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Scott Phillip Harris  
*Brigham Young University*

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Teacher Retention and Recruitment: Perceptions of Principals,  
Teachers, and University Students

Scott Phillip Harris

A dissertation submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

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## ABSTRACT

### Teacher Retention and Recruitment: Perceptions of Principals, Teachers, and University Students

Scott Phillip Harris

Department of Instructional Psychology and Technology, BYU  
Doctor of Philosophy

This study identifies differences in perceptions between three stakeholder groups – principals, K-12 teachers, and parents – regarding the effect of workplace conditions on teacher attrition. An electronic questionnaire was sent to 15 of Utah's 41 school districts. Sampling efforts yielded completed surveys from 93 principals, 2003 teachers and 495 parents. All three groups agreed that workplace conditions are important, but the greatest disagreements occurred in perceptions of (a) teacher involvement in decision-making, (b) protection of teacher preparation time, (c) administration's management of student discipline, (d) adequacy of resource availability, (e) the degree to which a trusting and supportive school environment existed within the school, and (f) whether teachers' expectations were reasonable. Overall, principals believed that work conditions are relatively good for teachers, while many teachers disagreed with these perceptions. The study also examined factors that influence science, technology, engineering and math (STEM) university students' willingness to consider teaching as a career. A total of 4,743 university students majoring in STEM fields from Brigham Young University completed the survey (31%) and although very few of these students initially consider this profession, we identified four factors using predictive modeling that are strongly associated with these students' willingness to consider teaching and their belief that teaching might be their best career option. Results indicated that STEM university students were more likely to consider teaching when they believed teaching is something they would be good at, others encouraged them to be a teacher, when family encourages them to teach, and when teachers they know inspire them. Results from this study indicate that small salary bonuses would likely not entice students in STEM subjects to become teachers. Less impactful factors included gender and individual beliefs about the respectability of the profession. Additionally, this study found these students less likely to consider work conditions for teachers when making career choices. This study concludes with several implications that can inform and possibly improve the recruitment and leadership preparation programs at Institutes of Higher Education.

Keywords: teacher education, teacher recruitment, teacher preparation, teaching profession, teacher shortage, perceptions on the teaching profession

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## DESCRIPTION OF RESEARCH AGENDA AND STRUCTURE OF DISSERTATION

This dissertation follows the article-format option for dissertations. The overall research topic for this dissertation addresses the problem of teacher retention and teacher recruitment currently facing schools and what administrators can do about it. Nationally, 16% of public school teachers leave their schools annually with 8% moving to a different school and 8% leaving the profession (Goldring, Taie, & Riddles, 2014). Compounding this problem is the fact that student enrollments are up, while new entrants into the teaching profession are down (Sutcher, Darling-Hammond, & Carver-Thomas, 2016).

As it is costly for schools to lose talent and experience with the departure of skilled teachers, it is important for school administrators to understand the factors driving the teacher attrition problem (Borman & Dowling, 2017; Glazer, 2018). Teachers likely consider many factors in their decision to leave the profession, but research has determined that workplace conditions are paramount (Hanks, Davies, Christensen, Harris, & Bowles, 2019). Using the findings from previous teacher attrition research as a starting point, one purpose of this study is to identify the differences between teachers', administrators', and parents' perceptions of working conditions for teachers. It is hoped that the findings from this study will help school administrators better understand the issues so they might provide teachers with better support and help them better incentivize teachers to stay in the profession.

Not only are teachers in the U.S. currently leaving the profession at a fairly constant rate, new entrants into the teaching profession have decreased. If just 3-5% of the teachers that leave annually could be retained, the national teacher shortage would end (Ravitch, 2016; Sutcher et al., 2016). Thus, in addition to retaining qualified teachers, the teaching profession faces a challenging issue of recruiting qualified individuals to become teachers. The problem is a supply

and demand challenge and, in addition to the review of stakeholder perceptions regarding teacher retention, this dissertation will explore the supply side teacher recruitment.

Over the last decade, fewer university students have shown interest in pursuing a teaching education major. Nation-wide teacher preparation programs in the United States have experienced a 35% decrease in enrollments from 2009 to 2014, while at the same time university enrollments have declined only 3%; further evidence that students are choosing other collegiate majors instead of teaching (Ravitch, 2016; US Department of Education, 2015). Much research has been conducted on current teachers and the teacher retention problem in an attempt to discover why in-service teachers may, or may not, persist in the teaching profession. Less is known about the current teacher recruitment problem (Flores & Niklasson, 2014). Most of the research literature simply identifies factors that may influence teacher recruitment.

### **Article Structure and Summaries**

This dissertation is based on two studies. The results from the first study examine principals' and teachers' perceptions to determine which factors best predict whether a teacher will remain in the profession, highlighting the differences in perceptions between principals and teachers. The second study explored factors that best predicted whether a STEM university student is not only willing to consider teaching as a career, but also whether they felt teaching is a viable career option for them. The goal of this dissertation was to identify factors that best predicted whether a teacher would remain in the teaching profession and factors that best predicted whether a STEM university student would consider the teaching profession. The dissertation also includes an extended literature review of the topic.

## Article 1: Teacher Attrition

The first article of this dissertation is titled *Teacher Attrition: Differences in Stakeholder Perceptions of Teacher Work Conditions*. This article has been completed and was published in *Education Sciences* on December 15, 2019. This journal is an international peer-reviewed open access journal published monthly online by Multidisciplinary Digital Publishing Institute (MDPI). A slightly modified version free from certain copy errors of the published article is presented below.

This study examined the working conditions of K-12 teachers that research has identified as influential to teacher attrition with the purpose of identifying differences in perceptions between principals, K-12 teachers, and parents. In general, while all groups agreed that workplace conditions are important, they disagreed on specific problems that exist in the workplace. The greatest agreement between teachers and administrators occurs with regards to (a) teacher compensation, (b) community respect for teachers, and (c) student behavior in the classroom. Teachers, administrators, and parents tended to agree that workplace conditions for these factors are suboptimal, but they disagree on the extent of the problem. The greatest disagreements between teachers and administrators perceptions in the working conditions most important to teachers occurred with regards to (a) expectations of teachers are reasonable, (b) a trusting and supportive environment exists, (c) teachers are involved in decision making, (d) administrators properly manage student discipline, and (e) preparation time is protected. While principals most often believed they are supporting teachers and creating an environment of trust, many teachers in this study disagree with these perceptions.

## **Article 2: Teacher Recruitment**

The second article for this dissertation is titled *Teacher Recruitment: Predictive Factors of STEM University Students Entering the Teaching Profession*. From the literature review conducted in conjunction with the first article, we found that students who feel like they have a good ability to teach and receive encouragement from others were more likely to consider teaching as a career and are more likely to feel teaching is their best career option (Christensen, Davies, Harris, Hanks, & Bowles, 2019). Other factors such as teacher compensation, respect for teachers, reasonable expectations, work conditions, teacher's lifestyle, and special bonus incentives were also evaluated.

This article utilized data obtained through a survey of STEM university students to identify which factors best predict whether they might choose to enter the teaching profession now that they are in college. The article targeted students who are designated as STEM majors as these teaching positions are particularly needed.

## **Article 3: Extended Literature Review**

The extended literature review for this dissertation explored the perceptions of the teaching profession held by principals, teachers, parents, and university students. The goal for the review was to gain an understanding of how these perceptions affect the current teacher shortages in public schools as they relate to teacher retention and recruitment. The extended literature review contributed to the creation of the survey instruments.

Perceptions of teaching found in the literature were used to identify potentially influential factors parents and students might consider when making a career decision regarding teaching. Some factors identified include low wages, increasingly challenging working conditions, difficult students and parents, and the diminished prestige of the teaching career (Han,

Borgonovi, & Guerriero, 2018). The literature also indicated that teachers who do persist in the profession report high levels of personal satisfaction and enjoyment as they contribute to society (Johnson, Kraft, & Papay, 2012). The review concludes with a call to better understand university students' perceptions of teaching such that recruitment efforts can be better aligned with university students' career interests.

ARTICLE 1

**Teacher Attrition: Work Condition Perception Differences**

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### Abstract

The purpose of this study was to identify differences in perceptions between three stakeholder groups – principals, K-12 teachers, and parents – regarding the effect of workplace conditions on teacher attrition. All three groups agreed that workplace conditions are important, but they disagreed about (a) which workplace conditions are most problematic for teachers, (b) the magnitude of these problems, and (c) the degree to which these problems may contribute to teacher leaving. The greatest disagreements occurred in perceptions of (a) teacher being involvement in decision-making, (b) protection of teacher preparation time, (c) administration's management of student discipline, (d) adequacy of resource availability, (e) the degree to which a trusting and supportive school environment existed within the school, and (f) whether teachers' expectations were reasonable. Overall, principals believed that work conditions are relatively good for teachers, while many teachers disagreed with these perceptions.

*Keywords:* teacher attrition, educational issues, work conditions for teachers

## Introduction

Many factors affect the quality of education, including school culture, community demographics, the support systems available to teachers and students, and many others (Burkhauser, 2017). One of the most important factors identified as a key challenge to the delivery of quality education, and which has steadily increased in recent years, is teacher attrition. While it is impossible to know the exact numbers, some researchers estimate that up to 16% of public school teachers may leave their schools every year, some of whom move to a different school, but many of whom leave the profession entirely (Goldring, Taie, & Riddles, 2014). Compounding this problem is the fact that student enrollments are up, while new entrants into the teaching profession are down (Sutcher, Darling-Hammond, & Carver-Thomas, 2016).

Since it is costly for schools to lose skilled teachers, it is important for school administrators to understand the factors driving the teacher attrition problem (Borman & Dowling, 2017; Glazer, 2018). Teachers likely consider many factors in their decision to leave the profession, but recent research has determined that workplace conditions are paramount (Hanks, Davies, Christensen, Harris, & Bowles, 2019). Prior research has found differences in perceptions between administration and teachers on issues associated with workplace conditions (Geiger & Pivovarova, 2018; Livingstone, 2018). However, as it is important to replicate research, especially when perceptions change as do workplace conditions, this research looks at current perceptions of various stakeholders paying attention to differences in these perceptions.

Using the findings from previous teacher attrition research as a starting point, the purpose of this study was to identify the differences between teachers', administrators', and parents' perceptions of working conditions for teachers. It is hoped that this study will help school

administrators better understand the issues that lead to teacher attrition, in order to help administrators take actions that might better incentivize teachers to stay in the profession.

### **Summary of Teacher Attrition Research**

Some amount of teacher attrition in the profession is unavoidable, because of personal factors and life issues. In fact, a certain amount of turnover is even healthy (Barnes, Crowe, & Schaefer, 2007). However, the current dynamic goes far beyond what might be considered “normal” levels of attrition (Glazer, 2018; Sutchter et al., 2016). High levels of teacher turnover are harmful for schools and students (Barnes et al., 2007). Aside from the negative impact on efforts to build strong organizational cultures and maintain staff cohesion (Guin, 2004; Hanselman, Grigg, Bruch, & Gamoran, 2016), high levels of teacher turnover often negatively impact student achievement outcomes due to inconsistency in instruction and differences in teacher quality and effectiveness between teachers who leave and those who replace them (Ronfeldt, Loeb, & Wyckoff, 2013). Additionally, replacing teachers is very expensive. Carroll (2007) posits that replacing an individual teacher in the United States costs between \$4,400 and \$17,900, with state expenditures for teacher turnover in the U.S. estimated to be over \$1 billion each year (Haynes, 2014).

Over the past four decades, much educational research has been devoted to this problem, with the hope that educators and policymakers will be able to develop effective, practical solutions. With drastic decreases in enrollment for teacher education university programs (Sutchter et al., 2016), the previous solution often adopted by policymakers of recruiting more teachers to replace the ones that leave is no longer a viable solution. Even with a wide range of initiatives to recruit new teachers, this continues to be a problem (Cooper & Alvarado, 2006; Ravitch, 2016). Solutions that have been attempted these include (a) career-change programs

designed to entice professionals into midcareer switches to teaching; (b) alternative certification programs to allow college graduates to postpone formal education training and begin teaching immediately; (c) recruitment of teaching candidates from other countries; and (d) financial incentives such as signing bonuses, student loan forgiveness, housing assistance, and tuition reimbursement (Cooper & Alvarado, 2006; Ravitch, 2016). While perhaps providing some limited benefits, these efforts have failed to adequately compensate for the flood of teachers leaving the profession and in some cases have only served to contribute to the attrition problem in other ways. For example, some researchers have found that alternatively trained teachers are often less effective than formally trained teachers, and may leave their teaching positions at even higher rates (Berry, 2008; Ingersoll, Merrill, & Stuckey, 2014). Perhaps, the main problem with these efforts is that none of them address the root cause of what is determining the teacher attrition problem in the first place; therefore we should perhaps not be surprised that they have not led to a permanent solution. Much of the teacher attrition research has, therefore, been focused on attempting to understand the cause of the attrition problem, so that proposed solutions will be more likely to be successful than simply replacing the teachers who leave.

### **Summary of Teacher Work Conditions Research**

Some of these studies have concluded that interpersonal principal–teacher relationships are a primary driver of variations in teachers’ satisfaction and commitment levels (Carr, 2009) and have proposed efforts (e.g. retreats, teambuilding, culture building, administrator training, modeling, etc.) to strengthen those relationships as a possible solution to the teacher attrition problem. However, while there is evidence that some administrators have employed such efforts with some success in their schools, such successes have not made a dent in teacher attrition levels on a large scale (Thomas, Tuytens, Devos, Kelchtermans, & Vanderlinde, 2018).

Low salaries for teachers is another factor that educational research has frequently identified as a major cause of the teacher attrition problem; however, research has shown that raising salaries has not been particularly effective at reducing attrition (Colson & Satterfield, 2018; Grimm, 2017). This suggests that increasing teacher pay may be only a partial solution to the attrition problem.

Increased expectations of teachers, as well as decreased support and respect for the teaching profession, are other concerns that have been noted in the research literature (Harrison, 2017; Sass, Seal, & Martin, 2011; Skaalvik & Skaalvik, 2016). However, practical solutions to these concerns have not been forthcoming. In short, while researchers have proposed a variety of explanations for attrition, and educators and policymakers have implemented a variety of policies based on those explanations to attempt to solve the attrition problem, efforts, to this point, have not succeeded in stemming the rising tide of teacher attrition (Burkhauser, 2017).

It has been suggested by some researchers that one of the reasons we have so far been unsuccessful at solving the attrition problem is that we do not yet sufficiently understand. Teacher attrition is a wicked issue that is recognized by everybody but which nobody has yet been able to pin down, because it comprises the convergence of multiple practical and theoretical educational themes (Kelchtermans, 2017). The authors tend to agree and have designed the current study to explore some of those practical educational themes – specifically, those related to teacher work conditions – in order to better understand the role those conditions play in teacher attrition (it would be impossible to conduct an in-depth investigation of all of the relevant educational themes in a single study). Factors related to teachers' working conditions that have been identified in previous research as affecting teacher attrition are presented in Table 1. These factors were used to develop items for the data collection instruments employed in this study.

Table 1

*General Factors Included in This Analysis That are Believed to Influence Teacher Attrition*

Factor	Source
Teacher expectations	Ladd, 2011; Torres, 2016
Personal factors/life issues	Borman & Dowling, 2017
Student behavior	Duyar, Gumus, & Bellibas, 2013
Work conditions/job satisfaction	Burkhauser, 2017; Goldring et al., 2014
School leadership	Burkhauser, 2017; Grant, 2017; Ladd, 2011
Teaching experience	Guarino et al., 2006; Ingersoll et al., 2014
Environment of trust	Hughes, Matt, & O'Reilly, 2015
Professional Development	Burke et al., 2013; Burkhauser, 2017
Respect/support	Arnup & Bowles, 2016; Bennett et al., 2013
Compensation	Burkhauser, 2017; Gray & Taie, 2015

*Note.* Multiple sources exist for each general factor. In addition, each factor has various aspects associated with it.

### **Methodology**

In this study, a sample of parents, practicing principals and assistant principals, and K-12 teachers in several school districts across one western U.S. state were surveyed to determine their perceptions of working conditions for teachers, based on factors that are already believed to affect teacher attrition (see Table 1).

### **Participants**

After IRB approval was granted for the study, participant recruitment took place in the early months of 2018. Participants were recruited by approaching all the school districts in the state with an email that (a) explained the purpose of the research, (b) provided an attachment of IRB approval and of the sample surveys, and (c) invited the school district to participate in the study. Once a district agreed to participate, the surveys were sent to district office personnel to be distributed through the district email system. Participating districts then sent email invitations

containing a survey link to parents, current teachers, and principals and assistant principals. Since perceptions can differ by location (Borman & Dowling, 2017; Glazer, 2018), efforts were made to ensure that the final sample included school districts representing urban, suburban, and rural areas, as well as school districts representing a geographic cross section of the state in which the study took place.

The researchers were successful in receiving approval from 15 (approximately 36%) of the 41 school districts that were invited to participate. The smallest of these districts employed 72 teachers, the largest employed 2245. Participation was anonymous and voluntary. The various explanations that district superintendents gave for why they chose to not participate in the study included concerns with (a) principals and teachers having already reached survey fatigue for the year; (b) the survey's temporal proximity to the most recent survey sent out by the district; (c) the amount of time remaining in the school year; (d) potential parent backlash; (e) political concerns; and (f) lack of interest on the part of district personnel. Within the 15 participating districts, all school administrators and teachers were emailed an online survey link. Nine of the districts also sent out survey invitations to parents. These sampling efforts yielded the following results: 495 parents completed all survey items; 2003 current teachers completed all survey items (183 teachers only completed part of the survey); and 93 school administrators completed all survey items (2 administrators only completed part of the survey). An examination of the incomplete surveys revealed that they often contained meager data and that the survey items that were not answered appeared to be randomly distributed throughout the survey. Therefore, the researchers decided that list-wise deletion was a justifiable approach to take to the missing data, and only surveys with complete data were included in the data analysis.

Within the participating school districts, the teacher survey response rate was estimated at approximately 34%, with 1533 (77%) of the respondents being female. Within the group of responding school administrators, a response rate of approximately 47% was estimated, of whom 46% (43 respondents) were males. The response rate for parents was impossible to calculate, but 383 parent respondents (77%) were female.

### **Instrument Development**

Survey items were developed, tested, and refined in order to capture respondents' perceptions of specific teacher working conditions. The instruments used for data collection were validated through a process recommended by Creswell (2008). Based on a review of literature that identified potentially important factors that might affect an individual's decision to choose teaching as a career, draft items were created. These items were tested and revised on the basis of a cognitive think aloud process followed by pilot testing to verify that item did in fact capture the essence of the factors of interest. Once the items were set, they were entered into an online survey software program to be distributed by cooperating school districts. In the spring of 2018 invitations to complete an anonymous online questionnaire were sent to all the juniors and seniors in the nine participating school districts by district personnel, using their email system. For disaggregation purposes, the typically 6-point Likert scale was collapsed to three categories for reporting the results in this article, although the full scale was used for the analysis. The final version of the survey was approved by each of the school districts.

### **Data Collection and Analysis**

The question this study attempted to address is: What are the differences in perceptions of teachers' working conditions between (a) teachers, (b) school administrators, and (c) parents (with an emphasis on differences between how these three stakeholder groups believe teacher



working conditions affect teacher attrition)? Responses were obtained using a 6-point Likert-type scale with response options that ranged from *strongly disagree* to *strongly agree*. For the purpose of simplicity in reporting results, the scale was later collapsed into three categories (e.g. the *agree* and *strongly agree* response options became a single category, reported here as *agreed with statement*). After determining that the assumptions for the statistical methods used in the study (linearity, independence, normality, equality of variance, and multicollinearity) were met, the response percentages for each category were then compared for each of the disparate stakeholder groups that participated in the study (teachers, administrators, parents). Parametric and non-parametric statistics were then used to determine whether the differences in the response distributions were statistically significant. The primary analysis in this article was meant to identify factors highly predictive of teachers thinking of leaving the profession, shown in Table 3. A complete explanation of this regression analysis is reported in a separate article currently in press.

### **Results and Discussion**

Of the responses collected for the 13 specific working conditions examined in this study, the results reveal substantial disagreements between the various stakeholder groups (teachers, administrators, and parents) (see Tables 2 and 3). In general, the stakeholder groups all agreed that workplace conditions are important and that many of them likely play a role in teacher attrition. However, there was significant disagreement between the stakeholder groups regarding (a) which workplace conditions are most problematic for teachers, (b) the magnitude of the problems caused by these conditions, and (c) the role these problems play in teachers leaving their teaching position. The reader should note that parents were not asked about some of the workplace conditions, due to the researchers' determination that they likely would not have

enough information to develop an informed opinion about them (see Table 2). Likewise, in Table 3, teacher beliefs are compared to administration's and parents' perceptions on related topics.

### **Administrative Support**

The research literature on teacher attrition places special significance on administrative support in teachers' decisions about remaining at their teaching post. Hughes et al. (2015) found that teachers held four areas of support in greatest esteem. The most important kind of support was emotional support, meaning that expectations of teachers are reasonable and that there is a trusting and supportive environment in the school. The second most important kind of support was environmental support, meaning that administrators effectively address student behavior and safety issues. The third most important kind of support was instructional support, meaning that teachers are provided with adequate resources, have a say in decisions that affect them, and are provided with quality professional development opportunities. The final kind of support that was most important to teachers was technical support.

Table 2

*Differences in Perceptions of Working Conditions for Teachers*

Working Condition in Schools	Agreed with statement*			Importance**
	Principals	Teachers	Parents	Teachers
There is a trusting and supportive environment †	92 %	53 %		89 %
Expectations of teachers are reasonable †	56 %	20 %	10 %	91 %
Students are well behaved and care about learning †	49 %	19 %	6 %	78 %
Adequate resources provided	83 %	43 %	7 %	80 %
Teachers respected in community	50 %	30 %	57 %	76 %
Leaders articulate a vision for improving learning †	83 %	51 %		62 %
Teacher performance is evaluated fairly	78 %	47 %		76 %
Teachers have a say in decisions that affect them	89 %	39 %		84 %
Quality professional development opportunities †	79 %	54 %		68 %
Support provided to improve Administrators effectively address student behavior and safety issues	83 %	51 %		62 %
Preparation time is protected	86 %	44 %		84 %
Teachers are compensated adequately for their work †	85 %	38 %		81 %
	27 %	7 %	5 %	86 %

\* percentage of individuals in the group who agreed or strongly agreed with each statement.

\*\* percentage of individual teachers who felt this factor was important or very important.

† factors found to be highly predictive of teachers thinking of leaving the profession (Hanks et al., 2019)

Table 3

*Differences in Beliefs Regarding Common Reasons for Teachers Leaving the Profession*

Potential Reason for Leaving	Agreed this is Common*			Teacher Beliefs
	Principals	Parents		
Work expectations become overwhelming	54 %	63 %	80 %	Expectations of teachers are unreasonable. †
Not respected by students	47 %	50 %	19 %	Students are well behaved and care about learning. †
Not respected by community	30 %	36 %	30%	Teachers respected in community
Not respected by administration	16 %	24 %	53 %	There is a trusting and supportive environment †
Better paying job	45 %	62 %	30%	I could get a better paying job
Negative work environment	39 %	9 %	40 %	Work environment is negative
Compensation inadequate	30 %	36 %	93 %	Teachers are not compensated adequately †
Lifestyle changes	70 %	55 %	22 %	Does not fit my lifestyle
Dislike current position	9 %	10 %	25 %	Dislike current position

\* percentage of individuals in the group who agreed or strongly agreed with each statement.

† factors found to be highly predictive of teachers thinking of leaving the profession (Hanks et al., 2019)

The results of the present study corroborate the findings of Hughes et al. (2015) to a significant degree but also reveal sharp disagreement between the beliefs of the participating teachers and those of their administrators about the nature of the working relationships that exist within their schools.

### **Trusting and Supportive Environment in Schools**

Only half (53%) of the teachers in this study agreed with the general statement that *there is a trusting and supportive environment* at their school, while nearly all (92%) principals believed that such an environment existed (see Table 2). A more specific example of this disparity in perception of support is the fact that the teachers in this study did not believe that *teachers have a say in decisions that affect them*, which research suggests is one of the specific indicators of a trusting environment in schools (Hughes et al., 2015). Only 39% of teachers agreed with this statement, in contrast to 89% of principals.

### **Expectations of Teachers**

Teaching has always been difficult, and expectations of teachers have steadily increased over the years (Torres, 2016). Only 20% of teachers in this study felt that expectations of teachers are reasonable, and 91% considered this particular working condition to be important or very important (see Table 2). Interestingly, an even lower percentage of parents (10%) believed that expectations of teachers are reasonable. In fact, this working condition has been found to be a highly predictive factor in teachers' satisfaction with their current position, which has recently been found by the authors (in a related study) to be a highly predictive factor in teachers' thoughts of leaving the profession (Hanks et al., 2019). The results of this survey indicate that some school leaders do recognize this problem, as only about half of them (56%) believed that the expectations placed on teachers were reasonable. However, these results confirm that there still exists a significant disparity in perceptions of this issue between teachers and administrators. This is confirmed even more strongly by examination of an even more specific indicator of expectations placed on teachers – the factor *teacher preparation time is protected*. Most of the

administrators (85%) agreed with the statement, as compared with only 38% of teachers who agreed.

### **Student Behavior**

Both teachers and parents reported that many students are not particularly well behaved in school and that many are also not invested in their own learning. The results of this study showed that 19% of teachers and only 6% of parents agreed that students are well behaved and care about learning (see Table 2). These findings seem to corroborate Ravitch's (2016) report of a growing toxicity in the public school environment, including the dynamic between students and teachers. Most importantly, this working condition has recently been found to be a highly predictive factor in teachers' satisfaction with their current position, which has been found to be a highly predictive factor in teachers' thoughts of leaving the profession (Hanks et al., 2019). Again, administrators were far more likely than teachers to believe that student behavior is not an issue (49%). Compounding this problem is the fact that teachers expect school leadership to support and enforce rules for student conduct; however, most administrators (86%) indicate that they effectively address student behavior and safety issues, while only 44% of teachers believe that they do.

### **Resources and Opportunities**

The two working conditions (a) having *adequate resources provided* to teach effectively and (b) receiving *quality professional development opportunities* were believed to be important by both principals and teachers. However, administrators and teachers tended to have different opinions regarding the adequacy of these conditions in schools. For the first of these two factors, 83% of principals (but only 43% of teachers) agreed that teachers received adequate resources to do their jobs (see Table 2). (Interestingly, only 7% of parents agreed that teachers received

adequate resources to do their jobs). Regarding the second factor, 68% of the teachers in this study rated it as important, but only about half (54%) agreed they were receiving quality professional development opportunities. Meanwhile, 79% of principals believed teachers received such opportunities. This discrepancy in stakeholders' perceptions of this particular working condition has especial significance. It has been recently identified by the authors (in a related study) to be a highly predictive factor in teachers' satisfaction with their current position, which has been found to be a highly predictive factor in teachers' thoughts of leaving the profession (Hanks et al., 2019).

### **Compensation**

One factor on which respondents were in general agreement is that teachers are not paid well (only 27% of administrators, 7% of teachers, and 5% of parents agreed with the statement *teachers are compensated adequately for their work*), although there is still a 20% disparity between teachers and administrators on this work condition (see Table 2). However, compensation, on its own, does not seem to be the main cause of teachers deciding to leave. While it is true that some research (Burkhauser, 2017; Gray & Taie, 2015; Hanks et al., 2019) has suggested that low teacher salaries is a leading cause of teacher attrition, researchers have found that the frequency of teachers' thoughts of leaving the profession appear to be influenced more by their working conditions than by pay alone. According to that study, work conditions that influence thoughts of leaving include (a) unreasonable expectations, (b) lack of trust and support from administrators, (c) teachers' inability to participate in decisions affecting their job, and (d) student behavior. This does not mean that teacher compensation is not an influential factor in teachers' thoughts and decisions about leaving or staying. Regardless of how long they had been teaching, 93% of teachers agreed that they are not paid adequately, but salary was not

reported as being the most important factor teachers considered when making a decision to remain a teacher. In terms of importance to teachers, compensation was reported by teachers as being less important than (a) reasonable work expectations and (b) a trusting and supportive environment at school. These data suggest that working conditions may often be more important to teachers than compensation, or at least that compensation and work conditions may work together to influence teachers' thoughts of leaving the profession.

For example, a teacher might initially agree that their compensation is not adequate, but, because their work expectations are reasonable and they have a trusting and supportive environment at school, they may still have no thoughts of leaving their post. However, as time goes on, if this teacher begins to perceive that work expectations have become less reasonable and/or that their school environment is no longer as trusting and supportive as it once was, then their inadequate compensation might begin to be more important. If this hypothetical scenario, or something like it, is true for many teachers, it may explain (or partially explain) why research on teacher attrition consistently finds that teachers are dissatisfied with their pay, but that efforts to increase teacher salaries have had no appreciable success at stemming the tide of current teacher attrition rates (Colson & Satterfield, 2018; Grimm, 2017).

### **Differences in Perspective**

The study results from Table 3 show significant differences in perceptions between principals, parents, and teachers regarding common reasons for teachers leaving the profession. First, while 70% of principals and 55% of parents believe teachers leave for lifestyle reasons, only 22% of teachers indicated that this is the case. Second, the study results show that while only 9% of principals and 10% of parents agree that teachers dislike their current position, 25% of teachers indicated they do not like their current teaching position. This is particularly



important, as it is one of the factors that has been found to be highly predictive of teachers' thoughts of leaving (Hanks et al., 2019). Third, many principals (47%) and parents (50%) believe that teachers leave because they do not feel respected by students, but those beliefs are out of step with the beliefs of teachers, only 19% of whom agreed that teachers leave because of a lack of respect on the part of the students. Fourth, regarding compensation, only 30% of principals and 36% of parents believe teachers leave due to inadequate compensation, while 93% of teachers agreed that this was a common reason for teachers leaving. Fifth, over half of the teachers surveyed in this study (53%) believed that teachers leave because of issues related to trust and support in their school. In contrast, only 16% of administrators and 24% of parents considered this a common reason teachers leave. This was found to be a highly predictive factor for teachers thinking of leaving the profession (Hanks et al., 2019). Finally, the most highly predictive factor for teachers thinking of leaving, according to our findings is that work expectations become overwhelming. With regards to this factor, there were major discrepancies in stakeholder perceptions, with 54% of principals and 63% of parents agreeing that this is a common reason for teachers leaving, compared with 80% of teachers.

These results confirm that there exist important discrepancies in the beliefs of the various stakeholders regarding the issue of teacher attrition. Additionally, these results serve to underscore the fact that there are many factors (e.g. teacher work conditions) beyond teacher salaries that play a major role in the complex decision that teachers make to either remain in or leave their teaching position. Additionally, these factors appear to work together in complex ways that are not always immediately apparent, thus indicating the importance of educators and policymakers employing a multi-pronged approach to solving the attrition problem.

An important point made by several administrators in the comments section of the survey notes that teachers are occasionally forced to leave the profession because they do not meet adequate levels of acceptable performance. The observation about teacher dismissals is, of course, correct, and points out the fact that a certain amount of teacher turnover is unavoidable, and, if due to teacher incompetence or malfeasance is even desirable (Barnes et al., 2007). Indeed, one of the most important roles of a principal is to identify and remove underperforming teachers (Burkhauser, 2017). Studies have shown that teachers generally agree to be held to high professional standards for delivering instruction; however, they also want the procedures for teacher performance evaluations to be consistent, and they want to receive feedback that can help them improve their teaching (Burkhauser, 2017). Unfortunately, only 47% of teachers in this study agreed that their performance is evaluated fairly, as compared with 78% of principals (see Table 2).

### **Conclusions**

Public school districts in the United States struggle with teacher retention (Boyd et al. 2011; Johnson, Kraft, & Papay, 2012; Ladd, 2011). Policymakers have often responded to this problem by trying to increase the supply of teachers, by offering incentives, or both. While such recruitment efforts may be worthwhile and helpful to a point, little evidence exists that these efforts will solve the teacher attrition problems without the simultaneous efforts to address other factors associated with teachers' decision to leave, such as the conditions under which teachers work (Hanks et al., 2019; Richardson & Watt, 2006).

The purpose of this study was to identify differences between teachers', administrators', and parents' perceptions of working conditions for teachers, especially with regards to which of those working conditions are important to teachers. In general, teachers in this study feel

expectations are unreasonable, there is a lack of trust and support in the school environment, and their pay is inadequate. On the other hand, principals seem to believe they involve teachers in the decision making process at their school, they protect teachers' preparation time, they address student behavior problems adequately, and they provide teachers with opportunities for professional development. Given the disconnect that seems to exist between teachers' and principals' perceptions of teacher working conditions, even with improved pay, teachers will continue to consider leaving the profession.

This being the case, it is important for administrators to consider what policies and practices can be implemented to incentivize teachers to stay. While the principals in this study had an average of over 12 years in prior teaching experience, they had been working as full-time administrators an average of 9 years. Regardless of the long tenure as teacher for most of these administrators, with all of the additional concerns, responsibilities, and demands that come with the position of administrator, it seems clear that administrators' perceptions of the teaching environment becomes divergent from the beliefs of those still teaching. The principals in this study expressed what appears to be great optimism about the nature of the workplace conditions in their schools; however, this is at odds with the much more negative perceptions of their teachers.

School administrators have the responsibility to understand teachers' concerns and play a key role in improving the school environment for teachers, regardless of the accuracy of teachers' perceptions (Burkhauser, 2017). There is, of course, an important role for teachers to improve the work environments at their schools. However, the purpose of this particular study was to identify the disparity in perceptions held by administrators and teachers regarding the working conditions at their schools.

The eight factors that showed the largest gaps in agreement between principals often deal more with work conditions than pay. These factors, in order from the largest perception gaps to smallest, include the belief that (a) teachers have a say in decisions that affect them; (b) teacher preparation time is protected; (c) students are well behaved and care about learning; (d) administrators effectively address student behavior and safety issues; (e) adequate resources are provided; (f) a trusting and supportive environment exists; (g) expectations of teachers are reasonable; and (h) compensation is reasonable. These results suggest that, in addition to efforts to improve teacher pay, any comprehensive plan intended to reduce teacher attrition must primarily be concerned with improving work conditions in schools. Recruiting large numbers of new teachers to replace those who leave has worked in the past to alleviate the teacher attrition problem. However, even if more teachers are hired, these teachers will continue to leave if work conditions are not improved. Unfortunately, when making career choices, those considering a teaching career do not often consider work conditions (Hanks et al., 2019). This is likely one of the reasons individuals end up leaving their teaching positions once the reality of teachers' work conditions become more apparent. As the common expression goes, "a rising tide lifts all boats." Improved teachers' work conditions is clearly an important factor that needs to be address if the teacher attrition problem in the U.S. is to be solved. This starts with recognizing the disparity between perceptions about work conditions for teachers among important stakeholders.

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## APPENDIX

## Teacher Attrition Study 2019

## Perceptions of Working Conditions of both Principals and Teachers - By Importance to Teachers

Working Condition	Principals			Teachers			Difference	Importance	
	Strong Agree	Agree	Total	Strong Agree	Agree	Total		Principals	Teachers
Expectations of Teachers Reasonable	18	38	56	4	16	20	36	99	91
Environment of Trust	42	50	92	19	34	53	39	96	89
Pay is Adequate	4	23	27	1	6	7	20	94	86
Teachers Involved in Decisions	38	51	89	10	29	39	50	89	84
Principals Address Student Behavior	26	60	86	12	32	44	42	92	84
Preparation Time is Protected	44	41	85	9	29	38	47	95	81
Adequate Resources are Provided	24	59	83	11	32	43	40	90	80
Students Behave Well	5	44	49	2	17	19	30	92	78
Performance is Evaluated Fairly	19	59	78	13	34	47	31	72	76
Teachers Respected in Community	13	37	50	5	25	30	20	87	76
Leaders Vision for Improvement	24	63	87	15	37	52	35	84	71
Provided Quality ProDev	27	52	79	16	38	54	25	85	68
Provided Support to Improve	28	55	83	15	36	51	32	78	62

## Perceptions of Working Conditions of both Principals and Teachers - By Difference

Working Condition	Principals			Teachers			Difference	Importance	
	Strong Agree	Agree	Total	Strong Agree	Agree	Total		Principals	Teachers
Teachers Involved in Decisions	38	51	89	10	29	39	50	99	91
Preparation Time is Protected	44	41	85	9	29	38	47	92	78
Principals Address Student Behavior	26	60	86	12	32	44	42	95	81
Adequate Resources are Provided	24	59	83	11	32	43	40	89	84
Environment of Trust	42	50	92	19	34	53	39	92	84
Expectations of Teachers Reasonable	18	38	56	4	16	20	36	94	86
Leaders Vision for Improvement	24	63	87	15	37	52	35	90	80
Provided Support to Improve	28	55	83	15	36	51	32	72	76
Performance is Evaluated Fairly	19	59	78	13	34	47	31	96	89
Students Behave Well	5	44	49	2	17	19	30	87	76
Provided Quality ProDev	27	52	79	16	38	54	25	85	68
Pay is Adequate	4	23	27	1	6	7	20	78	62
Teachers Respected in Community	13	37	50	5	25	30	20	84	71

ARTICLE 2

**Teacher Recruitment: Predictive Factors of  
STEM University Students Entering  
the Teaching Profession**

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### Abstract

This study examines factors that influence science, technology, engineering and math (STEM) university students' willingness to consider teaching as a career. Although very few of these students initially consider this profession, we identified four factors using predictive modeling that are strongly associated with these students' willingness to consider teaching and their belief that teaching might be their best career option. Results indicated that STEM university students were more likely to consider teaching when they believed teaching is something they would be good at, others encouraged them to be a teacher, when family encourages them to teach, and when teachers they know inspire them. Results from this study indicate that small salary bonuses would likely not entice students in STEM subjects to become teachers. Less impactful factors included gender and individual beliefs about the respectability of the profession. Additionally, this study found students less likely to consider work conditions for teachers when making career choices.

*Keywords:* teacher education, teacher recruitment, teacher preparation, teaching profession, teacher shortage, perceptions on the teaching profession, university STEM students

## Introduction

For decades, schools in the United States have struggled to retain enough teachers to fully staff their classrooms (Grissmer & Kirby, 1987). Currently, the demand for teachers is much greater than the supply (Ingersoll, Merrill, & Stuckey, 2014). The increased demand for new teachers is partly due to the growing student populations; however, another factor impacting the shortage is that fewer potential teachers are entering teacher education programs (Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Enrollments in traditional university teacher preparation programs have declined by 30% between 2010 and 2014 (Barth, Dillon, Hull, & Higgins, 2016). Even more alarming, nearly half of the graduates from teacher preparation programs do not take a teaching position (DeMonte, 2016). Under these current circumstances, the United States will likely continue to experience a shortage of teachers for the foreseeable future (Colby & Ortman, 2015; Hussar & Baily, 2017).

Over the last several years, fewer high school graduates have shown interest in pursuing a teacher education major in college. In 2010, 15% of high school students showed interest in the teaching profession compared to only 12% in 2014. Note that these figures only show student interest, and not intent to enroll in a teacher preparation program (Aragon, 2016). This is further supported by the nation-wide 35% decrease in enrollments in teacher preparation programs from 2009 to 2014, and while qualified teachers come from many different candidate pools, the vast majority of new teachers are prepared by university teacher preparation programs (Ravitch, 2016). In comparison, overall university enrollments only decreased 3% over the same time period. This suggests that students, despite some interest in the teaching profession, are choosing career paths other than teaching (U.S. Department of Education, 2015). In short, it has become increasingly challenging to entice new teachers into the profession.

Solutions to the problems of teacher recruitment and retention are difficult and complicated to resolve. Over the years, many solutions have been attempted including early interventions that encourage parents to influence their children to become a teacher and enroll in a teacher preparation program to help increase the supply of qualified teachers (Christensen, Davies, Harris, Hanks, & Bowles, 2019). But beyond the challenge of simply having enough teachers, one of the most critical issues schools are facing is the shortage of qualified teachers in science, technology, engineering, and math (STEM) subjects. Schools are subject to state mandates to hire qualified STEM teachers with degrees that match the specific subject area and hold appropriate endorsements. With this need to hire STEM qualified teachers, which are difficult to find, incentives have been devised and implemented to entice them into the profession. One such program incentivizes STEM university students to become teachers by providing qualified secondary education teachers of mathematics or other specifically identified science areas with a salary supplement (Utah Schools, 2018).

Many factors have been previously identified as having potential import to individuals when considering a teaching career (Christensen et al., 2019; Hanks, Davies, Christensen, Harris, & Bowles, 2019). From a study of the literature, Table 1 presents factors that have been found to impact an individual's decision to enter the teaching profession. These factors were used in the development of the survey instrument used in this study to discover which factors are most influential.

While many other studies from the literature have surveyed pre-service and practicing teachers, this study targets non-teaching university students currently studying STEM topics. Given the need to identify workable solutions to incentivize STEM university students to the field of teaching, this study was designed to examine factors believed to have an effect on

teacher recruitment. The research questions addressed in this article focus on identifying the most influential factors that predict whether university students pursuing STEM majors might consider teaching as a career, whether they felt teaching was the best career option for them, and the degree to which STEM students might be incentivized to consider teaching as a career by a yearly teaching bonus.

Table 1

*General Factors Included in This Analysis Believed to Influence STEM University Students to Become Teachers*

Factor	Sources
Respect for teachers/profession	Fray & Gore, 2018; Azman, 2012
Teacher compensation	Han, Borgonovi, & Guerrier, 2018
Student's gender	Azman, 2012; Fray & Gore, 2018
Teacher in the family	Fray & Gore, 2018
Expectations are reasonable	Ladd, 2011; Torres, 2016
Self-efficacy/interest	Chong & Low, 2009
Work conditions for teachers	Han, Borgonovi, & Guerrier, 2018
Altruistic motivations	Bennett et al., 2013, Tang et al., 2018
Encouragement from others	Ralph & MacPhail, 2015; Christensen et al., 2019
Teacher's lifestyle	Fray & Gore, 2018; Hanks et al., 2019

*Note.* Multiple sources exist for each general factor. In addition, each factor has various aspects associated with it.

### Research Questions

To better understand the existing teacher recruitment challenge, this study asked which factors best predicted whether STEM university students would consider teaching as a career and

whether they felt teaching was their best career option. The study was designed to examine factors identified from previous research that affect teacher recruitment. Three research questions were addressed: (a) Which factors predict whether STEM university students are willing to consider teaching as a career? (b) Which factors predict whether STEM university students feel teaching is the best career option for them? and (c) How much of a yearly teaching bonus these university students feel they need to consider teaching as a career? These first two questions while related are important because, as many researchers have found, there are many potential teachers that might be willing to consider teaching as a career, but there are many more who do not feel teaching is the best career option for them. There is a profound difference in just considering a teaching career vs. feeling that teaching is their best career option.

### **Methodology**

Many studies have been conducted that target both pre-service and in-service teachers. In this study, university students enrolled in STEM majors were surveyed to determine their perception of the teaching profession, including (a) whether students were considering teaching as a career and (b) whether they felt teaching was the best career option for them. Then a regression analysis was conducted to separately identify for those two dependent variables which factors best predicted those beliefs. Factors measured through items on the survey were used as independent variables in each regression analysis (see Table 1).

### **Participants**

After Institutional Review Board for Human Subjects (IRB) approval was granted for the study, participant recruitment took place in Fall Semester 2019. Participants were recruited from university students pursuing education in STEM-related fields at Brigham Young University in Provo, Utah. Students with declared majors in mathematics, computer science, engineering,



chemistry, biology, physics, physical science, and general science were sent an email invitation via the university email system to complete an anonymous online Qualtrics questionnaire. The purpose of the survey was to seek their perceptions about career choices specifically as it related to teaching as a career.

The researchers sent out the survey with an informed consent to participate to 15,127 students and these sampling efforts yielded 4,743 students that completed all of the survey items for a response rate of approximately 31%, with 2920 (62%) of the respondents being male. An examination of the relatively few incomplete surveys (defined as less than 90% complete) revealed that they often contained meager data and that the survey items not answered appeared to be randomly distributed throughout the survey. Therefore, the researchers decided that list-wise deletion was a justifiable approach to take to the surveys missing data, and only surveys with complete data were included in the data analysis. While a response rate of 31% can be considered typical in social science, the researchers understand there is a limitation to the generalizability of these results as we truly don't know if the respondents are biased toward the teaching profession as the greeting announced this was a survey of perceptions about career choices, specifically targeting teaching as a career.

### **Instrument Development**

Survey items were developed, tested, and refined in order to capture respondents' perceptions of teachers and the teaching profession. The instruments used for data collection were validated through a process recommended by Creswell (2008). Based on a review of literature that identified potentially important factors that might affect an individual's decision to choose teaching as a career, draft items were created. These items were tested and revised based on a cognitive think-aloud process and then pilot tested to verify that each item did in fact

capture the essence of the factors of interest. Once the items were set, they were entered into an online survey software program to be distributed by the university email system. The invitations to complete the anonymous online questionnaire were sent to all targeted STEM declared majors by university personnel. A typical 6-point Likert continuous scale ranging from *strongly disagree* to *strongly agree* was used. For disaggregation purposes, the 6-point Likert scale was collapsed to three categories for reporting the results in this article, although the full scale was used for the analysis. The final version of the survey was approved by the university teacher preparation program administrators.

### **Data Collection and Analysis**

In order to answer the research questions concerning (a) the factors that predict whether a STEM university student would consider teaching as a profession, (b) the factors that predict these student's belief that teaching is the best profession for them, and (c) how much of a yearly teaching bonus these university students feel they need to consider teaching as a career, a regression analysis was conducted. The research questions also asked for the student's GPA and gender which were used in the analysis. The regressions were based on an individual's selection of their agreement with the statements, based on the 6 point continuous scale. The independent variables used for the analysis of the first two questions were derived from items regarding students' perceptions of the teaching profession. After determining that the assumptions for the statistical methods used in the study (linearity, independence of observations, normality of residuals, equality of variance, and lack of multicollinearity) were met, the responses for each factor were calculated through regression analysis. These assumptions were checked via (a) residual plots, (b) histograms of residuals, (c) variance inflation factors (VIFs), and (d) data structure for independence. All statistical assumptions were met.

## Results and Discussion

### Students' Perception of Teaching

University STEM students' beliefs about teaching from the survey results and the relative importance of those beliefs in their willingness to consider teaching as a career is found in Table 2. The table presents two separate but related perceptions; first, the beliefs about each specific factor, and second, the importance participants place on each factor. Of the responses collected for the 11 specific perceptions of teachers and the teaching profession examined in this study, the results reveal the factors of most importance show little agreement with the beliefs that would have an effect on whether students believe becoming a teacher is their best career option.

The belief that teachers can be a positive influence in students' lives, that teaching is a noble profession, was the factor that students (87%) felt was most important in their decision to become a teacher and 96% of students agreed with that belief. However, in the next belief of highest importance, teacher salary (80%), only 5% felt teachers are paid adequately for the job while 60% completely disagreed. We were interested to find that students recognized the importance of good working conditions for teachers (75%) but only 26% agree that these conditions actually exist.

Students mostly agreed with the beliefs; people are supportive of teachers, teachers are well respected in the community, and that you need to have a certain personality to be a good teacher, but these factors were rated lowest in importance so students appear to attribute greater importance to other factors in their decision to become a teacher.

Table 2

*University Students' Beliefs About Teaching and the Importance of These Individual Factors to Students in Considering Teaching as a Career Ordered by Importance (N=4,743)*

Beliefs about Teaching	Disagree*	Somewhat Agree/Disagree	Agree**	Important or Very Important
Teachers can be a positive influence in students' lives (Teaching is a noble profession)	0 %	4%	96%	87%
Teachers are paid well for doing their job	60%	35%	5%	80%
Working conditions for teachers are good	17%	57%	26%	75%
Teachers have a good lifestyle (working hours, holidays)	11%	48%	41%	70%
Teachers have the resources they need to do their job	37%	51%	12%	67%
Expectations of teachers (class sizes, responsibilities) are reasonable	18%	57%	25%	64%
Students are well behaved and care about learning	25%	61%	14%	63%
Most of the teachers I know are good teachers	9%	54%	37%	45%
People I know are very supportive of teachers	3%	37%	60%	45%
Teachers are well respected in the community	7%	45%	48%	42%
You need to have a certain personality to be a good teacher	10%	44%	46%	42%

\* percentage of university students in the group who disagreed or strongly disagreed with each statement.

\*\* percentage of university students in the group who agreed or strongly agreed with each statement.

### Factors Predicting Student Career Decisions for Teaching

The survey data representing students' perceptions and beliefs of teaching on a 6 point continuous scale were used to conduct a predictive regression analysis to determine which

factors best predicted whether students were willing to consider teaching as a career and whether they believed teaching was the best career option for them. Table 3 provides a list of the factors that were found to be predictive of students' willingness to consider teaching as a career. Table 4 lists the factors found to be predictive of students' belief that becoming a teacher is their best career option. Table 5 lists those factors found not to be highly predictive in either regression. Statistical significance as well as the standardized beta value for the regression, along with a descriptive label representing the influence of each factor, are included in each table. Those factors with a standardized beta above 0.1 were considered to be of high influence and those below that threshold were considered to be of low influence.

The most important factors that predicted whether a participant would consider teaching as a career centered around the degree to which students feel teaching is something that they would be good at and encouragement from those around them. It is interesting to note that encouragement from others is actually more predictive than the encouragement from their own families.

Table 3

*Factors Predictive of University Students Considering Teaching as a Career (N=4,743)*

Factor or Perception	Significance	Standardized Beta	Influence
Teaching is something I would be good at.	<0.001	.403	High
Others encourage them to be a teacher.	<0.001	.202	High
Family encourages them to teach.	<0.001	.170	High
Teacher is in my immediate family.	<0.001	.078	Low
Student's gender	0.002	-0.070	Low
Teachers I know inspire me.	<0.001	.069	Low
Students are well behaved in the classroom.	0.001	-0.050	Low
Teachers have a good lifestyle.	<0.001	.046	Low
Expectations of teachers are reasonable.	0.001	-0.045	Low

Table 4

*Factors Predictive of STEM University Students' Belief That Becoming a Teacher is Their Best Career Option (N=4,743)*

Factor or Perception	Significance	Standardized Beta	Influence
Teaching is something I would be good at.	<0.001	.228	High
Others encourage them to be a teacher.	<0.001	.175	High
Family encourages them to teach.	<0.001	.176	High

Factors highly predictive of STEM university students' belief that becoming a teacher is their best career option greatly mirrored those factors highly predictive of university students considering teaching as a career as displayed (see Table 4). While potential teachers (especially females) might be willing to consider teaching as a career, they may not feel teaching is the best career option for them. In both cases, they needed to believe they would be a good teacher and they needed to be encouraged primarily by others.

Several factors were not predictive of either dependent variable. Of note is the fact that the belief that teaching is a noble profession, teacher working conditions, and pay were not primary indicators as indicated in Table 5. These factors are commonly believed to be important. In fact, many teacher preparation colleges attempt to recruit individuals based on the fact that teaching is a noble profession. Yet, almost all the participants felt teaching was an important profession, even those who choose not to teach. Likewise, teacher pay was not predictive of the dependent variables as most everyone seemed to feel teachers are not paid well. Still some choose to teach. Given that work conditions are considered to be an extremely important factor in teacher retention, these findings reveal that STEM university students generally do not understand the true working conditions of teachers and therefore this factor did not have greater predictive value. Only about half of those participating in this study (57%) felt teachers work condition were OK, with 75% indicating this factor was important (see Table 2).

Table 5

*Factors Found Not to Be Highly Predictive in Any of the Regressions (N=4,743)*

Factor or Perception	Significance	Standardized Beta	Influence
Teachers are provided with needed resources.	0.046	.028	Low/None
Teachers need to have a teacher personality.	0.057	-0.025	Low/None
Working conditions for teachers are good	0.463	.013	Low/None
Teaching is a noble profession	0.671	-0.005	Low/None
Teachers are paid well for doing their job.	0.694	-0.006	Low/None

### **Analysis of Highly Influential Factors Predicting Students' Decisions**

#### **Self-Efficacy**

A students' belief that they would be a good teacher (self-efficacy) was the most important predictive factor they considered when deciding about teaching as a career and believing they could be a teacher (see Tables 6 & 7). Students needed to believe they would be good at teaching before considering going into the profession and believing it to be their best option; 47% felt they could be a good teacher.

The response distribution for the factor of self-efficacy disaggregated by respondents indicating whether they would consider becoming a teacher and whether they felt teaching was the best career option for them are presenting in tables 6 and 7. Of those who said they definitely were not considering teaching as a career, 11% likely did so because they felt they would not be good at teaching. In contrast, 23% of those who said they were considering a teaching career reported that they felt they would do well in teaching. Yet, while positive self-efficacy is important, it is not sufficiently predictive by itself: 30% of those who did not think teaching was a good career option for them felt they would be good at teaching, and 0% percent of respondents who said teaching was their best career option did not think they would be good teachers.

Table 6

*Disaggregation of Students' Believing They Would Be Good Teachers by Their Willingness to Consider Teaching*

I would consider teaching as a career	I would be a good teacher		
	Disagree	Somewhat Agree	Agree
Agreed (28% of all respondents)	0%	5%	23%
Maybe (36%)	3%	17%	16%
Disagree (37%)	11%	18%	8%
All respondents	14%	30%	47%

Note. Response distributions statistically different ( $\chi^2(4) = 1395.5, p < .000$ )

Table 7

*Disaggregation of Students' Believing They Would Be Good Teachers by Their Belief That Teaching was Their Best Career Option*

Teaching is my best career option	I would be a good teacher		
	Disagree	Somewhat Agree	Agree
Agreed (3% of all respondents)	0%	0%	3%
Maybe (21%)	1%	6%	14%
Disagree (76%)	14%	32%	30%
All respondents	15%	38%	47%

Note. Response distributions statistically different ( $\chi^2(4) = 407.9, p < .000$ )

### Encouragement from Others

The factor of encouragement from others as displayed in Table 8 was the second most important predictive factor of students indicating they would consider teaching as a career. Encouragement from people outside of their family seemed to have greater influence than encouragement from parents or relatives. Results from these factors are disaggregated by the dependent variables in Tables 8 and 9. Of the 28% of those who indicated they would consider



teaching as a career (see Table 8), only 10 of the 28% indicated that others had encouraged them to consider the profession (13 of the 28% somewhat agreed).

Table 8

*Disaggregation of Students' Others Encouragement by Their Willingness to Consider Teaching*

I would consider teaching as a career	Encouragement from those outside family		
	Disagree	Somewhat Agree	Agree
Agreed (28% of all respondents)	5%	13%	10%
Maybe (36%)	14%	17%	4%
Disagree (36%)	26%	26%	2%
All respondents	45%	39%	16%

*Note.* Response distributions statistically different ( $\chi^2(10) = 1331.3, p < .000$ )

Table 9

*Disaggregation of Students' Others Encouragement by Their Belief That Teaching was Their Best Career Option*

Teaching is my best career option	Encouragement from those outside family		
	Disagree	Somewhat Agree	Agree
Agreed (3% of all respondents)	0%	1%	2%
Maybe (21%)	5%	10%	6%
Disagree (76%)	40%	27%	8%
All respondents	45%	39%	16%

*Note.* Response distributions statistically different ( $\chi^2(10) = 676.9, p < .000$ )

More important to this result is this data trend suggesting that of those who would not consider teacher (36%), only 2 of the 36% said they were encourage to consider teaching from someone outside their family. And while very few respondents felt teaching was the best career for them (3%, see Table 7) each of these respondents indicated they were encouraged to teach to

some degree. Of the 76% of respondents who felt teaching was not a viable career option for them, very few (8 of the 76%) said they were encouraged to teach from others not in their family.

### Encouragement from Parents or Relatives

Another indicator of students' willingness to consider teaching and belief that teaching would be their best career option involves encouragement from parents or relatives. Results from these factors are disaggregated by the dependent variables in Tables 10 and 11. These findings support the importance of encouragement. Overall, 28% of STEM students would consider teaching as a career and 11 of the 28% of these respondents agreed that family had encouraged them to teach. Few of those who would not consider teaching felt they were encouraged to consider teaching and felt that teaching was a viable career option.

Table 10

#### *Disaggregation of Students' Family Encouragement by Their Willingness to Consider Teaching*

	Encouragement from family members		
	Disagree	Somewhat Agree	Agree
I would consider teaching as a career			
Agreed (28% of all respondents)	6%	11%	11%
Maybe (36%)	13%	17%	6%
Disagree (36%)	24%	10%	2%
All respondents	42%	39%	20%

*Note.* Response distributions statistically different ( $\chi^2(10) = 1099.6$ ,  $p < .000$ )

Of relevance to this analysis are the results from a recent parent survey conducted by the authors (Christensen et al., 2019). In that study, only 36% of the 495 high school parents surveyed indicated they would encourage their child to become a teacher, and just 25% of these parents felt teaching would be a good career option for their child. Of note, 45% of those parents

who were or had been teachers said they would not encourage their child to consider becoming a teacher.

Table 11

*Disaggregation of Students' Family Encouragement by Their Belief That Teaching was Their Best Career Option*

Teaching is my best career option	Encouragement from family members	
	Disagree	Somewhat Agree
Agreed (3% of all respondents)	0%	1%
Maybe (21%)	4%	10%
Disagree (76%)	37%	28%
All respondents	42%	39%

Note. Response distributions statistically different ( $\chi^2(10) = 682.4$ ,  $p < .000$ )

### Gender

A student's gender was a predictive factor only for the dependent variable of whether the individual believed that they had better career options than teaching (see Tables 12-13). Of those few (3%) who said they would definitely consider teaching as a career, 2 of the 3% were female. In general, this finding supports the fact that most people who consider teaching are female however, while the trend exists, given the small number of individuals who felt teaching was a viable career, the result should be considered carefully.

Table 12

*Disaggregation of Students' Gender by Their Willingness to Consider Teaching*

I would consider teaching as a career	Male	Female
Agreed (28% of all respondents)	15%	12%
Maybe (36%)	22%	13%
Disagree (36%)	24%	13%
All respondents	61%	38%

Table 13

*Disaggregation of Students' Gender by Their Belief That Teaching was Their Best Career Option*

Teaching is my best career option	Male	Female
Agreed (3% of all respondents)	1%	2%
Maybe (21%)	11%	10%
Disagree (76%)	49%	27%
All respondents	61%	39%

### **Analysis of Compensation Factors**

Most teacher retention and recruitment studies have indicated that teacher compensation is an important issue (Han, Borgonovi, & Guerriero, 2018). One factor in which respondents were in general agreement is that teachers are not paid well. No other factor reached a 60% disagreement as did this factor. In this study, over 80% of the respondents (3,834) agreed to some degree with the question, "Getting a salary bonus to become a teacher because I have a science degree would influence my decision to become a teacher." Clearly, pay is a factor individuals consider when making a career choice.

Many states have implemented programs similar to Utah's The Teacher Salary Supplement Program (TSSP) to draw qualified individuals into education for specific subject areas that have been identified as a priority because of staffing shortages and/or for assistance with the fees associated with obtaining and maintaining certification with the National Board for Professional Teaching Standards (NBPTS). Currently the TSSP offers a yearly \$4,100 salary supplement for qualifying STEM teachers. In addition to the salary adjustment, the TSSP also covers the additional employer paid benefit costs associated with retirement, worker's compensation, Social Security, and Medicare (Utah Schools, 2018).

To better understand the expectation of student's salary levels to seriously consider becoming a teacher, the final question in this survey asked, "If a typical starting teacher salary was \$50K, how much of a bonus salary would you need for you to seriously consider teaching as a career?" Table 14 shows the bonus amount needed to seriously consider becoming a teacher. For those students that are seriously considering becoming a teacher, the bonus amount indicated was \$15,060 on average. For those who are not seriously considering this career, the average amount needed was \$20,870 (see Table 14). The average responses for these three groups of students indicated there was a statistically significant difference between the groups. Each group however, seemed to indicate the amount offered by the TSSP program would be an insufficient incentive. The result was similar for those who considered teaching as a viable option. While those who felt teaching was a good career option indicated the bonus could be less than those who felt teaching was not an option, this result suggests that a small bonus in salary was not a strong enticement (see Table 15).

Table 14

*Bonus Amount Needed to Seriously Consider Becoming a Teacher*

I have seriously considered becoming a teacher	N	%	Amount
Students – Agree/Strongly Agree	1245	28.1	\$15,060
Students – Somewhat Disagree/Somewhat Agree	1587	35.9	\$18,100
Students – Disagree/Strongly Disagree	1593	36.0	\$20,870

Table 15

*Bonus Amount Needed for Those Believing That There are Better Career Options Than Teaching*

There are better career options for me other than becoming a teacher.	N	%	Amount
Students – Agree/Strongly Agree	3594	81.2	\$19,290
Students – Somewhat Disagree/Somewhat Agree	774	17.5	\$13,890
Students – Disagree/Strongly Disagree	58	1.3	\$11,190

In a previous related study of teachers by the investigators of this study, even for current teachers, 93% of them agreed that they were not paid adequately (Christensen et al., 2019).

Although that was not the most important factor to continue to remain a teacher, compensation became a big factor as soon as teachers perceive that work expectations have become less reasonable and/or their school environment was no longer trusting and supportive as it once was (Harris, Davies, Christensen, Hanks, & Bowles, 2019).

The data trend presented in Table 16 shows that while those who consider teaching as a viable option might be enticed by a smaller pay bonus than those who do not feel teaching is a viable career option, few respondents would be enticed by a \$4,000 bonus. One interpretation of these data is that most STEM students are seeking career options that have much higher starting salaries without properly considering other important benefits such as job satisfaction and a job's time commitments. More research needs to be done to compare total compensation packages of teachers with other STEM careers so that instead of students just comparing initial salaries, they could review all compensation benefits such as health insurance costs, retirement plans, and other perks that teachers typically receive such as time off in the summer over an extended period of time.

Table 16

*Bonus Amount Needed for Those Believing Becoming a Teacher is My Best Option*

Becoming a teacher is my best career option.	N	%	Amount
Students – Agree/Strongly Agree	133	3.0	\$9,340
Students – Somewhat Disagree/Somewhat Agree	940	21.2	\$14,650
Students – Disagree/Strongly Disagree	3351	75.8	\$19,600

From the analysis results present in Table 17, we see that those students who performed academically higher than their peers were much less likely to consider teaching as a career and

would require a higher bonus to their salary if they were to consider teaching. However, regardless of an individual's GPA, few would be satisfied with a small bonus incentive. While these data do not indicate a reason for the trend, many have pointed out that the best teachers are not always the highest academic achievers and that non-academic attributes are more important (Vegas, Murnane, & Willett, 2001). Others speculate that high-achieving students might make good teachers but considering their potential and interests, many see more attractive opportunities for themselves in STEM careers other than teaching (Goldhaber, Gross, & Player, 2011).

Table 17

*Bonus Amount Needed by GPA Groupings to Seriously Consider Teaching*

GPA	N	%	Amount
< 2.5	144	3.3	\$16,150
2.6 – 3.0	375	8.5	\$16,850
3.1 – 3.5	1145	25.9	\$17,600
3.6 – 4.0	2753	62.3	\$18,810

We also see differences when looking at gender and bonus pay expectations. In general, males would require a considerable larger bonus incentive than females (see Table 18). This may be due the stereotype held by many that teaching is by large a female profession (Ingersoll et al., 2014). It may also be based on the expectation that males must be able to provide for a family, and the perception that a female's salary would be supplementary.

Table 18

*Bonus Amount Needed by Gender to Seriously Consider Teaching*

Gender	N	%	Amount
Male	2745	62.3	\$20,280
Female	1660	37.7	\$14,870

## Discussion and Conclusions

Teacher recruitment remains a serious and complicated problem for public school districts and institutes of higher learning especially in the STEM subjects (Boyd et al., 2011; Johnson, Kraft, & Papay, 2012; Ladd, 2011). As policymakers respond by trying to increase the supply of teachers and by offering various incentives, these recruitment efforts may be worthwhile to a point but little evidence exists that these current efforts will solve the teacher recruitment problem. Simultaneous efforts to address other factors associated with teacher attrition such as the working conditions of teachers must also be resolved (Christensen et al., 2019; Richardson & Watt, 2006).

Numerous studies have identified factors that affect teacher recruitment. Each of the 11 beliefs about teaching factors that appeared on Table 2 can be generalized to all areas of teacher recruitment. What was found to be unique in this study of university STEM students was the more pronounced demand for a significant salary bonus. These students typically believe there are many other more lucrative career opportunities, such as being a chemist, for them as they have unique skills and abilities. Using students' willingness to consider teaching and their belief that teaching was their best career option as dependent variables, the data revealed that only 3% of these students believe that teaching is their best career option.

The primary driving factors of whether these students would seriously consider teaching were revealed to be whether they believed they would be good at it, others encouraged them to be a teacher and that their own family encourages them to teach. Therefore, teacher preparation programs must provide compelling information about the overall lifestyle and total compensation package of a STEM teacher. This support is highly critical in helping them make the decision to pursue a teaching career. Another factor, having teachers that inspired them was also found to be



predictive and important. While factors of gender, respectability of the profession, and teacher working conditions also exist, these didn't have as much predictive influence as other factors.

University STEM students consider many factors when making career decisions. As evidenced by this study, the importance of a competitive starting salary is important. In a 2010 study by Mckinsey & Company (see Auguste, Kihn, & Miller, 2010), market research of 1,600 high-performing college students relating to a teaching career and salaries found that only 10-17 percent of those surveyed believed that teaching rated well in the following characteristics of salary:

- If they did well, would they be paid appropriately?
- Could they support a family on their salary?
- Does the career pay appropriately for the skills and effort they would bring?
- Are starting salaries competitive?
- Would salaries increase appropriately over time?

In contrast, 65-81% believed their chosen (non-teaching) profession rated well on the above characteristics. Compared with the characteristics associated with other factors, these salary discrepancies between teaching and their chosen career were the largest. This suggests that teacher salaries are indeed an important factor in the equation when high academically able students, such as STEM students, are choosing a career. However in the same survey, more than half of the survey respondents underestimated the average teacher starting salary and the average maximum salary. In addition, in a survey of students from the top-third of their college class who did enter teaching, only 30% believed that they could financially support a family with their teaching career (Auguste et al., 2010). This study found that salaries have a greater impact on

teachers of math and science than other teachers, likely reflecting the opportunities, including opportunities for higher pay, open to them outside the teaching profession.

In a study by Milanowski (2003), he explored the amount by which starting teacher salaries would have to increase in order for STEM students to be willing to consider teaching. He found a somewhat linear relationship between the amount that starting teacher salaries would have to improve and the percent of STEM students who would teach (e.g., a 23% increase in starting salary would attract about 18-23% of the participants and a 45% increase would attract 37-48% of the participants).

This current study demonstrated that significant salary bonuses would need to be in place for most of these students to seriously consider becoming a teacher. For those currently not considering a career in teaching, a salary bonus of over \$20,000 would likely be required to entice them into the profession. Even those currently willing to consider a teaching career have indicated they would need \$15,000 in additional salary to change their career path. Future research on comparing overall teacher compensation benefits to those in careers commonly pursued by science and mathematics majors could demonstrate more parity than starting salary amounts. Benefits that could be compared could include work satisfaction, vacation and other time off such as summers and holidays, pension plans, and health insurance plans. This type of research could likely influence STEM students to take a closer look at choosing a teaching career.

For successful recruitment of this critical STEM segment of teachers a concerted focus on helping influencers to offer this encouragement to become a teacher will be needed; especially for those with an perceived aptitude for teaching. Thus, it is imperative to take good care of existing teachers and expend every effort possible to make their working conditions as

hospitable as possible so they will, in fact, offer that critical encouragement to the future generation of teachers.

### **Implications from this Research**

One possible interpretation of these results is that past approaches to recruiting teachers, especially those with a STEM background, may need to be updated and improved. We might be asking the wrong questions in our teacher recruitment research. Clearly, compensation is an issue, but other misconceptions are likely causing individuals to dismiss teaching as a viable career.

The results of this study support the conclusions of other research regarding teacher compensation. There is a widely held perception that teachers are not paid well. Everyone seems to agree that this is a fact. However, recruitment research might need to verify this perception aligns with reality by conducting side by side comparisons of overall teacher compensation with a variety of STEM career compensation packages at different points in a career. Compensation is clearly an issue for potential STEM teachers, yet many do not seem to have an accurate perception of the issue. The McKinsey & Company (Auguste et al., 2010) study cited found that more than half of the survey respondents underestimated the average teacher starting salary and the average maximum salary. This prevalent perception of the teaching profession as a low compensation career needs to change if teacher recruitment is to improve. An accurate comparison of total compensation of different STEM career tracks with teaching at beginning, mid-career, and end of career would be needed. Additionally, these comparison studies should include statistics related to job satisfaction. Some STEM related careers could be considered to be repetitious and boring and so for those that enjoy more social interaction by working with others on a daily basis, teaching could be a better career fit.

While teacher compensation is typically cited as a concern, there are other implications for teacher recruitment from this study. For example, many recruitment techniques for teacher preparation programs appeal to individuals' belief that teaching is a noble profession. This is based on the fact that many teacher retention studies have found that those individuals who choose to remain in the teaching profession tend to have this perception. However, most everyone agrees with this sentiment even those who choose to leave the profession. From the results of this survey we found that 96% of the STEM university students agreed with that teaching is a noble profession. This factor may have been considered for retention but it does not seem to be a critical factor in recruitment. In this study 28% of STEM students indicated that they would consider teaching as a career and 47% of them felt that they would be a good teacher but only 3% believed that teaching was their best career option. Perhaps a better strategy for recruitment would be to intentionally encourage those individuals who feel they have an aptitude for teaching. This along with the selling factor of job satisfaction and salary comparisons may have a greater impact on teacher recruitment.

One last implication coming from this study is that of work conditions for teachers. It is likely that those considering teaching have faulty perceptions about teaching when it comes to work conditions. A major objection that STEM university students did have in their consideration of the teaching profession is the current less than ideal working conditions of teachers. They likely have some understanding of the many expectations placed upon teachers and the nature of the students among other challenges. In this study the two lowest ranking factors in their beliefs about teaching, besides pay, were teachers have the resources they need to do their job (12%) and students are well behaved and care about learning (14%) as shown in

Table 2. These concerns highlight the importance of better training principals so they can mitigate the real challenges teachers face every day in their workplace.

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## APPENDIX

**Teacher Retention Study 2019 - Undergrads**

Q1

**Greeting** We would like to get your perceptions about career choices for a research study. Specifically targeting teaching as a career. Those participating in the study are undergraduates age 18 or older.

**What are you being asked to do?**

If you decide to be in the study you will be asked to complete a short survey and give your honest answers.

**What are the benefits to me for taking part in the study?**

Taking part in this study will not help you directly (you won't receive any reward or compensation), but it will help us understand what students think about the teaching profession and help us better understand the current teacher shortage in public education.

**Can anything bad happen if I am in this study?**

There is minimal risk to you by being in the study. It will take a few minutes of your time and you don't have to answer any of the questions you don't want to answer. Your participation in this survey will in no way affect your grade or your relationship with your teachers.

**Who will know that I am in the study?**

You won't put your name on the survey so your answers will be completely private. When we analyze the results of the survey it will be done as a group not individually. All data will be stored without names on a secure computer for the duration of the study and will be deleted afterwards. Only those involved with the study will have access to the data.

**Do I have to be in the study?**

No, you don't, we really want to know what you think but if you don't want to take the survey, simply indicate you don't want to participate. Also, if you start the survey, you can change your mind at anytime and simply stop answering questions.

**What if I have questions?**

If you want to ask us questions about the study, contact Professor Randall Davies at [randy.davies@byu.edu](mailto:randy.davies@byu.edu), Scott Harris at [Scott.Harris@byu.edu](mailto:Scott.Harris@byu.edu), or the IRB office at [irb@byu.edu](mailto:irb@byu.edu) – (801) 422-1461.

**Implied consent:** If you want to be in this study simply complete the survey; it should take about 15 minutes or less of your time. If not, that's Ok, just indicate below and don't complete the survey.

I would like to take the survey, begin the study (1)

I do not wish to participate (2)

Q2 Please indicate your sex?

Male (1)

Female (2)

Prefer not to say (4)

Q3 How successful are you as a student?

- Not Really (1)
- Below Average (2)
- Average (3)
- Above Average (4)
- Well above average (5)

Q4 Please indicate your current GPA range.

- 2.5 or lower (4)
- 2.6 to 3.0 (3)
- 3.1 to 3.5 (2)
- 3.6 to 4.0 (1)

Q6 Is anyone in your immediate family a teacher?

- Yes (1)
- No (2)

Q7 What is your current major?

- I have not yet decided (not declared) (1)
- Education (2)
- Science (chemistry, biology, physics, math, computer science) (4)
- Social Science (English, History, Foreign language) (6)
- Other, Please indicate your declared major (3) \_\_\_\_\_

Q8 Please indicate how strongly you agree with each of the statements below. *With regards to teaching as a career:*

	Strongly Disagree (1)	Disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)
I have seriously considered becoming a teacher. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think teaching is something I would be good at. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are better career options for me other than being a teacher. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Becoming a teacher is my best career option. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 Please indicate how strongly you agree with each of the statements below. *With regards to people encouraging you to consider teaching as a career:*

	Strongly Disagree (1)	Disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)
My parents or relatives have encouraged me to consider becoming a teacher if I want to. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People outside my family have encouraged me to consider becoming a teacher. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers I know inspire me. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a teacher is a respectable profession. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 Please indicate the degree to which you agree with each of these statements	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Somewhat Agree (4)	Agree (5)	Strongly Agree (6)
<b>Perceptions of Teachers and the Teaching profession</b>						
Teachers are well respected in the community. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People I know are very supportive of teachers. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers can be a positive influence in their students lives. (Teaching is a noble profession.) (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers are provided with all the resources they need to do their job well. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You need to have a certain personality to be a good teacher. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most the teachers I know are good teachers. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers have a good lifestyle (working hours, holidays). (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expectations of teachers (teaching loads, class sizes, and responsibilities) are reasonable. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working conditions for teachers are good. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students are well behaved, respect teachers, and care about learning. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers are paid well for doing their job. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Q11 How important are each of these in terms of you considering teaching as a career?</b>						
Teachers are well respected in the community. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

People I know are very supportive of teachers. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers can be a positive influence in their students lives. (Teaching is a noble profession.) (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers are provided with all the resources they need to do their job well. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You need to have a certain personality to be a good teacher. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most the teachers I know are good teachers. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers have a good lifestyle (working hours, holidays). (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expectations of teachers (teaching loads, class sizes, and responsibilities) are reasonable. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working conditions for teachers are good. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students are well behaved, respect teachers, and care about learning. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers are paid well for doing their job. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

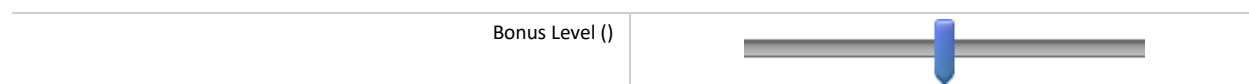
Q17 Receiving a salary bonus to become a teacher because I have a science degree would positively influence my decision to become a teacher.

- Strongly disagree (1)
- Disagree (2)
- Somewhat disagree (3)
- Somewhat agree (4)
- Agree (5)
- Strongly agree (6)

Q18

If a typical starting teacher salary was \$50K, How much of a bonus salary would you need for you to seriously consider teaching as a career? (in thousands of dollars e.g., 1 = 1K = 1000 dollar bonus)

0 3 6 9 12 15 18 21 24 27 30





ARTICLE 3

**Extended Literature Review: Examining the Conditions Affecting  
Teacher Attrition and Recruitment**

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### Abstract

Many U.S. public schools report high attrition rates among teachers. High levels of turnover are harmful for districts, schools, and students. The literature cites many factors and theories that influence a teacher's decision to enter and to remain in the profession. These include a teacher's personal characteristics, the level and quality of administrative support, and the resources that are made available to them. This study examines the importance of these factors as well as the school working conditions of teacher empowerment and influence over school policy, opportunities for teacher professional development and advancement, level of teacher collaboration, and the teacher's ability to focus on teaching. The results suggest that these key conditions have some of the strongest and most powerful effects on recruiting and retaining teachers in the profession. Evidence also demonstrates that school principals play a key role in improving teachers' perceptions of their school environment. The review concludes with a call to better understand what policies can be implemented to incentivize students to enter the profession, teachers to stay and how principals can better support them.

*Keywords:* teacher attrition, teacher career change, teacher retention, teacher support from administration, teacher working conditions, teacher autonomy, principal leadership, principal-teacher relationships

## Introduction

Many factors affect the quality of education delivered by U.S. public schools, including student body composition, school culture and organization, and community demographics and support (Burkhauser, 2017). One other major factor that has long been identified as a key challenge in the delivery of quality education is teacher turnover. Nationally, 16% of public school teachers leave their schools annually (Goldring, Taie, & Riddles, 2014). High levels of turnover are harmful for districts, schools, and students. Besides the negative impact on efforts to build strong organizational cultures and maintain staff cohesion (Guin, 2004; Hanselman, Grigg, Bruch, & Gorman, 2016), these high levels of teacher turnover negatively affect student achievement outcomes (Ronfeldt, Loeb, & Wyckoff, 2013). Replacing teachers is also very expensive. Replacing an individual teacher in the United States costs \$4,400 to \$17,900 (Carroll, 2007) and state expenditures on teacher turnover in the U.S. range from \$1 billion to \$2 billion each year (Haynes, 2014).

As teachers play the critical role in educating students, it is important for administrators to understand the factors driving teacher recruitment and attrition outcomes. These factors include: a teacher's personal characteristics, the level and quality of administrative support, and the resources that are made available to them. Among these, school working conditions such as teacher empowerment and influence over school policy, opportunities for teacher professional development and advancement, level of teacher collaboration, and the teacher's ability to focus on teaching have some of the strongest and most powerful effects (Boyd et al., 2011; Johnson, Kraft, & Papay, 2012; Ladd, 2011). In the last four decades many books and articles have been written about addressing this problem through administrative policies and initiatives. These include theories that hypothesize that interpersonal principal–teacher relationships (Carr, 2009)

explain variation in school professionals' satisfaction, cohesion, and commitment levels. However, these policies and initiatives have not done enough to stem the teacher attrition tide (Burkhauser, 2017). In this article, the most important school conditions are examined that affect teacher recruitment and turnover and their effects on both urban and rural schools. In addition, the relationships that principals have with teachers are examined to identify the key relationships that lead to teachers' decisions to leave, move, or stay in their current working position.

The following are the review questions utilized in this study:

1. What are the important school conditions that affect teacher recruitment and retention?
2. How do interpersonal principal-teacher relationships affect teacher retention?

### **Method**

Suitable sources included studies explicitly related to the research questions that addressed the current teacher recruitment and attrition problem, the perceptions of both K-12 administrators and teachers regarding potential contributing factors of teacher attrition, and the causes and solutions to the teacher recruitment and attrition problem. In an effort to conduct an orderly and logical review, we carried out the following steps.

#### **Scoping the Review**

We first started by developing explicit criteria for specifying which studies would be included in the review. The following lists the criterion type and inclusion criteria:

- Topic - Literature must relate directly to the research questions above (teacher attrition, teacher career change, teacher recruitment, teacher retention, teacher support from administration, teacher working conditions, teacher autonomy, principal leadership, principal-teacher relationships).

- Recency - Literature published between 2006 and 2017 was given higher priority than more antiquated articles.
- Geographical spread - Literature should relate primarily to studies in the USA, together with select examples from other countries with similar education systems.
- Research base - Literature must be based upon empirical research (either qualitative or quantitative).
- Transparency - The methodology of the research upon which the literature is based must be made explicit (e.g. sample sizes, instruments, analysis).
- Reliability/validity - As far as can be determined, the findings upon which the literature is based must be valid and reliable, taking into account the type of study.

### **Literature Searching Strategies**

I searched the Educational Resources Information Center (ERIC), PsychINFO, and Scopus databases for all publications that contained at least one of the following keywords; teacher attrition, teacher career change, teacher recruitment, teacher retention, teacher support from administration, teacher working conditions, teacher autonomy, principal leadership, principal-teacher relationships. The search results included peer-reviewed academic journal articles, theses and dissertations, magazines, conference reports, and educational reports related to teacher recruitment, attrition and administrative support. Additional articles were also identified in the reference sections of several of the more pertinent articles.

### **Screening Strategies**

These search strategies produced hundreds of unique references to studies. Each piece of literature was screened against the inclusion criteria and most of the studies were eliminated by this approach. The results left only the most relevant studies being retained. This process helped

to minimize hidden bias, by having clear consistent rules about which studies were being used to answer the above research questions. By appraising each study against the same criteria and recording the results, the basis for the conclusions was made more evident.

### **Synthesizing Study Findings**

The final step in synthesizing the results was to analyze each remaining article in depth to ensure that each was a high quality study that included an appropriate sample size, sound methodology, and author conclusions that were strongly supported by the data collected and presented. Then the individual studies were categorized and summarized. This involved bringing the summaries of the research methodology and findings together under thematic headings, as narrative paragraphs summarizing the key messages and their relative evidence bases. Finally, we identified potential limitations in the generalizability or transferability of the findings found in unique studies that only pertained to densely populated inner city urban schools or studies of extremely rural schools.

## **Discussion**

Teacher turnover presents a major challenge to U.S. public and charter schools. A growing body of research reveals the factors and theories leading to these decisions including those that suggest principals may be in the best position to influence school working conditions.

### **Teacher Attrition Factors**

Much research has been devoted to determining what factors moderate attrition outcomes. While personal characteristics of teachers are important predictors, attributes of teacher's schools, including organizational characteristics such as the level and quality of administrative support, student body composition, and available resources such as instructional spending and teacher salaries are also key moderators. In hard-to-staff schools that have higher

proportions of minority, low-income, or low-achieving students, researchers have found school working conditions are even more challenging and difficult to manage (Borman & Dowling, 2008).

Key school working conditions include teacher empowerment and influence over school policy, opportunities for teacher professional development and advancement, the amount of teacher collaboration, and the ability of teachers to focus their time on teaching. Most researchers concur that these working conditions have some of the strongest and most powerful effects on teachers (Boyd et al., 2011). Recent evidence found by Burke et al. (2013) examined the supportive working condition preferences of beginning or early career teachers (ECTs). Using a discrete choice experimental approach and associated Scale-Adjusted Latent Class Model (SALCM), they quantified the relative value placed on various types of support in the form of affirmation, resources, collegial opportunities, mentoring, and professional development. Stages of research included an extensive literature review on ECTs, qualitative interviews with 42 teachers, quantitative research with 258 ECTs, and soliciting feedback from 29 ECTs conference attendees on the extent to which the factors they extracted were consistent with the real-world experiences of ECTs. The findings for ECTs with intentions to depart the profession showed they placed greater relative value on the sharing of resources, cooperative teaching and planning, offsite discussions about classroom management, programming with mentors, and having a greater professional voice. In contrast, those with intentions to remain placed greater value on observation from and conversations about teaching with more experienced teachers at their school. The researchers of this study suggest that attrition from teaching is becoming more strongly controlled by characteristics of teachers' work conditions than has been previously noted in the literature (Ladd, 2011).

While working conditions encompass many of the factors that can affect whether or not teachers want to remain in their current school, an overriding factor is known as teacher contribution. The involvement of teachers in schools is important because their level of contribution and sentiment toward the school workplace can have a positive or negative effect on the classroom environment as well as affect student achievement (Roby, 2009). Roby's study of 70 teachers pursuing their master's degree in teacher leadership was conducted at Wright State University at different locations throughout western Ohio. The typical cohort student was a female elementary teacher with one to five years of teaching experience. The majority were between the ages of 26-35, married, and Caucasian. The survey asked them to give their perceptions of coworker's contribution level the majority of the time they were engaged in work. These teachers were also given an opportunity to self-assess their level of contribution in the workplace the majority of the time they were at work.

Roby (2009) then divided the contribution levels of teachers in the following categories: non-contributor, part-time contributor, frequent contributor, influential contributor, and respected contributor. At the lowest level, the non-contributor is considered a follower and is generally either dissatisfied or complacent with their work and they often demonstrate characteristics of apathy, reclusive behavior, and insecurity. Part-time contributors are also followers and reactive in nature. They are extrinsically motivated, work in the operational mindset, and contribute when the situation is interesting to them. Frequent contributors are those teachers that contribute often, either positively or negatively. At times they may challenge or question goals imposed or even new ideas. The results included the overriding factors that lead to the highest level of contribution which were having a definite purpose, high morale, and teamwork.



Another study where teachers offered their advice on how best to improve schools was conducted by Berry (2008). With support from the National Education Association and the Center for Teaching Quality, he was able to work with more than 1,700 National Board Certified Teachers (NBCT's) from five states in a series of state policy summits that gave the teachers opportunities to examine the recruitment and retention research and take part in structured dialogues with policy makers. Summits for NBCT's were held in North Carolina, Ohio, Oklahoma, South Carolina, and Washington. Berry (2008) took the comprehensive list of 142 specific policy recommendations that, if implemented, were believed would significantly alleviate the nation's problems in staffing high needs schools. He summarized and organized their ideas into the following five major recommendations; (a) Transform the teaching and learning conditions in high-needs schools, (b) Prepare and support teachers for the specific challenges posed by working in high-needs schools, (c) Recruit and develop administrators who can draw on the expertise of specially-prepared teacher leaders, (d) Create a menu of recruitment incentives but focus on growing teacher expertise, and (e) Build awareness among policy makers, practitioners, and members of the public about the importance of National Board certification for high needs schools.

These important factors and working conditions can be addressed through careful administrative policies and can include support in the form of affirmation, resources, collegial opportunities, mentoring, and professional development.

### **Teacher Attrition Theories**

Research examining teacher turnover from an organization perspective extends existing theory by drawing from the sociology of organizations, occupations, and work, which holds that teacher turnover and school staffing problems cannot be fully understood without closely

examining the characteristics of the organizations. Torres (2016) analyzed survey data (2010-2011) from one large Charter Management Organization (CMO) to learn about the primary cause of teacher turnover. The focus of the study was to investigate teachers' perceptions of workload as an unsustainable workload, which is considered the primary cause of teacher turnover at CMOs. Yet, most reports provide only anecdotal evidence to support this claim. This study found that 1 out of 3 teachers concentrated in urban areas who rated their workload unmanageable left their school compared with 1 in 10 who did not rate their workload unmanageable. However, controlling for perceptions of leadership and professional growth, workload was no longer associated with turnover. Accounting for measures of working conditions across schools and teachers, perceptions of the CMO's student disciplinary systems were the only significant predictor of turnover.

In a study of high teacher rates of turnover, Albright, Sims, and Glasgow (2017), invited 14 district wide educators within urban, middle schools characterized by high poverty, low academic achievement, and not meeting Average Yearly Progress to participate in a study. Nine were novice teachers and five were principals. These participants participated in face-to-face interviews and a focus group. Using inductive analysis to address the study's research questions including gathering and examining individual and focus group interviews confirmed for accuracy through member checks, these methods supported the triangulation of the data which improved internal validity. Results found that all teachers felt unprepared for the urban setting and that they were not provided adequate support. The administrators also acknowledged that novice teachers were not prepared to succeed in an urban school setting since they lacked classroom management skills and strategies; they did not spend enough time in urban schools in their pre-service training; and many had limited or no experience with urban, at-risk students. The teachers

wished the university had done more to prepare them for this experience by providing additional preservice hours in an urban classroom setting. These factors were all found to be associated with higher rates of turnover after controlling for the characteristics of both teachers and schools, inadequate support from the school administration, and student discipline problems.

**Role of the principal on relationships with teachers.** There is good theoretical reason to suspect that interpersonal relationships between principals and their teachers influence school professionals' attitudes that define the broader school climate. Theories from organizational studies, social psychology, and sociology inform hypotheses about how affective responses from interpersonal principal–teacher relationships explain variation in school professionals' satisfaction, cohesion, and commitment levels (Price, 2011)

One such theory, the transformational approach to leadership, has been increasingly advocated for in schools. In a study by Barnett and McCormick (2004), Transformational leadership is posited to contribute to a range of organizational outcomes that include motivation, commitment, and capacity of teachers to develop new approaches to education. This study conducted in the state of New South Wales, Australia, used a nonexperimental research design and quantitative research methods where they randomly selected 117 schools, and from those schools surveyed 373 teachers from the population of government secondary schools. Teacher participants were principally full-time classroom teachers and heads of departments. Seventy-five percent of the teachers had more than 11 years of teaching experience, and 57% had worked with their current principal for more than two years.

In the past, there was little evidence about whether transformational leadership actually leads to changes in teaching, learning, and school organization and results in enhanced student learning outcomes. The research evidence comes from a number of multilevel and structural

equation models to explain variations in teachers' leadership and school learning culture scores. Findings from the researchers of this study suggest that the effect of leadership on student learning outcomes is mediated by school conditions such as goals, structure, people, and school culture. The results suggested relationships between leadership and school learning culture did exist, and they highlight the importance of individual principal-teacher relationships in schools (Barnett & McCormick, 2004).

**Role of the principal on teachers working conditions.** School principals play a vital role in improving teacher retention by providing support in instructional, environmental, technical and emotional domains. In a recent study by Hughes, Matt, & O'reilly (2015), currently employed administrators and teachers were invited to participate in a survey that was sent out to 20 sites within a western state that fit the delimitations of the research. The total sample size for this non-experimental correlation design was 80 teachers. The focus of the research question was to determine the relationship, if any, between principal support and the retention of teachers in hard-to-staff schools. In the findings, teachers who were expecting to stay in their current assignment for the 2012-2013 school year held the four areas of support very high in relation to why they were continuing to stay in their current placement. The area of support that had the highest correlation was that of emotional support, and the second highest was environmental support, followed by instructional support and finally technical support. The data showed that even teachers that were sure they would not continue in their current assignment demonstrated a strong correlation between retention and support. The results of the data also showed that principals perceived that they supported their teachers better than the teachers perceived they were supported by the principals. In addition, teachers indicated systemic structures were often barriers to the ability of principals to support them. Principals are often challenged to find a way

to work within the leadership structure of the institution to provide the necessary tools for their teacher to succeed. (Hughes et al., 2015).

The National Policy Board for Educational Administration (2015), provides a list of 10 standards for principals that define effective educational leadership and embody a holistic view of leadership. These standards are the results of an extensive review of empirical research and the input of researchers and more than 1,000 school and district leaders through surveys and focus groups to identify gaps among the day-to-day work of education leaders. The National Association of Elementary School Principals (NAESP), National Association of Secondary School Principals (NASSP), and American Association of School Administrators (AASA) were also instrumental in the development of these standards. The standards for principals include developing and supporting school curriculum and hiring, supporting, and retaining effective teachers. What is new about these standards is that they have been recast with a stronger, clearer emphasis on student and student learning and outlining foundational principles of leadership to help ensure each child is well educated and prepared for the 21<sup>st</sup> century. The standards recognize the central importance of human relationships not only in leadership work but in teaching and student learning. They reflect a positive approach to leadership that is optimistic, emphasizes development and strengths, and focuses on human potential. They also include engendering a shared commitment to the mission and vision of the school, maintaining a safe and healthy school environment, promoting professional development of teachers, empowering and entrusting teachers to perform, and effectively managing staff resources.

In the past, the conception of a principal's duties were more managerial such as overseeing bus schedules and ensuring teachers arrived to school on time. For the last decade, The Wallace Foundation (2013) has supported efforts to improve leadership in public schools

and has funded projects in 28 states and numerous school districts which has generated more than 70 research reports and other publications covering school leadership. Through this work and research, they deeply understand the nature of the school principal's role, what makes for an effective principal and how to tie principal effectiveness to improved student achievement. Current conceptions developed now charge principals with five key responsibilities; (1) Shaping a school vision of academic success for all students, (2) Creating a climate hospitable to education in order that safety and a cooperative spirit prevails, (3) Cultivating leadership in others, (4) Improving instruction, and (5) Managing people, data and processes to foster school improvement (The Wallace Foundation, 2013).

Research has demonstrated that principals can affect how teachers feel about their schools. As Duyar, Gumus, and Bellibas (2013) summarized, researchers have studied the principal's influence on teacher job satisfaction for some time. In this study, a causal comparative design and a multilevel methodology used OECD's Teaching and Learning International Survey (TALIS) data set. The multilevel data included 178 principals and 2,967 teachers. Two-level Hierarchical Linear Modeling (HLM) method was used to investigate whether principals' leadership and teachers' collaboration predict teacher self-efficacy and teacher job satisfaction, net of several important teacher-level and school-level control variables. Early research found that among all independent and control variables, teachers' collaboration appeared to be the strongest predictor of both teacher self-efficacy and job satisfaction. The research provided evidence that practices such as managing student behavioral issues to ensure a safe school environment, providing support, insulating teachers from external forces, supporting teachers, and acknowledging teachers' accomplishments were associated with increased job satisfaction. They also found that instructional practices from managing curriculum to

supervising teachers and principal servant leadership (e.g., making teachers a priority, providing support) were associated with increased job satisfaction (Duyar et al., 2013).

Past research has shown principal support is associated with teachers feeling less stress and burnout in addition to being associated with increased job satisfaction. In a large study by Singh and Billingsley (1998), they randomly sampled 9,317 schools from the 50 states and the District of Columbia and selected new and experienced teachers to participate in a public school teacher survey. The final sample of teachers consisted of 9,040 full-time teachers who had responded to all items in the questionnaire. Approximately 68% of the teachers were female, and the average level of education was a bachelor's degree. The average length of employment as a teacher was 12 years. The primary purpose of this study was to use a national database to determine the effects of professional support (both principal and peer support) on teachers' commitment to the teaching profession. The results indicated that when principals communicate clear expectations, provide fair evaluations, and provide assistance and support, teachers experience greater professional commitment. The largest effect in this model was that of principal leadership on peer support. Essentially, when the principal's leadership is perceived as strong and positive, teachers are more likely to work cooperatively and share a common sense of purpose. Thus, the principal not only has a direct influence on teacher's commitment, the principal enhances commitment through fostering a collegial environment.

### **Implications for Principal-Teacher Relationships**

School principals can play a key role in improving teachers' perceptions of their school environment that can affect teacher's decision of leaving. Through instruments such as the Teacher Empowerment/School Leadership scale, administrators may be able to effectively measure conditions for which principals are responsible. Then they can find authentic,

meaningful ways to support teacher's perceptions of school environment. One study made use of a value-added modeling approach which is new to the literature and examined how much of the school-to-school variation in these measures can be explained by principals (Burkhauser, 2017).

This study by the North Carolina Education Research Data Center of teacher working conditions took data from North Carolina public schools and span school years 2005-2006 through 2011-2012. They concede that this sampled population isn't completely generalizable when compared with the U.S. public school population as North Carolina has a higher proportion of Black students, a lower proportion of Hispanic students and a higher proportion of students who qualify for a free or reduced price lunch (FRPL). However, the survey is a reliable measure of teaching conditions with Cronbach's alpha values above .80 for all categories of working conditions. The surveys contained 34 items of interest asked in each survey year. To determine if the items were measuring broader school environment constructs, a principal components factor analysis was implemented followed by an orthogonal rotation of the factors separately for each survey year at the individual teacher response level. This resulted in four distinct measures of the school environment, the key factors being:

1. Teacher's ability to focus on teaching. This condition stipulates that teachers have reasonable class sizes, time available to collaborate with their colleagues, and are protected from duties that interfere with their essential role of educating students. School leadership is responsible to minimize the amount of routine administrative paperwork required of teachers and sufficient non-instructional time is to be provided for teachers.
2. The physical environment is well maintained and conducive to teaching. This condition concerns whether teachers have sufficient access to appropriate



- instructional materials and resources, instructional technology, communications technology, and office equipment. This means the reliability and speed of the Internet in the school are sufficient to support instructional practices, there is adequate professional space to work productively, and the school environment is clean, well maintained, and safe.
3. Teacher empowerment and school leadership. This condition requires the administration to trust teachers to make sound professional decisions about instruction, to offer the faculty an effective process for making group decisions and solving problems, and to provide an atmosphere of trust and mutual respect within the school. In addition, this means the school leadership consistently enforces rules for student conduct, supports teachers' efforts to maintain discipline in the classroom, supports teachers, and provides effective leadership at the school. It also means the faculty and staff have a shared vision, teachers are held to high professional standards for delivering instruction, the procedures for teacher performance evaluations are consistent, and teachers receive feedback that can help them improve teaching. Finally, this condition requires the school leadership to make a sustained effort to address teacher concerns about facilities and resources, the use of time in their school, professional development, leadership issues, and new teacher support.
4. Professional development. The last condition makes available sufficient funds and resources to allow teachers to take advantage of professional development activities and adequate time is provided for this professional development. Teachers also need to have sufficient training to fully utilize all of the instructional technology.

This value-added modeling approach makes use of a longitudinal panel of working conditions survey data to explore the relationship between teachers' perceptions of the above discussed four measures of their working conditions and their school's principal. The results are first compared within the same network of schools and then these results are compared with those schools that experienced a change in principal at any point over the years of the study to determine an estimation of principal effects beyond school effects. This approach can also examine whether the estimated principal effects are correlated across perceptions of working conditions. If principals, rather than being specialists who are skilled at leadership/management in one or a few domains, tend rather to be capable of enhancing performance across a wide range of domains simultaneously, this could shape how districts and principal preparation programs train principals to affect the school environment (Burkhauser, 2017).

Therefore, a wider adoption nationwide of an instrument such as the Teacher Empowerment/ School Leadership scale utilized in North Carolina, could prove beneficial to districts and superintendents as they strive to effectively measure the conditions for which they hold their principals responsible, specifically the case of quality teacher retention. The actual results in each district could instruct the local principal preparation programs to focus on particular adult leadership skills and provide effective local teacher feedback which will improve the training of their future school leaders. Districts might also look for or recruit principals with a proven track record of improvements in teacher working conditions when hiring at schools that struggle to maintain their teaching force.

### **Implications for Teacher Recruitment**

Currently, fewer potential teachers are entering teacher education programs (Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Enrollments in traditional university teacher

preparation programs have declined by 30% between 2010 and 2014 (Barth, Dillon, Hull, & Higgins, 2016). Even more alarming, nearly half of the graduates from teacher preparation programs do not take a teaching position (DeMonte, 2016). Under these current circumstances, the United States will likely continue to experience a shortage of teachers for the foreseeable future (Colby & Ortman, 2015; Hussar & Baily, 2017).

Over the last several years, fewer high school graduates have shown interest in pursuing a teacher education major in college. In 2010, 15% of high school students showed interest in the teaching profession compared to only 12% in 2014. Note that these figures only show student interest, and not intent to enroll in a teacher preparation program (Aragon, 2016). This is further supported by the nation-wide 35% decrease in enrollments in teacher preparation programs from 2009 to 2014, and while qualified teachers come from many different candidate pools, the vast majority of new teachers are prepared by university teacher preparation programs (Ravitch, 2016). In comparison, overall university enrollments only decreased 3% over the same time period. This suggests that students, despite some interest in the teaching profession, are choosing career paths other than teaching (U.S. Department of Education, 2015). In short, it has become increasingly challenging to entice new teachers into the profession.

Lindquist and Nordanger (2016) examined the most common method for overcoming the shortage of teachers: simply increase the recruiting and hiring of new teachers. This longitudinal study (1993-2014) followed an entire cohort of 87 teachers, 63 women and 24 men, from their graduation in 1993 and through their following 22 years in working life, up to 2014. The data of the first 15 years was collected through semi-structured questionnaires, exchanged between them and their former lecturer. These teachers, who were perceived as “skilled” during teacher training, described their paths out of the profession. The results of the study found that more

efficient strategies to teacher retention lie in supporting active teachers and in re-recruiting skilled ex-teachers back to the occupation. The findings also emphasize teacher attrition as a process related to identity-making within the interrelation between opportunity structures and individuals' frames of reference. Teachers with broader frames of references and images of themselves, not just identifying themselves as teachers, are more likely to leave the profession.

Solutions to the problems of teacher recruitment and retention are difficult and complicated to resolve. But beyond the challenge of simply having enough teachers, one of the most critical issues schools are facing is the shortage of qualified teachers in science, technology, engineering, and math (STEM) subjects. Schools are subject to state mandates to hire qualified STEM teachers with degrees that match the specific subject area and hold appropriate endorsements. With this need to hire STEM qualified teachers, which are difficult to find, incentives have been devised and implemented to entice them into the profession. One such program incentivizes STEM university students to become teachers by providing qualified secondary education teachers of mathematics or other specifically identified science areas with a salary supplement (Utah Schools, 2018).

Theories on work place satisfaction can play a key role in understanding how to entice and recruit students to become teachers. One such theory is Frederick Herzberg's motivator-hygiene theory. According to Herzberg, motivating factors (also called job satisfiers) are primarily intrinsic job elements that lead to satisfaction. Hygiene factors (also called job dissatisfiers) are extrinsic elements of the work environment. These hygiene factors of working conditions, supervision, interpersonal relationships at work, salary and benefits and job security are posited to result in job dissatisfaction if not well managed. The motivating factors lead to satisfaction, such as achievement, recognition, the (nature of) work itself, responsibility,

advancement, and growth. A sufficient number of positive hygiene factors must be in place in order to recruit teachers to the profession and then enough motivation factors need to exist to retain the teachers. (Kyriacou, Kunc, Stephens, & Hultgren, 2003)

### **Conclusion**

Public school districts in the United States, especially those serving the poorest and lowest performing students, struggle with teacher recruitment and retention. As such, a critical question is what policies can be implemented to incentivize teachers to stay. In this literature review we found evidence that school principals can play a key role in improving teachers' perceptions of their school environment which have been shown to affect their leaving decisions (Burkhauser, 2017).

Policymakers have often responded to the problem by trying to increase the supply of teachers. States, districts, and schools have instituted a wide range of initiatives to recruit new teachers: career-change programs designed to entice professionals into midcareer switches to teaching; alternative certification programs to allow college graduates to postpone formal education training and begin teaching immediately; recruitment of teaching candidates from other countries; and such financial incentives as signing bonuses, student loan forgiveness, housing assistance, and tuition reimbursement (Cooper & Alvarado, 2006; Ravitch, 2016). While all of these recruitment efforts are often worthwhile, they unfortunately will not solve the teacher staffing problems that schools face (Richardson & Watt, 2006).

The many studies and data find that support of teachers by the administration is the critical and most important impact on teacher retention, especially in hard-to-staff schools. Teachers feel supported when principals recognize them for a job well done, when principals support a teacher's decision in front of parents and colleagues, and when principals support

activities within a teacher's classroom. The value of communication and being notified of events in their buildings is also important to teachers (Hughes et al., 2015).

Building bonds of trust and creating a positive culture in the school begins with constant communication. This collaborative principal-teacher relationship is achieved through open forums, discussions, meetings, and reviews to evaluate the needs of the school, teachers, and students. Administrative support for teachers is also accomplished by providing resources and workshops that are designed to decrease stress and burnout. Mentoring programs that allow teachers to engage with each other to discuss and solve the everyday struggles and challenges as well as reviewing the successes is another way that support and trust can be achieved.

Finally, a simple increase in the ratio of principals to teachers could increase teacher retention. Principals that have the time to observe their teachers interacting with their students and are available to sit down and discuss a teacher's needs without it seeming like a bother are critical activities that help teachers feel supported. Principals need to be able to limit the number of duties for which they are responsible in order for them to be able to spend time observing, collaborating, and guiding their teachers. This may even take the form of hiring more assistant principals or deans so that principals can spend time providing emotional, technical, instructional, and environmental support to their teachers. As the transformational leadership literature has described, these improved interpersonal principal-teacher relationships will increase teacher's satisfaction, cohesion, and commitment levels.

### **Implications for Future Research**

More in depth research is needed to understand more specifically what administration does or does not do that influences a teacher to enter, remain or leave. Why is teacher attrition higher in the urban setting? How could school systems better prepare teachers for the urban

setting and once they were there how could leadership have been more supportive? After recruitment, the preservice teacher preparation programs need to better prepare new teachers for the school settings they will encounter. Nationwide, teacher education programs need to be redesigned to allow preservice teachers the opportunity to participate in more comprehensive, first-hand, urban school field experiences. More study of teachers who actually leave would be valuable to determine what they are currently doing. Did they stay in education and go to a different type of school district, or did they leave education altogether?

Additional study is needed to better understand how to create a strong support system for recruiting teachers and bolstering teachers once they enter their first year of teaching. The transition from preservice to the first year of teaching is difficult. First year teachers need support in the form of coaching and modeling and require different types of professional development than veteran teachers (Haynes, 2014). If they are not provided the support and professional development, they are not likely to remain in the profession, especially in the urban setting. Research into better comprehensive induction packages can help in three areas: (1) job satisfaction, commitment, and retention, (2) classroom teaching practices and pedagogical methods, and (3) student achievement. Haynes (2014) proposed comprehensive induction programs that comprise multiple types of support, such as high-quality mentoring, common planning time, and ongoing support from school leaders, as they have proved to reduce the turnover rate by one-half when compared to those receiving none.

More in depth recruitment studies could delve into qualitative factors such as perceptions, beliefs, cultural context, and experiences. Preservice teachers need additional exposure and experience, especially in the urban setting, to better prepare them in working with diverse populations, underprivileged students, and their families. Voltz, Collins, Patterson, and Sims

(2008) have proposed approaches to include the following initiatives: (1) increase their sociocultural competence, (2) foster high expectation for student achievement, (3) build collaborative skills, and (4) equip them with instructional strategies that promote learning within diverse populations.

Additional research could investigate how principals develop meaningful professional relationships with teachers to nurture and support them. The development of professional relationships with teachers could convey value, support and empowerment and thus lead to a growing, positive profession that could increase recruitment prospects.



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## DISSERTATION CONCLUSION

From these two studies, there are several implications that can inform and possibly improve the recruitment and leadership preparation programs at Institutes of Higher Education.

### **Presenting Teacher Compensation**

One possible interpretation of these results is that past approaches to recruiting teachers, especially those with a STEM background, may need to be updated and improved. We might be asking the wrong questions in our teacher recruitment research. Clearly, compensation is an issue, but other misconceptions are likely causing individuals to dismiss teaching as a viable career.

The results of this study support the conclusions of other research regarding teacher compensation. There is a widely held perception that teachers are not paid well. Everyone seems to agree that this is a fact. However, recruitment research might need to verify this perception aligns with reality by conducting side by side comparisons of overall teacher compensation with a variety of STEM career compensation packages at different points in a career. Compensation is clearly an issue for potential STEM teachers, yet many do not seem to have an accurate perception of the issue. The McKinsey & Company (see Auguste, Kihn, & Miller, 2010) study cited found that more than half of the survey respondents underestimated the average teacher starting salary and the average maximum salary. This prevalent perception of the teaching profession as a low compensation career needs to change if teacher recruitment is to improve. An accurate comparison of total compensation of different STEM career tracks with teaching at beginning, mid-career, and end of career would be needed. Additionally, these comparison studies should include statistics related to job satisfaction. Some STEM related careers could be

considered to be repetitious and boring and so for those that enjoy more social interaction by working with others on a daily basis, teaching could be a better career fit.

### **Finding Those with an Aptitude for Teaching**

While teacher compensation is typically cited as a concern, there are other implications for teacher recruitment from this study. For example, many recruitment techniques for teacher preparation programs appeal to individuals' belief that teaching is a noble profession. This is based on the fact that many teacher retention studies have found that those individuals who choose to remain in the teaching profession tend to have this perception. However, most everyone agrees with this sentiment even those who choose to leave the profession. From the results of this survey we found that 96% of the STEM university students agreed with that teaching is a noble profession. This factor may have been considered for retention but it does not seem to be a critical factor in recruitment. In this study 28% of STEM students indicated that they would consider teaching as a career and 47% of them felt that they would be a good teacher but only 3% believed that teaching was their best career option. Perhaps a better strategy for recruitment would be to intentionally encourage those individuals who feel they have an aptitude for teaching. This along with the selling factor of job satisfaction and salary comparisons may have a greater impact on teacher recruitment.

### **Improving Teacher Working Conditions**

Another implication coming from this study is that of work conditions for teachers. It is likely that those considering teaching have faulty perceptions about teaching when it comes to work conditions. A major objection that STEM university students did have in their consideration of the teaching profession is the current less than ideal working conditions of teachers. They likely have some understanding of the many expectations placed upon teachers

and the nature of the students among other challenges. In this study the two lowest ranking factors in their beliefs about teaching, besides pay, were teachers have the resources they need to do their job (12%) and students are well behaved and care about learning (14%) as shown in Table 2. These concerns highlight the importance of better training principals so they can mitigate the real challenges teachers face every day in their workplace.

### **Providing Emotional Support**

The findings of this study support the research literature on teacher attrition which places special significance on administrative support in teachers' decisions about remaining a teacher. The area of support held in greatest esteem by teachers is emotional support. Teachers must feel a strong sense of trust and supportive environment in the school from their administration. They must trust that administrators will have reasonable expectations of them and involve them in decision making.

In this study, in addition to pay, the following three factors were rated the highest in importance by teachers, trusting environment (89%), expectations reasonable (91%) and say in decisions (84%). The gaps in perception differences between principals and teachers are wide, trusting environment (39), expectations reasonable (36), say in decisions (50) for these three factors. When 92% of principals think they have a trusting environment but only 53% of teachers agree, the principals in this study clearly have a challenge in self-awareness and relationship management.

One helpful solution would be to incorporate an entire course on emotional intelligence (EQ) in leadership preparation programs. In the business world, EQ trainings are very popular as they have found that a high EQ is much more important than a high IQ for success in the workplace. People often misunderstand emotional intelligence as a form of charisma or they



don't believe it can be improved. By understanding what EQ really is and how it can be managed in a school setting, a principal can begin to leverage all of their intelligence, education and experience and create outstanding relationships with teachers. Four core EQ skills are self-awareness, self-management, social awareness and relationship management. Through skilled implementation, principals can reach their goals with the teachers in their schools and ultimately and importantly, retain them. It is not uncommon to hear about teachers following a principal into a different school because they greatly value the emotional support offered by an outstanding principal.

Dedicated one-on-one time between a principal and a teacher is critical. These can be annual year end 20 minute meetings where a principal sits down and inquires as to what is going well and what needs to be improved. Teachers want to know they are heard, their input is valued and they can contribute to important decision making at the school. Teachers also want their performance to be fairly evaluated and so principals must be taught how to properly evaluate a teacher. Ongoing evaluation training is important which is in addition to dedicating time to participate in observing and mentoring teachers (especially new teachers) throughout the year.

Trust and support is further gained as principals strictly protect teacher preparation time. As most educational leadership faculty are former principals, inviting experts with different perspectives from different fields into the education curriculum could have real value. Otherwise, we continue to prepare school leaders using the same approach and thus we will continue to get the same results.

### **Addressing Student Behavior**

Environmental support, according to the literature and this study, is highly valued by teachers. Teachers want principals to effectively address student behavior and safety issues. This

factor also showed up as one of the highest in importance to teachers (84%) and was at the top of the factors with greatest principal vs. teacher perception gaps. Our finding was that 86% of principals perceived they effectively addressed student behavior and safety issues (only 44% of teachers agreed). When teachers expect school leadership to support and enforce rules for student conduct and then don't follow through, high levels of dissatisfaction with their current position occur and this factor has been shown to highly predictive of a teachers' thoughts of leaving the profession.

Implications for leadership preparation programs would be to dedicate more time in human resource training to not only understand the rules and regulations of the school, district and state but be specifically trained in child psychology. While a better understanding of emotional intelligence will also help in interactions with students, a highly effective principal would have a deep understanding of child psychology. This is critical as a finding in this study showed that only half (49%) of principals and 19% of teachers and 6% of parents agree that students are well behaved and care about learning. This coincides with Ravitch's (2016) report of a growing toxicity in the public school environment. Principals must have greater skills in working with difficult students that may come from homes where discipline is lacking and/or motivation for learning is not strongly encouraged.

### **Effective Teacher Preparation**

The transition from preservice to the first year of teaching is difficult. During preservice, teacher working conditions need to be explored in depth so that new teachers really understand what to expect. This explicit discussion will help the new teacher transition more smoothly into the workplace. First year teachers need support in the form of coaching and modeling and require different types of professional development than veteran teachers. If they are not provided the

support and professional development, they are not likely to remain in the profession, especially in the urban setting. Multiple types of support, such as high-quality mentoring, common planning time, and ongoing support from school leaders is vital. This support has proved to reduce the turnover rate by one-half when compared to those receiving none.

Effective approaches to include in teacher preparation programs would include the following initiatives: (1) increase their sociocultural competence, (2) foster high expectation for student achievement, (3) build collaborative skills, and (4) equip them with instructional strategies that promote learning within diverse populations.

Leadership preparation programs at Institutes of Higher Education could seriously consider these implications as they strive to improve their recruitment efforts and school administrators would do well to heed the findings from these studies in their retention efforts.

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## APPENDIX

**IRB Approvals**

**From:** Human Subjects Committee <[irb@byu.edu](mailto:irb@byu.edu)>

**Date:** Thursday, December 14, 2017 at 2:21 PM

**To:** Randall Davies <[randy.davies@byu.edu](mailto:randy.davies@byu.edu)>

**Subject:** X17469 PI: Randall Davies IRB Determination: APPROVAL



INSTITUTIONAL REVIEW BOARD  
FOR HUMAN SUBJECTS

**Memorandum**

To: Professor Randall Davies

Department: IP&T

College: EDUC

From: Sandee Aina, MPA, IRB Administrator

Bob Ridge, PhD, IRB Chair

Date: December 14, 2017

IRB#: X17469

Title: *"Understanding Utah's Current Teacher Shortage"*

Brigham Young University's IRB has approved the research study referenced in the subject heading as expedited, categories 6-7. The approval period is from December 14, 2017 to December 13, 2018. Please reference your assigned IRB identification number in any correspondence with the IRB. Continued approval is conditional upon your compliance with the following requirements:

1. A copy of the informed consent statement is attached. No other consent statement should be used. Each research subject must be provided with a copy or a way to access the consent statement.
2. Any modifications to the approved protocol must be submitted, reviewed, and approved by the IRB before modifications are incorporated in the study.
3. All recruiting tools must be submitted and approved by the IRB prior to use.

4. In addition, serious adverse events must be reported to the IRB immediately, with a written report by the PI within 24 hours of the PI's becoming aware of the event. Serious adverse events are (1) death of a research participant; or (2) serious injury to a research participant.
5. All other non-serious unanticipated problems should be reported to the IRB within 2 weeks of the first awareness of the problem by the PI. Prompt reporting is important, as unanticipated problems often require some modification of study procedures, protocols, and/or informed consent processes. Such modifications require the review and approval of the IRB.
6. A few months before the expiration date, you will receive a continuing review form. There will be two reminders. Please complete the form in a timely manner to ensure that there is no lapse in the study approval.

IRB Secretary

A 285 ASB

Brigham Young University

(801)422-3606

**From:** Human Subjects Committee <[irb@byu.edu](mailto:irb@byu.edu)>

**Sent:** Friday, August 23, 2019 5:17 PM

**To:** Randy Davies

**Subject:** E19242 PI: Randall Davies IRB Determination: APPROVAL



INSTITUTIONAL REVIEW BOARD  
FOR HUMAN SUBJECTS

## Memorandum

To: Professor Randall Davies

Department: IP&T

College: EDUC

From: Sandee Aina, MPA, IRB Administrator

Bob Ridge, PhD, IRB Chair

Date: August 23, 2019

IRB#: E19242

Title: *“University Students Perceptions of the Teaching Profession: Factors that Entice Students to Enter the Teaching Profession”*

Brigham Young University’s IRB has approved the research study referenced in the subject heading as exempt level, category 2. This category does not require an annual continuing review. Each year near the anniversary of the approval date, you will receive an email reminding you of your obligations as a researcher and to check on the status of the study. You will receive this email each year until you close the study.

The study is approved as of **August 23, 2019**. Please reference your assigned IRB identification number in any correspondence with the IRB.

Continued approval is conditional upon your compliance with the following requirements:

1. A copy of the informed consent statement is attached. No other consent statement should be used. Each research subject must be provided with a copy or a way to access the consent statement.
2. Any modifications to the approved protocol must be submitted, reviewed, and approved by the IRB before modifications are incorporated in the study.
3. All recruiting tools must be submitted and approved by the IRB prior to use.
4. In addition, serious adverse events must be reported to the IRB immediately, with a written report by the PI within 24 hours of the PI's becoming aware of the event. Serious adverse events are (1) death of a research participant; or (2) serious injury to a research participant.
5. All other non-serious unanticipated problems should be reported to the IRB within 2 weeks of the first awareness of the problem by the PI. Prompt reporting is important, as unanticipated problems often require some modification of study procedures, protocols, and/or informed consent processes. Such modifications require the review and approval of the IRB. Please refer to the [IRB website](#) for more information.



IRB Secretary

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