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ORGANIZATIONAL CITIZENSHIP BEHAVIORS, SELF EFFICACY, JOB SATISFACTION, AND ORGANIZATIONAL COMMITMENT OF SCIENCE AND MATH TEACHERS IN ALABAMA

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by

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ABSTRACT

This study investigated the correlations between occupational citizenship behaviors, self-efficacy, job satisfaction, and organizational commitment of math and science teachers. The purpose was to discern how these variables interacted to determine how best to support these teachers so they may be more likely to stay teaching in their organizations until retirement. The researcher surveyed math and science teachers within the State of Alabama. There were 314 math and science teachers who completed the survey instrument. Six hypotheses were evaluated to determine if all the variables had positive relationships with each other. From the correlation analysis, used for hypothesis testing, total scores of all latent variable scales were calculated and used for the analyses. Four were supported by the analysis results while two were not.

Due to the hypothesis testing results, the researcher conducted exploratory analysis including path analysis of the total scores of the latent variable scales and further correlation analysis of their subscales. The further analyses yielded more useful information used to further explain the interactions between the study variables.

Results of all analyses were used by the researcher to make recommendations to school districts and post-secondary institutions on how best to provide training to practicing teachers and pre-service teachers. Further recommendations for future research were also proposed.

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DEDICATION

This work is dedicated to my wife Bridget Wood. Thank you for your support and everything that you have done that helped me get to this point. Most of all, thank you for your love and putting up with me. Next, I dedicate this work to my children: Decker, Hannah, Leo, and Wyatt. Third, I dedicate this work to my parents, extended family, and close friends who have been there for me throughout my life. Finally, to Kelly for being a great mother to Decker.

Finally, thank you God for giving me the strength and the ability to complete this dissertation.

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LIST OF ABBREVIATIONS

OCB	Organizational Citizenship Behaviors
SE	Teacher Self Efficacy
JS	Teacher Job Satisfaction
OC	Organizational Commitment
ACS	Affective Commitment Scale
CCS	Continuance Commitment Scale
NCS	Normative Commitment Scale

CHAPTER I - PROBLEM

Introduction

This study's goal was to develop a model that establishes a correlation between occupational citizenship behavior, self-efficacy, job satisfaction, and organizational commitment. The model is built on data collected from a survey of math and science teachers within the State of Alabama. The model can help provide insight to school districts on how math and science teachers consider their own self efficacy and how it drives their organizational citizenship behaviors, job satisfaction, and organizational commitment. The latter is important as it is a major predictor if the teacher stays in or leaves the organization. Further, it is a determinant if teachers will remain in-the profession along with job satisfaction and self-efficacy. Information gained from this study can help school districts plan programs and initiatives to support, develop, and retain these teachers.

Background

The need for highly qualified teachers (HQT) in all subject areas has been an area of focus for educational leaders ever since the passage of the No Child Left Behind Act (NCLB) under President George W. Bush in 2001. This law, which was the reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA), required that every classroom had a teacher designated with the HQT status. Teachers with HQT status must have taken a set number of courses in their content area and pass a NCLB-required subject matter test in their content area to gain certification in their state

(NCLB, 2001). This increase in requirements not only put additional stress on districts to find applicants that met these qualifications, but it also meant many universities had to revamp their requirements for certification within their colleges of education. Due to the increase in demands placed on a teacher to develop all students with skills to make them successful in the 21st century workplace, Darling-Hammond (2006) discussed the need to develop a three-component approach to teacher education programs that include research-based approaches to pedagogy, content knowledge in the subject area, and development of a better clinical program for pre-service teachers that involves a partnership with schools. This approach is stressed by Darling-Hammond (2006) as the cornerstone for teacher preparation for the classroom full of diverse learners.

More recently, President Barack Obama signed into law the legislation known as Every Student Succeeds Act of 2015 (ESSA) which reauthorized the ESEA and replaced the NCLB Act. Under ESSA, the federal HQT requirements placed on teachers under NCLB were loosened leaving the requirements for certification to ensure teacher quality back to the states. (ESSA, 2015). While this law calls for the end of HQT status, 42 states including the District of Columbia still have requirements for teacher certification in place based on the HQT model. These requirements are likely to remain in place as school reform groups within states apply pressure to keep these requirements in place (Sawchuk, 2016).

While the increase in requirements made of a teacher to get students ready for the challenges of the 21st century classroom is daunting, it is also imperative to make sure that once the teacher is in the classroom they stay there. Further, the cost of teacher professional development and other position-related expenses incurred by a school

district can be financially draining if teacher attrition within the district is not minimized. Based on type of school district, it is reported that financial cost could range from $ 4,631 to $ 26,502 per teacher leaving the classroom (Watlington, Shockley, Guglielmino, & Felsher 2010). This cost is not the only issue that school districts face when teachers leave. More important than financial cost is the cost of lowered student achievement due to the departures of experienced highly qualified teachers out of school districts. When faced with hiring new inexperienced teachers, school districts may find a decrease in student achievement develop in successive years as inexperienced teachers replace the experienced teacher that had left.

In analyzing the literature, Borman, and Downing (2008) found that the teacher attrition overall may not be good for school districts. They found, from their analysis, mixed results in the literature regarding whether the attrition of teachers was beneficial to the district (i.e.: losing poorly performing teachers) or not (i.e.: losing highly qualified, high performing teachers). They indicate that, based on the studies they have reviewed, the trend is for those more experienced, higher trained, and talented educators to leave the profession more often than their lesser counterparts especially those in hard to fill content areas such as math and science (Borman and Downing, 2008). Thus, science and math teachers tend to be at a premium considering findings found in the literature.

Ingersoll and May (2012) found many science and math teachers leaving the classroom before retirement. The main reason they found for this attrition was teacher salary (Ingersoll & May 2012). While salary may be the main reason science and math teachers leave, it is not the only reason. Other reasons for science and math teacher attrition include lack of resources and professional development; lack of teacher

autonomy; excessive workload; lack of time to accomplish the workload; and poor relations with parents, students, and administrators (Handel, Watson, Petocz, Maher 2013; Hughes 2012; Pirkle 2011; Kelchtermans 2017). These issues lead to significant teacher dissatisfaction and lower morale which are two factors leading to teacher attrition overall (MacDonald, 1999; Kelchtermans 2017; Carver-Thomas & Darling-Hammond 2017).

Along with low job satisfaction and morale, teacher burnout has also been a major factor leading to teacher attrition. Burnout can develop from the build-up of job stressors. Stressors for teachers are the reasons listed previously, many leave the profession. Burnout is a condition made up of three separate components known individually as depersonalization, emotional exhaustion, and reduced personal accomplishment (Maslach & Jackson 1981; and Maslach, Jackson, & Leiter 1986). Skaalvik and Skaalvik (2010) studied the depersonalization and emotional exhaustion as the two main criteria for their study of job stressors, which they describe as school context variables (time pressure, autonomy, relations with parents, student discipline problems, and supervisory support) on teacher burnout. They found only time pressure had a high correlation with emotional exhaustion and parent relations had a negative correlation with depersonalization. All other school context variables had minimum correlations with the burnout components (Skaalvik & Skaalvik, 2010).

The self-efficacy of teachers is yet another variable of interest when dealing with teacher attrition. Bandura (1982) describes self-efficacy as: “concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (Bandura, 1982 p.122). With the complexities of teaching and the various

duties, requirements of the position, and personal interactions, it is important to see how teachers perceive their abilities to accomplish their jobs effectively. It has been found that some variables related to the functions of a teacher's position have an indirect effect on job satisfaction as mediated through self-efficacy (Skaalvik & Skaalvik, 2010). Considering that job satisfaction is a prevailing consideration for teachers to stay or leave the position, it is logical to consider self-efficacy as part of a model illustrating factors relating to retention of teachers. This is especially important considering math and science teachers, who are in high need and have other career options available outside the classroom. It may also be crucial for school districts to look at whom they are hiring to find candidates with characteristics that lead them to be life-long teachers in the classroom.

While retaining teachers in the classroom can be financially advantageous and good for student achievement, it is also good for the school as an organization to have teachers who exhibit elevated levels of behaviors that benefit the organization. There are many tasks and situations that occur within the school setting where the job description set forth by the HR department of a school district is insufficient. This is where teachers who exhibit elevated levels of Organizational Citizenship Behaviors (OCBs) become beneficial in the effective operation of the school. OCB can be defined as: "Individual Behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ, Podsakoff, & Mackenzie 2006, p.3). A study has looked at the relationship between teacher OCB and job satisfaction as well as organizational commitment in Iranian schools (Zeinabadi & Salehi, 2011). Zeinabadi and Salehi (2011)

found in their study positive, though small, correlations between organizational commitment (retention) and job satisfaction on OCBs. It could be important to see how OCBs reported by science and math teachers in the US correlate with not only job satisfaction and retention, but how these OCBs relate to self-efficacy in a combined model.

Such a model could shed light on how these cognitive processes relate to each other as well as the overall outcome of persistence in the profession. Findings could help decision makers at the school district level and those in post-secondary colleges of education. Overall teacher attrition has been a significant area of concern for decades (MacDonald, 1999). While reasons vary for overall teacher attrition, the fact remains that costs due to attrition of qualified teachers can be significant in terms of monetary loss and student achievement within school districts (Watlington et al., 2010, Borman & Downing, 2008). This is especially the case for math and science teachers who leave the classroom early and fail to persist to retirement (Ingersoll & May 2012). Without highly qualified math and science teachers in the classroom, school districts will see lower test scores on standardized test that measure achievement in the areas of science and math literacy (Borman & Downing, 2008)

Problem Statement

Research is clear in demonstrating that OCB and other variables such as self-efficacy and job satisfaction have a correlation with each other. Further it is well documented that job satisfaction is highly correlated with teacher retention.

Development of a combined model that shows the relationship between OCBs correlated with self-efficacy, job satisfaction, and organizational commitment (retention) in the profession has yet to be found in the literature for teachers in general much less math and science teachers. Further, studies dealing with math and science teachers in the United States, specifically, are scarce in terms of OCBs, self-efficacy, job satisfaction, and intent to organizational commitment (retention) in the profession. This study could provide knowledge necessary to fill that gap in literature.

Purpose of Project

The intent of this project is to investigate the role of organizational citizenship behaviors that math and science teachers possess and their correlation with their self-efficacy, job satisfaction that may have been experienced by these teachers, and organizational commitment which is used as a related variable to illustrate a teacher's intent to persist (retention) till retirement. The goal of this study is the development of a model, built from data collected from a survey of math and science teachers within the State of Alabama to establish the correlation between the variables of OCB, self-efficacy, job satisfaction and organizational commitment (retention). The results determined from the model will be used to answer research questions and test the hypotheses.

Justification

This study could increase the knowledge base of the literature in the areas of OCB, self-efficacy, job satisfaction, and organizational commitment of math and science teachers. There have been studies dealing with developing various models showing

relationships between variables in this study such as: self -efficacy and teacher burnout (Skaalvik & Skaalvik 2010), OCB; self-efficacy, job satisfaction, and organizational commitment (variable related to retention) (Canrinus, Helms-Lorenz, Beijaard, Buitnik,& Hofman 2012); and teacher OCBs with job satisfaction (Zeinabadi & Salehi, 2011). The previous studies, along with most in the literature, have not only been in countries outside the United States, but with teachers as a whole and not math and science teachers, specifically. The findings of this study could fill gaps in the literature in the areas of OCB, job satisfaction, retention, and self-efficacy and their relationships between them regarding US math and science teachers.

Developing a model of interactions between these variables could be useful in the educational community. This model will provide information to professionals in recruiting future teachers who will become career teachers. Further, it will increase knowledge in the literature concerning the retention of these teachers.

Further the findings from these studies will aid school districts in recruiting math and science teachers who not only stay to retirement (retention), but also go beyond their professional responsibilities (demonstrate elevated levels of OCB) thus benefiting the school district.

Finally, the findings from this study will aid colleges of education at universities to recruit and educate students that have the desire to stay in the teaching profession till retirement.

Research Questions

1. Is there a positive relationship between reported OCBs and job satisfaction of math and science teachers?

2. Is there a positive relationship between OCBs and self-efficacy of math and science teachers?
3. Is there a positive relationship between OCBs and organizational commitment of math and science teachers?
4. Is there a positive relationship between job satisfaction and self-efficacy of math and science teachers?
5. Is there a positive relationship between job satisfaction and organizational commitment of math and science teachers?
6. Is there a positive relationship between self-efficacy and organizational commitment of math and science teachers?

Research Hypothesis

H_1: Math and Science teachers with higher levels of reported OCBs will have higher job satisfaction.

H_2: Math and science teachers with higher levels of reported OCBs will have higher levels of self-efficacy.

H_3: Math and science teachers with higher levels of reported OCBs will have higher levels of organizational commitment (retention).

H_4: Math and science teachers with higher levels of job satisfaction will have higher levels of self-efficacy.

H_5: Math and science teachers with higher levels of job satisfaction will have higher levels of organizational commitment.

H_6: Math and science teachers with higher levels of self-efficacy will have higher levels of organizational commitment.

Assumptions

The study population are college educated and are licensed within the State of Alabama to teach public school children. These educators are assumed to be helpful and trustworthy, and thus provide honest opinions in this study, especially, one in which they can remain anonymous. Professional Educators, in the 21st century, are assumed to have proficiency in using the internet and email to complete the survey questionnaire. The participants will self-report responses to questions in a 67-item instrument.

Delimitations

The study focused on determining correlations among self-reported levels of job satisfaction, organizational citizenship behaviors, self-efficacy, and organizational commitment within the teaching profession rather than determining cause and effect. No focus within the study was placed on any other school related issues related to teacher retention and /or attrition.

The participants for this study are all secondary math and science teachers who are employed as such within two large school districts within the State of Alabama. Other participants are fellow science and math teachers in Alabama recruited to participate through snowball sampling.

Definitions

1. Self-Efficacy is a cognitive mechanism in which "people process, weigh, and integrate different sources of information concerning their capabilities, and they regulate their choice behavior and effort expenditure accordingly" (Bandura, 1977 p.212)

2. Organizational Citizenship Behavior is a behavior that is discretionary and is not directly or explicitly recognized by formal reward and promotes the efficient and effective functioning of the organization (Organ et al. 2006). The measures of OCB in the study will be formulated by the responses on the Organizational Citizenship Checklist (OCB-C) (Fox & Spector, 2007)

3. Intent to Persist or Retention is the continued use, existence, or possession of something or someone (Cambridge, 2008). For teachers in this study, it is the conscious decision to stay in one's position regardless of adverse situations and stressors.

4. 'Social Cognitive Theory suggests that behaviors, cognitive, and other internal issues of the individual such as self-efficacy along with environmental events are variables within the overall model that are all interactive with each other either directly or inversely (Bandura, 1988).

5. Social Exchange Theory can describe social behavior as “an exchange of goods” both material such as money or non-material such as fame or other symbols of prestige. (Homans, 1955).

CHAPTER II – LITERATURE REVIEW

I: Historical Empirical Research

Organizational Citizenship Behaviors

If one looks to an established moral code such as the Golden Rule, it is centered on the precept that a person should treat others with the same dignity and respect he or she wants, but also aid their fellow man as if the need was their own. Further, this moral code introduces the concept of altruism in that people should help one another without the regard of gaining some personal benefit, yet by the simple pleasure in the notion of knowing that they have helped their fellow man. This is represented well in the parable of the Good Samaritan as related by Jesus Christ in Luke 10:25-37. Leading to this, is an ideal, that man should go by a higher moral code which establishes a set of behaviors all men should adhere to make the world and themselves better regardless of reward, theological dogma, or religious status (Harris, 2014). This sounds very much like a theological expression of what are known as Organizational Citizenship Behaviors (OCBs).

Organ defined OCB as "Individual Behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ et al. 2006, p.3). The reason for this is given by Smith, Near, and Organ (1983), when they state that OCBs are to "lubricate the social machinery of the organization" (p.654). They go on to state that OCBs are prosocial dimensions of cooperation between individuals within the workplace

that grease the gears and cogs of that mechanism, as well as elaborate on the theme of OCB's functioning beyond the formal reward system. By suggesting that OCBs can be placed into two distinct dimensions of Altruism, helping others within the organization, and General Compliance (helping the organization as a whole), the researchers further elucidate the complexity of OCB phenomena (Smith, Organ, & Near, 1983). Given the fact that such behaviors are beneficial to an organization, it has become a source of considerable study as to the factors, known also as determinants in the literature, and personality traits that manifest them (Smith, et al., 1983; Organ , 1988; Organ & Konovsky, 1989; Organ, 1994; Organ & Konovsky, 1996).

It has been suggested that mood can be a predictor regarding the number of OCBs an individual will exhibit. Findings indicate that an individual's positive mood correlates with elevated levels of reported OCBs, whereas negative mood of an individual is related to lower amounts of OCBs (Smith, et al.1983). Later, the affective determinant of mood was studied with cognitive determinants, which are subjective in nature, to find which could better predict a person's level of OCBs. However, study findings seem to indicate that cognitive determinants have greater predictive power than mood states (Organ & Konovsky, 1989). The researchers propose that the implication of their findings suggest that OCBs are "of a deliberate and controlled character, somewhat akin to conscious decision making, rather than expressive emotional response to the perceived fairness within the organization" (p.162).

Since Organ and Konovsky (1989) reason that OCBs come from cognitive appraisals of fairness of treatment within organizations, it is suggested their findings could be utilized by organizations to understand how organizational governance could

influence the number of OCBs reported by their employees. That being hypothesized, the relationship of fairness (one's perception of workplace equity) and OCB lies within the correlation in workplace fairness and the development of trust between coworkers (Organ and Konovsky, 1996).

If trust is developed, it is suggested that the individual in the workplace will exhibit OCBs by means of manifested social exchange. The idea of Organ and Konovsky (1996) lends itself to the proposition that a person's disposition has much greater influence on the OCBs than that demonstrated by the individual's contextual attitudes concerning elements within the workplace such as equity, fairness, and satisfaction with supervisors. Further, the study findings make the point of providing evidence for the view that disposition influences both OCB and workplace attitudes directly or as a moderator between them (Organ and Konovsky, 1996). Considering that their review of the literature supported the established relationship between workplace factors and dispositional factors, Organ and Konovsky, in their study, sought to determine if there was a meaningful or spurious relationship between OCB and a dispositional factor of fairness. The five OCB measures in this article assessed: altruism, general compliance, sportsmanship, courtesy, and civic virtue. This paradigm illustrated more developed OCBs than was seen in Smith et al. 1983 showing the advancement in conceptualization of OCB over time. In their findings, Organ and Konovsky (1996) found that workplace attitudes did in fact predict most forms of OCB. The findings indicated that the dispositional variable Conscientiousness predicted one form of OCB (General Compliance). The regression results of this study also indicated small effects of perceived job fairness and satisfaction in prediction of OCBs as well as the dispositional variable

Conscientiousness in prediction of the OCB dimensions of Compliance, Altruism, and Civic Virtue (Organ and Konovsky, 1996). The article suggested more research is needed in this area as stated "Clearly, no single study or small group of studies can settle such a large issue as the general importance of disposition in explaining OCB or the comparative importance of disposition and context" (p.263).

Personality has a key role in determining an individual's actions. Organ (1994) argues that many facets of personality play a role in determining if a person will display OCBs. Further, it is discussed that job satisfaction has a relationship with OCB through some possible underlying dimensions of personality that account for this correlation. Organ (1994) when reviewing the literature attempted to determine if there was evidence to support that attitudes about certain dimensions of work correlate with OCB or with predicting a relationship between a person's personality and performance of OCBs. It could be found that only people who display the personality trait Conscientiousness had any significant degree of variance within the person displaying OCB meaning that the more conscientious the individual is the higher the number of OCBs that individual will display. Organ does point out in the conclusion of his article that there is a possibility that a mixture of personality elements may be at play that may have led to discovering higher levels of OCB (Organ, 1994).

A review of the early literature concerning job satisfaction and OCB versus organizational fairness, as perceived by employees, makes it clear that noteworthy results concerning OCB and job satisfaction are related. Positive correlations between OCB and job satisfaction were found to be the trend in the literature and suggests a direct relationship between OCBs and measures of job satisfaction (Organ, 1988).

Self-Efficacy

Bandura (1977) asserted that the construct of self-efficacy suggests "people process, weigh, and integrate different sources of information concerning their capabilities, and they regulate their choice behavior and effort expenditure accordingly" (p.212). By looking at this definition more, self-efficacy requires decision making, a cognitive operation rather than just an emotional response to adverse stimuli. The operative process of self-efficacy plays a large part in an individual's thought patterns, actions, and emotional arousal to outside stimuli (Bandura, 1982).

The process of the operative mechanism of self-efficacy is theorized to work in the following manner. At the start of the process, a person must consider four different pieces of information: personal accomplishments, vicarious experience, verbal persuasion, and physiological state (Bandura, 1977; Locke, Ed. 2000). Personal accomplishments are those historical events of task mastery experiences such as a student scoring high on previous tests. Vicarious experience is the process of an individual observing the successful completion of another giving the individual confidence that they will be able to do the same. The third piece of information, verbal persuasion, is when an individual valued by a student gives positive feedback or encouragement that the student could complete a challenging task like a term paper. The final piece of information is the physiological state of the student, or, whether the student feels well enough to accomplish the task, such as a math problem or term paper, based upon his or her perceived physical, mental, and emotional state (Bandura 1977; 1982; 1988).

Once the four pieces of information are processed by the individual's operative mechanism, it is further hypothesized that value judgements are assigned by the

individual based on their current physical, cognitive, and emotional abilities to accomplish the challenging task in front of them (Bandura, 1977; Bandura, 1982). If the person's skill set is lacking, then the individual has low self-efficacy and will tend toward task avoidance versus high self-efficacy and taking on the task at hand (Bandura, 1977).

It is important to realize that a person's belief in their capabilities may be quite different than those perceived by others or their actual capability. Bandura (1982) stated of self-efficacy that it is "not a fixed act or simply a matter of knowing what to do. Rather, it involves the generative capability in which component cognitive, social, and behavioral skills must be organized into an integrated course of actions to serve innumerable purposes" (p.122). Thus, we can increase our self-efficacy by learning from others and by interacting with conditions in our organizational environment (Bandura, 1988).

It was proposed that the way to increase self-efficacy is for the individual to have a model of how a task presented to them has been completed successfully. Then, the person is to use what they have learned from witnessing that performance and then practice that operation until they have developed the skill to the point of mastery (Bandura, 1977). With this, the person will have developed high self-efficacy and thus elevated levels of task performance (Bandura, 1982). Committing resources to modeling to increase self-efficacy is appropriate for an organization whose goal is the increase of self-efficacy in their employees (Bandura, 1988; Locke, Ed., 2000). This raises an area of focus that should be considered. It is possible for one to make the argument by extension that some of these tasks may or may not be a part of the formal reward system and could be considered OCBs.

Job Satisfaction

In Colossians 3:22-24, Paul instructs by writing "Slaves, obey in everything those who are your earthly masters, not by way of eye service, as people pleasers do, but with sincerity of heart, fearing the lord. Whatever you do, work heartily, as for the lord and not for men, knowing that from the lord you receive your inheritance as your reward. You are serving the Lord Christ." While most people are not slaves to masters, they are servants in their work toward providing for the greater good of humanity while in the service to God (Newton, 2016). Paul's advice has merit. Upon inspection, Paul is telling the church to be motivated to do their Christian work not by extrinsic rewards but by intrinsic motivation that they are serving their faith and their God. Thus, according to Paul, the church should be satisfied in whatever toil was put before them on this earth (Hinson, 1973). What is job satisfaction? "The feeling of pleasure and achievement that you experience in your job when you know that your work is worth doing, or the degree to which your work gives you this feeling" (Cambridge University Press, n.d.).

Given this definition it is likely that there are many variables or factors that come into play to influence an individual's level of job satisfaction or dissatisfaction. There have been theories utilized to help understand job satisfaction. One such theory suggests that factors that cause an increase in job satisfaction are different than those factors that contribute to job dissatisfaction. This theory is known as the motivation-hygiene theory or as the two-factor theory (Herzberg, 1968). Herzberg distinguishes a class of factors described as motivators, which increase job satisfaction, and are completely different than those known as hygiene factors, which lead to job dissatisfaction. Herzberg explains that job dissatisfaction and job satisfaction are not opposites by stating: "it follows that

these two feelings are not opposites of each other. The opposite of job satisfaction is not job dissatisfaction, but no job satisfaction. The opposite of job dissatisfaction is not job satisfaction, but no job dissatisfaction" (Herzberg, 1968 p.56). Hygiene factors are extrinsic in nature such as salary, peers, and organizational policies while Motivators are intrinsic in nature such as achievement, advancement, and growth (Herzberg, 1968). Though the motivation-hygiene theory had many critics and had been put aside as not valid, a recent resurgence in the literature looking at intrinsic and extrinsic factors with motivation and job satisfaction has given rise to the merits of the theory once again (Sachau, 2007).

Given that many intrinsic and extrinsic motivators are of interest in the study of job satisfaction, but also in the study of self-efficacy and OCB. The following idea arises considering Herzberg's motivation-hygiene theory seems to have more merit as the theoretical framework for job satisfaction:

Job satisfaction may have direct correlations with self-efficacy and OCBs given their shared influences in the literature.

Theoretical Framework

When advancing the social exchange theory, Homans (1955) put forth three basic precepts regarding the exchange process between individuals within a small group. When looking at experimental and real-life studies, he was attempting to make a connection between how both processes relate in terms of these three basic postulates. Those are: 1. Individuals will conduct an exchange if their benefit outweighs their cost 2. Individuals will continue to conduct exchanges that they have done in the past if they receive the corresponding reward 3. Eventually all exchanges reach a point of deprivation / satiation

in which the reward unit over multiple exchanges becomes less valuable and therefore the perceived costs to the individual begins to approach and outweigh the rewards gained from the exchange (Homans, 1955). Further the idea of social exchange involves that all parties have the inherent belief that the exchange undertaken follows the rule of distributive justice (Blau, 1964, Homans,1955). The concept of distributive justice is the proposition that both parties in the exchange will have an equal proportion of rewards to costs associated with the exchange meaning that greater the cost for each participant the greater the rewards (Blau, 1964).

One type of exchange to consider when looking at individuals within the organization is that of exhibiting OCBs. While it is central to the formal definition of OCBs that OCBs are reported outside the formal reward system, an individual may possess certain personality elements such as Conscientiousness that require the individual to perform OCBs within an exchange process to satisfy that part of his or her personality (Organ, 1994). Thus, satisfaction is a reward in such an exchange. This exchange/reward process is further intensified if the individual perceives that their organization has a high degree of fairness in which people reciprocate such actions in the scheme of organizational justice, leading to increased job satisfaction and job performance (Organ, 1998; Organ & Konovsky 1996; Nord 1969; Blau 1964). This increase in satisfaction with oneself could lead to both increased job satisfaction and self-efficacy, within the individual, leading to increased organizational commitment.

Considering that increased self-efficacy could lead to higher job functioning thus an increase in productivity in the work place, the individual may in fact participate in more activities such as OCBs as their level of job satisfaction and trust in the

organization increases (Bandura, 1982; Konovsky & Pugh, 1994) This creates a profitable exchange as the intrinsic motivators of the individual are satisfied, leading to higher motivation to participate in tasks that benefit the organization regardless of the formal reward system (Konovsky & Pugh, 1994; Herzburg, 1968)

As Herzburg 1968 attests, the higher the number of motivators an individual has within his or her position the higher the amount of job satisfaction. Thus, the increased job satisfaction experienced by the individual should lead to higher expressions of an individual's self-efficacy, organizational commitment (retention), and expression of OCBs within the workplace.

II: Research Related to Teachers

OCB Research and Teachers

Considering that OCBs are needed to facilitate the effective operation of an organization, it may be in the best interest of school administrators in US schools to provide opportunities for teachers to express such behaviors. There have been studies in countries outside the US looking at teacher OCBs. Polat (2009), for example, found that administrators in Israeli schools rated teachers high in OCBs. It was found that school administrators rated the perceived teacher OCBs in the following order: 1. Courtesy 2. Altruism 3. Civic Virtue 4. Conscientiousness 5. Sportsmanship (Polat, 2009). Considering administrators' appraisals of teacher OCBs could be a crucial step for school districts to gauge teacher professionalism during the evaluation process. Data could be used to develop mentoring programs along with professional development practices to

maximize performance and lead to increased teacher organizational commitment (Hannan, Russell, Takahashi, & Park, (2015); Hasani, Borroujerdi, & Sheikhesmaeli, (2013)).

Avci (2016) surveyed 1613 public and private school teachers in the Istanbul province of Turkey on the number of OCBs the teachers felt they demonstrated. Statistically significant differences in perceived teacher OCB were found between the following classifications: gender, years of experience, teacher education level, and years at their present school. Looking at each of these variables it was reported that male teachers had higher OCBs than females; teachers with more experience had higher OCBs than those with less years in the profession; and interestingly, those with higher levels of education reported significantly lower amounts of perceived OCBs than their less educated counterparts (Avci, 2016). Another study in Turkey involving 1699 primary school teachers found that small but statistically significant negative correlations between many perceived OCB traits for these teachers and their levels of burnout toward the profession (Inandi & Buyyukozkan, 2013). Considering that burnout has previously been cited in the current review as one of the hindrances to job satisfaction thus leading to increased teacher attrition, this is an area that school districts and administrators could address in terms of hiring, developing, and supporting future teachers in their schools. Further, by looking at the results of Inandi et al. 2013 and Avci, 2016, the case to include OCB and Job Satisfaction when studying intent to persist in the profession by establishing a combined model of their interactions could be studied.

When considering social exchange as the explanation of teacher OCBs, Elstad, Christophersen, and Turmo (2011) found considerable positive results utilizing SEM to

study the interaction between social exchanges and teacher OCBs. Findings included: 1. developed trust between administrator and teacher had a strong effect on social exchange with indirect impact on teacher OCBs 2. Principal leadership had a moderate effect on teacher OCBs, while teachers' economic exchange (salary) has no effect on teacher OCBs. The model also predicted that there was a positive relationship between teacher's level of OCBs and student outcomes in core subjects (Elstad et al. 2011). Considering this notion of OCB to student outcomes, it could be of interest for school districts to not only consider OCB in recruiting and hiring practices but also when developing improvements to their school improvement plans. Some ways to structure their improvement plans may be to provide professional development that includes methods and ways to increase teacher OCBs by providing programs and services to promote trust between administrators and teachers for the betterment of the school.

Self-efficacy and Teachers

Teacher self-efficacy has been researched in the literature as either a variable to predict outcomes or as a dependent variable under study. Schwarzer and Hallium (2008) investigated how self-efficacy could be a predictor of job stress and teacher burnout. Their hypothesis was two-fold: 1. self-efficacy is negatively correlated to both job stress and burnout and 2. Job stress and burnout were positively correlated. Utilizing Syrian and German teachers, the researchers found through two studies the following: male teachers seem to have higher self-efficacy than women regardless of job stress and burnout, younger teachers seem to have lower self-efficacy leading to higher job stress and burnout, and that teachers in the two nations differed in terms of the amount of burnout

experienced (Schwarzer & Hallium, 2008). This notion of younger teachers experiencing burnout due to having low self-efficacy is nothing new such as seen in Klassen and Chiu (2010) but is not consistently found in the study of Canrinus et al. (2012). The latter study looked at 1,214 Dutch teachers and examined a variety of factors such as self-efficacy, job satisfaction, organizational commitment versus teachers' experience. Findings suggest there was no significant difference between any of the parameters under study and teacher experience level. Further, results found that self-efficacy had a positive relationship with the other factors (job satisfaction and organizational commitment) being examined (Canrinus et al. 2012).

There are many variables that can influence a teacher's low self-efficacy, a contributing factor to teacher burnout. Skaalvik and Skaalvik (2007) found that teacher self-efficacy had a strong negative correlation to teacher burnout. Mirroring this finding was a study of ESL (English as a Second Language) teachers in Iranian schools. The researchers found that contextual variables within the school setting could directly or indirectly, through a lowering of teacher self-efficacy, lead to increased teacher burnout. The authors argue that the role of increased teacher self-efficacy can moderate or decrease the effects of contextual variables and stressors leading to less teacher burnout (Khani and Mirzaee 2015).

Pas, Bradshaw, and Hershfeldt (2012) conducted a two-year longitudinal study, with 600 elementary teachers in 31 schools, on the effects of both teacher factors (relational factors with stakeholders) and school-related factors which influenced both teacher efficacy and burnout. It was found that both teacher efficacy and burnout increased with time along with teacher preparedness, perception of teacher affiliation,

and school leadership each having strong negative correlations with teacher burnout and strong positive correlation to teacher efficacy (Pas et al., 2012).

Another study involving 1430 Canadian teachers found that male teachers have higher classroom self-efficacy than their female counterparts which correlated with higher stress and lower job satisfaction for the female teachers than for their male peers. Results for all teachers showed a negative correlation between job stress with self-efficacy along with a negative correlation between job stress and job satisfaction (Klassen and Chiu, 2010). Skaalvik and Skaalvik (2010) found comparable results, utilizing CFA and SEM, in their model addressing certain school context factors and the relationship between both self-efficacy and burnout. Their final model utilized relationships among school context variables, teacher self-efficacy, two dimensions of burnout (emotional exhaustion and depersonalization), and job satisfaction. Findings showed that some school context variables were related to job satisfaction while others were indirectly related to job satisfaction through self-efficacy and burnout though most were weakly correlated. The authors discussed the need for school districts to address factors that were highly correlated in their study such as parent teacher relations and teacher efficacy, depersonalization, and emotional exhaustion; time pressures with emotional exhaustion; and emotional exhaustion and job satisfaction considering that low teacher satisfaction leads to teacher attrition and early retirement.

Low self-efficacy can also lead to negative school outcomes, Mojavezi and Poodinch (2012) found when looking at the role teacher efficacy plays in student motivation and achievement that high teacher efficacy did have a positive correlation with student motivation and achievement. This could interest districts by providing

information in terms of developing strategies to increase teacher efficacy through effective professional development strategies.

Teacher Job Satisfaction

Job satisfaction has been repeatedly described in the literature as a major variable in dealing with retention or attrition in teachers (Macdonald, 1999). There are many factors that have been reported to influence teacher job satisfaction. Such factors, also associated with attrition and /or retention, are school context variables, morale, burnout, trust in the workplace, relationships between school staff and stakeholders, racial similarities between teacher and the students they serve. Further federal law, such as the NCLB and now the ESSA, can have considerable impact on a teacher's level of job satisfaction (Weiss, 1999; Evans, 1997; Briggs & Richardson, 1992; Woods & Weasmer, 2004; Fairchild, Tobias, Concoran, Djunkic, Kovner, & Noguera, 2012, Rhodes, Nevill, & Allan, 2004; Kessler & Snodgrass, 2014; Phi Delta Kappan, 2013; Byrd-Blake, Afolayan, Hunt, Fabunmi, Pryor, & Leander, 2010; Sawchuk, 2016).

In a study dealing with job satisfaction and burnout, School context variables (such as time pressure, parent relations, and lack of teacher autonomy) were shown to have negative correlations with teacher job satisfaction while having positive correlations with the three components of burnout (Emotional Exhaustion; Depersonalization; and Reduced Feeling of Job Accomplishment with students) as described by Masbach and Jackson, 1981. The researchers also found that an increase in supervisory support had a negative correlation to all three school context variables thus leading to higher job satisfaction and less burnout (Skaalvik & Skaalvik, 2009). Skaalvik and Skaalvik (2011)

studied the relationship between teacher beliefs about six school context variables (value consonance, supervisory support, relations with colleagues, relations with parents, time pressure, and discipline problems) and their feelings of belonging, emotional exhaustion, job satisfaction, and motivation to leave the teaching profession. Findings included a positive correlation between teachers' value consonance, supervisory support with relations between parents and colleagues and a sense of belonging to the school. Also, they found the expected positive correlation between time pressure and discipline problems with emotional exhaustion. Both emotional exhaustion and feeling of belonging were found to be mediators between the six context variables and a teacher's job satisfaction. Emotional exhaustion and job satisfaction were related to a teacher's motivation to leave the profession. It was found that a teacher's sense of belonging was not directly correlated to motivation to leave but was mediated through job satisfaction and emotional exhaustion. Emotional exhaustion was found to be positively correlated to the motivation to leave the profession while job satisfaction was negatively correlated to motivation to leave (Skaalvik & Skaalvik, 2011).

Considering school climate factors in predicting teacher burnout, Grayson and Alvarez (2008) found that different school climate factors had relationships with each of the three burnout dimensions: emotional exhaustion, depersonalization, and low personal accomplishment. They found an inverse relationship between school context factors and burnout as mediated through job satisfaction. Another study suggests that there is a positive correlation between teachers' use of proactive strategies (self- and co-regulatory strategies) with burnout and perceived job fit within their schools (Pietarinen, Pyhalto, Soini, & Salmela-Aro, 2013). Teachers can develop cognitive strategies to deal

effectively with various variables that may lead to lower job satisfaction and a willingness to leave their position. Droogenbroeck, Spruyt, & Vanroelen, (2014), when examining burnout among senior level teachers, found using structural `equation modeling that workload was directly correlated to burnout and positive relations with students, peers, and administrators had positive relationships with burnout. The study also found that parental relationships were not related to any dimensions of burnout which contradicts other results found in the literature (Droogenbroeck et al., 2014).

Teacher Commitment

There are a variety of factors throughout the literature that have been shown to influence a teacher's attitudes toward his or her own intent to remain in the profession, often referred to as organizational commitment. Factors include teacher empowerment, administrative support, collegial atmosphere, school related factors, work-family conflict, burnout, self-efficacy, job satisfaction, job stress and even OCBs expressed by the teacher (Ahmad, Malik, Sajjad, Hyder, Hussain, & Ahmad, 2014; Borman and Downing 2008; Kersaint, Lewis, Potter, & Meisels, 2007; Mc.Inerney, Ganotice, King, Marsh, & Moring, 2015; Canrinus et al., 2012; Cohen and Liu, 2011; Zeinabadi 2010; Zeinabadi and Salehi, 2011).

Kersaint et al. (2007) studied the planned behavior of teachers who remained in teaching compared to those who resigned their position. Utilizing a researcher-developed instrument and factor analysis they found six factors that influenced both groups. The six factors were: 1. Time with family 2. Administrators support 3. Financial benefits 4. Family responsibility 5. Paperwork/ assessment 6. Joy of teaching. Findings suggest a

direct correlation between each factor and both groups within the study. From the analysis, it was determined that high ratings on each factor lead to retention while low ratings lead to attrition (Kersaint et al., 2007).

When looking at job satisfaction with organizational commitment as variables that influence teacher OCBs, researchers suggest that OCBs are coping activities associated with how a teacher perceives their work environment and how they emotionally respond to it (Zeinabadi, 2010). The work environment of a teacher has been well established as a multifaceted factor in the literature which has effects on teacher attrition or retention (Eick, 2002; Kersaint et al., 2007; MacDonald, 1999; Ingersoll and May, 2012; Rinke, 2006; Skaalvik and Skaalvik, 2011; Pirkle, 2011; Ahmad et al., 2014). Thus, work in this area is ongoing to find necessary tools that school districts and administrators can use to improve teacher retention and curb the rate of attrition.

Characteristics leading to high levels of organizational commitment that may be of interest to school districts and officials when hiring prospective teachers or developing future professional development for teachers include finding teachers with high levels of 'workaholism' which researchers suggest is made up of three factors (feeling driven to work, high level of work involvement, and work enjoyment) (Rakhashanimehr & Jennabadi, 2015). Though Rakhashanimehr & Jennabadi 2015 found that those teachers who reported elevated levels of workaholism reported elevated levels of OCBs which can lead to more productive schools, most teachers, as cited earlier, are not 'workaholics' and place higher priority on family and other factors such as discussed in Kersaint et al. 2007. Thus, it is imperative to keep researching and developing methods that administrators can use to keep teachers' level of organizational commitment high thus keeping teacher

retention high. This is especially important in high demand positions such as math and science.

Math and Science Teachers

Math and science teachers tend to have more options for employment thus can be more prone to leave for other positions. According to Ingersoll and May (2012) and Kersaint et al. (2007), one of the main contributing factors is that of salary consideration, in that other open positions often fit their skill set, and these teachers are offered more lucrative incentives such as private sector jobs or positions within educational administration. Countries other than the US have seen retaining math and science teachers as an issue that needs to be addressed as a high priority. In Australia, it was found that most new inexperienced science and math teachers, who were in rural remote schools within the country, had major concerns that kept them from considering staying within the school setting. Such concerns included: lack of resources, professional development for their content area, adding administrative duties they were not qualified for, and being the only teacher at their school in their content area (Handel et al., 2013). Pirkle (2011) looked at attrition rates of both inexperienced and experienced science teachers and found quite different reasoning for the attrition for each group. Findings for the inexperienced teacher group included inability to cope with the job's complexities. This contrasts with the findings for the experienced group, for whom the overwhelming reason for their attrition or early retirement was job dissatisfaction. This finding for the experienced group differs from the view found in the literature that these teachers are leaving for more lucrative opportunities (Pirkle, 2011). So, there is a discrepancy in the

literature as to what the main causes may be in terms of science and math teacher attrition or early retirement as well as a great schism between reasons for attrition between the inexperienced math and science teacher versus the experienced ones.

Looking further into the reasoning for science teacher attrition, Gilbert (2011) conducted a qualitative case study including two inexperienced science teachers and their reasons for transitioning out of the classroom. Neither of the teachers in this study saw themselves as life-long teachers, but as a transition to other career paths though it was found that for both teachers returning to the classroom later was an option. Other findings from the study suggest that teacher isolation and other school related factors helped lead to each science teacher's transitioning process out of the classroom (Gilbert, 2011).

When looking at school-related factors, Kersaint et al. (2007) found in their quantitative study that schools should provide intervention strategies to retain math and science teachers when dealing with issues of paperwork and assessment practices; administrative support; financial benefits; and the joy of teaching which can be related to job satisfaction. While they conclude that these factors weigh heavily on why these teachers leave, they found that family issues were of highest priority especially when looking at family time spent compared with job responsibilities that demand their time after school hours (Kersaint et al., 2007). It further showed that school districts need to look at helping teachers overcome such obstacles to keep them in teaching and students achieving.

Summary

As seen in the literature, there are a variety of reasons for teachers in general to stay or leave the profession. All these factors could influence a teacher's job satisfaction. In turn,

job satisfaction tends to influence other factors such as self-efficacy, organizational citizenship behaviors, and organizational commitment to stay in teaching till retirement. This retention is needed within school districts to maintain an effective teacher force to increase student achievement. This is especially critical in areas of high need such as math and science.

CHAPTER III - METHODOLOGY

Introduction

This study was designed to survey math and science teachers within the State of Alabama. The questionnaire instrument was comprised of a demographics section along with sections of questions concerning the following four constructs: organizational citizenship behaviors, self-efficacy, job satisfaction, and organizational commitment which concerns a teacher's intent to persist in the profession (retention).

Participants

Participants in this study were certified math and science teachers employed within two large school districts in the State of Alabama, Alabama math and science teachers who had been recruited through snowball sampling, and through contacts within the teacher organizations to include the Alabama Science Teacher Association, Alabama Math Teachers Association, and the Alabama Educators Association (AEA) along with social media. The school districts gave permission for recruitment of their math and science teachers. All teachers surveyed will be above 18 years of age. The number of participants was estimated to be n = 500 for the districts. The participants were assumed to be of various ethnicities, levels of education obtained, and years of experience in the teaching field. All participants were certified teachers with at least a BS degree from a college or university and thus were assumed to communicate effectively using email on a daily basis. This should contribute to the questionnaire being answered correctly reflecting the true nature of the participants' responses to the questionnaire items. All

participants were made fully aware of the nature of the survey instrument within the enclosed email including information concerning anonymity, purpose of the study, and the researcher's intent regarding utilizing the survey data.

Reasoning for restricting the study participants to Alabama math and science teachers was twofold. First, 8th grade math and science scores for Alabama on the last released National Assessment of Educational Progress (NAEP) for the subjects were well below the national average. (*The Nation's Report Card*, n.d.) Second, Alabama had passed the TEAMS act which offers up to a $20000 salary boost to attract and retain qualified math and science teachers. (Alabama State Department of Education, 2022)

Instrumentation

Several items from instruments were combined within the Qualtrics online survey website which included questions regarding the teacher's OCB's, self-efficacy, job satisfaction, organizational commitment, along with questions dealing with demographics with one question dealing with intent to persist till retirement. The study questionnaire (Appendix A) was written at a high school reading level, as all participants are assumed to have, and requires no exceptional skills or training to participate and complete.

The demographic items were created by the researcher and included questions concerning gender, subjects taught (math or science), years of experience, and ethnicity. One question concerning intent to persist in the field until retirement.

The portion of the survey instrument used to measure teacher OCB in this study comes from the Organizational Citizenship Behavior (OCB-C) (2011b). This scale consists of 20 items on a verbal frequency scale from 1(never), 2 (once or twice a year), 3

(once or twice per month), 4(once or twice per week), 5(everyday). Based on three different studies utilizing this instrument the authors of the OCB-C, Fox and Spector (2011b) found reliabilities ranging from α=.89 to α =.94. To assure validity, the scale was developed from responses of types of OCBs experienced in the workplace, generated by subject matter experts in the areas of human resource management and business administration who had employment experience (Fox and Spector, 2011b).

The Teacher's Sense of Efficacy (short form) developed by Tschannen- Moran and Woolfolk-Hoy at Ohio State University consists of 12 items with a 9-point horizontal numeric scale ranging from 1(nothing) to 9(A Great Deal) on a variety of statements measuring a teacher's sense of efficacy in the workplace. The authors of the scale report three factors that have emerged from the 12-item scale with corresponding construct reliabilities: Efficacy in Student Engagement (α=.81), Efficacy in Instructional Strategies (α=.86), and Efficacy in Classroom Management (α=.86) with an overall Cronbach's alpha of .90 for the entire 12 item instrument (Tschannen-Moran & Woolfolk-Hoy, 2001). To assure validity of the instrument items, a group of subject matter experts consisting of the researchers, graduate students in the department, all of whom had multiple years of teaching experience, pooled, and discussed items that were eventually added to the instrument used in this study (Tschannen-Moran & Woolfolk-Hoy, 2001).

The next instrument utilized in the overall study instrument is the Teacher Job Satisfaction Scale (TJSS-9) developed by Pepe (2011). The instrument has 9 items with a 5-point satisfaction scale ranging from 1 (I am highly dissatisfied with this aspect of the school) to 5 (I am highly satisfied with this aspect of the school). Items in the instrument are associated with the following three dimensions each with reliabilities greater than α =

0.70: satisfaction with coworkers (3 items; α=.884); satisfaction with parents (3 items; α= .872) and satisfaction with student behaviors (3 items; α = .937) for those surveyed in the US along with sufficient convergent and discriminant validity when comparing data gathered in six countries (Pepe et al., 2017).

The organizational commitment (OC) questions within the survey instrument are those utilized in Allen and Meyer (1990). There are 18 total questions in the survey instrument with 6 questions appearing within three different subscales of affective commitment (ACS), continuance commitment (CCS), and normative commitment (NCS). The reliability of each scale is as follows: ACS (α = .87), CCS (α = .75), and NCS (α = .79). All of which are above the standard reliability of α = .70. Meyer. Allen, and Smith (1993) used correlations and regression analysis to demonstrate convergent and discriminant validity of all items and subscales of the organizational commitment instrument.

Each instrument is in Appendix A with each item listed with their appropriate subscale.

Procedures

Before commencement of the survey, the protocol with approval from IRB (Appendix C), consisted of obtaining permission from superintendents to survey teachers of two large school districts (Appendix D & E), and within the state for a convenience sample. Emails was sent to all math and science teachers with a letter describing the purpose of the survey, contact information, and anonymity information as required by IRB along with a link to the Qualtrics online website where they completed the

questionnaire. Completion of the questionnaire by the participants implied consent by the participants. Deadlines for study completion was also included in the emails to potential subjects.

Once approval was obtained from the University of Southern Mississippi's Institutional Review Board, an email was sent to math and science supervisors in both school districts as well as officials of the teacher organizations for dissemination to all secondary math and science teachers currently employed in the districts and the State of Alabama. The total possible respondents were estimated to be as high as 1000 participants. A reminder of questionnaire due dates was also sent by the researcher after the study's commencement date.

Responses were downloaded from the Qualtrics website for statistical analysis by the researcher. Statistical analysis was performed, and after study completion the researcher destroyed the data.

Data Analysis

The number of respondents needed to give a large effect size with a power level of .95 and alpha of .05 was a sample of two hundred. Statistical tests included descriptive analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), Pearson correlation, and path analysis. New variables were created as needed for analysis after data collection. Variables were generated for the overall means of scale items of all latent variables (OCB, self-efficacy, job satisfaction, and organizational commitment) to be used for Pearson correlation and path analysis. Other variables were created for subscales within the latent variable scales for exploratory analysis. Correlation and path analysis

tests were used to determine how relationships between teacher OCBs. self-efficacy, job satisfaction and organizational commitment of math and science teachers relate.

CHAPTER IV – RESULTS

Introduction

Two large Alabama school districts along with the Alabama Education Association and Alabama Math Teachers Association gave permission to send recruitment letters and Qualtrics study link to their members through email. Some participants were recruited through social media via Facebook. There were 503 teachers who responded of which 314 completed responses within the Qualtrics survey platform. All participants who completed responses were math and science teachers. The raw data were downloaded from the Qualtrics platform to IBM SPSS Statistics (Version 28). Within SPSS 28, the data were coded and analyzed, including exploratory factor analysis (EFA). EFAs were conducted on OCB and OC instruments to elucidate factor structure for teacher participants in this study. Both instruments have been utilized in other fields. Further data modeling procedures to produce CFA and Path Analysis were generated by AMOS 28. CFAs (Confirmatory Factor Analysis) were conducted on the Teacher Job Satisfaction Scale and Teacher Self-Efficacy scale to confirm factors and items loadings previously reported. A path analysis was performed as an exploratory analysis to examine the relationships between OCB, job satisfaction, self-efficacy, and organizational commitment of math and science teachers.

Participant Demographics

Of the 314 participants, math teachers accounted for 176 (56.1%) with the remaining 138 (43.9%) being science teachers. Of these math and science teachers, there

were 50 (15.9%) male participants, 263 (83.8%) female participants, and 1 participant who responded, '*Prefer not to say'*. Other demographic information such as ethnicity and years of teaching experience were also collected. See Table 4.1 and 4.2 for ethnicity and teaching experience demographics collected from participants in this study.

Table 1 *Ethnicity of participants*

	Frequency	Percent	Valid Percent	Cumulative Percent
Asian descent	5	1.6	1.6	1.6
African descent	58	18.5	18.5	20.1
Caucasian descent	232	73.9	73.9	93.9
Arab descent	2	.6	.6	94.6
Other	17	5.4	5.4	100.0
Total	314	100.0	100.0	

As seen in Table 1, three quarters of the participants were Caucasian followed by 18.5 percent being of African descent. Other minorities made up only 6.6%. This will indicate that most respondents were Caucasian female math and science teachers.

Table 2 *Years of Teaching Experience of participants*

	Frequency	Percent	Valid Percent	Cumulative Percent
0 to 5 years	62	19.7	19.7	19.7
6-10 years	61	19.4	19.4	39.2
11-15 years	44	14.0	14.0	53.2
16-20 years	52	16.6	16.6	69.7
21-25+ years	95	30.3	30.3	100.0

In Table 2, most experience ranges were within six percent except for the 21-25+ range which had the greatest percentage of participants at 30.3%. The difference in percentage between this group and the next highest percentage was 10.3%. The cumulative percentage of respondents at or below 15 years of experience is 53.2%.

The final question in the demographic section asked, 'Do you plan to retire as a teacher? Results are seen in Table 3 below, with most participants (85.7%) indicating that they plan to retire as a math or science teacher.

Table 3 *Do you plan to retire as a teacher?*

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	269	85.7	85.7	85.7
No	45	14.3	14.3	100.0
Total	314	100.0	100.0	

Descriptive Statistics and Reliability Analysis

In Table 4, items assessing OCBs of participants are shown along with their means and standard deviations. Each of the twenty items was on a five-point Likert scale indicating the frequency in which respondents demonstrated each with 1 (never), 2 (once or twice a year), 3 (once or twice a month), 4 (once or twice a week), 5 (Everyday).

Table 4 *Descriptive Statistics of OCB items*

Item ID	N	Minimum	Maximum	Mean	Std. Deviation
OCB -1	314	1	5	2.22	.790
OCB- 2	314	1	5	3.48	1.082
OCB- 3	314	1	5	3.54	.876
OCB- 4	314	1	5	3.01	1.059
OCB- 5	314	1	5	4.06	.927
OCB- 6	314	1	5	3.86	.992
OCB- 7	314	1	5	2.15	.966
OCB- 8	314	1	5	3.01	.942
OCB- 9	314	1	5	2.86	.978
OCB- 10	314	1	5	2.74	.813
OCB- 11	314	1	5	2.36	.855
OCB- 12	314	1	5	2.83	.901
OCB- 13	314	1	5	2.65	.942
OCB- 14	314	1	5	1.89	1.001
OCB- 15	314	1	5	3.39	.968
OCB- 16	314	1	5	3.44	1.066
OCB- 17	314	1	5	3.01	.949
OCB- 18	314	1	5	3.50	.967
OCB- 19	314	1	5	2.88	1.131
OCB- 20	314	1	5	2.50	.873

Note: Items with Item IDs for the Organizational Citizenship Behaviors scale found in Appendix V

The item with the highest mean was ‘OCB – 5: Lent a Compassionate ear when a person has a work problem’ (M = 4.06, SD =.927). The item with lowest mean was OCB – 14: ‘Took phone messages for absent or busy coworker’ (M= 1.89, SD = 1.001). An internal consistency reliability analysis was determined for the 20 OCB items within the survey instrument. The Cronbach’s Alpha coefficient was 0.912.

For subsequent analysis to evaluate research hypothesis, the overall mean for OCB items was calculated and computed as a new variable (OCBAVE) for each respondent within SPSS.

In Table 5, items assessing teacher job satisfaction are shown with their means and standard deviations. Each of the nine items was on a 5-point Likert scale indicating the level of satisfaction each respondent experienced with a range of 1 (Highly dissatisfied with this aspect of the school) to 5 (Highly satisfied with this aspect of the school).

Table 5 *Descriptive Statistics of Job Satisfaction items*

Item ID	N	Minimum	Maximum	Mean	Std. Deviation
JS- 1	314	1	5	4.08	.904
JS- 2	314	1	5	4.04	.845
JS- 3	314	1	5	4.08	.872
JS- 4	314	1	5	2.78	1.197
JS- 5	314	1	5	2.81	1.194
JS- 6	314	1	5	2.86	1.216
JS- 7	314	1	5	2.60	1.149
JS- 8	314	1	5	2.67	1.116
JS- 9	314	1	5	2.81	1.079

Note: Items with Item IDs for the Teacher Job Satisfaction Scale found in Appendix Y

There were two items with the highest mean JS-1: ‘The quality of relations with your coworkers’ (M =4.08, SD = .904) and JS ‘-3: ‘Your overall satisfaction with your coworkers’ (M = 4.08, SD = .872). The item with the lowest mean was JS-7: ‘The degree of interest shown by parents in the education of their children (M = 2.60, SD = 1.149).

An internal reliability analysis was performed on the nine teacher satisfaction items within the survey instrument. The Cronbach's Alpha coefficient was .886.

For subsequent analysis to evaluate the research hypothesis, the overall mean for the teacher job satisfaction items was calculated and computed as a new variable (JSAVE) in SPSS.

In Table 6, items assessing teacher self-efficacy are shown with their means and standard deviations. Each of the twelve teacher self-efficacy items was on a nine-point Likert scale indicating the level of self-efficacy with a range of 1 (nothing) to 9 (A Great Deal).

Table 6 *Descriptive Statistics for Teacher Self Efficacy items*

Item ID	N	Minimum	Maximum	Mean	Std. Deviation
SE- 1	314	1	9	7.87	1.342
SE- 2	314	1	9	7.26	1.458
SE- 3	314	1	9	7.32	1.321
SE- 4	314	1	9	6.87	1.446
SE- 5	314	1	9	8.10	1.045
SE- 6	314	1	9	7.84	1.237
SE- 7	314	1	9	7.67	1.270
SE- 8	314	1	9	8.06	1.146
SE- 9	314	1	9	8.22	.978
SE- 10	314	1	9	8.52	.816
SE- 11	314	1	9	7.32	1.305
SE- 12	314	1	9	7.86	1.238

Note: Items with Item IDs for the Teacher Self-Efficacy scale found in Appendix W

The item with the highest mean was SE -10'To what extent can you provide an alternative explanation or example when students are confused' (M= 8.52, SD = .816). The item with the lowest mean was SE -4 'How much can you do to get students to value

learning?" (M = 6.87, SD = 1.446). An internal reliability analysis was performed by the researcher on the twelve teacher self-efficacy items within the survey instrument. Cronbach's Alpha coefficient was .879.

For subsequent analysis to evaluate the research hypothesis, the overall mean for the teacher self-efficacy items was calculated and computed as a new variable (SEAVE) in SPSS.

In Table 7, items assessing organizational commitment are shown with their means and standard deviations. Each of the eighteen organizational commitment items was on a seven-point Likert scale with 1 (strongly disagree) to 7 (strongly agree).

Table 7 *Descriptive Statistics of Organizational Commitment items*

Item ID	N	Minimum	Maximum	Mean	Std. Deviation
OC – 1	314	1	7	5.12	1.729
OC – 2	314	1	7	4.16	1.793
OC – 3 (R)	314	1	7	4.89	1.737
OC – 4 (R)	314	1	7	5.13	1.667
OC – 5 (R)	314	1	7	5.12	1.743
OC – 6.	314	1	7	5.15	1.599
OC – 7	314	1	7	4.86	1.766t
OC – 8	314	1	7	4.42	1.939
OC – 9	314	1	7	4.38	1.977
OC – 10.	314	1	7	3.58	1.892
OC – 11	314	1	7	3.68	1.971
OC – 12	314	1	7	3.31	1.862
OC – 13 (R)	314	1	7	4.53	1.795
OC – 14	314	1	7	3.89	1.873
OC – 15.	314	1	7	4.01	1.941
OC – 16.	314	1	7	4.36	1.834
OC – 17	314	1	7	4.56	1.826
OC – 18	314	1	7	4.04	1.813

Note: Items with Item IDs for the Organizational Commitment scale found in Appendix Y. (R) denotes reverse scored item.

The item with the greatest mean was OC - 6 ‘This organization has a great deal of personal meaning to me.’ (M = 5.15. SD = 1.599) The item with the lowest mean was OC – 12 ‘One of the few negative consequences of leaving this organization will be the scarcity of available alternatives.’ (M =3.31, SD = 1.862). Internal reliability was performed on eighteen organizational commitment items within the survey instrument. The Cronbach’s Alpha coefficient was .817.

For subsequent analysis to evaluate the research hypothesis, the overall mean for the teacher organizational commitment items was calculated and computed as a new variable (OCAVE) in SPSS.

Factor Analysis of latent variable scales

Exploratory Factor Analysis was performed in SPSS 28 on the OCB scale to determine the number of Factors and Factor loadings for the 20 items of the scale. Table 8 and 9 show the Pattern Matrix and Factor Correlation Matrix, respectively.

Table 8 *Pattern Matrix for OCB items*

Item ID	Factor		
	1	2	3
OCB- 1	[a]		
OCB- 2		.796	
OCB- 3		.790	
OCB -4		.544	

Table 8 (cont.)

Item ID	Factor		
	1	2	3
OCB- 5			.882
OCB- 6			.848
OCB- 7	.482		
OCB- 8		.635	
OCB- 9		.545	
OCB- 10	.704		
OCB- 11	.602		
OCB- 12	.641		
OCB- 13	.543		
OCB- 14	.662		
OCB- 15	.414		
OCB- 16	[a]		
OCB- 17	.497		
OCB- 18			.447
OCB- 19	.588		
OCB- 20	.717		

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Loadings greater than .4 maintained. [an] *Item did not load on any factor. Items for OCB with IDs are in Appendix V.*

All 20 OCB items were subjected to Exploratory Factor Analysis by Principal Axis Factoring with Promax rotation. The Kaiser-Meyer-Olkin measure verified sample adequacy for the analysis, KMO =.904. Bartlett's test of sphericity χ^2 (190) = 2729.18 p < .001, indicated that the correlation structure was adequate for factor analysis. The analysis had a cut-off for item loadings of .40 for each factor (Guadagnoli & Velicer,1998). Kaiser criterion of eigenvalues greater than 1 (see Field, 2018) yielded a 3-factor solution as the best fit for the data accounting for 51.66% of the variance. Two of the items as seen in Table 8 did not load on any of the three factors. Observation of the item loadings suggest that Factor 1 is consistent with the OCB Altruism, Factor 2 is consistent with the OCB Conscientiousness, and Factor 3 is consistent with the OCB Courtesy.

Table 9 *Pattern Correlation Matrix*

Factor	1	2	3
1	1.000	.691	.583
2	.691	1.000	.614
3	.583	.614	1.000

Confirmatory Factor Analysis was conducted by the researcher in AMOS 28 on the Teacher Job Satisfaction Scale first reported and confirmed by Pepe et al. (2011, 2017). This was to confirm the factors for a sample of US math and science teachers as this scale was developed outside of the United States. Table 10 contains Goodness of Fit indices for the 3-factor model. Table 11 contains the unstandardized loadings, standardized errors, and standardized loadings for the three factor Teacher Job Satisfaction Scale. Results including the high factor loadings are consistent with that of Pepe et al. (2017).

Table 10 *Goodness of Fit Indicators for Teacher Job Satisfaction Scale*

Model	χ^2	D_f	χ^2/D_f	CFI	TLI	RMSEA	LO 90	HI 90
3 Factor	45.996*	24	1.914	.990	.986	.054	.030	.078

$p < .004$

Table 11 *Unstandardized Loadings (Standard Errors) and Standardized Loadings for the Teacher Job Satisfaction Scale*

Item ID	CWJS		SJS		PJS	
	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized
JS-1	1.000 (-)	.849**				
JS-2	.915(.051)	.832**				
JS-3	1.049(.053)	.924**				
JS-4			1.000 (-)	.912**		
JS-5			1.022 (.039)	.934**		
JS-6			.940 (.044)	.844**		
JS-7					1.000 (-)	.898**
JS-8					.973(.042)	.900**
JS-9					.935 .041)	.894**

** *$p < .001$* *Note: Items with Item IDs for the Teacher Job Satisfaction scale found in Appendix V*

Fit statistics in Table 10 indicate an excellent fit for the model. The CFA diagram for the Teacher Job Satisfaction Scale is found in Appendix F. The loadings for all items are extremely high and are similar to what is seen in Pepe et.al 2017.

Confirmatory Factor Analysis was conducted by the researcher in AMOS 28 on the Teacher Self Efficacy Scale reported by Tschannen-Moran & Woolfolk-Hoy (2001). This was to confirm the factors for this sample of math and science teachers. Table 12 contains Goodness of Fit indices for the 3-factor model. Table 13 contains the unstandardized loadings, standardized errors, and standardized loadings for the three factor Teacher Self-Efficacy Scale.

Table 12 *Goodness of Fit Indicators for Teacher Self-Efficacy Scale*

Model	χ^2	D_f	χ^2/D_f	CFI	TLI	RMSEA	LO 90	HI 90
3 Factor	113.13**	49	2.309	.960	.946	.065	.049	.080

*** p < .001*

Table 13 *Unstandardized Loadings (Standard Errors) and Standardized Loadings for the Teacher Self-Efficacy Scale*

Item ID	Pedagogy		Mentorship		Class_Manage	
	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized
SE_5	1.000 (-)	.644				
SE_9	1.035(.102)	.712				

Table 13 *(cont.)*

Item ID	Pedagogy		Mentorship		Class_Manage	
	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized	Unstan-dardized	Stan-dardized
SE_10	.898 (.086)	.741				
SE_11	.943 (.127)	.487				
SE_12	1.338(.130)	.728				
SE_4			1.000 (-)	.681		
SE_3			1.150(.098)	.858		
SE_2			1.059(.098)	.715		
SE_1					1.000 (-)	.657
SE_8					1.082(.089)	.833
SE_7					1.108(.096)	.769
SE_6					1.143(.095)	.815

Note: Items with Item IDs for the Teacher Self-Efficacy scale found in Appendix W

The fit statistics shown in Table 12 indicate a good fit for the model. The CFA diagram for the Teacher Self-Efficacy scale is found in Appendix G. Table 13 shows reasonably large loadings above .4. This confirms Tschannen – Moran and Woolfolk-Hoy (2001) subscales.

Exploratory Factor Analysis was performed in SPSS 28 on the OC scale to determine the number of Factors and Factor loadings for the 18 items of the scale. Table 14 and 15 show the Pattern Matrix and Factor Correlation Matrix, respectively.

Table 14 *Pattern Matrix for Organizational Commitment items*

Item ID	Factor		
	1	2	3
OC – 17	.817		
OC – 16	.715		
OC – 14	.713		
OC – 15	.704		
OC – 18	.691		
OC – 2	.291[a, b]		.253[a, b]
OC – 10		.798	
OC – 12		.644	
OC – 9		.636	
OC – 8		.614	
OC – 11		.587	
OC – 7		.563	
OC – 4			.900
OC – 5			.853
OC – 3			.737
OC – 1			.447
OC – 6			.438
OC – 13			.404

Note. Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization. Loadings greater than .4 maintained. [a] Item loaded below the .4 Threshold [b] item double loaded. *Note: Items with Item IDs for the Organizational Commitment scale found in Appendix V*

All 18 OC items were subjected to Exploratory Factor Analysis by Principal Axis Factoring with Oblique rotation (Oblimin). The Kaiser-Meyer-Olkin measure verified sample adequacy for the analysis, KMO =.858. Bartlett's test of sphericity χ^2 (153) = 2485.97 $p < .001$, indicated that the correlation structure was adequate for factor analysis. The analysis had a cut-off for item loadings of .40 for each factor (Guadagnoli & Velicer, 1998). Kaiser criterion of eigenvalues greater than 1 (see Field, 2018) yielded a 3-factor solution as the best fit for the data accounting for 57.00% of the variance. Observation of the item loadings is inconsistent with what Meyer, Allen, and Smith developed (1993). For Factor one, five items from the Normative Commitment Scale (NCS) loaded. One item 'I feel as if this organization's problems are my own' double loaded on the first factor below the cutoff of .3 (.291) and the third factor (.253). This item belongs to the Affective Commitment Scale. The item was kept and used in the ACS subscale for subsequent analysis due to prior literature results and negligible effect on the total score of this subscale and overall scale. For Factor two, all six items loaded matched the items of the Continuance Commitment Scale (CCS). Factor three had five items load from the Affective Commitment Scale (ACS). One item 'I do not feel any obligation to remain with my current employer' loaded with a value of .404. This item belonged to the Normative Commitment Scale (NCS).

Table 15 *Factor Correlation Matrix for Organizational Commitment*

Factor	1	2	3
1	1.000	.098	.484
2	.098	1.000	-.136
3	.484	-.136	1.000

Analysis of Data to Test Hypotheses

The researcher formulated research hypotheses to guide this study. Data were calculated and analyzed to determine if each hypothesis was supported. Total scores were calculated from all measures to conduct the hypothesis testing. All items were used in calculating total scores even with factor loading issues of items in the OCB and OC scales observed in the EFAs reported before.

Research Hypothesis 1

H_1: Math and Science teachers with higher levels of reported OCBs will have higher job satisfaction.

A Pearson Product-Moment correlation was conducted to determine the relationship between reported OCBs and job satisfaction of math and science teachers. There was no statistically significant correlation between reported OCBs and job satisfaction, r = -.018, (n =314), p = .375. The hypothesis was not supported by the results of the Pearson correlation.

Research Hypothesis 2

H_2: Math and science teachers with higher levels of reported OCBs will have higher levels of self-efficacy.

A Pearson Product-Moment correlation was conducted to determine the relationship between reported OCBs and self-efficacy of math and science teachers. A

positive correlation was determined between reported OCBs and self-efficacy, $r = .218$, (n =314), $p < .001$. The research hypothesis was supported by the Pearson correlation.

Research Hypothesis 3

H_3: Math and science teachers with higher levels of reported OCBs will have higher levels of organizational commitment (retention).

A Pearson Product-Moment correlation was conducted to determine the relationship between reported OCBs and organizational commitment of math and science teachers. There was no statistically significant correlation between reported OCBs and organizational commitment, $r = -.023$, (n =314) $p = .339$. The research hypothesis was not supported.

Research Hypothesis 4

H_4: Math and science teachers with higher levels of job satisfaction will have higher levels of self-efficacy.

A Pearson Product-Moment correlation was conducted to determine the relationship between job satisfaction and self-efficacy of math and science teachers. A positive correlation was determined between job satisfaction and self-efficacy, $r = .372$, (n =314), $p < .001$. The research hypothesis was supported by the Pearson correlation.

Research Hypothesis 5

H_5: Math and science teachers with higher levels of job satisfaction will have higher levels of organizational commitment.

A Pearson Product-Moment correlation was conducted to determine the relationship between job satisfaction and organizational commitment of math and science teachers. A positive correlation was determined between job satisfaction and self-efficacy, $r = .345$, (n =314), $p < .001$. The research hypothesis was supported by the Pearson correlation.

Research Hypothesis 6

H_6: Math and science teachers with higher levels of self-efficacy will have higher levels of organizational commitment.

A Pearson Product-Moment correlation was conducted to determine the relationship between self-efficacy and organizational commitment of math and science teachers. A positive correlation was determined between job satisfaction and self-efficacy, $r = .148$, (n =314), $p < .001$. The research hypothesis was supported by the Pearson correlation.

Summary

In this chapter descriptive statistics on demographics and latent scale items were provided and discussed. Factor Analysis either EFA or CFA was performed on each of the latent variable scales to determine or insure factor structure. Finally, an analysis of data utilizing Pearson correlation was used to evaluate hypotheses. Four of the six hypotheses were supported by correlation analyses.

CHAPTER V – CONCLUSION

Exploratory Analysis

Exploratory (path) analysis was conducted to further investigate the relationships between the constructs. In addition, this analysis aided in discussion and interpretation of findings from the hypothesis testing as well as the generation of recommendations.

Path Analysis

A simple path analysis was conducted by the researcher in AMOS 28 to illustrate and further elucidate the relationships between OCB, job satisfaction, self-efficacy, and organizational commitment of math and science teachers. The average total scores for each latent variable scale were used in the analysis (OCBAVE, SEAVE, JSAVE, OCAVE). The path diagram is in Figure 1 below.

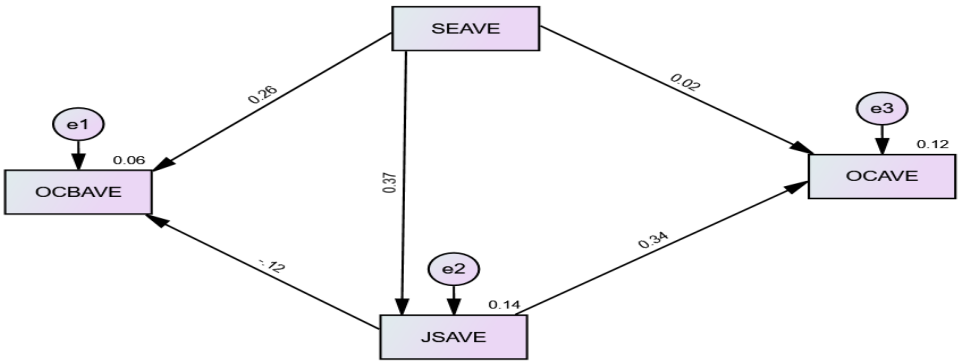

Figure 1. Path Model Diagram for OCBAVE, SEAVE, JSAVE, and OCAVE

In Table 16, the goodness of fit indices for the model are reported. Table 17 contains the unstandardized loadings, standardized errors, and standardized loadings for the path analysis model.

Table 16 *Goodness of Fit Indicators for Path Analysis Model*

χ^2	D_f	GFI	CFI	TLI	RMSEA	LO 90	HI 90
.188*	1	1.000	1.000	1.000	.000	.000	.114

**p =.665*

Table 17 *Unstandardized Estimates (Standard Errors), Standardized Estimates and Z-Scores for the Path Analysis*

Parameter	Unstandardized	Standardized	Z-score	*p*
SEAVE -> JSAVE	.366 (.052)	.372	7.095	< .001
JSAVE ->OCAVE	.381 (.065)	.336	5.885	< .001
SEAVE >OCBAVE	.189 (.043)	.261	4.412	< .001
JSAVE >OCBAVE	-.085 (.044)	-.115	-1.947	.052
SEAVE ->OCAVE	.025 (.064)	.022	.393	.694

The path analysis showed interesting fit indices with RMSEA = .000, GFI = 1.000, CFI = 1.000 and TLI = 1.000 which indicate excellent model fit. As seen in Table 17, there were three statistically significant parameters, with two not being significant. One of the statistically nonsignificant parameters (JSAVE → OCBAVE) is of interest due to the indirect effect of SEAVE through JSAVE on OCBAVE. Considering the

negative value of the estimate for this parameter, the total effect of SEAVE on OCBAVE is .218. This estimate is lower (-16.5%) than the standardized direct effect of SEAVE on OCBAVE of .261. This is an interesting result that may lead to further research to understand this phenomenon. Research into effects of subscales of the Teacher Job Satisfaction Scale on OCBs as probable causes of this anomaly could reveal interesting findings.

The variable JSAVE also mediates the effect of SEAVE on OCAVE. This is of interest as there is no statistically significant direct effect on the variable OCAVE by SEAVE as seen in Table 17. As seen in Table 17, parameters SEAVE → JSAVE and JSAVE → OCAVE are statistically significant. Thus, there is a significant standardized indirect effect on OCAVE by SEAVE through JSAVE with an estimate value of .125. This result may lead to more investigation into the specifics of this indirect effect.

The researcher conducted further correlation analyses with the subscales of the latent variables of teacher job satisfaction, self-efficacy, and organizational commitment to further understand the relationships between these constructs and with OCB. Results are reported in Appendices G-L.

Summary of Study

OCB, job satisfaction, self-efficacy, and organizational commitment of math and science teachers are of interest due to the need to have these teachers perform at an elevated level and be committed to the profession and organization until retirement. All these variables have been studied in numerous ways with teachers (e.g., Ahmed et al.

(2014), Avci (2016), Canrinus et al. (2012). Skaalvik & Skaalvik (2007, 2009, 2010, 2011). This study sought to determine correlations between these latent constructs to hopefully provide useful information to school districts and post-secondary institutions who maintain schools of education which train future math and science teachers in the United States. Hypotheses were evaluated, and the findings spurred the researcher to conduct further exploratory analysis to include path analysis and Pearson correlations of the latent variable subscales. These further analysis steps have aided in interpretation and discussion of the results of the hypothesis testing and how the results fit within the literature.

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Interpretation and Discussion of Results

Research Hypothesis 1

H_1: Math and Science teachers with higher levels of reported OCBs will have higher job satisfaction.

Findings of this study suggest that this hypothesis is not supported by the results of the Pearson correlation r (314) = -.018, p = .375 and path analysis β (314) = -.115, p = 0.52. For the math and science teachers, in this study, based on the results of the correlation and path analysis, there appears to be no negative relationship between OCBs and job satisfaction. Study results contrast what is found in literature. Zeinabadi (2010) and Zeinabadi and Salehi (2011) both reported positive correlations and standardized path estimates from structural equation models between OCBs and teacher job satisfaction. Zeinabadi (2010) further reported two subscales of job satisfaction (intrinsic

and extrinsic) having statistically significant correlations with OCB. Due to these findings, the researcher conducted exploratory correlation analysis of the study data between the three subscales of the Teacher Job Satisfaction Scale to investigate if any of the subscales (CWJS, SJS, PJS) had a positive correlation with OCB. The results of this analysis appear in Appendix I.

Interesting results were found as two of the subscales had statistically significant correlations with OCB (CWJS and PJS) while SJS did not. Further, both statistically significant subscales differed as CWJS had a positive correlation matching what is seen in the literature concerning job satisfaction while PJS contrasted findings in the literature. The CWJS subscale concerns a teacher's job satisfaction in terms of coworkers. For math and science teachers in this study, higher job satisfaction in terms of interactions with coworkers correlates to higher teacher reported OCBs. This is in stark contrast to job satisfaction concerning interaction with parents and OCBs in that higher PJS correlates to lower teacher reported OCBs. These findings could lead to further research to investigate these conflicting results within this study and the literature.

Research Hypothesis 2

H_2: Math and science teachers with higher levels of reported OCBs will have higher levels of self-efficacy.

Findings of this study suggest that this hypothesis is supported by the results of the Pearson correlation $r(314) = .218$, $p < .001$ and direct effect estimate from path analysis $\beta(314) = .261$, $p < .001$. This finding from math and science teachers is well supported by other studies in literature. Makruf, Ramadhan, Muharom, Hafidah, and

Maslamah (2021) found a statistically significant direct effect between teacher self-efficacy and OCBs with a standardized estimate of $\beta = 0.239$. Mahipalan, Sheena, and Sudheer (2019) found positive statistically significant correlations between OCBs and two types of teacher self-efficacy (personal and general) ranging from $r = 0.36$ to 0.47. Dussault (2006), when also looking at the two types of teacher self-efficacy versus types of OCBs, personal teaching efficacy (intrinsic efficacy factors that the teacher can control autonomously) and general teaching efficacy (extrinsic efficacy factors that the teacher cannot control autonomously), found statistically significant positive correlations with all OCBs and personal teaching efficacy ranging from $r= 0.14$ to $r= 0.24$. Contrary to that, Dussault (2006) found that only one type of OCB (sportsmanship) had a statistically positive correlation with general teaching efficacy with a value of $r = 0.15$. Considering the findings of Mahipalan et al. (2019) and Dussault (2006) concerning the two types of teacher self-efficacy, the researcher conducted exploratory correlation analysis between OCB (OCBAVE) and the SE subscales. The subscale labeled Pedagogy in this study is related more to the personal self-efficacy type while Class Management and Mentorship subscales relate more to the general self-efficacy type. Results of this analysis appear in Appendix J. All three subscales had positive statistically significant correlations with teacher reported OCBs. This shows further agreement between findings of this study with Mahipalan et al. (2019) but contrast slightly with those of Dussault as there were three types of OCBs that were measured in this study as seen in the results and discussion of the EFA found in Table 8.

Research Hypothesis 3

H_3: Math and science teachers with higher levels of reported OCBs will have higher levels of organizational commitment (retention).

Findings from this study suggest that this hypothesis is not supported by the results of the Pearson correlation, r (314) = -.023, p = .339 and the path analysis β (314) = .022, p = .694. For math and science teachers, in this study, there appears based on the standardized parameter estimate and correlation analysis, no relationship at work between OCB and OC. This result contrasts with what is seen in Hasani et al. (2013), Ahmad et al. (2014) and Zeinabadi (2010). All three reported significant positive correlations between OCBs and organizational commitment (OC). Further, Hasani et al. (2013) utilizing the same organizational commitment instrument used in this study found large positive correlations between OCBs and the OC subscales of affective continuance (ACS), continuance commitment (CCS), and normative commitment (NCS). Because of these findings, exploratory correlation analysis was conducted to see if any of these subscales had a significant correlation with OCBs in this study. It was found that none of the OC subscales had any statistically significant correlations with OCBs (see Appendix H).

Findings of this study do have some support in the literature from Cohen and Liu (2011). These researchers also used the same OC instrument as this study and Hasani et al. (2013). They found that only the ACS subscale had any statistically significant relationship with OCBs.

While results of this study are contradictory to those of Zeinabadi (2010), Hasani et al. (2013), and Ahmed et al. (2014) and partially supported by Cohen and Liu (2011), it

is important to note that participants of those studies were from other countries and not math and science teachers. More research may need to be conducted to understand the reasons for this contradiction.

Research Hypothesis 4

H_4: Math and science teachers with higher levels of job satisfaction will have higher levels of self-efficacy.

Findings of this study suggest that this hypothesis is supported by the results of the Pearson correlation r (314) = .372, $p < .001$ and path analysis β (314) = .372, $p < .001$. Results of this study have support from other studies in literature. Klassen and Chiu (2010) showed statistically significant positive relationships between teacher self-efficacy and teacher job satisfaction. This is echoed in Canrinus et al. (2011). Klassen and Chiu (2010) further elaborated in their structural equation model three subscales of self-efficacy (classroom management, instructional strategies, and student engagement) and reported positive direct and indirect effects between each of the self-efficacy subscales with job satisfaction. Similar findings dealing with classroom self-efficacy are reported by Canrinus et al. (2011). Considering these findings, the researcher conducted further follow-up exploratory correlation analysis between all three subscales of the teacher self-efficacy scale with all three subscales of the teacher job satisfaction scale used in this study. Findings are found in Appendix G. All correlations between subscales of both teacher self-efficacy and job satisfaction were positively correlated and statistically significant at $p < .001$. All findings are comparable to what are found in Klassen and

Chiu (2010) and Canrinus et al. (2011). Findings in this study further support what is found in literature.

Research Hypothesis 5

H_5: Math and science teachers with higher levels of job satisfaction will have higher levels of organizational commitment.

Findings of this study suggest that this hypothesis is supported by the results of the Pearson correlation r (314) = .345, $p < .001$ and path analysis β (314) = .336, $p < .001$. Results of this study are supported by studies found in literature. Both Zeinabadi (2010) and Zeinabadi and Salehi (2011) found statistically significant correlations or standardized path estimates between job satisfaction and organizational commitment. Interestingly, both studies reported smaller correlations or standardized path estimates than what was found in this study. Zeinabadi (2010) reported a correlation between job satisfaction and organizational commitment of r = .26. Zeinabadi & Salehi (2011) reported significant correlation r = .26 and standardized direct effect estimate of β = 0.19. Further, Zeinabadi (2010) reported correlations of two subscales of job satisfaction (intrinsic and extrinsic) with organizational commitment (OC) of r = .23 and .19, respectfully. Considering these findings, the researcher conducted exploratory correlation analysis to see how the three subscales of the Teacher Job Satisfaction Scale correlated with OC (OCAVE) and the OC subscales (ACS, CCS, NCS). Results of these analyses are in Appendices L & G, respectfully. As seen in Appendix L, all the subscales of JS had positive correlations that were higher for teachers in this study than what was reported in Zeinabadi (2010) with a range of r =.242 to .349. Further exploratory analysis concerning correlations between the subscales of JS and OC found some interesting findings as

reported in Appendix G. Two of the OC subscales (ACS and NCS) had positive statistically significant correlations with JS ranging from r = .229 to .521. Interestingly, the CCS subscale had no statistically significant correlation with any of the three JS subscales. This may be because the CCS scale measures the 'need' to stay with the organization while the other two scales measure personal feelings toward the organization (Allen & Meyer, 1990). The results of this study complement findings already found in the literature.

Research Hypothesis 6

H_6: Math and science teachers with higher levels of self-efficacy will have higher levels of organizational commitment.

Findings of this study suggest that this hypothesis is supported by the results of the Pearson correlation r (314) = .148, $p < .001$ and path analysis results (indirect effect through job satisfaction) β (314) = .125 $p < .001$. Results of this study have supportive and conflicting results in the literature. Dou, Devos, and Valcke, (2016) reported a moderate correlation between self-efficacy and organizational commitment of r = .451. Further, Waweru, Kihoro, and Gachunga (2021) reported value of r = .280. Both literature values are significantly higher than the weak correlation found in this study. Interestingly, Seyhan (2015) reported finding no correlation between SE and OC for Turkish chemistry teachers. This is significant considering this result is from a study of science teachers. The studies of Dou et al. (2016) and Waweru et al. (2021) surveyed all secondary teachers regardless of subject area. Due to this mix of results, exploratory correlation analysis was conducted between the subscales of SE and OC. The results are

reported in Appendix G. The results of the exploratory correlation analysis are as conflicting as what was found in the literature. When looking at ACS versus the three SE subscales, all the correlations were statistically significant with a range of r = .197 to .268. This makes sense considering that the ACS subscale measures a respondent's 'want' to be a part of the organization (Allen & Meyer, 1990). For the CCS subscale, results were vastly different. There was only one statistically significant negative correlation with the SE subscale Mentorship r = -.140, p = .013. Considering that CCS measures a respondent's 'need' to be a part of the organization, it may not be as surprising a result as those with high self-efficacy may not feel the need to be a part of the organization if they have other options such as higher paying positions and /or better work conditions elsewhere. These options have been factors for teacher attrition especially for math and science teachers as reported in the literature (e.g., Ingersoll & May, 2011) and MacDonald, 1999). Finally, the NCS subscale had statistically significant positive correlations to two of the SE subscales Class Management and Mentorship with values of r = .268 and r = .225, respectfully. The third SE scale Pedagogy, which deals with instructional strategies, was not statistically significant. Considering that, according to Allen & Meyer (1990), NCS measures how strongly the respondents feel they 'ought' to be a part of the organization. The results of this study may make sense. Given that those scoring higher on the NCS subscale may concentrate more on being more efficacious in classroom management and mentoring strategies with students as this may be needed more to be a part of their school than building their 'toolbox' of instructional strategies.

Recommendations for Policy and Practice

To help determine the best recommendations, the researcher created mean plots for all latent variable subscales versus years of experience of the participants in this study. The resulting plots are Appendices M-U. It is advised that recommendations be extrapolated to all teachers not just math and science teachers. Considering that recommendations are aided by exploratory analysis, it is further advised that more research and evaluation should be done to confirm the effectiveness of said recommendations.

1. School districts should provide targeted on-going professional development in general pedagogical strategies to teachers under 10 years of teaching experience. See Appendix M.
2. School districts should provide targeted on-going professional development in pedagogical strategies utilizing the latest instructional technology to all teachers, especially those over 20 years of experience. See Appendix M.
3. School districts should provide targeted on-going professional development in classroom management and mentoring students, to be active engaged learners, to teachers with 0-5 years of experience. See Appendices N, O, Q.
4. School districts should provide refresher professional development to teachers with 20 plus years of experience in the latest classroom management and mentoring strategies for students to be active engaged learners. See Appendices N, O, Q.

5. School districts should develop, implement, and maintain programs that will strengthen positive relationships between teachers (particular emphasis on those with less than 10 years of experience and those with over 20 years of experience) with their students and parents. See Appendices Q and R.
6. School districts should develop, implement, and maintain programs that will strengthen positive collegial relationships between teachers and other staff members within a school and throughout the district. This is important for teachers between 6-15 years of experience and those of 20 + years of experience. See Appendices P and S-U.
7. Post-secondary teacher preparation programs should partner with school districts to help professional development programs to address the recommendations for school districts outlined above.
8. Post-secondary teacher preparation programs should evaluate their own programs to ensure that pre-service teachers are prepared in terms of pedagogy, classroom management, and mentoring students to be active engaged learners.

Limitations of Study

1. Study was limited to math and science teachers in Alabama from two large school districts along the state's coast.
2. Most of the participants were Caucasian female math and science teachers which is consistent with the total population of teachers in the state (Alabama State Department of Education, n.d).

3. The findings are generalizable primarily to math and science teachers employed in the State of Alabama
4. Study is limited to self-reported data of participants.

Recommendations for Future Research

1. Develop and pilot test an OCB instrument more conducive to teachers and their roles within a school setting.
2. Conduct a qualitative study to investigate possible reasons for the conflicting findings of this study dealing with the teacher job satisfaction subscales and their correlation with teacher reported OCBs of math and science teachers.
3. Conduct study with all teachers within the state to develop a full model of relationships of OCB, self-efficacy, job satisfaction, organizational commitment and make comparisons between teachers of different subject areas.
4. Include the variable burnout to investigate its relationship with the other variables in this study model.
5. Expand this study to the Southeast region of the United States and or nationally to expand generalizability of the results.

Concluding Remarks

In Chapter I, the researcher communicated the need to examine the correlations and interactions between occupational citizenship behaviors, self-efficacy, job

satisfaction, and organizational commitment of math and science teachers. Chapter II discussed the literature surrounding the latent constructs both in a general historical context, studies related to these constructs and teachers, and a theoretical framework that underpinned such understanding of complexities that are at work with the latent constructs interplay with each other. Chapter III, the researcher provided the methodology for conducting the study along with validity and reliability of the instruments used to measure the items used to describe the latent variables. Chapter IV laid out all the descriptive data of the participants, latent variable scales, along with factor analysis to insure reliability and validity of the scales, and finally the results of the testing of the researcher's six hypotheses. Chapter V provided further exploratory analysis including a path analysis model to further provide the reader more detail and clarity of study findings regarding latent variables and their constructs. The researcher aimed to provide a rigorous interpretation and discussion of the results of this study to gain meaningful insight into the relationships between the study latent variables and how these study results fit within the literature. Finally, the researcher gave recommendations for policy and practice and future research in this area. These recommendations are provided in hopes that what is learned in this study and future studies can help school districts and teacher education programs gain needed information to enhance efforts to train, retain, and support present and future math and science teachers.

APPENDIX A - SURVEY INSTRUMENT

All Questions were inputted into Qualtrics. A link will be provided for teachers to complete the survey online.
Qualtrics Questionnaire Preview Link:
https://usmep.co1.qualtrics.com/jfe/preview/SV_7TBiS84qfMPCDQi?Q_CHL=preview&Q_SurveyVersionID=current

Demographics

Math or science teacher?

Male or Female?

Years of experience in teaching?

0-5 6-10 11-15 16-20 20-25+

What is the ethnicity that best describes you?

Asian Hispanic Caucasian African descent Arab descent Other

Do you plan to retire as a teacher?

Yes NO

Organizational Citizenship Behavior Checklist (OCB-C) 20 Item

How often do you do these things at your job?	Never Once or twice Once or twice per month Once or twice per week Every day
1. Picked up meal for others at work	1 2 3 4 5
2. Took time to advise, coach, or mentor a co-worker.	1 2 3 4 5
3. Helped co-workers learn new skills or shared job knowledge.	1 2 3 4 5
4. Helped new employees get oriented to the job.	1 2 3 4 5
5. Lent a compassionate ear when someone had a work problem.	1 2 3 4 5
6. Lent a compassionate ear when someone had a personal problem.	1 2 3 4 5
7. Changed vacation schedule, workdays, or shifts to accommodate co-worker's needs.	1 2 3 4 5
8. Offered suggestions to improve how work is done.	1 2 3 4 5
9. Offered suggestions for improving the work environment.	1 2 3 4 5
10. Finished something for co-worker who had to leave early.	1 2 3 4 5
11. Helped a less capable co-worker lift a heavy box or other object.	1 2 3 4 5
12. Helped a co-worker who had too much to do.	1 2 3 4 5
13. Volunteered for extra work assignments.	1 2 3 4 5
14. Took phone messages for absent or busy co-worker.	1 2 3 4 5
15. Said good things about your employer in front of others.	1 2 3 4 5
16. Gave up meal and other breaks to complete work.	1 2 3 4 5
17. Volunteered to help a co-worker deal with a difficult customer, vendor, or co-worker.	1 2 3 4 5
18. Went out of the way to give co-worker encouragement or express appreciation.	1 2 3 4 5
19. Decorated, straightened up, or otherwise beautified common workspace.	1 2 3 4 5
20. Defended a co-worker who was being "put-down" or spoken ill of by other co-workers or supervisor.	1 2 3 4 5

Teachers' Sense of Efficacy Scale1 (short form)

Teacher Beliefs How much can you do?
Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are. Confidential. Based on a 9-point Likert Scale.

1 Nothing 3 Very Little 5 Some 7 Quite A Bit 9 A Great Deal
1. How much can you do to control disruptive behavior in the classroom?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
2. How much can you do to motivate students who show low interest in school work?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
3. How much can you do to get students to believe they can do well in school work?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
4. How much can you do to help your students value learning?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
5.To what extent can you craft good questions for your student
s? (1) (2) (3) (4) (5) (6) (7) (8) (9)
6.How much can you do to get children to follow classroom rules?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
7. How much can you do to calm a student who is disruptive or noisy?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
8. How well can you establish a classroom management system with each group of students?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
9. How much can you use a variety of assessment strategies?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
10. To what extent can you provide an alternative explanation or example when students are confused?
(1) (2) (3) (4) (5) (6) (7) (8) (9)
11. How much can you assist families in helping their children do well in school? (1) (2) (3) (4) (5) (6) (7) (8) (9)

12. How well can you implement alternative strategies in your classroom?
(1) (2) (3) (4) (5) (6) (7) (8) (9)

Teacher Job Satisfaction (Pepe, 2011)

Directions: Given the nine items please give a numeric response as follows:

1. Highly Dissatisfied with this aspect of the school
2. Dissatisfied with this aspect of my job
3. Neither dissatisfied or satisfied with this aspect of the school
4. Satisfied with this aspect of the school
5. Highly satisfied with aspect of the school

The quality of your relations with co-workers

The extent to which your co-workers encourage you and support you in your work

Your overall satisfaction with your co-workers

The extent to which students act in a self-disciplined manner

Your satisfaction with the behavior of students in your school

Your overall level of satisfaction with student discipline in your school

The degree of interest shown by parents in the education of their children

The extent to which parents are supportive of the school and its programs

Your overall level of satisfaction with parents where you work

Commitment Scales

Revised Version (Meyer, Allen, & Smith, 1993)

Instructions
Listed below is a series of statements that represent feelings that individuals might have about the company or organization for which they work. With respect to your own feelings about the particular organization for which you are now working, please indicate the degree of your agreement or disagreement with each statement by circling a number from 1 to 7 using the scale below.

1 = strongly disagree
2 = disagree
3 = slightly disagree
4= undecided
5 = slightly agree
6 = agree
7 = strongly agree

Affective Commitment Scale
1. I would be very happy to spend the rest of my career with this organization.
2. I really feel as if this organization's problems are my own.
3. I do not feel a strong sense of "belonging" to my organization. I
4. I do not feel "emotionally attached" to this organization. I
5. I do not feel like "part of the family" at my organization. I
6. This organization has a great deal of personal meaning for me.

Continuance Commitment Scale
1. Right now, staying with my organization is a matter of necessity as much as desire.
2. It would be very hard for me to leave my organization right now, even if I wanted to.
3. Too much of my life would be disrupted if I decided I wanted to leave my organization now.
4. I feel that I have too few options to consider leaving this organization.
5. If I had not already put so much of myself into this organization, I might consider working elsewhere.
6.One of the few negative consequences of leaving this organization would be the scarcity of available alternatives.

Normative Commitment Scale
1. I do not feel any obligation to remain with my current employer. I
2. Even if it were to my advantage, I do not feel it would be right to leave my organization now.

3. I would feel guilty if I left my organization now.
4. This organization deserves my loyalty.
5. I would not leave my organization right now because I have a sense of obligation to the people in it.
6.I owe a great deal to my organization.

Note. I indicate a reverse-keyed item. Scores on these items should be reflected (i.e., 1 =7, 2 = 6, 3 = 5, 4 = 4, 5 = 3, 6 = 2, 7 = 1) before computing scale scores.

Hello Andrew,

Thank you for your interest in using the Three-Component Model (TCM) Employee Commitment Survey in your research. You can get information about the measure, a Users' Guide, and the measure itself at:
http://employeecommitment.com/

For academic / research purposes, please choose the Academic Package. (There is no charge for this package.) I wish you well with your research!

Best,

Natalie Allen

From: Andrew Wood <awood@bcbe.org>
Sent: Friday, July 19, 2019, 12:07 PM
To: Natalie Jean Allen <nallen@uwo.ca>
Subject: permission to use questionnaire

Dr. Allen,

I am requesting permission to use your Organizational Commitment scale for my dissertation at the University of Southern Mississippi.
Thank you,

Andrew Wood

Organizational Citizenship Behavior Checklist (OCB-C)

The Organizational Citizenship Behavior Checklist (OCB-C) is a 20-item scale designed to assess the
frequency of citizenship behaviors in the workplace. Items ask respondents to indicate how often each
behavior is performed by themselves or others (e.g., coworkers or subordinates).

OCB-C development, overview, and scoring, includes earlier longer versions.

OCB-C Bibliography (under construction)

Sharing OCB-C results

OCB-C 20-item scale

OCB-C 10-item scale.

OCB-C 20-item German version. Shows English and German items.

OCB-C 20-item Romanian version.

Home

Page last modified April 27, 1014.

You are welcome to use the TSES in your research as you describe below. This website might be helpful to you:

http://u.osu.edu/hoy.17/research/instruments/

Best wishes in your work.

Anita

Anita Woolfolk Hoy, PhD
Professor Emerita
The Ohio State University
7655 Pebble Creek Circle, Unit 301
Naples, FL 34108

anitahoy@mac.com
415-640-2017

http://u.osu.edu/hoy.17/

On Jul 19, 2019, at 12:30 PM, Andrew Wood <awood@bcbe.org> wrote:
Dr. Hoy,

I am writing to gain permission to use the Teacher Sense of Efficacy scale (short form) for my dissertation research at the University of Southern Mississippi.
Thank you,

Andrew Wood

Andrew Nathanial Wood
Mar 27, 2018
Dr. Pepe,

My name is Andrew Wood. I am currently working on my dissertation entitled “Correlations between

Occupational Citizenship Behaviors, Self-Efficacy, Job Satisfaction, and Retention in US Science and Math Teachers" at the University of Southern Mississippi. I saw your paper entitled "Measuring Teacher Job Satisfaction: Assessing Invariance in the Teacher Job Satisfaction Scale (TJSS) Across Six Countries" and would ask for a copy and permission to use your scale as part of my study.

Thank you,

Andrew Wood, Ed.S

Alessandro Pepe to you
Mar 28, 2018
Dear Andrew Wood,

thank you for contacting me. In attached the full text of the article. The TJSS version is reported in table 2 (page 404). Please consider that the facet of job satisfaction evaluated by the TJSS is mainly relational. Feel free to use it for your purpose.
Best luck with your research!

All the best
Alessandro Pepe
TJJES_EUROPE.pdf

APPENDIX C– IRB Approval Letter

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	21-061
PROJECT TITLE:	Correlations between Organizational Citizenship Behaviors, Self-Efficacy, Job Satisfaction, and Organizational Commitment of Math and Science Teachers. A Model of Relations.
SCHOOL/PROGRAM	School of Education
RESEARCHERS:	PI: Andrew Wood Investigators: Wood, Andrew~Shelley, Kyna~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	17-Feb-2022 to 16-Feb-2023

Donald Sacco

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX D - MCPSS RESEARCH APPROVAL LETTER

Mobile County
PUBLIC SCHOOLS

1 Magnum Pass | Mobile, Alabama 36618 | 251-221-4000 | www.mcpss.com

BOARD OF SCHOOL COMMISSIONERS
Reginald A. Crenshaw, Ph.D., President - District 3
William C. Foster, Ed.D., Vice President - District 5
L. Douglas Harwell, Jr. - District 1
Don Stringfellow - District 2
Sherry Dillihay-McDade - District 4

SUPERINTENDENT Chresal D. Threadgill

August 24, 2021

Mr. Andrew Wood
14896 Chase Court
Summerdale, AL 36567

RE: Permission to conduct research

Dear Mr. Wood,

The Mobile County Public School System grants permission and approval for your research proposal, *Correlations between Occupational Citizenship Behaviors, Self-Efficacy, Job Satisfaction, and Organizational Commitment of Math and Science Teachers A Model of Relations* to be conducted in middle and high schools in the Mobile County Public School System. Approval is given, however, with the following stipulations:

1. Involvement is to be on a voluntary basis. You must advise your participants that they are not obligated to participate in your study.
2. You must comply with the Family Education Rights and Privacy Act.
3. Confidentiality must be guaranteed for all participants.
4. Any and all surveys must be administered electronically through this office.
5. Approval for the above referenced study is granted for one year from the date of this letter.

Upon conclusion of the research, one completed copy of your study should be submitted to the MCPSS Division of Research, Assessment, Grants, and Accountability.

Best wishes to you as you continue your research efforts.

Sincerely,

Susan Hinton

Susan Hinton, PhD
Executive Director
Research, Assessment, Grants & Accountability

LEARNING TODAY. LEADING TOMORROW.

Mobile County
PUBLIC SCHOOLS

APPENDIX E - BCBE RESEARCH APPROVAL LETTER

BALDWIN COUNTY PUBLIC SCHOOLS

Baldwin County Public Schools

July 28, 2021

1091 B Avenue

Loxley, AL 36551

251-972-6862

To Whom It May Concern:

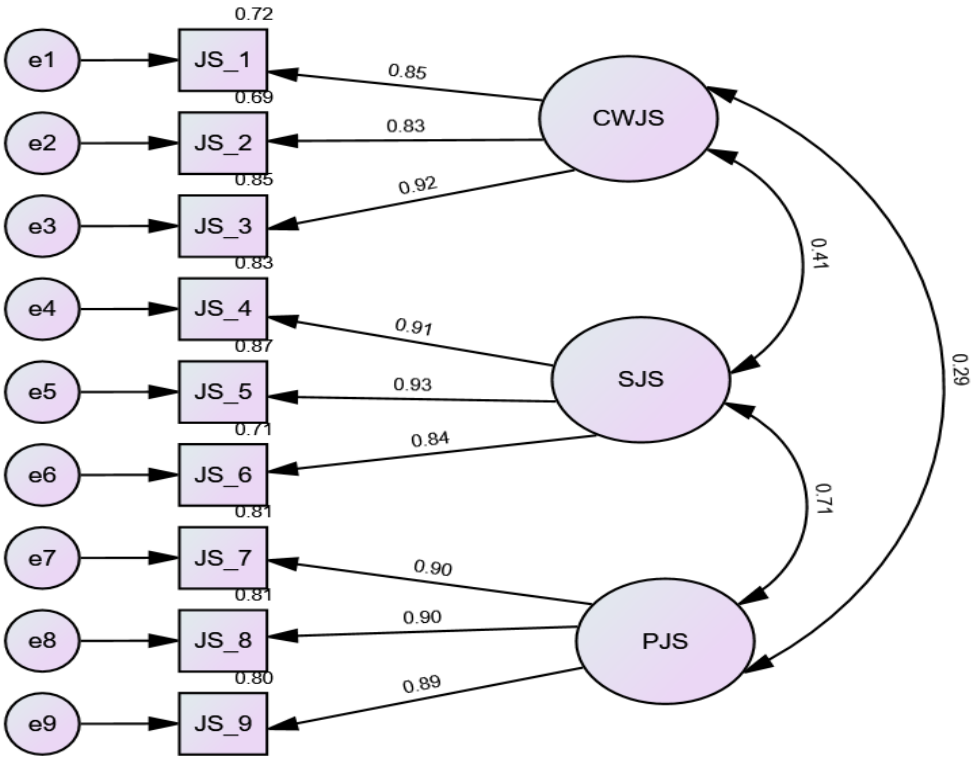
Mr. Andrew Wood has permission from the Baldwin County Board of Education to survey math and science teachers within our district for his dissertation.

Paula Renee Carter

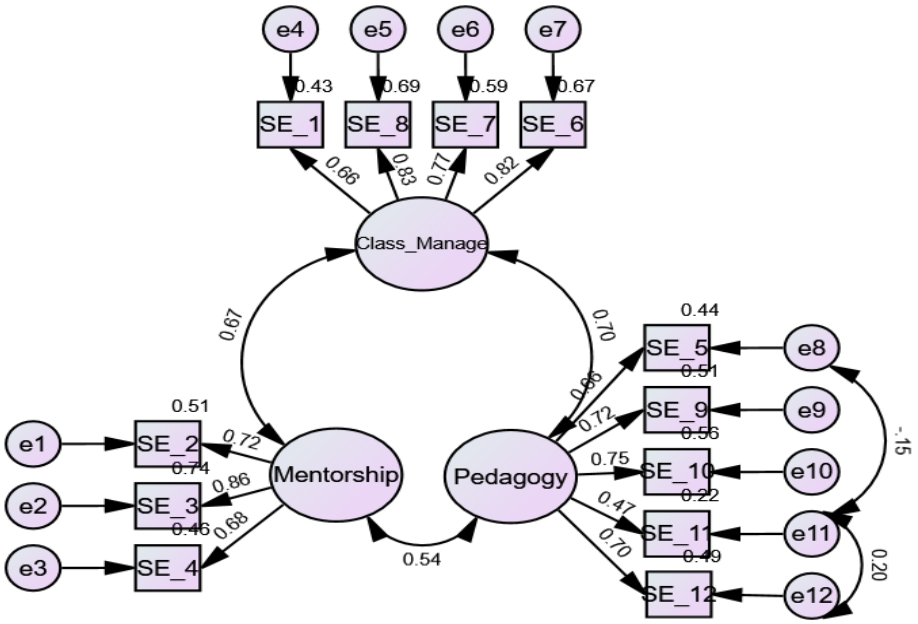
Dean of Academics

2600 North Hand Avenue • Bay Minette, Alabama 36507 • tel 251-937-0308 • fax: 251-580-1856 • www.bcbe.org

APPENDIX F - CONFIRMATORY FACTOR ANALYSIS DIAGRAM OF TEACHER JOB SATISFACTION SCALE



APPENDIX G - CONFIRMATORY FACTOR ANALYSIS DIAGRAM OF TEACHER SELF EFFICACY SCALE



APPENDIX H - PEARSON CORRELATION TABLE OF JOB SATISFACTION, SELF EFFICACY, AND ORGANIZATIONAL COMMITMENT SUBSCALES

		ACS	CCS	NCS	Pedagogy	Class_Manage	Mentorship	CWJS	SJS	PJS
ACS	Pearson Correlation	1	-.099	.554**	.197**	.268**	.225**	.521**	.382**	.270**
	Sig. (2-tailed)		.078	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	314	314	314	314	314	314	314	314	314
CCS	Pearson Correlation	-.099	1	.115*	-.077	-.107	-.140*	-.064	-.067	-.019
	Sig. (2-tailed)	.078		.042	.172	.058	.013	.255	.234	.744
	N	314	314	314	314	314	314	314	314	314
NCS	Pearson Correlation	.554**	.115*	1	.094	.168**	.212**	.274**	.229**	.247**
	Sig. (2-tailed)	<.001	.042		.098	.003	<.001	<.001	<.001	<.001
	N	314	314	314	314	314	314	314	314	314
Pedagogy	Pearson Correlation	.197**	-.077	.094	1	.558**	.580**	.156**	.180**	.194**
	Sig. (2-tailed)	<.001	.172	.098		<.001	<.001	.006	.001	<.001

	N	314	314	314	314	314	314	314	314	314
Class_Manage	Pearson Correlation	.268**	-.107	.168**	.558**	1	.713**	.214**	.420**	.240**
	Sig. (2-tailed)	<.001	.058	.003	<.001		<.001	<.001	<.001	<.001
	N	314	314	314	314	314	314	314	314	314
Mentorship	Pearson Correlation	.225**	-.140*	.212**	.580**	.713**	1	.170**	.407**	.287**
	Sig. (2-tailed)	<.001	.013	<.001	<.001	<.001		.003	<.001	<.001
	N	314	314	314	314	314	314	314	314	314
CWJS	Pearson Correlation	.521**	-.064	.274**	.156**	.214**	.170**	1	.403**	.266**
	Sig. (2-tailed)	<.001	.255	<.001	.006	<.001	.003		<.001	<.001
	N	314	314	314	314	314	314	314	314	314
SJS	Pearson Correlation	.382**	-.067	.229**	.180**	.420**	.407**	.403**	1	.664**
	Sig. (2-tailed)	<.001	.234	<.001	.001	<.001	<.001	<.001		<.001
	N	314	314	314	314	314	314	314	314	314
PJS	Pearson Correlation	.270**	-.019	.247**	.194**	.240**	.287**	.266**	.664**	1

	Sig. (2-tailed)	<.001	.744	<.001	<.001	<.001	<.001	<.001	<.001	
	N	314	314	314	314	314	314	314	314	314

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

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX I - PEARSON CORRELATION TABLE OF OCBAVE AND OC SUBSCALES

		OCBAVE	ACS	CCS	NCS
OCBAVE	Pearson Correlation	1	.004	-.036	-.014
	Sig. (2-tailed)		.942	.523	.801
	N	314	314	314	314
ACS	Pearson Correlation	.004	1	-.099	.554**
	Sig. (2-tailed)	.942		.078	<.001
	N	314	314	314	314
CCS	Pearson Correlation	-.036	-.099	1	.115*
	Sig. (2-tailed)	.523	.078		.042
	N	314	314	314	314
NCS	Pearson Correlation	-.014	.554**	.115*	1
	Sig. (2-tailed)	.801	<.001	.042	
	N	314	314	314	314

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

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX J - PEARSON CORRELATION OF OCBAVE AND JS SUBSCALES

		OCBAVE	CWJS	SJS	PJS
OCBAVE	Pearson Correlation	1	.154**	-.041	-.115*
	Sig. (2-tailed)		.006	.471	.041
	N	314	314	314	314
CWJS	Pearson Correlation	.154**	1	.403**	.266**
	Sig. (2-tailed)	.006		<.001	<.001
	N	314	314	314	314
SJS	Pearson Correlation	-.041	.403**	1	.664**
	Sig. (2-tailed)	.471	<.001		<.001
	N	314	314	314	314
PJS	Pearson Correlation	-.115*	.266**	.664**	1
	Sig. (2-tailed)	.041	<.001	<.001	
	N	314	314	314	314

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

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX K - CORRELATION TABLE OF OCBAVE AND SE SUBSCALES

		OCBAVE	Pedagogy	Class_Manage	Mentorship
OCBAVE	Pearson Correlation	1	.186**	.155**	.221**
	Sig. (2-tailed)		<.001	.006	<.001
	N	314	314	314	314
Pedagogy	Pearson Correlation	.186**	1	.558**	.580**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	314	314	314	314
Class_Manage	Pearson Correlation	.155**	.558**	1	.713**
	Sig. (2-tailed)	.006	<.001		<.001
	N	314	314	314	314
Mentorship	Pearson Correlation	.221**	.580**	.713**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	314	314	314	314

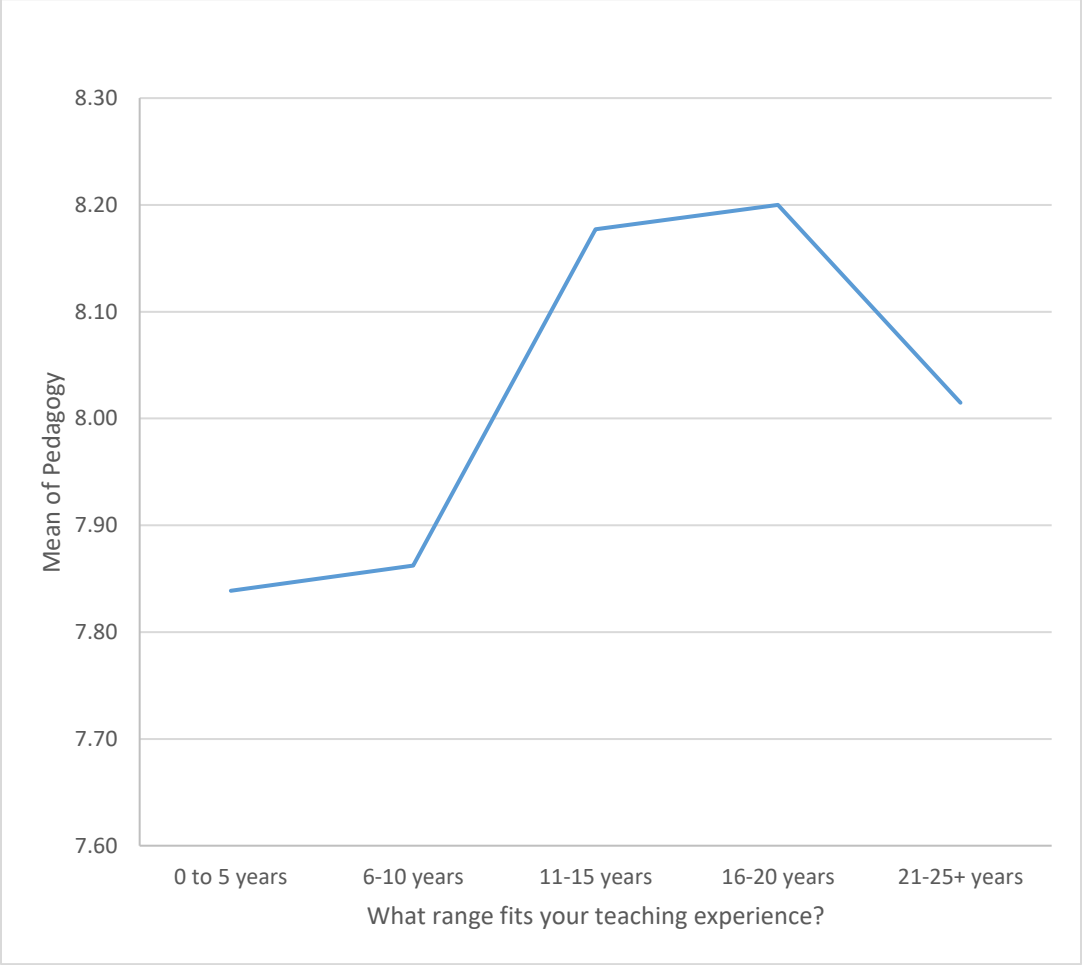
**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX L - CORRELATION TABLE OF OCAVE WITH JS SUBSCALES

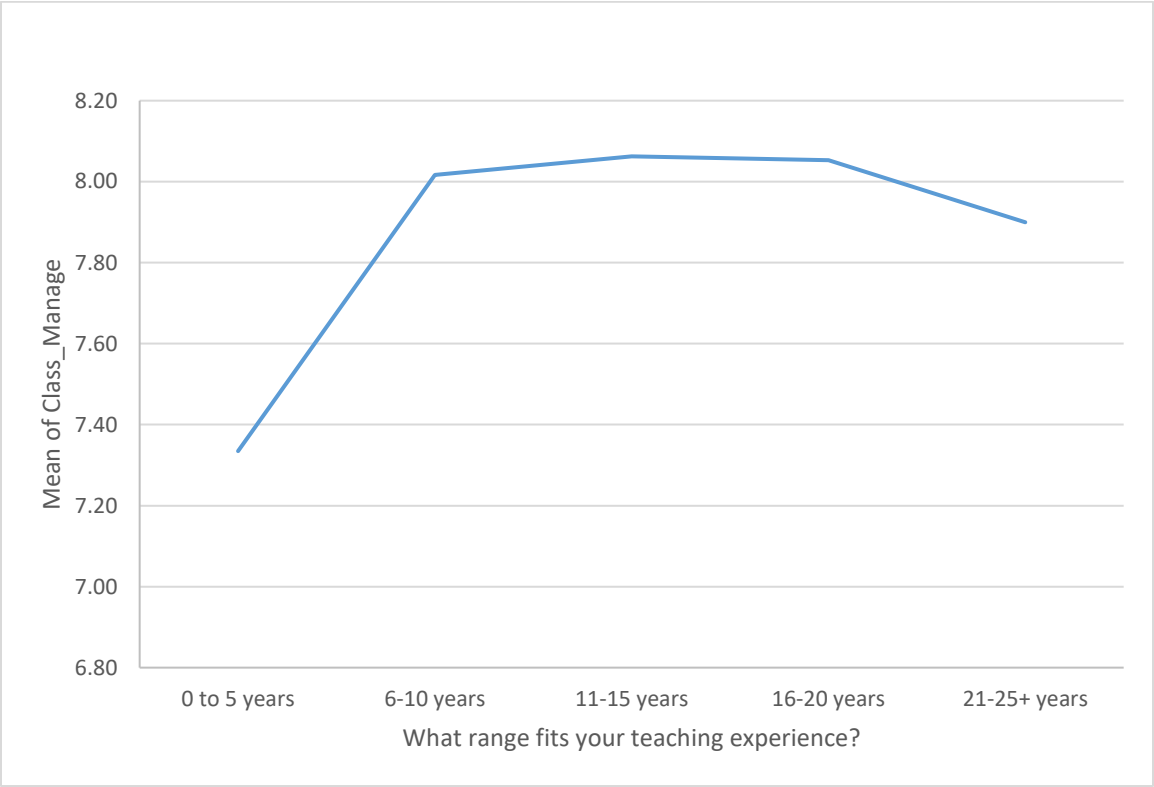
		OCAVE	CWJS	SJS	PJS
OCAVE	Pearson Correlation	1	.349**	.260**	.242**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	314	314	314	314
CWJS	Pearson Correlation	.349**	1	.403**	.266**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	314	314	314	314
SJS	Pearson Correlation	.260**	.403**	1	.664**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	314	314	314	314
PJS	Pearson Correlation	.242**	.266**	.664**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	314	314	314	314

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

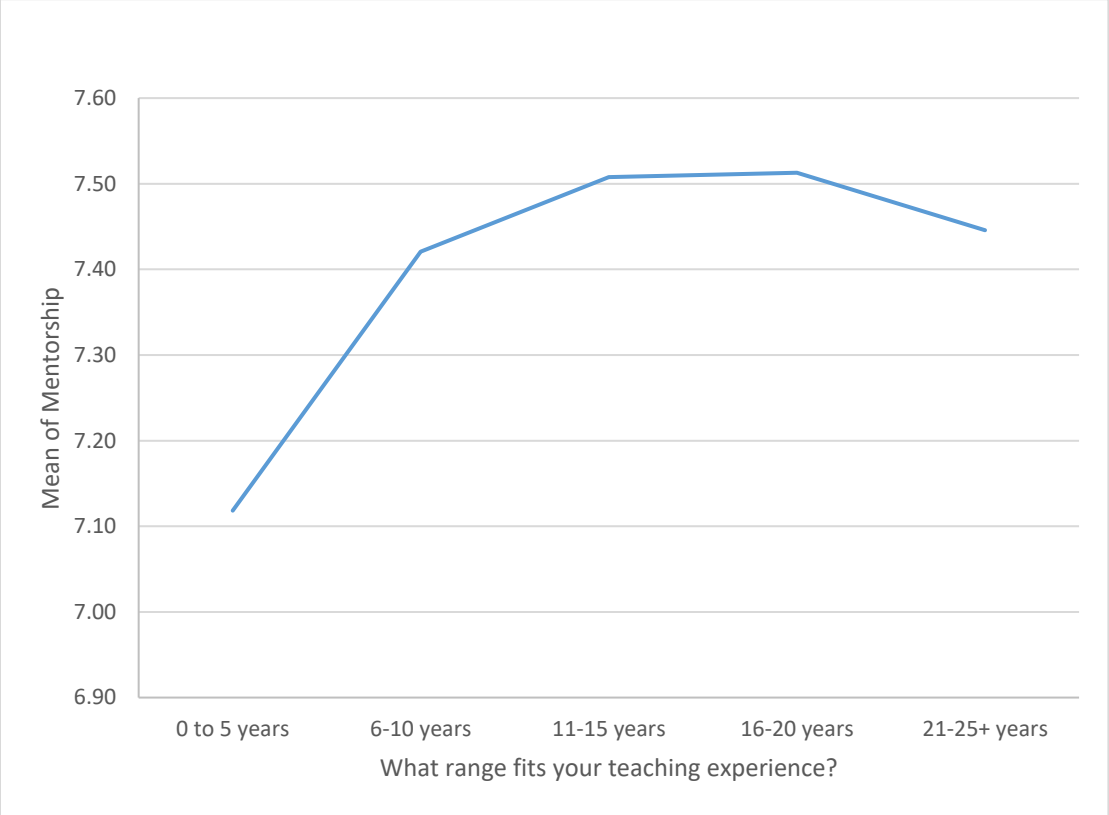
APPENDIX M - GRAPH OF PEDAGOGY VERSUS YEARS OF EXPERIENCE



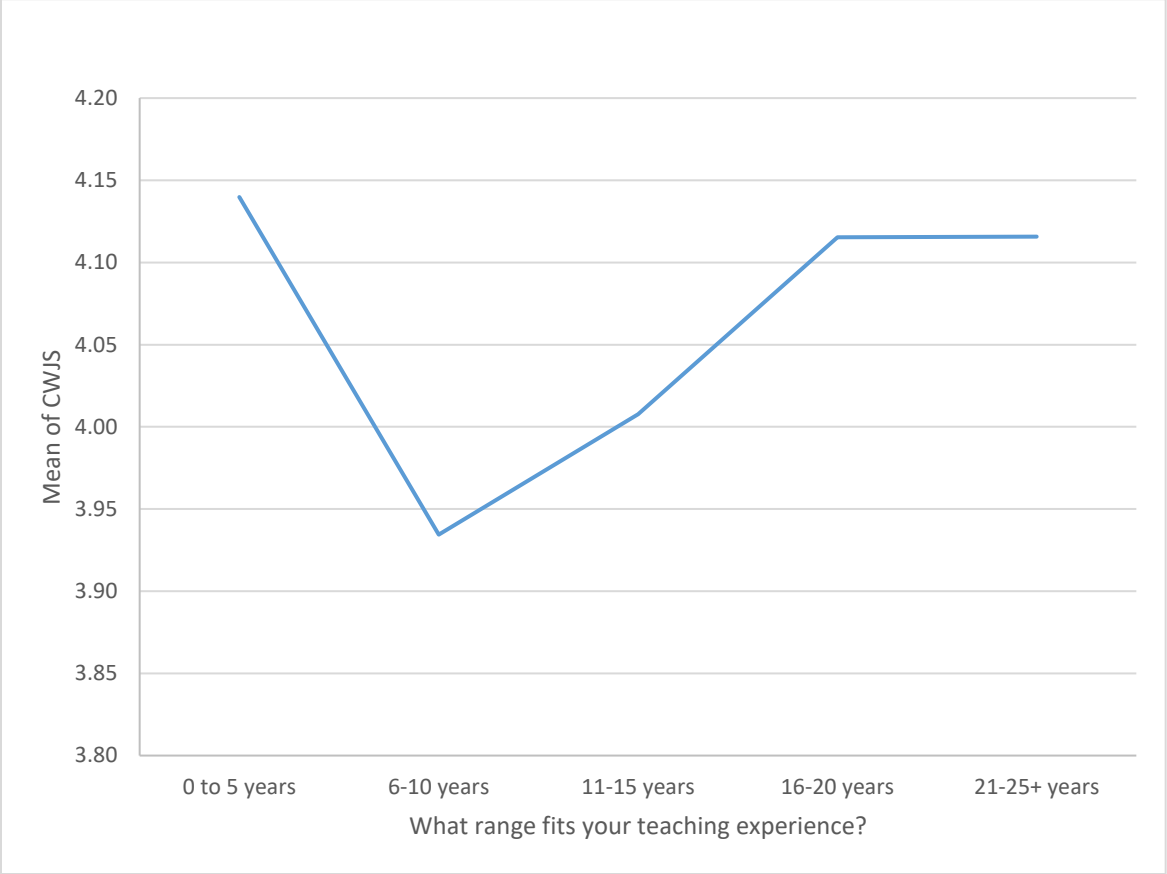
APPENDIX N - GRAPH OF CLASS MANAGEMENT VERSUS YEARS OF EXPERIENCE



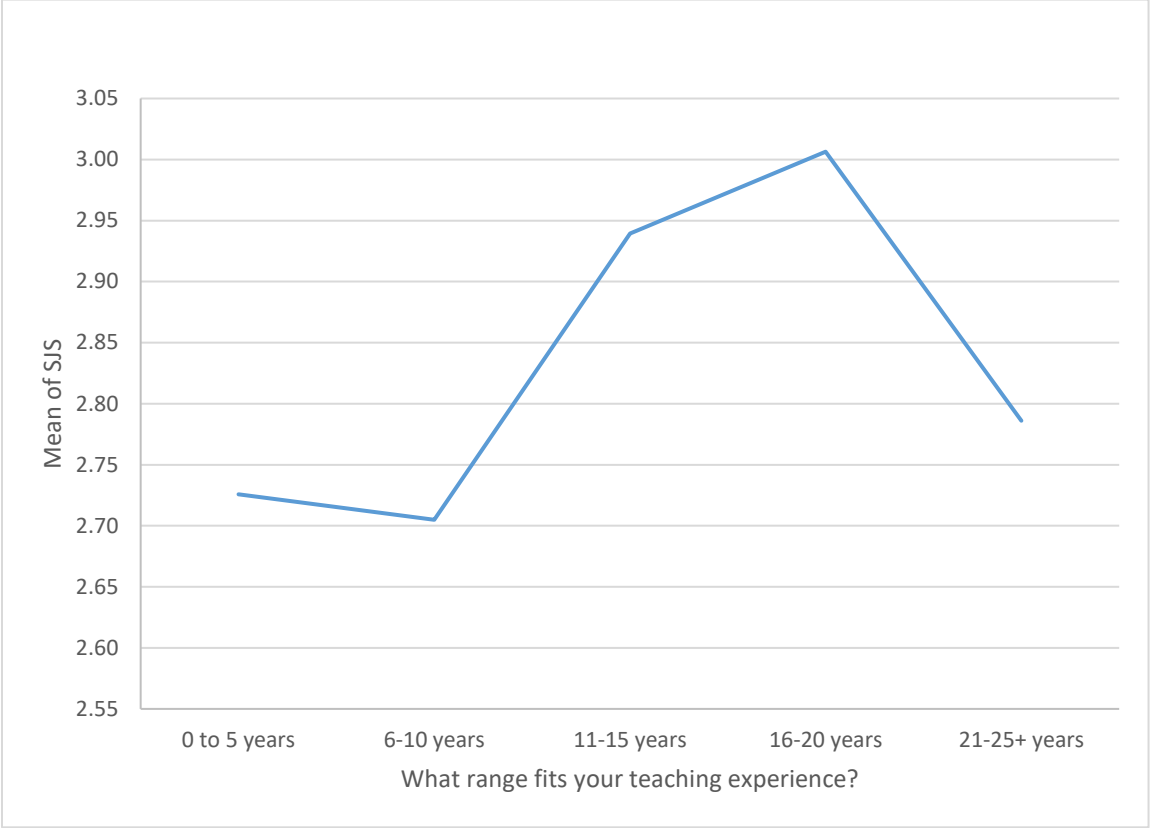
APPENDIX O - GRAPH OF MENTORSHIP VERSUS YEARS OF EXPERIENCE



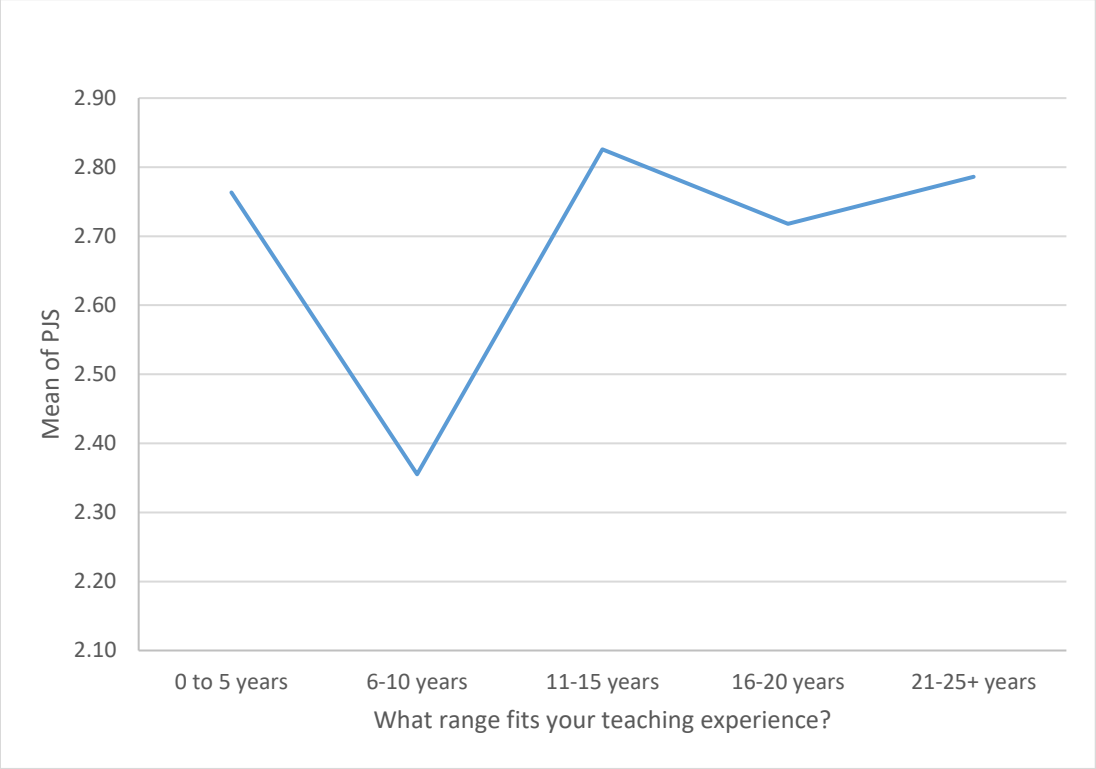
APPENDIX P - GRAPH OF CWJS VERSUS YEARS OF EXPERIENCE



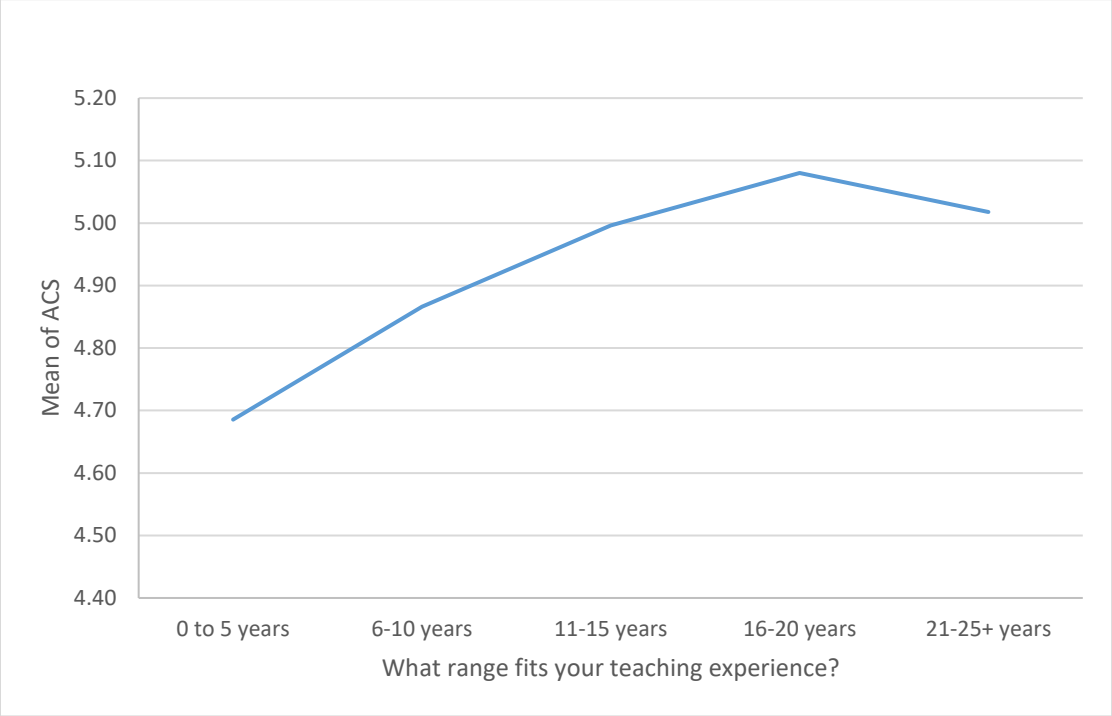
APPENDIX Q - GRAPH OF SJS VERSUS YEARS OF TEACHING EXPERIENCE



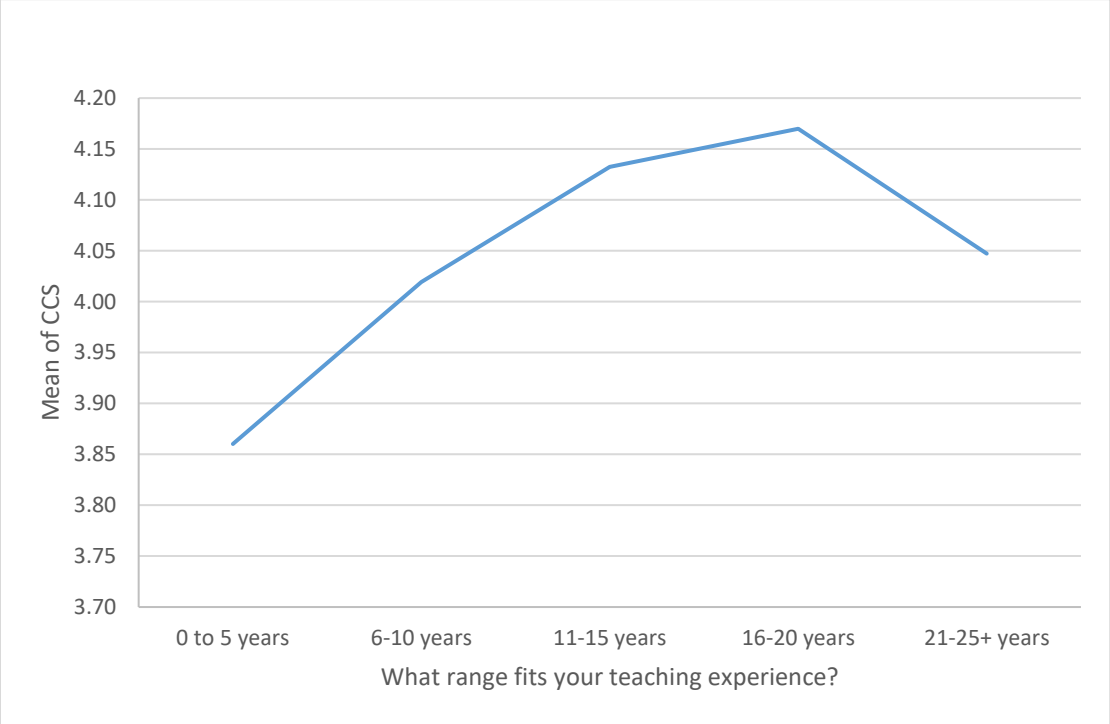
APPENDIX R - GRAPH OF PJS VERSUS YEARS OF EXPERIENCE



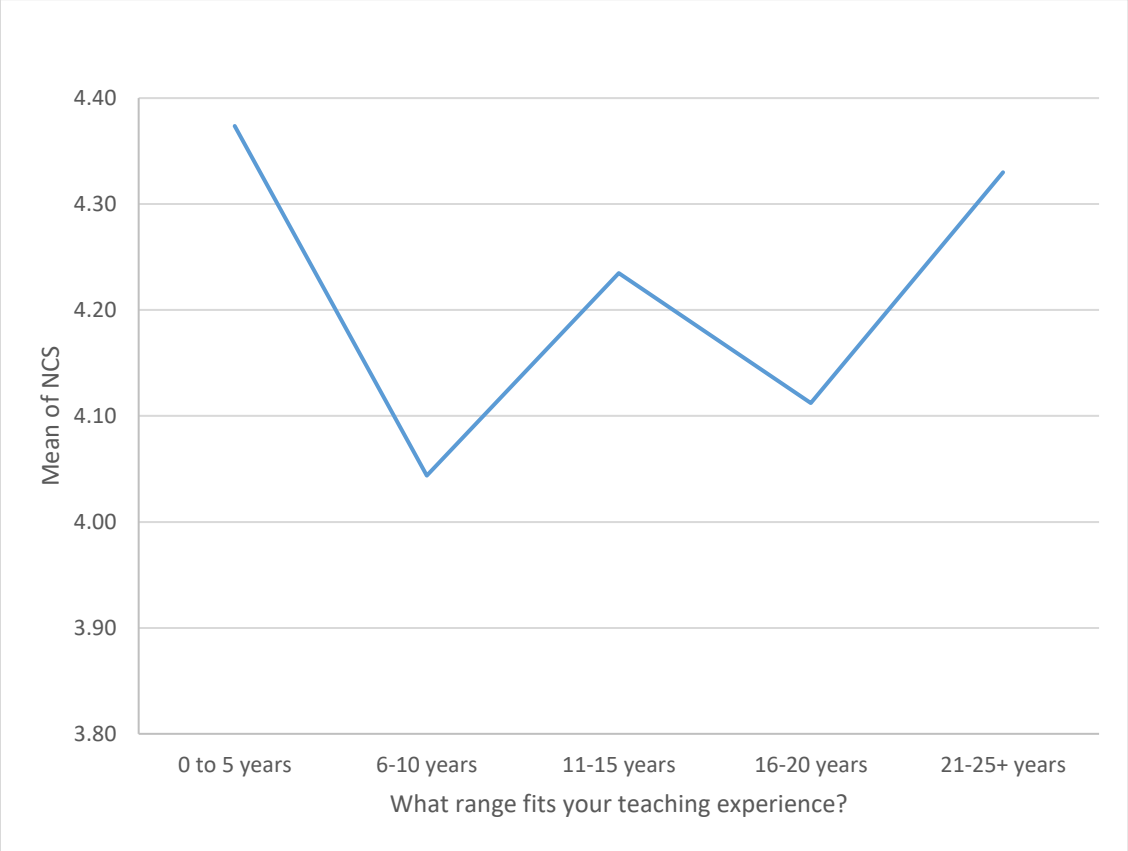
APPENDIX S – GRAPH OF ACS VERSUS YEARS OF EXPERIENCE



APPENDIX T – GRAPH OF CCS VERSUS YEARS OF TEACHING EXPERIENCE



APPENDIX U – GRAPH OF NCS VERSUS YEARS OF TEACHING EXPERIENCE



APPENDIX V - ITEM IDS WITH OCB ITEMS

ITEM IDs with OCB ITEMS	
ITEM ID	ITEM
OCB-1	Picked up meal for others at work
OCB-2	Took time to advise, coach, or mentor a co-worker.
OCB-3	Helped co-worker learn new skills or shared job knowledge.
OCB-4	Helped new employees get oriented to the job.
OCB-5	Lent a compassionate ear when someone had a work problem.
OCB-6	Lent a compassionate ear when someone had a personal problem.
OCB-7	Changed vacation schedule, workdays, or shifts to accommodate co-worker's needs.
OCB-8	Offered suggestions to improve how work is done.
OCB-9	Offered suggestions for improving the work environment.
OCB10	Finished something for co-worker who had to leave early.
OCB-11	Helped a less capable co-worker lift a heavy box or other object.
OCB-12	Helped a co-worker who had too much to do.
OCB-13	Volunteered for extra work assignments.
OCB-14	Took phone messages for absent or busy co-worker.
OCB-15	Said good things about your employer in front of others.
OCB-16	Gave up meal and other breaks to complete work.
OCB-17	Volunteered to help a co-worker deal with a difficult customer, vendor, or co-worker.
OCB-18	Went out of the way to give co-worker encouragement or express appreciation.
OCB-19	Decorated, straightened up, or otherwise beautified common workspace.
OCB-20	Defended a co-worker who was being "put-down" or spoken ill of by other co-workers or supervisor.

APPENDIX W - ITEM IDS WITH SE ITEMS

ITEM IDs with SE ITEMS	
ITEM ID	ITEM
SE-1	How much can you do to control disruptive behavior in the classroom?
SE-2	How much can you do to motivate students who show low interest in schoolwork?
SE-3	How much can you do to get students to believe they can do well in schoolwork?
SE-4	How much can you do to help your students value learning?
SE-5	To what extent can you craft good questions for your students?
SE-6	How much can you do to get children to follow classroom rules?
SE-7	How much can you do to calm a student who is disruptive or noisy?
SE-8	How well can you establish a classroom management system with each group of students?
SE-9	How much can you use a variety of assessment strategies?
SE-10	To what extent can you provide an alternative explanation or example when students are confused?
SE-11	How much can you assist families in helping their children do well in school?
SE-12	How well can you implement alternative strategies in your classroom?

APPENDIX X - ITEM IDS WITH OC ITEMS

ITEM IDs with OC ITEMS	
ITEM ID	ITEM
OC-1	I would be very happy to spend the rest of my career with this organization
OC-2	I really feel as if this organization's problems are my own
OC-3	I do not feel a strong sense of "belonging" to my organization
OC-4	I do not feel "emotionally attached" to this organization
OC-5	I do not feel like "part of the family" at my organization.
OC-6	This organization has a great deal of personal meaning for me.
OC-7	Right now, staying with my organization is a matter of necessity as much as desire.
OC-8	It would be very hard for me to leave my organization right now, even if I wanted to.
OC-9	Too much of my life would be disrupted if I decided I wanted to leave my organization now.
OC-10	I feel that I have too few options to consider leaving this organization.
OC-11	If I had not already put so much of myself into this organization, I might consider working elsewhere.
OC-12	One of the few negative consequences of leaving this organization would be the scarcity of available alternatives.
OC-13	I do not feel any obligation to remain with my current employer.
OC-14	Even if it were to my advantage, I do not feel it would be right to leave my organization now.
OC-15	I would feel guilty if I left my organization now.
OC-16	This organization deserves my loyalty.
OC-17	I would not leave my organization right now because I have a sense of obligation to the people in it.
OC-18	I owe a great deal to my organization.

APPENDIX Y - ITEM IDS WITH JS ITEMS

ITEM IDs with JS ITEMS	
ITEM ID	ITEM
JS-1	The quality of your relations with co-workers
JS-2	The extent to which your co-workers encourage you and support you in your work
JS-3	Your overall satisfaction with your co-workers.
JS-4	The extent to which students act in a self-disciplined manner.
JS-5	Your satisfaction with the behavior of students in your school
JS-6	Your overall level of satisfaction with student discipline in your school
JS-7	The degree of interest shown by parents in the education of their children
JS-8	The extent to which parents are supportive of the school and its programs
JS-9	Your overall level of satisfaction with parents where you work

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