investigated on-the-job or organizational factors (e.g., salary, working conditions, organizational leadership and support) related to turnover decisions. Lev and Koslowsky (2012) examined teachers' job embeddedness but focused only on on-the-job factors. Lev and Koslowsky found that on-the-job embeddedness was a significant predictor of teacher performance and turnover intention.

The review of literature indicated a gap in understanding the teacher turnover phenomenon. Teacher turnover affects many stakeholders including teachers, students, parents, policymakers, researchers, and the broader educational community. Findings from this study may be used to reduce teacher turnover among high school math teachers.

Problem Statement

Teacher turnover results in the need to hire new teachers to fulfill the responsibilities of those who leave (Cho & Lewis, 2012; Hayes et al., 2012). One implication of high turnover is the possibility of operating with a suboptimal number of employees or staff, which may negatively impact overall organizational performance (Cho & Lewis, 2012). High turnover results in the need to hire new employees to minimize negative implications to performance and operations (Hayes et al., 2012). Hiring new employees represents a significant cost to the organization (Cho & Lewis, 2012; Hayes et al., 2012) because changes occur in the composition of teacher quality. Cho and Lewis (2012) found that students lose trust in the leadership of the school and do not perceive a new teacher as an effective educator. Teacher turnover promotes cynicism in students, which can have far-reaching implications. The decline in moral values and consideration of virtues as insignificant are other implications of high teacher turnover. Placing a strong emphasis on teacher retention and promotion of different programs may improve the situation.

Purpose of the Study

The purpose of this study was investigating the extent to which on-the-job and off-the-job embeddedness dimensions' impact turnover decisions of high school math teachers in Nevada, which has a high rate of teacher turnover. This study addressed on-the-job and off-the-job factors of embeddedness in three dimensions of fit, links, and sacrifice to examine the impact on teachers' turnover decisions. Identifying which factors relate to teachers' decisions to leave their jobs may be helpful in developing programs

geared toward teacher retention. Research has shown that math teachers have the highest percentage of turnover compared to other content area teachers (Curtis, 2012; Ingersoll & May, 2012). The study focused on the state of Nevada, which has a high percentage of families living below the poverty line (Tyler & Owens, 2012), which is a factor related to high turnover rates (Stuit & Smith, 2012).

Research Questions and Hypotheses

Based on the research problem and purpose of the study, three research questions (RQs) were developed to guide the study:

RQ1: Does job embeddedness affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o1: There is no effect of job embeddedness on the turnover intentions of high school math teachers.

H_a1: There is an effect of job embeddedness on the turnover intentions of high school math teachers.

RQ2: Does on-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o2: There is no effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a2: There is an effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

RQ3: Does off-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o3: There is no effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a3: There is an effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

Theoretical Framework

The theoretical framework for the study was the theory of job embeddedness, which provides a means of discovering why people stay in an organization (Mitchell et al., 2001). Mitchell et al. (2001) pioneered the construct of job embeddedness to determine the interrelated forces that keep employees in their jobs. Mitchell et al. initially aimed to determine the role of on-the-job factors of personal alignment with the organization and the job or position, and off-the-job factors of connections with the community, family, and social groups, to determine how these factors relate to employee turnover intention. According to Mitchell et al., job embeddedness is a construct that refers to employees' (a) link to other people or groups of people; (b) perceptions of their appropriateness in relation to the job, organization, and community; and (c) beliefs about what they would have to sacrifice if they left their jobs. The important aspects of job embeddedness include the extent to which people have links to other people or activities, the extent to which their jobs and communities are similar to or fit with the other aspects of their life, and the ease with which they could change their lifestyle if they left their job (Morganson, Major, Streets, Litano, & Myers, 2015; Takawira, Coetzee, & Schreuder, 2014; Zhang, 2013). By analyzing the construct of job embeddedness using the three dimensions of fit, links, and sacrifice within community (off-the-job) and workplace (on-

the-job) contexts, researchers can determine an overall level of job embeddedness (Mitchell et al., 2001; Zhang, 2013).

Based on the job embeddedness theory, the dimension of fit is referred to as an individual's perceived comfort with an organization (on-the-job) and community (off-the-job) (Mitchell et al., 2001). The closer the person's views, values, and goals are to an organization, the more likely the employee will be to feel professionally and personally connected to the organization (Mitchell et al., 2001). The dimension of links is defined as "relationship that exists between people and organizations" (Mitchell et al., 2001, p. 7). Highly embedded individuals have many links to the workplace (on-the-job), their community (off-the-job), or both (Young, Stone, Aliaga, & Shuck, 2013). The dimension of sacrifice refers to the different opportunities or benefits (e.g., material, psychological, or emotional) that may be missed or lost if an employee leaves an organization (Mitchell et al., 2001; Morganson et al., 2015).

In the current study, job embeddedness theory was used to investigate how fit, links, and sacrifice within the community (off-the-job) and workplace (on-the-job) were related to turnover of high school math teachers in Nevada (see Lee et al., 2014). Moreover, job embeddedness theory provided a basis for exploring how the factors of community (off-the-job) and workplace (on-the-job) embeddedness were related to teacher turnover. Job embeddedness is commonly assumed to benefit all stakeholders in an organization through higher levels of employee performance, stronger social cohesion, and lower rates of employee turnover (Allen, Pelkotorpi, & Rubenstein, 2016; Heritage, Gilbert, & Roberts, 2016; Park & Shaw, 2013). Job embeddedness can also predict work

outcomes other than rates of employee turnover (Kiazad, Hom, Holtom, & Newman, 2015) such as in-role and extra-role performance, counterproductive work behaviors, and absenteeism (Lee et al., 2014).

Nature of the Study

I used a quantitative, nonexperimental, causal-comparative design. According to Babbie (2012), quantitative approaches are appropriate when researchers are attempting to determine relationships or causality between two or more variables. A quantitative approach requires numeric data to test hypotheses and answer the research questions (Mustafa, 2011). Quantitative methodology is used to investigate correlational or causal relationships that may exist between different variables (Mustafa, 2011; Yang, 2013).

A causal-comparative research design was used in this study to examine relationships between the independent variable of embeddedness and the dependent variable of turnover intention (see Zikmund, Babin, Carr, & Griffin, 2010). Quantitative research can be done using experimental and nonexperimental approaches (Bryman, 2012). Experimental research involves manipulation of the independent variable and determination of both a treatment and a control group within a controlled environment (Bryman, 2012). Nonexperimental research involves studying variables within an uncontrolled environment while measuring these variables through quantitative data (Bryman, 2012; Cozby, 2012). The current study did not include control or experimental groups; therefore, the design was nonexperimental. Another research design considered was a pretest/posttest design; however, this was not appropriate because the study does not involve testing the effectiveness of an intervention. To address the purpose of this

study, I used a quantitative causal-comparative research design. Data were gathered from high school math teachers in 17 counties in Nevada. Ninety-eight teachers (both male and female) ages 21 and over were recruited for this study, and teaching experience ranged from 1 to 10 plus years. The data were gathered using survey questionnaires to measure (a) job embeddedness and (b) turnover intention. I used multiple linear regression modeling to examine the relationships between the variables.

Definitions

Fit: Perceived comfort with an organization and community. The closer a person's values, ideas, views, and goals are to an organization or community, the better the fit and likelihood of that person feeling personally or professionally tied and therefore not leaving (Mitchell et al., 2001).

Job embeddedness: Connections or "links to other people, teams, and groups perceptions of their fit with job, organization and community, and what they say they would have to sacrifice if they left their jobs" (Mitchell et al., 2001, p. 1102). A combination of factors influences employee retention.

Off-the-job embeddedness: External factors that influence employee retention, such as in the community (Mitchell et al. 2001; Zhang, 2013).

On-the-job embeddedness: Internal factors that influence employee retention, such as at the workplace (Mitchell et al., 2001; Zhang, 2013).

Retention: Occurs when a high school math teacher remains in the field by either staying at the current school in the same capacity or transferring to another school in the same capacity (Tanova & Holtom, 2008).

Turnover intention: The psychological tendency to leave a current job (Erturk & Vurgun, 2015).

Assumptions

Assumptions are claims that the researcher believes to be true but are not verifiable. According to Erturk & Vurgun (2014), an assumption is an idea that might have a negative or positive effect on a future event. The first assumption in the current study was that the participants would understand the survey questions and answer them honestly. The second assumption was that it would be easy to collect enough completed surveys to test the hypotheses. The third assumption was that participants who responded to the survey would be representative of the target population.

Scope and Delimitations

The scope of this study was limited to current high school math teachers in the state of Nevada; findings may not reflect math teachers in other areas of the country or at the elementary and middle-school level. A causal-comparative design was used to examine relationships between the independent variable of embeddedness and the dependent variable of turnover intention (see Zikmund et al., 2010).

Limitations

One limitation to this study was self-administered surveys. There was no way of knowing whether participants answered truthfully or whether they misunderstood the questions. Another limitation was targeting high school math teachers as opposed to all math teachers. A third limitation was the use of Survey Monkey and getting enough

responses. Researcher bias was not a concern because I had no previous professional or social relationships with the participants.

Significance

This research addressed the gap in literature regarding the role of off-the-job factors that may relate to turnover intention of teachers. The results of this study may provide insights about on-the-job and off-the-job embeddedness in terms of the dimensions of fit, links, and sacrifice in relation to teachers' turnover intentions. This study was unique because it addressed an under researched area in the field of education. Findings from this study may be beneficial to scholars and researchers interested in the field of education. The study may contribute new and significant information regarding turnover literature that may be used as a basis for future research. Focusing on the issue of turnover is important because it is among the pressing issues in the field of education in the United States (Curtis, 2012; Ingersoll & May, 2012; Stuit & Smith, 2012). The results may be beneficial to administrators and policy regulators of educational institutions in developing and modifying programs to increase teacher retention and minimize teacher turnover.

Summary

Acquiring and retaining high school math teachers in Nevada is a concern. Turnover is a problem that must be addressed because of the negative impact on students (Peretz & Fried, 2012; Shaw, 2011) as well as the financial costs. The financial cost of turnover in the United States is over $2 billion a year (The Alliance for Excellent Education, 2014), and researchers have found that high turnover leads to negative student

performance (Khani & Mirzaee, 2015; Peretz & Fried, 2012; Ronfeldt et al., 2013; Shaw, 2011). Nevada has a high percentage of low-income families (Tyler & Owens, 2012). The schools attended by these students have a harder time acquiring and keeping math teachers; therefore, students are taught by less experienced and less effective teachers (Dawson et al., 2014; Simon & Johnson, 2013).

Although job embeddedness has been used to study employee retention in many business fields, researchers have focused on job satisfaction, working conditions, and lack of mentoring as reasons why getting and keeping teachers is a problem. Researchers have not studied the impact of off-the-job embeddedness on retention of high school math teachers (Jiang et al., 2012; Robinson et al., 2014; Sablynski, 2014; Lee et al., 2014).

This study filled the gap in the literature on the role of off-the job factors in retaining high school math teachers. Further discussion of the theory of job embeddedness is provided in Chapter 2. This chapter also addresses studies on job embeddedness (both on-the-job and off-the-job) in terms of dimensions of fit, links, and sacrifice relating to retention and turnover intention of math teachers.

Chapter 2: Literature Review

In the last two decades, researchers have found higher turnover rates among math, science, and special education teachers (Ost & Schiman, 2015). The teacher turnover occurring among math teachers has been shown to negatively impact students (Khani & Mirzaee, 2015; Peretz & Fried, 2012; Ronfeldt et al., 2013; Shaw, 2011). Hiring and retaining math teachers has become a problem in Nevada (Tyler & Owens, 2012). Although efforts have been made to recruit more math teachers, they have not been effectively implemented in Nevada. This chapter includes a review of the literature on factors related to obtaining and keeping high school math teachers.

Literature Search Strategy

The literature reviewed in this chapter was found in organization, psychology, and education databases. I limited searches to scholarly, peer-reviewed journal articles, and most were published after 2011. A small percentage of articles published before 2011 were included because they were influential in the field, especially the work of Mitchell et al. (2001). Databases included EBSCOhost, PsychArticles, ScienceDirect, ERIC, ProQuest, and SAGE. I also used the Google Scholar search engine. Search terms used were *job embeddedness, turnover intention, teacher attrition, teacher retention, working conditions, job satisfaction,* and *organizational commitment*.

Theoretical Foundation

The theory of job embeddedness is used to explain the factors that influence employee retention. Lee et al. (2004) and Mitchell et al. (2001) found that job embeddedness was a better predictor of retention than job satisfaction. Researchers use

the dimensions of fit, links, and sacrifice to determine how embedded an employee is within an organization. The dimension of fit includes how an employee fits within the community, as well as how he or she fits within the organization (Lee et al., 2004; Mitchell et al., 2001). This dimension requires asking the following question: Does the individual feel that his or her community is a good match, or that his or her talents are being utilized at his or her job? The dimension of links extends from the organization to the community (Lee et al., 2004; Mitchell et al., 2001). This dimension requires asking the following questions: Does the person own his or her home, and has he or she worked for his or her organization for a long time? The third dimension, sacrifice, includes considerations of the community and the organization (Lee et al., 2004; Mitchell et al., 2001). Sacrifice refers to an employee's responses to the following questions: Would it be hard for the person to leave the community, and does the organization offer good promotion opportunities? Mitchell et al. (2001) found that the stronger the fit, the more likely the individual will stay with an organization.

Because employee turnover has been a topic for concern in many industries, it has become a popular research topic in the organizational psychology field. Tanova and Holtom (2010) looked at the connection between an employee's job and his or her personal life using factors such as the employee's feelings about belonging to an organization and his or her feelings about connection to the community. Other factors included work friends and commuter distance. Swider et al. (2011) found turnover levels to be higher when employees had lower levels of job embeddedness. Jiang et al. (2012)

found that female employees showed a stronger connection between job embeddedness and turnover than their male counterparts.

Yang, Ma, and Hu (2011) stated that "job embeddedness is an overall construct based on the belief that multiple, combined forces influence a person from either remaining or voluntarily terminating his or her job" (p. 420). Yang et al. found the research of Lewin's field theory (strong attachments or loose attachments affect connectedness) to be accurate, and that psychological testing could reveal the embeddedness of employees. Yang et al. also found that because the cultures and values of the Western world and the Eastern world differ, the factors that affect job embeddedness may differ too. For example, in China family and community bonds have a greater impact on job embeddedness than they do in a Western nation.

Literature Review

Turnover Intention

Researchers have found many reasons for turnover. Ingersoll and May (2012) found that retaining math teachers has become challenging for school districts all over the United States. The recruitment and training of new teachers are costly to a school district, and the U.S. government spends an estimated eight billion dollars yearly on training and recruiting new teachers (Shaw, 2011).

Curtis (2012) found that most math teachers went into the field because of a desire to help young people, their love of the subject, and the feeling that they were making a difference. Some of the reasons for leaving were lack of administrative support, poor relationships with other teachers, and low salary (Curtis, 2012.) Curtis also found

that teachers' expectations of the job were sometimes in direct contrast to the job itself, and that teacher education programs were not always preparing teachers for the realities of the job. DiCarlo (2015) stated that teachers were asked if substantial salary increases would have made a difference in their staying in the teaching field. Most said no; however, over half of math teachers said yes (DiCarlo, 2015).

Besen, Matz-Costa, Brown, Smyer, and Pitt-Catsouphes (2013) found that turnover intention and job satisfaction could be predicted by variables such as task identity, task significance, and dealing with others. Cho and Lewis (2012) found that motivation drives employee attitudes and behaviors, and that meaningful work promotes intrinsic motivation and lowers turnover intention.

Boyd et al. (2011) found that teacher perception of school administration had the greatest influence on teacher turnover, while Simon and Johnson (2013) found that teacher turnover in high poverty schools had nothing to do with the students but was the result of poor working conditions. Moynihan and Pandey (2009) found that when the economy was good there was more turnover because people believed finding another job was easy, and that when the economy was bad and unemployment was high people did not leave their jobs.

Job Embeddedness

Job embeddedness is the relationship between the individual and the work-related contexts inside and outside of the organization (Mitchell et al., 2001). Job embeddedness includes the non-subjective and working factors and provides a framework for understanding organizational behavior. The concept of job embeddedness was first

proposed by Mitchell et al. in 2001 and has been used to explain why employees stay rather than leave. The theory of job embeddedness addresses the relevant organizational and community-related factors that enable employees to stay in the workplace (Holtom et al., 2008).

Job embeddedness is based on three aspects of research. First, several empirical studies on organizational dependencies have shown that nonproductive factors have an important effect on dependency. Early versions of resignation models by Agho, Price, and Mueller (1993); Mowday, Steers, and Porter (1979); and Mobley (1977) included the effects of nonworking factors and that employee retention factors are organizational rather than individual. Yao, Lee, Mitchell, Burton, and Sablynski (2004) defined *embeddedness* as the individual leaving his or her work as a comprehensive factor. Some of these factors included marital status, community ties, and job tenure (Yao et al., 2004). Zhang, Fried, and Griffith (2012) revealed that job embeddedness predicted incremental variations in turnover after controlling for traditional turnover predictors such as job satisfaction.

Work Embedded Dimension

Work embedding is a concept that includes contextual and perceptual elements that bind individuals to communities and organizations (Mitchell et al., 2001). To be manipulated and measured, these two elements are also known as organizational and community-level work embedded. Job embedding includes three core parts: Link refers to the formal or informal connection of an individual to other individuals, communities, and activities; fit refers to the similarity of the organization and community in which the

individual is located and its living space; and sacrifice refers to the expense or loss of the individual from the organization or community, including material and psychological losses. These three constructs form a 3x2 matrix structure with two profiles. This multidimensional structure is recognized by most researchers and provides the basis for further manipulation. The Mitchell exploratory factor analysis shows that the six dimensions are very low and can be regarded as independent of each other, where the link is a completely non-emotional dimension, and the fit and sacrifice are indirectly emotional dimensions.

Job Embedding

Job embedding is a measure of the degree of embedding of individual work. The concept of job embedding and its multidimensional features are recognized by most researchers. Caldarola (2010) found that this measurement method assumes that the dimensions are equally important to the individual, while ignoring the different individuals' differences for different dimensions, such as employees who change jobs but do not need to change their homes, employees who pay less attention to community-related job embedding projects, and those who need to change their communities or residences and pay more attention to community-related job embedding projects. Second, too many measurement items (for example, 40 project scale) are not conducive to co-measurement with other organizational behavior variables such as job satisfaction, organizational commitment, and turnover intention. Third, there are common method deviations and multiple collinearity problems in the statistical methods of embedded

engineering in multiple projects, which will affect the reliability and validity of job embedding.

Consequences of Job Embeddedness

Many studies have addressed the consequences of job embeddedness on voluntary turnover in different occupational sectors and in relation to cultural and demographic factors including gender. Most of these studies indicated that the increase of job embeddedness levels, as a result of different combinations of levels of fit, links, and sacrifice, reduced the intention to leave the organization, lowered voluntary turnover, and increased the intention to remain in the workplace. Ramesh and Gelfand (2010) found in addition to remaining in the workplace, job embeddedness (possibly moderated by community embeddedness) emerged as an explanatory variable of individual performance levels, both in-role (task performance) and extra-role. It was also a significant predictor of some organizational citizenship behaviors such as altruism, courtesy towards colleagues and diligence. Scapolan, et al. (2014) also found that high levels of job embeddedness were associated with innovation-oriented behaviors, such as the development and implementation of new ideas that improved the efficiency, increased production of quality products, and improved effectiveness of the teamwork. Finally, community embeddedness along with organizational embeddedness showed a relationship between motivation, networking behavior and organizational identification.

The research of Ng and Feldman (2010) investigated the “dark side” of job embeddedness by looking for potential negative effects. They provided empirical evidence which showed that over time, the employees with high organizational

embeddedness were less and less likely to spend time building relationships with influential people in the organization or community, and these employees also reduced their participation in career building behaviors such as participating in training courses. A recent study by Soltis, et al (2013) explored the links dimension by pointing out the link between relationships (formal and informal) existing in a workplace and demonstrated that the turnover is more complex than usually assumed. In particular, through an analysis of the existing social networks within an organization of professionals (and in particular the advice networks), the authors showed how people who asked for advice more frequently from colleagues about the performance of their work are those with the highest level of intention to remain in the organization. In contrast, people who receive requests for advice from a larger number of colleagues are those with the lowest levels of intention to remain in the organization. If, as suggested by the theory of social capital (Coleman, 1990), namely that the relationships that develop between colleagues in an organization are an important resource for both the individual and for the operation of the organization itself, then all relationships are just as important. In the Coleman study (1990), colleagues to whom were asked for job tips improved the perception that the individual had a level of social support available within the organization. This increased their own level of embeddedness. However, many of the people who were giving the job tips had reduced embeddedness and had the perception of unfairness by the organization. In other words, they see it as an excessive cost that they have to spend to meet the demands of colleagues, as this distracts them from performing their duties; especially, since this time is unpaid. The study provides interesting practical implications. For

example, it highlights the importance of informal social networks, an aspect too often ignored by organizations, which often tend to focus their attention primarily on the important (but not exhaustive) formal aspects (organizational charts, procedures, etc.).

Job Embeddedness Versus Job Satisfaction

Job satisfaction has been a highly-researched area, with studies going back to Roethlisberger and Dickson (1939) and their research on job satisfaction and dissatisfaction among employees of the Western Electric company. In 1959, researchers Herzberg, Mausner, and Snyderman came up with what was called, the "dual factor" "theory of motivation". One factor was avoidance of pain, and the other was psychological growth. This theory became popular with both organizational managers and psychologists as a way to examine job satisfaction. In 1995, researchers Rust and Stewart found that high levels of job satisfaction were a definite influence in employee retention, while by 2014, Basak was examining the roles of gender, age, and education and what role they played in affecting job satisfaction. Research by Besen, et al (2013) found that job satisfaction can be predicted by variables such as ability to deal with others, task identity, task significance, feedback, and core self-evaluations, while Jiang et al (2012) found job satisfaction (or lack thereof) as a predictor of turnover intention and a key variable in testing job embeddedness. The study of teacher turnover conducted by Miller (2014) found that workplace conditions influenced teacher's job satisfaction and whether or not they would remain in the profession. Along with job satisfaction, employees looked for organizations that fit their ideas of a good work environment.

Teacher Turnover Intentions

Over the last two decades there have been numerous empirical studies aimed at teacher turnover and in the 21st century, the demands of society for the teacher are much higher than in the previous century. Satisfaction with this chosen field is important because it is associated with organizational effectiveness, which ultimately affects retention (Bolger, 2001). Ost and Schiman, (2015) found teacher turnover correlated with certain areas of teaching, and that certain areas were more likely to have higher turnover than others, with the highest being special education, science, and mathematics. School districts around the country have found it challenging to retain all three of these areas of teaching. Adnot et al, (2016) found that about 40 percent of all new teachers (including math teachers) will not stay in the teaching profession for more than five years. Grissmer and Kirby (2007) state that teachers have many reasons they choose to leave the profession. Some of these are personal reasons like health and family. Others are job dissatisfaction or conflict with co-workers and administration. Ingersoll (2001) after analyzing data from the *Schools and Staffing Survey,* found that the main reason for teacher turnover was due to perceived problems with the administration and the organizational perspective of the school. Research by Erturk (2014) found that when most former teachers were asked if getting a higher salary would have influenced their decision to stay, most said no. However, when asked about getting support from their administrators, most said yes. The results were that teacher turnover was lower when teachers felt like they were getting support from their administrators. However, Ost and Schiman (2015) found when it came to math and science teachers, the findings were that

more than half said a higher salary was the most important factor in staying or leaving. Another predictor of teacher turnover was availability of jobs. Jiang, et al. (2012) and May, et al. (2013) did studies of teachers at universities and found that turnover was considerably lower when it was significantly harder for teachers to find employment elsewhere. Their findings also demonstrated that teacher turnover went down when teachers were satisfied with their jobs and didn't experience burnout.

Working Conditions

Working conditions combine the elements of the physical working environment and the perception of them by the senses. Working conditions are important, and a reliable variable is used to measure workplace motivation based on the fact that worker attitudes and perceptions are strongly affected by the environment at the workplace (Robinson et al., 2014). In circumstances where workers consider their working conditions inadequate, the prediction is that workers will leave for better-working conditions. Additionally, there is a noticeable tendency for workers to avoid working in conditions that are below their expectations (Simon & Johnson, 2013). Torres (2014) states that when employees are expected to perform and deliver in conditions that fall outside their expectations, it leads to a perceived unfair division of labor. Torres (2014) also notes that employees often feel disheartened when they are forced to pay for the bad management decisions. Working conditions can be deemed as complete and fulfilling when an employee is sure that work requirements include health and safety, as well as fairness. Teachers who perceive their working conditions as negative are less likely to have job embeddedness. Evidence suggests that it is not the relationship between teachers

and the students causing teachers to leave, but the conditions in which they are being forced to teach and their students are being forced to learn (Boyd et al., 2011; Ladd, 2009 & 2011.)

Johnson, Kraft, and Papay (2012) found that the working conditions of teachers (and ultimately their students) was of extreme importance. Teachers chose to leave schools with poor work environments, and that these conditions were most common in schools with minority and low-income students. Teachers who taught in favorable work environments reported that they were more satisfied and less likely to plan to transfer or leave the profession than their peers in schools with less favorable conditions. Studies by Boyd et al., 2007; Kraft et al., 2012 and Leukens et al. (2004) examined new teachers who left schools with high percentages of students from minority and low-income groups to take jobs in districts with higher average family incomes or leave the teaching profession all together. However, the findings of Kraft, et al (2012) stated, "Teachers are more satisfied and plan to stay longer in schools that have a positive work context, independent of the school 's student demographic characteristics" (p.320). While many working conditions mattered to teachers (clean and well-maintained schools, up to date technology), the most important conditions were of a social nature. Administrative leadership and relationships with other teachers proved to the key to teacher's job satisfaction. The research also found that favorable working conditions predicted higher student academic achievement. Happy teachers equaled happy students with higher grades.

In 1990, Johnson created various components of a teacher's workplace in order to analyze variables in teacher job satisfaction. Those components were physical environment (safety), economic factors (pay), assignment related (workload), and social elements (organizational culture). The findings were that these factors played a large part in teacher satisfaction, and therefore job embeddedness. Robinson, et al. (2014) states that many teachers believed working conditions were better when they felt a sense of belonging and first year teachers believed working conditions were better when there was cooperation and collaboration with veteran teachers and the administration When looking at work conditions Cho and Lewis (2012) discussed teachers and working in a hostile work environment. An employee in any work environment needs to feel safe and welcomed. Feelings of being treated unfairly, repressed, or humiliated leads to diminished productivity, and leaving the organization. In another study by Felps (2009) the impact of coworkers on intent to stay was examined by looking at the links between organizational relationships and job embeddedness. This study focused on the social exchange theory. Findings indicated that social exchange had a limited impact on intent to leave, while the impact of job embeddedness over a longer term impacted decisions to leave the organization.

Teacher Attrition

Ingersoll and Smith (2003) state;" the teaching occupation suffers from chronic and relatively high annual turnover compared with many other occupations" (p.440). Total teacher turnover is fairly evenly split between two components: attrition (those who leave teaching altogether); and migration (those who move to teaching jobs in other

schools).” According to the U.S. Department of Education, National Center for Statistics (2014), of the public-school teachers with less than five years of experience, 13 percent left to go to a different school, and seven percent left teaching all together in 2012-2013. Fifty one percent of the teachers who left teaching in those years reported the main reasons for leaving as the manageability of work load and working conditions. Accurate measures of teacher attrition are needed to serve several important planning and policy objectives. First, attrition rates largely determine how many teachers need to be hired each year, therefore they play a significant role in assessing future teacher shortages. The findings of Ingersoll and May (2012), have shown that over 70 percent of new teachers were hired to replace leaving teachers; and only 30 percent were required to meet the needs of expanding enrollments and new programs. Because of this, it is crucial to measure and predict attrition accurately. Using surveys, Ingersoll and May (2012) found that teachers left teaching for several reasons. Work reasons such as layoffs, school reorganization, or termination and personal reasons such as health issues, pregnancy, and childcare. The two biggest reasons were pursuit of another job and job dissatisfaction. Twenty nine percent of those who listed job dissatisfaction said low salaries, lack of administration support, and lack of influence over classroom decision making were the main reasons for their dissatisfaction. In 2014, Ingersoll, Merrill, and May again examined teacher attrition. On one hand, it was believed that the problem stemmed from teacher preparation not being rigorous enough, and the way to produce better teachers was to upgrade teacher education and standards. The other side of the argument was the belief that the teacher requirements were too stringent and that there was no real evidence

that they were doing anything to encourage new teachers into the field. In fact, some educators believed this was discouraging people from entering the teaching field. Many people on this side of the argument believed the way to upgrade the quality of teaching was to change the current stringent ways and deregulate the education and certification requirements for new teachers. Findings from empirical studies were mixed concerning the subject of teacher education and preparation and the effect on student performance (Rivkin, 2007). Typically, such studies try to assess the relationship between various measures of teachers' qualifications and various measures of the performance of those teachers' students. The findings were mixed, and a number of studies have shown teacher qualifications to have little to no effects on student achievement. However, contrary to skeptics of teacher education, a number of studies have indeed found teacher education, preparation, and qualifications, of one sort or another, to be significantly and positively related to student achievement. In the study by Ingersoll, et al (2014) they looked at new teachers' preparation and education and their attrition in math and science. The analyses of data show that there were large differences in the types and amounts of education and preparation that teaching candidates receive. Math and science teachers, in particular, were more likely than other teachers to have graduated from highly selective colleges and universities, were more likely to hold non-education degrees, and were less likely to have entered teaching through a traditional teacher education program. Math and science teachers also had less actual teacher preparation and classes in teaching methods.

Shaw (2011) examined employee attrition and the relationship between organization and person fit. The result was that the relationship between the two was

indirect, and that fit had more to do with organizational commitment and job satisfaction. The findings of Kirby and Grissmer, 1993 and Curtis, 2012 were that mathematics teachers had the low rates of annual attrition, that they do not tend to return to teaching after a break in service, and that their permanent attrition rates are higher than what we would expect from looking at the annual rates. Kirby and Grissmer (1993) found the results for math teachers puzzling because starting salaries were higher than for other subjects.

Organizational Commitment

Grissom, Viano and Selin (2016) state," without due considerations of an organization's location on the culture continuum, factors that compose the organizational culture are the prevailing behavioral characteristics within the organization "(p.241). Each organization or institution has a standard of practice, expectation, or adaptation to the social climate that is part of an organization or institution culture. Overall, to comprehend an organization's culture, one has to consider its mission and vision. Ideally, the mission of an organization is instrumental in providing the vision for its drive and agenda. Ideally, the mission and vision of an organization often influence the way outsiders view it. The perception of outsiders is an inherent condition that shapes the organizational culture (Lee & Park, 2015). Organizational commitment is traditionally defined as "a strong belief in and acceptance of the organization's goals and values, a willingness to exert considerable effort on behalf of the organization, and a definite desire to maintain organizational membership" (p.18). (Watson, 2010).

Nagar (2012) asserted “organizational commitment is essential for retaining and attracting well qualified workers as only satisfied and committed workers are willing to continue their association with the organization and make considerable efforts towards achieving its goals” (p.43). As in other organizations, teachers seeing themselves as part of the organization creates commitment. Colak, et al (2014) found that the literature suggested that teachers with high levels of organizational commitment accept school goals at a higher level and do more than their job descriptions. The literature also suggests that organizational commitment increases job satisfaction and performance as well as decreases absenteeism and the desire to quit. One of the factors affecting teachers’ organizational commitment is leadership, which requires being the pioneer of change and actively taking part in the educational processes. Angelle and Hart (2011) found that supportive principals and a positive school climate made a difference in teacher organizational commitment. One of the studies by Collie and Martin (2016) examined adaptability of high school math teachers and focused on teacher well-being and organizational commitment (with well-being referring to teacher’s positive evaluations, and organizational commitment referring to teacher attachment to their school.) Also, studies from Arens and Morin (2016) found a connection between teacher well-being and student achievement.

Summary

The literature review provided credible, supportive research examining job embeddedness, teacher turnover, and job satisfaction. The purpose of this study is to examine job embeddedness and how it affects obtaining and retaining high school math

teachers. By examining previous studies that examined job embeddedness, teacher turnover, working conditions, organizational commitment and job satisfaction, this study will use the theoretical framework of Lee et al. (2004) and Mitchell, et al. (2001) who found that job embeddedness was a better predictor of retention than job satisfaction. Job embeddedness examines the various factors that influence employee retention. Understanding the mechanisms behind voluntary teacher turnover is especially helpful in creating programs to attract and retain math teachers, because research has shown that they are the group with highest percentage of turnover when compared to other content area teachers (Curtis, 2012; Ingersoll & May, 2012). While many studies focused on job satisfaction (or lack thereof) as the main reason for the turnover in mathematics teachers, the job embeddedness theory of Mitchell, et al (2001) will use the dimensions of links, fit, and sacrifice along with on-the job and off-the-job embeddedness. Since there has been extensive research on teacher retention and student outcomes, it is important to develop ways to attract and keep math teachers. Chapter three will go into detail regarding the research design which will be a quantitative casual-comparative design in order to identify causal relationships between the independent variables of embeddedness and the dependent variables retention and turnover.

Chapter 3: Research Method

The recruitment and retention of high school math teachers is an issue of concern for public schools across the United States. The lack of highly qualified math teachers available to teach in high schools affects the quality of education. To provide quality education to students, "policymakers and state and local education agency administrators must understand the reasons for teacher attrition to design effective retention strategies" (Miller et al., 1999, p. 201). The specific problem addressed in this study was the retention of high school math teachers in the state of Nevada using job embeddedness as a predictor. This chapter presents the research design, methodology, data collection, population, and instruments used in the study. This chapter also includes a discussion of the data analysis procedures, reliability, threats to validity, ethical concerns, and a summary.

Research Design and Rationale

I used a quantitative, nonexperimental, causal-comparative design. According to Babbie (2012), quantitative approaches are appropriate when addressing relationships between two or more variables. Quantitative methodology is used to investigate relationships that may exist between variables found in the context of the phenomenon (Mustafa, 2011; Yang, 2013). A causal-comparative design was used for this study to examine relationships between the independent variable of embeddedness and the dependent variable of turnover intention (see Zikmund et al., 2010). I considered was pretest/posttest design; however, this was not appropriate for the study because I did not test the effectiveness of an intervention. A qualitative approach was also not appropriate

because qualitative research involves open-ended interview questions, making data collection and analysis not easily quantifiable (Luo, 2011). To measure teachers' turnover intention, I used the Job Embeddedness Survey (see Mitchell et al., 2001). This is a 6-item scale that measures the intention to stay within the organization. The 6-item scale includes responses on a 7-point Likert scale rating system. The reliability of this scale was 0.80 (Bothma & Roodt, 2013). Demographic data of teachers (e.g., age, gender, total years in teaching, years in current school, and years from last turnover) was also gathered to describe the sample using measures of central tendencies. This study was guided by the following research questions and hypotheses:

RQ1: Does job embeddedness affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o1: There is no effect of job embeddedness on the turnover intentions of high school math teachers.

H_a1: There is an effect of job embeddedness on the turnover intentions of high school math teachers.

RQ2: Does on-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o2: There is no effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a2: There is an effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

RQ3: Does off-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o3: There is no effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a3: There is an effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

Methodology

Population

According to the State of Nevada Department of Education, there are 17 school districts in Nevada. The population of the study included math teachers of varying ages, both male and female, with varying education levels and years of teaching math. The number of participants was 98. To determine the minimum sample size needed for a multiple regression model, I used the G*Power 3.1 software (see Faul et al., 2009). With 6 predictors (3 on the job, 3 off the job) based on a medium effect size ($f^2 = .15$) and alpha level of.05, the needed sample size to achieve sufficient power (.80) was 98 respondents.

Sampling and Sampling Procedures

The sampling process consisted of recruiting current high school math teachers from the 17 school districts in Nevada. Data were gathered using survey questionnaires to measure (a) job embeddedness and (b) turnover intention. I used multiple regression modeling to examine the relationship between the variables. To measure job embeddedness, I used the Job Embeddedness Scale (see Mitchell et al., 2001).

Researchers who used this scale generated at least a 0.70 Cronbach's alpha, which is the acceptable value for reliability for each of the three dimensions (Ferreira & Coetzee, 2013; Takawira et al., 2014). The Job Embeddedness Scale has 6 subscales that correspond to the three dimensions of job embeddedness for each of the contexts involved (e.g., organization or on-the-job and community or off-the-job): LNKORG (Job Embeddedness Links Organization Subscale), LNKCOM (Job Embeddedness Links Community Subscale), FITCOM (Job Embeddedness Fit Community Subscale), FITORG (Job Embeddedness Fit Organization Subscale), SACORG (Job Embeddedness Sacrifice Organization Subscale), and ACCOM (Job Embeddedness Sacrifice Community Subscale).

Procedures for Recruitment, Participation, and Data Collection

After obtaining authorization from the survey authors and the Walden University institutional review board (02-05-18-0141336), I used high school websites within the 17 school districts in Nevada to obtain e-mails of math teachers. I then distributed the survey link for Survey Monkey via e-mail along with a letter of explanation containing information about the nature of the study and time expectations. Survey Monkey has become a popular online tool that is used in academic and business research. Data were then gathered from 98 high school math teachers (both male and female) ages 21 and over, with teaching experience ranging from 1 to 10 plus years.

Instrumentation and Operationalization of Constructs

The data were gathered using survey questionnaires to measure (a) job embeddedness and (b) turnover intention. Demographic information (age, gender,

education level, and years teaching math) was gathered using a basic demographic questionnaire (see Yang, 2013).

Instrumentation

I organized the data from the surveys to conduct multiple regression analysis. Multiple regression has been used to predict outcomes based on multiple variables and has been shown to have high levels of accuracy (Noblet, Mahree-Lawler, & Rodwell, 2012). I analyzed the data using the statistical software called Statistical Package for the Social Sciences (SPSS).

Job Embeddedness

Job embeddedness was measured using items adapted from the original survey used by Mitchell et al. (2001). The survey included the three dimensions of fit, links, and sacrifice. Each dimension was further categorized by on-the-job or off-the-job, for a total of six dimensions: fit to organization (on-the-job), fit to community (off-the-job), links to organization (on-the-job), links to community (off-the job), sacrifice to organization (on-the-job), and sacrifice to community (off-the-job). Responses were provided on a 5-point Likert scale with 1 being “Strong Agreement” and 5 being “Strong Disagreement.”

Data Analysis

I used quantitative methodology to investigate the relationships between the independent variable (job embeddedness) and the dependent variable (turnover intention). Because I examined both on-the-job and off-the-job embeddedness, I used multiple regression modeling to determine the relationships between the variables. This data

analysis technique is used to examine the relationship between an outcome (dependent) variable and a predictor (independent) variable (Castellan, 2011).

I used SPSS and Excel to analyze the quantitative data collected during the study. This study was unique because it addressed an under researched area of job embeddedness in the field of education. Knowing how factors in the three embeddedness dimensions relate to math teachers' intention to leave their jobs (turnover) may be helpful in developing programs geared toward promoting math teacher retention. The results from this study may also be beneficial to administrators and policy regulators in future program development.

Validity and Reliability

According to Carmines and Zeller (1979), if a concept is involved in the testing of a hypothesis to support a theory, it has to be measured, and researchers must demonstrate the validity and reliability of the findings.

Validity

This study included several assumptions that may have affected the validity of the findings. The first assumption was that the participants would understand the survey questions and provide honest answers. All participants received information regarding the nature of the study, and they were assured that the survey be anonymous. I also assured participants that no identifying information would be gathered or provided to their employer. The second assumption has to do with the data analysis being used. With multiple regression analysis, the researcher will examine the relationship between the variables without manipulation of the variables. Therefore, not being able to determine if

the predictor variables specifically caused anything. The third assumption is that participants who respond to the survey invitation are the representatives of the target population. Since the survey invitations will be sent through SurveyMonkey to various high school math teachers throughout Nevada, there will be no way to predict gender distribution of respondents. Since demographic variables will be collected but not analyzed, this should not affect the research.

Reliability

Reliability is the degree to which a test consistently measures whatever it measures. Errors of measurement that affect reliability are random errors and errors of measurement that affect validity are systematic or constant errors (Carmines & Zeller, 1980.) Reliability also depends on the nature of validity that the research carries. A high level of validity increases reliability to the study while a lower level reduces the level of reliability; hence, affecting the results of the study. Yin (2005) recalls that, three validity tests have been commonly used to determine the quality of any empirical social research. They are Constructive, External and Internal. Constructive validity establishes correct operational measures for concepts that are about the study, internal validity (for explanatory or causal studies only) establishes a causal relationship, through which are shown certain conditions that lead to other conditions, and external validity which establishes the domain to which the findings can be generalized. Yin (2005) goes on to state that the development of semi-structured questionnaires is a tactic to increase the reliability of quantitative research.

Ethical Procedures

This study will need to obtain permission from the authors of each survey as well as IRB approval before going forth with any gathering of information. All data collected will be from using an online survey format (SurveyMonkey) and will be strictly anonymous. Ethical issues will be addressed through an informed consent letter that will be provided to all participants. It will contain information about the nature of the study and information regarding anonymity and confidentiality (that there will be no identifying information such as name, age, or school.) This is vital in establishing confidence with the participants. Survey recipients may decide to opt out or cease participation, but the researcher aims at including the reasons for conducting the study and the essence of the contribution of the participants at the beginning of the questionnaire which will hopefully work as motivating factors to influence participants in deciding to participate. At the conclusion of the study, the data that will be saved on a flash drive only accessible to the researcher, and the flash drive will be destroyed after five years.

Summary

The purpose of this chapter is to review the research method and design that was chosen as the most appropriate to answer the research questions in the study. This study is a quantitative study to see how job embeddedness (both on the job and off the job) affects the turnover intentions of high school math teachers in Nevada. The data will be gathered from 98 high school math teachers (both male and female) from the varying 17 school districts in Nevada that are aged 21 and over and have taught math for at least one

year. The method for gathering the data will be the Job Embeddedness survey and a basic demographic survey. The researcher will then use multiple regression modeling to determine the causal relationship between the variables in the research questions. Ultimately, the study is looking to see if there is a statistically relevant relationship between off the job embeddedness and math teacher retention.

Chapter 4: Results

The purpose of this quantitative, nonexperimental, causal-comparative study was to explore whether on-the job or off-the-job embeddedness had a significant effect on high school math teacher turnover intention in Nevada. Using multiple linear regression, I investigated the relationships between the independent variable (job embeddedness) and the dependent variable (turnover intention). A sample of 98 high school math teachers from 17 counties in Nevada was recruited through an e-mail invitation to complete an online survey using Survey Monkey. The online survey consisted of the Job Embeddedness Survey and a basic demographic survey. An online survey was chosen to ensure anonymity. In Chapter 3, I describe the research methods present the findings of the statistical analysis to answer the research questions.

Research Questions and Hypotheses

RQ1: Does job embeddedness affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o1: There is no effect of job embeddedness on the turnover intentions of high school math teachers.

H_a1: There is an effect of job embeddedness on the turnover intentions of high school math teachers.

RQ2: Does on-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o2: There is no effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a2: There is an effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

RQ3: Does off-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o3: There is no effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a3: There is an effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

I hypothesized that job embeddedness would be a statistically significant predictor of math teacher turnover intention based more on on-the-job dimensions than off-the-job dimensions because in most of existing literature on teacher turnover and retention, researchers focused on the on-the-job or organizational factors related to turnover decisions (Curtis, 2012; Ingersoll & May, 2012; Robinson et al., 2014; Simon & Johnson, 2013; Stuit & Smith, 2012). I also hypothesized that the dimension of fit would be a better predictor of turnover intention than the other dimensions because Shaw (2011) found that individuals who did not feel like they were a good fit to an organization were more likely to leave. Finally, I hypothesized that the dimension of sacrifice would be a better predictor of turnover intention than the other dimensions because Tanova and Holtom (2010) found that employees were less likely to leave the organization if they had to leave friends and their community.

Data Collection

After securing Walden University IRB approval, I used Survey Monkey to collect data. E-mails with a recruitment letter and link to Survey Monkey survey were sent to 300 high school math teachers throughout the 17 counties in Nevada. The survey contained an informed consent form so teachers who did not wish to participate or who did not teach math could decline.

The online survey included the Job Embeddedness Survey (Mitchell et al., 2001) and a demographic survey addressing age, gender, race/ethnicity, education, years teaching math, and type of school district. Data collection took a little over 6 weeks, and 152 responses were obtained. This response provided more than enough data to satisfy the minimum sample of 98 respondents. I chose to use 152 responses.

Descriptive Statistics

The data were cleaned and screened before analysis. Several incomplete surveys were removed. According to the demographic survey, 66% of participants were female (n = 101) with 33% (n = 51) were male. Most participants were between the ages of 31 and 39 (n = 48).

Most participants were White (n = 62), and most were married (n = 102). Most teachers had 5-9 years of experience (n = 48). When asked what type of school they worked in, most participants answered suburban (n = 60).

Most participants reported having master's degrees (n = 74) and jobs in public schools (n = 113). Participants were also asked about home ownership. Most participants said they owned a home (n = 97). The participant demographics are shown in Table 1.

Table 1

Frequencies and Percentages for Demographics

Demographic	n	Percent
Gender		
Male	51	33.3
Female	101	66.0
Age		
21-30	28	18.3
31-39	48	31.4
40-49	41	26.8
50-59	25	16.3
60+	10	6.5
Race/Ethnicity		
White/Caucasian	62	40.5
African American/Black	36	23.5
Hispanic/Latino	18	11.8
Asian/Pacific Islander	17	11.1
American Indian/ Alaska Native	14	9.2
Multi-Ethnicity/ Other	5	3.3
Years Teaching Math		
1-4 years	45	29.4
5-9 years	48	31.4
10-14 years	34	22.2
15-19 years	12	7.8
20 + years	13	8.5
Marital Status		
Married	102	66.7

Not Married	50	32.7
School Area		
Rural	37	24.2
Urban	55	35.9
Suburban	60	39.2

Reliability

I conducted statistical and graphical tests to check for the normality of the dependent variable turnover intention. Cronbach's alpha was used to measure the internal consistency of the scales fit-to-organization, fit-to-community, links-to-organization, sacrifice-to organization, sacrifice-to-community, and turnover intention. Descriptive statistics were used for all of the variables, which were measured using a minimum of 1 and maximum of 5. Pearson correlation was used to assess correlations between job embeddedness and turnover intention for on-the-job and off-the-job embeddedness.

Results

The purpose of this study was to assess the relationship between job embeddedness and math teacher turnover intention. I used multiple linear regression through SPSS Version 24 to analyze data. For research Question 1, I conducted a multiple linear regression analysis to test the null hypothesis that job embeddedness had no effect on math teacher turnover intention. Findings indicated a statistically significant correlation between job embeddedness and turnover intent with sacrifice/job and link/ community being the predictors. Descriptive statistics and Pearson correlation data are

shown in Table 2, and results of the multiple linear regression model are shown in Table 3.

Table 2

Pearson Correlation for Job Embeddedness Dimensions and Turnover Intent

	n	Minimum	Maximum	Mean	Std. Deviation
Turnover Intent	152	1.00	5.00	3.6275	1.14640
Fit-Job	152	1.00	5.00	3.8383	.851 62
Fit-Community	152	1.00	5.00	3.9717	.92949
Sacrifice-Job	152	1.00	5.00	3.7255	.87416
Sacrifice-Community	152	1.00	5.00	3.7669	.95749
Link-Job	152	1.00	4.73	3.5288	.74 515
Link-Community	152	1.00	3.00	1.7908	1.15652

Sacrifice-Job	Pearson Correlation	.130	.132	.751**	.847**	.753**	1	.820**	.854**	.196*
	Sig. (2-tailed)	.110	.106	.000	.000	.000		.000	.000	.015
Sacrifice-Community	Pearson Correlation	.088	.097	.733**	.806**	.835**	.820**	1	.803**	.218**
	Sig. (2-tailed)	.282	.236	.000	.000	.000	.000		.000	.007

Table 3

Model Summary for Correlation Coefficient RQ1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.900[a]	.810	.801	.47672	1.700

a. Predictors: (Constant), Link-Community, Sacrifice-Job, Fit-Community, Link-Job, Sacrifice-Community, Fit-Job

b. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

The table above represents the R and R-squared coefficients. The R column in the model summary represents the correlation coefficient. In the case for the above regression model, the correlation coefficient is 90%. This indicates very high correlation between the independent and response variable. The R-squared column represents how much variation of the response variable (Turnover Intent) can be explained by the independent variable. For our model, 81% of variation can be explained by the independent variable. The Durbin-Watson d = 1.7, which is between the two critical values of $1.5 < d < 2.5$. Therefore, we can assume that there is no first order linear auto-correlation in our multiple linear regression data.

Table 4

Regression Model for RQ 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	125.580	6	20.930	92.096	.000[b]
	Residual	29.544	130	.227		
	Total	155.124	136			

a. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

b. Predictors: (Constant), Link-Community, Sacrifice-Job, Fit-Community, Link-Job, Sacrifice-Community, Fit-Job

The ANOVA table above represents how well the model fits the data. The table reports that the model predicts the independent variable significantly well. This is determined by the sig column in the regression row. The model has a p value of 0.000005 which is less than 0.05. This indicates that the model predicts the independent variable significantly well.

For research question 2, multiple linear regression was used to examine if the on the job dimensions of fit, links, or sacrifice had a statistically significant effect on turnover intent. The independent variable being turnover intention in the question, “I would sacrifice a lot if I left this job”. The findings were that sacrifice/job was a positive and statistically significant predictor of turnover intent in the regression model (as shown in Table 4), and that the null hypothesis can be rejected.

Table 5

Pearson Correlation for RQ 2

Correlations

		Turnover Intent (I would sacrifice a lot if I left this job)	Fit-Job	Sacrifice-Job	Link-Job
Pearson Correlation	Turnover Intent (I would sacrifice a lot if I left this job)	1.000	.776	.881	.769
	Fit-Job	.776	1.000	.902	.909
	Sacrifice-Job	.881	.902	1.000	.877
	Link-Job	.769	.909	.877	1.000
Sig. (1-tailed)	Turnover Intent (I would sacrifice a lot if I left this job)	.	.000	.000	.000
	Fit-Job	.000	.	.000	.000
	Sacrifice-Job	.000	.000	.	.000
	Link-Job	.000	.000	.000	.
N	Turnover Intent (I would sacrifice a lot if I left this job)	139	139	139	139
	Fit-Job	139	139	139	139
	Sacrifice-Job	139	139	139	139
	Link-Job	139	139	139	139

Table 6

Multiple Regression Model for RQ 2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.882[a]	.779	.774	.50908	1.783

a. Predictors: (Constant), Link-Job, Sacrifice-Job, Fit-Job

b. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

The table above shows that our multiple regression model is a good predictor for the dependent variable. The R coefficient shown in the R column indicates strong

correlation between the dependent and independent variables. A high percentage of variation i.e. 77.9% variation of the dependent variable can be explained by the independent variables. All these indicate that the model is a good predictor. The Durbin-Watson d = 1.783, which is between the two critical values of $1.5 < d < 2.5$. Therefore, we can assume that there is no first order linear auto-correlation in our multiple linear regression data.

Table 7

ANOVA for RQ 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	123.085	3	41.028	158.310	.000[b]
	Residual	34.987	135	.259		
	Total	158.072	138			

a. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

b. Predictors: (Constant), Link-Job, Sacrifice-Job, Fit-Job

The table above represents the f-test for the model. The F-test for the linear regression has the null hypothesis that the model explains zero variance in the dependent variable. The F-test is highly significant as shown by the sig column. Therefore, there is sufficient evidence to reject the null hypothesis and conclude that the model explains significant variance in the dependent variable.

For research question 3, multiple linear regression was used to examine if the off the job dimensions of links, fit, or sacrifice had a statistically significant effect on turnover intent. The independent variable being turnover intention in the question, “I

would sacrifice a lot if I left this job". The findings using the multiple regression model were statistically significant, with the link/community being a positive and a statistically significant predictor of turnover intent (as shown in Table 8).

Table 8

Correlation Between Variables

Correlations

		Turnover Intent (I would sacrifice a lot if I left this job)	Fit-Community	Sacrifice-Community	Link-Community
Pearson Correlation	Turnover Intent (I would sacrifice a lot if I left this job)	1.000	.768	.874	.183
	Fit-Community	.768	1.000	.874	.235
	Sacrifice-Community	.874	.874	1.000	.230
	Link-Community	.183	.235	.230	1.000
Sig. (1-tailed)	Turnover Intent (I would sacrifice a lot if I left this job)	.	.000	.000	.015
	Fit-Community	.000	.	.000	.002
	Sacrifice-Community	.000	.000	.	.003
	Link-Community	.015	.002	.003	.
N	Turnover Intent (I would sacrifice a lot if I left this job)	142	142	142	142
	Fit-Community	142	142	142	142
	Sacrifice-Community	142	142	142	142
	Link-Community	142	142	142	142

Table 8 represents the correlation between the variables. The table shows significant correlation between the variables, especially correlation between turnover intent and link community.

Table 9

Multiple Regression Model for RQ 3

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

1	.875[a]	.765	.760	.53167	1.693

a. Predictors: (Constant), Link-Community, Sacrifice-Community, Fit-Community

b. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

The table above shows the multiple regression model summary and overall fit statistics. From the table we can see that the R Square and the adjusted R Square statistics are 0.765 and 0.760 meaning that 76% of variation of the dependent variable can be explained by the independent variable. The Durbin-Watson d = 1.693, which is between the two critical values of $1.5 < d < 2.5$. Therefore, we can assume that there is no first order linear auto-correlation in our multiple linear regression data.

Table 10

ANOVA for RQ 3

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	126.970	3	42.323	149.726	.000[b]
	Residual	39.009	138	.283		
	Total	165.979	141			

a. Dependent Variable: Turnover Intent (I would sacrifice a lot if I left this job)

b. Predictors: (Constant), Link-Community, Sacrifice-Community, Fit-Community

The summary of the F-test with the null hypothesis that the model explains zero variance in the dependent variable is represented by the table above. The significance

value p=0.000 gives us enough evidence to reject the null hypothesis and conclude that the model explains significant amount of variation.

Summary

Chapter 4 provides a description of the research participants, as well as the quantitative data analyses and the results. The participants were 152 math teachers throughout the 17 counties in Nevada. The first research question sought whether or not there is a statistically significant connection between job embeddedness and math teacher turnover in Nevada. The second research question focused on the on the job factors that could affect turnover intent. Finally, the third research question examined the off the job factors that could affect turnover intent. Using multiple linear regression, the findings indicate statistically significant relationships between job embeddedness sacrifice/job (on the job), and link/community (off the job) in relation to turnover intention of math teachers in Nevada. The findings were that the job embeddedness dimensions of sacrifice/job and link/community were the most important to the math teacher's decision of whether to stay or go. Chapter 5 will detail the research results and implications of the found relationships, discuss the findings, and investigate and compare results from other studies. It will also examine limitations of the study, and what could have been done differently. In conclusion, an exploration of the implications, and recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

School districts across the United States are experiencing problems with qualified teacher retention, with math being one of the subjects with a higher turnover rate (Peretz & Fried, 2012). The loss of math teachers is concerning because turnover has been shown to negatively impact student performance (Khani & Mirzaee, 2015; Peretz & Fried, 2012; Ronfeldt et al., 2013; Shaw, 2011). The purpose of this quantitative, nonexperimental study was to determine whether any of the dimensions of the Job Embeddedness Questionnaire (Mitchell et al., 2001) predicted high school math teacher turnover intention in Nevada. The research questions and hypotheses for this study were the following:

RQ1: Does job embeddedness affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o1: There is no effect of job embeddedness on the turnover intentions of high school math teachers.

H_a1: There is an effect of job embeddedness on the turnover intentions of high school math teachers.

RQ2: Does on-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o2: There is no effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a2: There is an effect of on-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

RQ3: Does off-the-job dimension of fit, links, and sacrifice affect the turnover intentions of high school math teachers as measured by a self-reported questionnaire?

H_o3: There is no effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

H_a3: There is an effect of off-the-job dimension of fit, links, and sacrifice on the turnover intentions of high school math teachers.

Interpretation of the Findings

The theoretical framework for this study was Mitchell et al.'s (2001) job embeddedness theory. Data were collected from 152 high school math teachers in the 17 counties of Nevada using the Job Embeddedness Questionnaire and a demographic survey. Most of the participants said they had been teaching math for 5 to 9 years and had master's degrees. Most participants also said they taught in public schools in suburban areas and owned a home. Survey data were analyzed to determine whether particular on-the-job or off-the-job dimensions of job embeddedness were statistically significant predictors of high school math teacher turnover intention.

For on-the-job and off-the-job embeddedness, the dimensions measured were links, fit, and sacrifice. Links are defined as "discernible connections between people and institutions" (Mitchell et al., 2001, p. 8) and are separated into two factors: organizational links and community links. In theory, the more links or connections a person has to a job or community, the more embedded he or she becomes. Young et al. (2013) state that links can be social, psychological, or financial and associated with age, marital status, number

of children and their ages, years of service, hobbies, church or religious-related activities, and/or membership in community or professional organizations.

Fit is defined as an "employee's perceived compatibility or comfort with an organization and with his/her environment" (Mitchell et al., 2001, p. 9) and is separated into two factors: fit to organization and fit to community. The closer a person's personal views, values, and goals are with those of the organization and/or community cultures, the "higher the likelihood that an employee will feel professionally and personally embedded" (Mitchell et al., 2001, p. 9). Fit to organization and fit to community are not mutually exclusive. For example, an individual may love the community but dislike working for the organization (Young et al., 2013).

Sacrifice is the third dimension of job embeddedness. Sacrifice refers to the material and psychological benefits that an employee would lose if he or she chose to leave the organization (Mitchell et al., 2001). Like the other dimensions of job embeddedness, sacrifice is separated into two factors: sacrifice organization and sacrifice community. The greater the sacrifice, the more difficult the decision to leave will be (Shaw, 2011).

In this study, the first research question addressed whether job embeddedness was a predictor of math teacher turnover intention. Zhang et al. (2012) revealed that job embeddedness predicted incremental variations in turnover after controlling for traditional turnover predictors such as job satisfaction. Based on the findings in the current study, the dimensions of sacrifice/job (on-the-job) and link / community (off-the-

job) job embeddedness were statistically significant predictors of math teacher turnover intent.

The second research question asked the following: Does on-the-job embeddedness affect the turnover intentions of high school math teachers? Soltis et al. (2013) found links between workplace relationships and turnover to be more complex than assumed, and did not find a significant association. In other studies, dissatisfaction with administration or support led to teachers' decisions to leave (Ingersoll & May,2012) and lack of job satisfaction (Cho & Lewis, 2012). The findings from the current study revealed that the sacrifice dimension of on-the-job embeddedness significantly influenced the turnover intention of high school math teachers in Nevada.

The third research question focused on the off-the-job reasons why a math teacher would choose to stay or go (community perspective). Curtis (2012) found that community ties such as home ownership contributed to continuing employment. Findings from the current study also indicated the dimension of link/community to have a significant effect on math teacher turnover intention.

Ingersoll and May (2012) found that math and science teachers were more likely to have graduated from highly selective colleges and universities, were more likely to have held noneducation degrees, and were less likely to have entered teaching through a traditional teacher education program. It was also found that math and science teachers had less teacher preparation and classes in teaching methods (Ingersoll & May, 2012). Findings from the current study revealed that most participants had master's degrees.

Findings also showed a significant relationship between job embeddedness and math teacher turnover.

Previous studies did not indicate significant relationships between community job embeddedness and turnover intent (Ramesh & Gelfand, 2010). A possible reason for the disparate findings was the term *community* has different meaning to different people (Zhang et al., 2012). In the case of the math teachers in the current study, community job embeddedness did make a difference in turnover intention. These findings may provide insight to educational policymakers in developing programs to retain math teachers. This is especially important in Nevada, which has higher math teacher turnover rates (Stuit & Smith, 2012). Creating retention strategies is an important part of reducing teacher turnover. It is also important to understand the factors that contribute to individuals choosing to remain with their organization (Curtis, 2012). This study was significant because it was the first to focus on high school math teachers in Nevada.

Limitations of the Study

One limitation of this study was the sample was limited to math teachers in Nevada. The next limitation was that most participants were female. Other studies addressing the relationship between job embeddedness and retention had abundant participation from both genders (Ryan & Harden, 2014). Yang et al. (2012) found that job embeddedness was perceived differently between males and females. Because this study sample include only 33% males, future research could focus on job embeddedness from a male perspective.

Another limitation in this study was the use of only one independent variable for turnover intention in the survey item "I would sacrifice a lot if I left this job." Grissom et al. (2016) found the term *sacrifice* meant different things to different people. A final limitation of this study was the use of a self-report online survey to collect the data. Although online surveys are widely used due to ease and cost, there is an assumption of people answering honestly.

Recommendations

Much of the literature related to teacher turnover focused on job satisfaction, working conditions, and other on the job factors; however, researchers examining how to retain teachers had not explored job embeddedness as a way to predict math teacher retention (Chang & Cheng, 2013; Lee et al., 2014; Lev & Koslowsky, 2012). Findings in the current study revealed that job embeddedness was a statistically significant predictor of math teacher retention. Previous studies also indicated that the more an individual feels embedded, the more likely he or she is to stay (Young, Stone ,Aliaga, & Shuck, 2013). Because this study showed that link/community was a significant predictor of math teacher retention, future research may want to focus more on the off-the-job factors related to retention.

Researchers may want to replicate this study by focusing on other demographic groups that were not adequately represented in the current study. One recommendation would be to compare the effects of job embeddedness on the retention of male math teachers compared to female math teachers. Research suggested that U.S. public schools

include a majority of baby boomer educators who are nearing retirement (Simon & Johnson, 2013). Therefore, recruitment and retention of effective math teachers is crucial.

Implications

Research has shown that the lack of highly qualified math teachers available to teach in high schools ultimately affects the quality of education (Ronfeldt, et al. 2013). High school math teachers are imperative to student learning and achievement. Therefore, recruiting and retaining high school math teachers is an issue of concern for public schools across the country.

This research focuses on high school math teachers in Nevada, which is a state that has been identified to have a high percentage of families from low income and socioeconomic status, which are factors that relate to higher teacher turnover rates (Stuit & Smith, 2012). Income and socioeconomic status should not preclude students from getting a good education. This research hopes to have an impact on math teacher retention in Nevada, and other states as well by identifying through the job embeddedness theory what motivates math teachers to continue teaching.

Conclusion

Teacher turnover has been a problem in public schools since the 1980s (Ingersoll & Merrill, 2012); the latest turnover rate for public school teachers is almost 16% (DiCarlo, 2015). Moreover, Ingersoll and May (2012) as well as Curtis (2012), found higher turnover among mathematics and science teachers. One of the reasons this high turnover rate is concerning is because it negatively impacts student performance (Khani & Mirzaee, 2015; Peretz & Fried, 2012; Ronfeldt, Loeb, & Wyckoff, 2013; Shaw, 2011).

Compounding the problem is the fact that high teacher turnover is more prevalent in public school systems that have a majority of their student population coming from families of low socioeconomic status (Peretz & Fried, 2012; Shaw, 2011; Stuit & Smith, 2012). Nevada is one of the states that has the highest percentage of low-income families (Tyler & Owens, 2012).

This study was developed in order to understand and address high school math teacher turnover in Nevada and look for solutions to ensure retention and student achievement by studying the effects of job embeddedness. The Job embeddedness theory was originated by Mitchell, et al. (2001) and uses the dimensions of fit, links, and sacrifice to determine how embedded an individual is within an organization (on-the job) and within a community (off-the-job). An extensive literature review exhibited research on job embeddedness in many fields, but none focused on high school math teachers.

This study was a quantitative, non-experimental research study using multiple linear regression to analyze a self-reported survey through Survey Monkey to examine relationships between the independent variable (job embeddedness) and the dependent variable (turnover intention). This research study found that job embeddedness had an effect on high school math teachers in Nevada, and that both sacrifice/job, and link/community were statistically significant predictors. This information can be used for further research into what both educational institutions and the community can do to retain much needed teachers. One recommendation for a practical application for this research in the area of sacrifice/job would be that school districts consider the material and psychological benefits that math teachers believe they would lose if they chose to

leave. Professional development opportunities are one way to inspire teacher effectiveness, as well as time for collaboration with other math teachers. One recommendation for a practical application for this research in the area of link/community would be to inform math teachers of any home ownership programs and opportunities available to them.

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Appendix A: Job Embeddedness Survey

1.My job utilizes my skills and talents well.

2.I feel like I am a good match for this organization.

3.If I stay with this organization, I will be able to achieve most of my goals.

4.I really love the place where I live.

5.This community is a good match for me.

6.The area where I live offers the leisure activities that I like (sports, outdoors, cultural, arts).

7.I have a lot of freedom on this job to decide how to pursue my goals.

8.I would sacrifice a lot if I left this job.

9.I believe the prospects for continuing employment with this organization are excellent.

10.Leaving this community would be very hard.

11.If I were to leave the community, I would miss my non-work friends.

12.If I were to leave the community, I would miss my neighborhood.

13.Are you currently married?

14.If you are married, does your spouse work outside the home?

15.Do you own the home you live in?

16.How many coworkers do you interact with regularly?

17.How many coworkers are highly dependent on you?

18.I often exchange instructional ideas and materials with other math teachers.

19.I am able to get advice or assistance from regular educators at my school.

20.I feel included in what goes on in this school.

21.Most teachers in this school treat me with respect.

22.My fellow math teachers provide me with feedback about how well I am doing.

23. I have close colleagues with whom I can confide in at this school.

24. I am able to get advice or assistance from other math teachers.

25. Math teachers at this school come to me for advice.

26. My administration has my respect and trust.

27.My administration helps me solve problems.

28. My administration informs me about school/district policies.

29. My administration supports my actions and ideas.

30. My administration supports me in my interactions with parents.

31. My administration provides leadership about what we are trying to achieve.

Appendix B: Demographic Survey

1. What is your gender? A. Male B. Female

2. What is your race/ethnicity? A. Caucasian/White B. Asian

C. African-American/Black D. Hispanic/Latino E. Native American/Indian

F. Other

3. What is your age? A. 21-30 B.31-39 C. 40-49 D. 50-59 E. 60 +

4. What is your highest level of education? A. Bachelor's Degree

B. Master's Degree

5. What type of school district do/did you work in?

A. Rural B. Urban C. Suburban

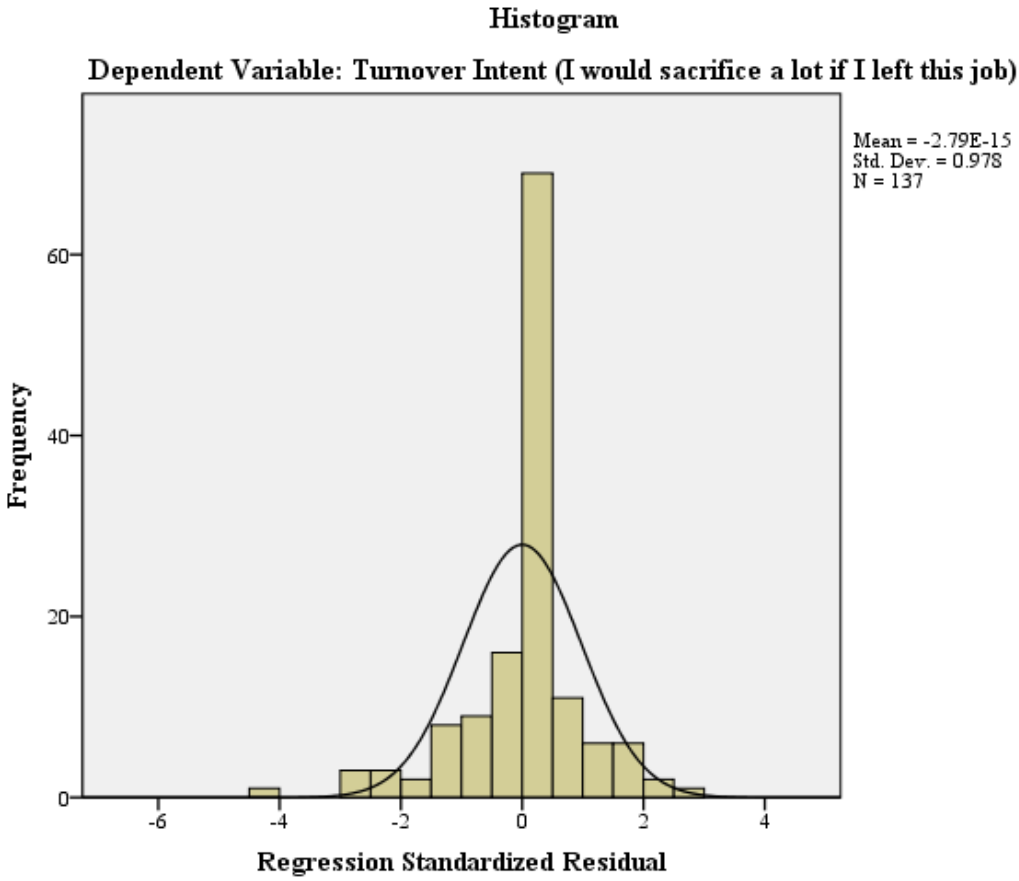
6. Which best describes the school you work/worked in?

A. Public B. Charter C. Private

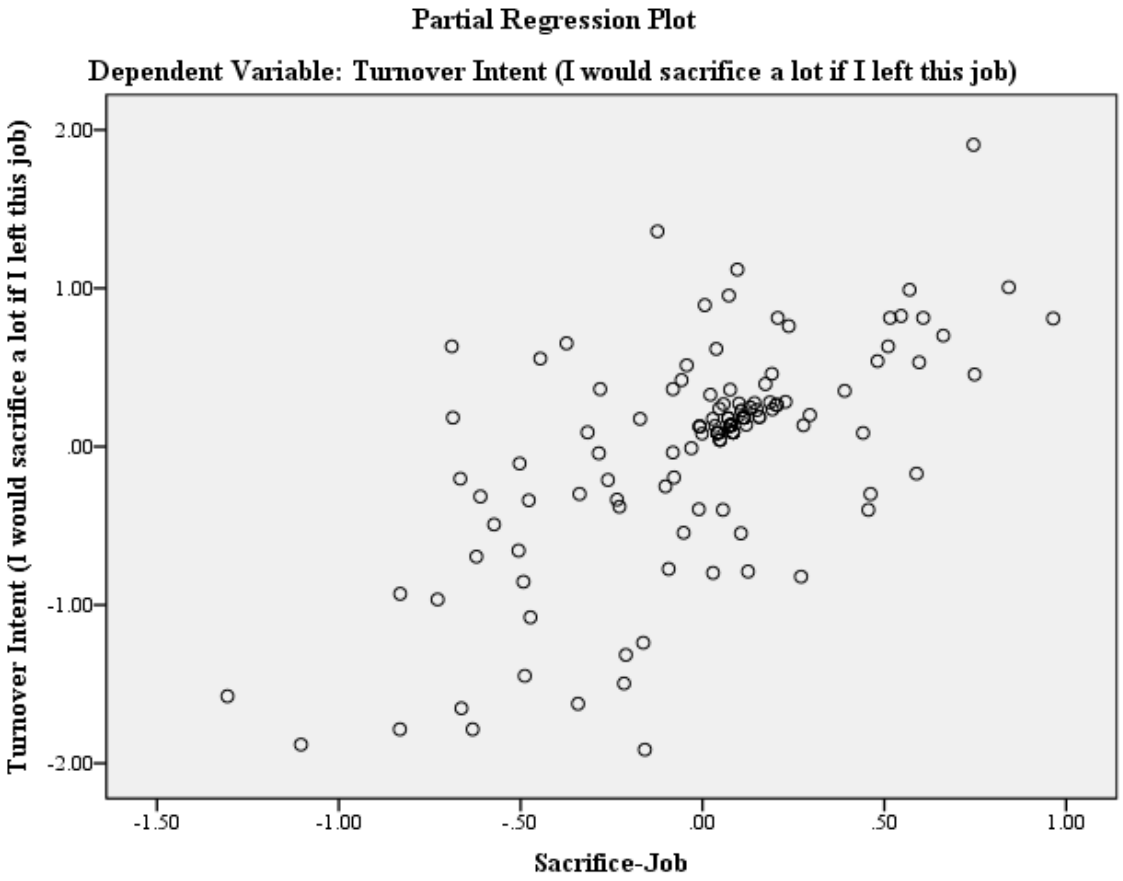
7. How many years have you taught math?

A. 1-4 B. 5-9 C. 10-14 D. 15-19 E. 20 +

Appendix C: Regression Standardized Residual



Appendix D: Partial Regression Plot for Sacrifice Job



Appendix E: Partial Regression Plot for Link Community