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Relation of High Stakes Teacher Evaluation Implementation in HawaiÊ»i to Teacher Satisfaction

Desire A. DeSoto
Walden University

Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Desiré Aguste DeSoto

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Review Committee
Dr. Steven Kriska, Committee Chairperson, Psychology Faculty
Dr. Lisa Scharff, Committee Member, Psychology Faculty
Dr. John Schmidt, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

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Abstract

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Desiré Aguste DeSoto

MSCP, Chaminade University, 2001

BS, Whitworth University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

High-stakes teacher evaluations (HSTEs) in public education influence millions of students and teachers across the U.S. Currently, there is a dearth of published quantitative research that shows the relation of HSTEs to teacher job satisfaction. The purpose of this quasiexperimental quantitative study was to determine if implementation of HSTEs in state of Hawai‘i as part of the U.S. Department of Education’s Race to the Top program initiative was related to teacher job satisfaction in public schools over time. A repeated measures analyses was conducted using archived teacher job satisfaction data from over 200 public schools in Hawai‘i from 2009 to 2014, including data collected from 2 years before until 2 years after implementation of HSTEs. The theoretical framework used for the study was grounded in Herzberg’s 2-factor theory of motivation. It was hypothesized that the implementation of HSTEs may have affected extrinsic hygiene factors such as wages, supervisory practices, and organizational policy relative to intrinsic motivational factors such as work achievement, recognition, and personal growth of teachers working in schools implementing the federal initiative. The most significant study finding was that both overall satisfaction and satisfaction with student achievement increased during the 2011-2012 implementation year and then fell below pre-implementation levels in the 2 years subsequent to implementation of HSTEs. This finding is discussed in the context of an increase in pay for public school teachers in Hawai’i during the post-implementation period. The results of this research may promote positive social change by highlighting the need for a focus on potential unintended consequences (i.e., possible negative effects on teacher job satisfaction) of federal education policies associated with HSTE systems.

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Chapter 1: Introduction to the Study

The effects of low socioeconomic and minority status on student academic achievement in the United States are well-documented in research literature, as are the legislative policy attempts to address ongoing inequalities in public education caused by social disparities (Hammond, Wilson, & Barros, 2011; Zhang, 2009). On July 24, 2009, President Barack Obama and Secretary of Education Arne Duncan enacted Race to the Top (RTT), a federal initiative worth more than $4.35 billion dollars in funding for state and local school districts, to develop programs aimed at driving innovation and reform in public schools (United States Department of Education [USDOE], 2010). Under RTT, federal grant monies were awarded to school districts willing to compete for funding to enact educational policies and guidelines addressing five core issues: (a) Implementing performance-based standards for teachers and principals, (b) adhering to Common Core standards, (c) capping the number of charter schools in a state, (d) building data systems, and (e) improving the performance of so-called failing schools in return for federal funds (USDOE, 2010). Given that RTT federal mandates such as high-stakes teacher evaluations (HSTEs) are well underway, evaluation and scrutiny of the potential impact of the implementation of the performance-based standard for teachers are becoming necessary.

This study was designed to examine the impact of the State of Hawai‘i’s implementation of HSTEs under federal RTT initiatives. Specifically, the study examines the impact of HSTEs on teacher job satisfaction using predictions made by Herzberg’s two-factor theory of motivation. It is contended that job dissatisfaction is dominated by

extrinsic or hygiene factors of work, such as organizational policies, working conditions, status, job security, and interpersonal relationships, which when perceived unfairly have been linked to decreased satisfaction and increased turnover in employees (Herzberg et al., 1959). Conversely, job satisfaction is dominated by intrinsic or motivator factors of work, such as achievement, recognition, responsibility, advancement, and nature of the job itself (Herzberg et al., 1959). Chu and Kuo (2015) showed that both hygiene and motivational factors have a significant effect on job involvement. Ghazi, Shanzada, and Khan (2013) concluded that teacher motivation is dependent on the fulfillment of hygiene factors. The redesign of teacher work in public education based on federal initiatives is aimed at addressing inequalities in American public education. However, when the implementation of HSTEs is analyzed through the lens of Herzberg's theory, unintended outcomes regarding the teaching profession may be manifested, such as decreased teacher job satisfaction due to extrinsic factors influencing a profession known for intrinsic factors.

Chapter 1 will provide a background for the study and present the problem statement, purpose, research questions, and related hypotheses. I also summarize the conceptual framework and discuss the nature of the research, assumptions, limitations, and delimitations of the research. The chapter then provides a discussion of the significance of the study and social change implications associated with the research findings. It concludes with a summary and transition to the literature review.

Background of the Study

Teaching is a profession typically driven by noble motives and values highly related to intrinsic motivation relative to extrinsic rewards (Sahlberg, 2010). Presently, there is no plan in place to address teacher morale issues arising considering the implementation of influential RTT policies. To fulfill the RTT mandate of implementing performance-based standards for teachers and principals, states and districts across the nation are linking external rewards and sanctions with teacher evaluations (Economic Policy Institute [EPI], 2010; Firestone, 2014). Concerns surrounding the RTT mandate are mounting as school districts across America connect student records to teacher performance in HSTEs. The Alliance for Excellent Education (2014) indicated that Hawai'i had the fourth largest school district in the nation, with an 11% teacher-turnover rate relative to the 7% nationwide average, costing taxpayers in the small state between $6 and 14 million dollars annually. Given the concerns regarding teacher morale and turnover since the initiation of RTT, there is much to learn about changes in data after the implementation of HSTEs.

Federal Mandates and Teacher Job Satisfaction

Low job satisfaction is a common antecedent of turnover in any organization, both public and private (Robbins, Judge, Millet, & Boyle, 2013). In the United States, 25% of new teachers leave the teaching profession by their third year, and nearly 40% leave within 5 years (USDOE, 2014). Ingersoll, Merrill, and Stuckey (2014) found the current teaching force in America is being impacted by a significant increase in turnover relative to the last 25 years. While roughly $7.3 billion dollars in taxpayer monies are

spent annually to account for the loss of human capital attributed to teacher turnover (Conneely & Uy, 2010). Meanwhile, school districts receiving federal RTT funds are using HSTE information to make personnel decisions in the form of pay-for-performance awards or impose sanctions on teachers who are not meeting annual performance goals (Firestone, 2014). Ford, Van Sickle, Clark, Fazio-Brunson, and Schween (2015) reviewed longitudinal interview data from 37 Louisiana elementary school teachers compiled after their first two years of teaching in a HSTE environment and revealed that the teachers reported "significant negative arousal events and profound losses of satisfaction and commitment to the profession" (p. 1-2). The use of high stakes HSTE measures that use student achievement tests to inform personnel decisions may result in added teacher shortages in areas of increased need and influence people to avoid the education profession entirely (EPI, 2010).

Race to the Top in Hawai‘i

In 2010, the Hawai‘i State Department of Education (HIDOE) was awarded $75 million of the more than $4.35 billion dollars of national RTT funding. The funds were granted because Hawai‘i was one of 19 states where federal RTT initiatives had been adopted, affecting 181,000 students in the State of Hawai‘i and 22 million students in public schools nationwide (HIDOE, 2014; USDOE, 2014). States implementing RTT reforms represent roughly 42,000 schools and employ approximately 1.9 million teachers, representative of 45% of all students in the nation and 42% of all low-income students (USDOE, 2014). In March 2015, the U.S. Secretary of Education, Arne Duncan, referred to HIDOE as a model for the rest of the country in implementing federal RTT

initiatives as the state officials and teacher union leaders agreed on the implementation of Hawai‘i’s version of HSTEs, the Educator Effectiveness System (EES) (HIDOE, 2015).

Although school districts willingly accept federal RTT monies, critics of RTT, including politicians, policy analysts, legal scholars, and educational researchers have cited cultural inequalities in terms of the policy development attached to funding. Critics of RTT argue that key federal initiatives rely too heavily on high-stakes standardized testing which places racial and ethnic minority students at a disadvantage as well as the teachers who teach them (Dyson, 2012; Ladson-Billings, 2011; Magill & Rodriguez, 2014; Tienken, 2011). Given the debate surrounding the use of student standardized test scores to determine the pay, promotion, or job termination of teachers, the implementation of HSTEs linking teacher accountability to student state standardized test scores merits research.

Problem Statement

There is an array of problems with public education in the United States. Despite the large-scale implementation of federal initiatives to close academic achievement gaps within the nation, educational inequalities persist (USDOE, 2015). Moreover, mandates tied to federal funding that aims to address academic disparities may exacerbate unwanted outcomes by negatively impacting the teaching profession. Research on the relation of federal initiatives and teacher evaluation and accountability in the form of HSTE has suggested overall deteriorations in teachers’ working conditions by negative impacts on teacher autonomy in the form of HSTE (Firestone, 2014; Niemiec & Ryan, 2009; Skaalvik & Skaalvik, 2014).

Currently, there is a dearth of published research that investigates the impact of HSTEs on teacher job satisfaction in light of federal RTT mandates. According to the USDOE (2015), "Hawai'i is the only state in the nation with a single statewide K-12 school system that operates as both the State educational agency and local education agency" (p. 3). A study that investigates RTT mandated implementation of HSTEs in Hawai'i and its relation to teacher job satisfaction using publicly available archived data may provide insight into the impact of such policies. The study is important to quantitatively evaluate any statistical relationship associated with the implementation of HSTEs and teacher job satisfaction in Hawai'i. Currently, I am not aware of any published studies that examined teacher job satisfaction pre and post implementation of HSTEs on a statewide scale.

Purpose of the Study

The intent of this quantitative quasiexperimental longitudinal study is to discover if changes in teacher job satisfaction occurred in Hawai'i public schools with the implementation of federally mandated HSTEs. In addition, demographic variables that may predict teacher job satisfaction are examined to better understand teacher job satisfaction. The goal is to determine if the independent variable, implementation of HSTEs, has unintended effects on the dependent variable, teacher job satisfaction in the public education school system, and make recommendations for future studies to explore and subsequently implement strategies to minimize potential long-term problems for both students and teachers.

Research Questions

The potential influence of HSTEs on teacher job satisfaction in Hawai‘i public schools is measured by the response analysis of three questions within the annually administered web based Likert type School Quality Survey (SQS) for stakeholders in the state-wide school system. In addition, possible influences of individual school demographics on teacher job satisfaction are examined. I use the following four research questions outlined in this section with an individual school being the unit of analysis.

The first three research questions are addressed using a quasiexperimental longitudinal design incorporating a quantitative repeated measure analysis for each of the three individual questions. For each of the three teacher satisfaction questions on the SQS, the average rating for each school in the State of Hawai‘i pre and post implementation are analyzed to evaluate their relation to the HSTE mandate that links high stakes teacher evaluations with student standardized test scores. The data for the five years between 2009-2015 included in the study correspond to the following events. During the 2009-2010 school year (Year 1) the HIDOE was awarded RTT funding from the federal government. During the 2010-2011 school year (Year 2), 23 schools piloted HSTEs in Hawai‘i and the more than 200 schools that implemented the HSTE mandate in Year 3 operated under the pre HSTE environment. During the second semester of the 2011-2012 school year (Year 3), HSTEs called the EES in the state of Hawai‘i were implemented with no rewards or sanctions for evaluation. Full implementation of EES with high-stakes consequences and rewards of temporary job security started during the 2012-2013 school year (Year 4) and the second year of full EES implementation was

during the 2013-2014 school year (Year 5). The implementation in Year 3 is viewed as potentially an anomaly and the a priori statistical contrasts that are tested reflect the anomaly. Average teacher satisfaction ratings in individual schools across the State of Hawai‘i on the three SQS items are available to the public.

RQ1: Are the federally mandated HSTEs in the Hawai‘i public school system, as operationalized in Years 4 and 5 in the form of EES, associated with a change in school-average teacher job satisfaction compared to pre-implementation in Years 1 and 2?

$H_0$1: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant for Year 4 and 5, following EES implementation in Year 3, compared to Years 1 and 2.

$$H_0 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 \leq 0$$

H_a1: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased for Year 4 and 5, following EES implementation in Year 3 compared to Years 1 and 2.

$$H_1 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 > 0$$

RQ2: Is the implementation process of EES in the Hawai‘i public school system in Year 3 associated with a change in the school-average teacher job satisfaction compared to prior school-average teacher job satisfaction?

$H_0$2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_0 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 \leq 0$$

*H_a*2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_1 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 > 0$$

RQ3: Did a change in school-average teacher job satisfaction occur with the implementation of federally mandated HSTE in the form of EES within the Hawai‘i public school system in the two year period post implementation compared to the pilot year?

$H_0$3: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_0 3: \mu_3 - {}^1/_2\ \mu_4 - {}^1/_2 \mu_5 \leq 0$$

H_a3: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_1 3: \mu_3 - {}^1/_2\ \mu_4 - {}^1/_2 \mu_5 > 0$$

RQ4: Do individual Hawai‘i public school demographics such as schools’ average percentage of Native Hawaiians and free-reduced lunch students as well as percentage of fully licensed teachers predict school-average teacher job satisfaction as indicated in Year 5?

H_04: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do not predict school-average teacher job satisfaction as indicated in Year 5.

H_a4: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do predict school-average teacher job satisfaction as indicated in Year 5.

Theoretical Framework

Theories originating in cognitive psychology that emphasize the significance of intrinsic motivation influenced the development of the research questions and hypotheses of the study. Herzberg’s two-factor theory categorizes extrinsic hygiene factors and intrinsic motivation factors, meanwhile empirically linking the factors to job dissatisfaction and satisfaction (Herzberg et al., 1959). The two-factor theory is rooted in cognitive psychology and suggests dissatisfied workers cite extrinsic hygiene issues such as supervision, pay, company policies, and working conditions as commonly associated with negative feelings towards work (Herzberg et al., 1959). Conversely, satisfied workers cite intrinsic motivational factors such as advancement, recognition, responsibility, and achievement as common for positive feelings towards work (Herzberg et al., 1959). Herzberg’s two-factor theory is primarily referenced as a human resources model in job satisfaction research and is directly linked to the construct of job satisfaction measured in the present study.

Studies validating the legitimacy of Herzberg’s two-factor theory in relation to teacher job satisfaction have been conducted in countries outside the United States.

However, in the United States, applications of Herzberg's two-factor theory to contemporary teacher job satisfaction research have been limited in scope and do not match the volume of the roughly 235 individual public schools represented in the current study. A more detailed discussion of Herzberg's two-factor theory and contemporary studies and HSTE initiatives are covered in Chapter 2 along with the hypothesized threats to teacher job satisfaction. Moreover, given that racial and ethnic minority students and the teachers who teach them may be at a disadvantage (Dyson, 2012; Ladson-Billings, 2011; Magill & Rodriguez, 2014; Tienken, 2011), this research also examines the potential of other factors influencing teacher job satisfaction. Therefore, an analysis of the percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers in each school relative to teacher satisfaction are included in the study.

Nature of the Study

The nature of this study is quasiexperimental with the use of archived data in which each individual school will serve as a unit of analysis. A repeated measures design was used to assess changes in the outcome variable of teacher job satisfaction pre and post HSTE implementation for RQ1-3. Teacher job satisfaction ratings are extracted from the SQS and reported as averages per school for each of three Likert type statements: (a) "I am satisfied with over-all quality of this school", (b) "I am satisfied with how well my students are achieving the standards", and (c) "I am satisfied with my school's leadership." The SQS is a Likert type survey that is administered annually online within a one-month window during the spring semester of the school year for all HIDOE schools.

Each of the variables of percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers as indicated in RQ4 was readily available for analysis from online HIDOE archives and were collected as an average within each individual school for the 2013-2014 school year.

For RQ1-3, I investigated changes in teacher job satisfaction during a span of 5 school years. Year 1 and Year 2 were before RTT mandated HSTE implementation. Year 3 there was a spring semester state-wide pilot. Year 4 was the first year for HSTEs and Year 5 was the second year. For RQ4, a regression analysis was used to determine the relation between demographic variables and teacher job satisfaction. The variables include percentage of Native Hawaiian students and free and reduced lunch students as well as percentage of fully licensed teachers at each individual school are included in RQ4 to assess if the variables relate to teacher job satisfaction within schools.

Definition of Terms

Extrinsic Motivation: Doing something because of the prospect of material gain or loss (Cerasoli, Nicklin, & Ford, 2014, p. 980).

Hygiene Factors: Extrinsic indicators such as salary, job security, work conditions, status, fringe benefits, paid insurance, and vacation time as indicated in Herzberg's two-factor theory of organizational motivation (Herzberg et al., 1959).

Intrinsic Motivation: Doing something because it is inherently interesting or enjoyable (Ryan & Deci, 2000, p. 55).

Motivation Factors: Intrinsic indicators such as meaningful work, responsibility, involvement in decision making, and sense of importance as indicated in Herzberg's two-factor theory of organizational motivation (Herzberg et al., 1959).

Teacher Job Satisfaction: The emotional relationship that a teacher has to his or her role as a teacher (Zembylas & Papanastasiou, 2004, p. 230).

Assumptions

The assumptions are that the data collected from the SQS are accurate and teachers responded honestly to questions regarding their satisfaction in the annual web-based survey conducted by HIDOE. Because survey data to access teacher job satisfaction were obtained anonymously on an online annually administered Likert type survey, minimal limitations arise in the potential for dishonest, inaccurate, or biased survey responses due to teacher anonimity. Also, archival data are assumed to be readily available for research and accurately archived. Furthermore, to the extent the state of Hawai‘i school district is unique as a state wide system compared to traditional smaller school districts, the study may not have potential generalizability in situations and populations across the nation.

Scope and Delimitations

The present study examined changes in teacher job satisfaction averages for respondents within each school for three questions for roughly 11,000 teachers in 232 public schools state-wide over the course of five school years between 2009 and 2012 (before RTT mandated HSTE implementation) and 2012 and 2014 (after RTT mandated HSTE implementation). HIDOE enrolls roughly 85% of school-aged children in the state

of Hawai‘i and an average of 96% of teachers are fully licensed, 60% have 5 or more years in the same school, 37% hold an advanced degree, and have an average of 13 years teaching experience (HIDOE, 2016). The 235 individual schools are estimated to consist primarily teachers and include counselors, librarians, as well as teacher mentors who are considered teachers but serve in support capacities (HIDOE, 2016).

Given the nature of the quasiexperimental study and the lack of a control group, it is not feasible to determine a cause and effect relation between the independent and dependent variables. Rather, the study looks to quantitatively assess a relatively large sample size of 235 individual schools to determine if any connection exists between teacher satisfaction and the implementation of HSTE in the state of Hawai‘i. Moreover, if a relation does exist between teacher satisfaction as well as percentage of Native Hawaiian students and free and reduced lunch students, and percentage of fully licensed teachers at each individual school, more studies will be needed to determine possible explanations influencing the relationship between variables.

Limitations

Use of a longitudinal quasiexperimental research design presents a host of restrictions regarding interpretations, observations, and interactions and cannot demonstrate definitive cause-and-effect relations between variables. The use of any quasiexperimental design limits findings. A historical event before, after, or during the 2009-2014 timeframe may have coincided with the implementation of HSTE in HIDOE schools, and there is no way to determine if that is the case or to parse out any such historical effects due to lack of randomization in treatment and control groups amongst

individual schools. The HIDOE archived research data, however, are based on a relatively large number of 232 individual schools representing roughly 11,000 teachers from which aggregate data are calculated.

A secondary limitation is presented based on the quantitative nature of the study. The use of a quantitative approach limits results to specific acceptance or rejection of a null hypothesis and further limits findings from providing a comprehensive assessment of specific perceptions relevant to the study focus. Another limitation of the study is the change in the number of extreme directional Likert score anchors on the scales within the 5-year research span. For example, in Years 1, 2, and 3, a 5-point Likert scale is used. Meanwhile, a 6-point Likert scale is used in Year 4 and a 4-point Likert scale is used in Year 5. To provide comparability between years, the four and five-point scales are transformed so that on all scales, the strongly agree anchor is a six and the strongly disagree anchor is a one. This approach provides a linear transformation of the scores from the four and five point scales into the six-point scale. Unfortunately, the effect of the different number of anchors on the three scales is confounded with effects that are expected with implementation and examining the effects due to the different number of anchors will not be amenable to analysis.

As previously stated, the current study does not have the capacity to inform readers of the specific aspects of EES that lead to end results. Nevertheless, decreases in job satisfaction associated with the implementation of EES would be consistent with the predictions of the two-factor theory. However, findings are limited with generalizability to the state of Hawai‘i and may not be generalizable to other areas. Moreover, the use of

aggregate data in the study impedes examination of change in job satisfaction on an individual teacher level.

Significance of the Study

To close the achievement gap between the lowest and highest performing public schools in the nation, federal government officials allocated $4.35 billion dollars in federal funding to states able to meet mandates associated with RTT. The state of Hawai‘i was awarded $75 million dollars in federal funding for the implementation of RTT initiatives. A major initiative of RTT mandates is the increased emphasis on teacher and principal accountability using standardized test scores. This research is unique in that it relates Herzberg’s two-factor theory of organizational motivation to teacher job satisfaction rates in Hawai‘i’s public schools with HSTEs, specifically, pre and post EES implementation.

Hawai‘i presents a unique setting in that the state is a part of the United States; however, the islands were illegally annexed by a coup led by businessmen on behalf of United States in 1898. Like Native Americans, Native Hawaiians have not performed well in the wake of federally imposed programs and standardized tests, which may cause excess stress and strain upon schools and teachers tasked to carry out mandated public policy. Herzberg’s two-factor theory postulates that extrinsic hygiene factors (wages, supervisory practices, and company policy) influence job dissatisfaction, whereas intrinsic motivational factors (achievement, recognition, and personal growth) influence job satisfaction (Herzberg et al., 1959). Herzberg’s two-factor theory simplistically explains a complex variable such as job satisfaction within organizations. If Herzberg’s

ideas are validated and federal education mandates are intricately implemented to balance both hygiene and motivational factors, there should be insignificant or minimal changes in teacher job satisfaction in public schools in Hawai‘i. Conversely, if there is a significant directional change in teacher job satisfaction, theoretical hygiene factors and motivational factors may need to be considered in future studies.

The study is a unique analysis of teacher job satisfaction since the implementation of federal education policies within the only state-wide school district in the United States. The prospective study does not signify a causal relation. Rather, the research is designed to potentially influence positive social change by the data analyses' triggering future studies of both direct and indirect effects of implementing unresearched federal education policies on teachers working with fragile populations of students. As such, the findings of the data analysis may serve to influence future research regarding job satisfaction of teachers. This may also impact student learning and Hawai‘i in general if teacher recruitment and retention rates can be positively influenced by future studies.

Summary and Transition

Results of high-stakes standardized tests determine the awarding of federal grant funds that school districts across the nation receive. Teachers who serve in school districts that receive federal funding may experience pressure under HSTEs associated with national RTT initiatives. Consequently, the pressure may lead to changes in teacher job satisfaction rates for teachers working in schools implementing controversial RTT initiatives such as HSTEs. The study is designed to examine the association of time

during the implementation of the RTT mandated HSTE with teacher job satisfaction rates among HIDOE public schools in the form of EES.

Chapter 2 presents a literature review that highlights the theoretical foundations of Herzberg's two-factor theory by applying concepts of the theory to intrinsic motivation and the possible problem of adverse effects on teacher job satisfaction in relation to HSTE policy driven by RTT initiatives. Hypotheses based in Herzberg's two-factor theory suggest a decrease in teacher job satisfaction may be associated with the implementation of controversial employee evaluation methods such as EES which is the HIDOE that link state mandated student standardized test scores with HSTEs in Hawai‘i.

Chapter 3 includes the methodological details of the study. This chapter will outline the specific population from which the sample was drawn, with emphasis on the sampling procedures. In this chapter, the details of the analyses and any relevant assumptions are described as well. Specific hypotheses to be tested are stated in Chapter 3. The chapter outlines the framework and procedures for the study so that researchers in the future who aim to replicate the findings may do so. Chapter 4 will report descriptive statistics of the collective of schools involved in the results and a discussion of specific test outcomes for each of the four research questions. Finally, Chapter 5 discusses conclusions, study limitations, implications for positive social change, and recommendations for future research.

Chapter 2: Literature Review

Introduction

Throughout the United States, school districts in the District of Columbia, Delaware, Florida, Georgia, Maryland, Massachusetts, North Carolina, Ohio, Rhode Island, Tennessee, and the entire state of Hawai‘i are implementing HSTE systems in response to federal RTT mandates (USDOE, 2015). Critics of RTT argue the federal initiatives negatively impact students and teachers in disenfranchised communities primarily comprised of ethnic minorities with limited English language proficiency and income (see Croft, Roberts, & Stenhouse, 2016; Dyson, 2012; Firestone, 2014; Ladson-Billings, 2011; Magill & Rodriguez, 2014; Niemiec & Ryan, 2009; Tienken, 2011; Skaalvik & Skaalvik, 2014). Relative to this study, critics suggest RTT mandates associated with the implementation of HSTE may generate challenging environments for both teachers and students to flourish (see Reeve, 2012; Ryan & Deci, 2011; Sheldon & Ryan, 2011). According to Lavigne (2014) despite concerns about the reliability and validity of current teacher evaluation methods, relatively few empirical studies on the effects of HSTEs on the teaching profession exist. The research is used to determine if changes in teacher job satisfaction averages per school coincide with the initiation of the HSTEs associated with RTT within the state of Hawai‘i. Presently, no research has been conducted on a statewide level examining teacher job satisfaction pre and post initiation of HSTEs.

The $4.35 billion dollar RTT federal government education program has received criticism from politicians, policy analysts, thought leaders, and educators since the

program's introduction in 2009. Citing psychological research regarding motivation, RTT critics argue the initiatives may disadvantage students from high-minority and low-socioeconomic backgrounds both directly and indirectly through the short-term loss of human capital and long-term impacts of decreased teacher job satisfaction and increased teacher turnover in schools servicing high-needs students (Firestone, 2014). Central to Herzberg's two-factor theory, highlighted in the present study, is the dominant concept of intrinsic versus extrinsic motivation: Essential elements in linking the job satisfaction theory of motivation and organizational policy to teacher job satisfaction in this literature review. In reference to Herzberg's two-factor theory of motivation, it seems reasonable to conclude that linking HSTEs to student standardized test scores imposes more extrinsic hygiene factors such as wages, supervisory practices, and company policy, rather than intrinsic motivational factors such as achievement, recognition, and personal growth on to the job. This should likely in turn lead to an increase in job dissatisfaction, thus decreasing teacher job satisfaction in schools enacting the RTT mandate initiative.

The present study aims to fill an empirical gap in the research by examining a theoretical perspective of job satisfaction with a large-scale state-wide analysis of average teacher satisfaction within the state of Hawai‘i pre and post implementation of HSTEs. If null hypotheses of the first three questions are rejected, conclusions may be consistent with the predictions of Herzberg's two-factor theory. In addition, by examining correlations between school demographics and teacher job satisfaction, it may be determined that specific demographic variables are predictive of high and low levels of teacher job satisfaction. Regardless of the outcomes of the data analysis, more research

will be needed to make definitive conclusions regarding any hypotheses included in the study.

Organization of the Literature Review

To provide the reader with a deeper understanding of the theoretical predictions driving this research, the literature review starts with a discussion of intrinsic motivation and leads into the main propositions and premises associated with Herzberg's two-factor theory. The second section covers the general application of two-factor theory concepts to contemporary research relative to teacher job satisfaction variables. Third, I discuss RTT and the specific problems of teacher job satisfaction and turnover in the American education system, specifically regarding how the theoretical framework of two-factor theory can be viewed to predict direct and indirect effects on teacher job satisfaction and turnover. Fourth, I examine research related to two-factor theory teacher job satisfaction and turnover by synthesizing related contemporary studies in a table to illustrate the gap in research the study will fulfill. Finally, I explore variables that have been empirically linked to teacher turnover and shortages and may relate to job satisfaction.

Literature Search Strategy

The current literature examined for this study used key terms regarding Herzberg's two-factor theory, teacher job satisfaction, teacher turnover, and initiatives related to RTT. The sources analyzed in this literature review were found in online scholarly databases, including original peer-reviewed literature and books. Sources were located via Google Scholar, JSTOR, Academic Search Premier, Business Source Complete, and PsycINFO using keywords such as *Herzberg's two-factor theory*,

motivation-hygiene theory, *two-factor theory*, *intrinsic motivation*, *extrinsic motivation*, *Race to the Top*, *high-stakes teacher evaluations*, *teacher job satisfaction*, and *teacher turnover*. The study research included the material associated with the identified search words within the past ten years, available through the databases, as recommended by Walden University policy.

Theoretical Foundation

Theories of motivation are concerned with the why of behavior and constructed on a set of assumptions about the nature of people and motivational elements driving their behavior (Deci & Ryan, 1985). Herzberg's two-factor theory provides the primary theoretical foundation guiding the hypotheses in the present study. This section starts with a brief description of intrinsic and extrinsic motivation followed by an overview of two-factor theory and ends with summaries of variables related to current research relative to the present study.

Intrinsic and Extrinsic Motivation

Intrinsic and extrinsic motivation are commonly used terms in the field of psychology that carry opposing meanings. Intrinsic motivation represents the innate affinity of people to seek out individual activities and challenges in efforts to extend and exercise learning and exploration (Deci, 1971; Ryan & Deci, 2000; Ryan & Weinstein, 2009; Stone, Deci, & Ryan, 2009). Extrinsic motivation refers to participation due to external rewards in the form of approval, money, grades, status, or avoidance of punishment (Deci, 1971; Ryan & Deci, 2000; Ryan & Weinstein, 2009; Stone et al., 2009). Researchers associate intrinsic motivation with both short- and long-term positive

behaviors, whereas extrinsic motivation has been strictly associated with goal-oriented short-term activity engagement (Taylor et al., 2014). Intrinsic motivation is sustainable in nurturing environments whereas extrinsic motivation presents long-term volatility in job satisfaction.

Extrinsic reward systems are a commonality of organizations in a capitalistic society. Stone et al. (2009) showed external reward systems foster short-term motivational increases in productivity. However, short-term motivation increases which are inspired by the implementation of external rewards are unsustainable and of weak quality (Stone et al., 2009). Deci, Koestner, and Ryan (1999) indicated that extrinsic motivation is linked to the long-term undermining of intrinsic interest in work. Additionally, Baker, Oluwole, and Green (2013) ascertained that extrinsic motivation systems promote the encouragement of deception and cheating. The current extrinsic focus of high-stakes testing data in HSTEs may present a host of issues policy makers did not anticipate.

The profession of teaching has long been touted as one known to attract individuals driven primarily by intrinsic motivation over extrinsic motivation (Ryan & Weinstein, 2009). However, the high-stakes testing environment created by federal initiatives may pose a threat to the intrinsic motivation typically associated with teaching. In a recent court case involving a school district under high-stakes federal mandates, several educators participated in behavior aligned with external rather than internal motivational factors (Greenberg, 2015). Investigators in Atlanta, Georgia implicated the Superintendent as well as 178 other teachers, principals, and administrators for

participating in an unethical pattern of cheating on high- stakes testing and covering-up the violations (Greenberg, 2015). An educator implicated in the case involving Atlanta Public Schools (APS) received a prison sentence of seven years for racketeering, but the policy roots of the misconduct continue to be overlooked (Greenberg, 2015).

Despite the federal offense that occurred in Georgia schools, there is no way of knowing if the federal initiatives associated with RTT mandate were an antecedent in the racketeering case against educators. However, research has suggested that intrinsic motivation is a powerful behavioral drive requiring supportive conditions to flourish, but this insecure internally motivated behavior can be interrupted by several obstructive organizational conditions set in policy as theorized by Fredrick Herzberg (1959) in the two-factor theory.

Motivation-Hygiene Theory

Herzberg's two-factor theory, also known as the dual-factor theory or motivation-hygiene theory (Herzberg, 1966; Herzberg, Mausner, & Snyderman, 1959), is a perspective based in theoretical postulations regarding what satisfies and motivates employees at work. Consistent with intrinsic and extrinsic inferences in human motivation, Herzberg's theory paralleled research of psychological health theory associated with Maslow's Hierarchy of Needs (1943). Maslow's Hierarchy of Needs (1943) was made popular through the illustration of a motivational hierarchy that served as a classic reference in the evolution of human behavior through cognitive thought and psychological health (Kovach, 1987). Maslow's Hierarchy of Needs (1943) theorized that individual motivation advances up a pyramid to a self-actualizing pinnacle superseding

self-esteem, love and belonging, safety and security and basic physiological need base. Maslow's Hierarchy of needs theory acknowledges a move toward higher-level thinking and cognition associated with intrinsic indicators (self-esteem & self-actualization needs) after basic survival level extrinsic motivators (physiological, safety and belonging needs) are met. Lower level needs of safety, security, and belongingness associated with Maslow's Hierarchy of needs are parallel with hygiene factors and given industrial descriptors such as salary, job security, work conditions, status, fringe benefits, paid insurance and vacation time (Kovach, 1987). In contrast, higher order needs indicated by Maslow's Hierarchy such as self-esteem and self-actualization are parallel to motivation factors such as meaningful work, responsibility, involvement in decision making, and sense of importance to the organization (Kovach, 1987). Herzberg's two-factor research concludes that when thwarted, extrinsic hygiene factors (wages, supervisory practices, and company policy) influence job dissatisfaction whereas intrinsic motivational factors (achievement, recognition, and personal growth) influence job satisfaction (Kovach, 1987).

Powerful research-based theoretical postulations. Herzberg et al. (1959) claim pay provides a minimal incentive in job satisfaction and is more likely to lead to dissatisfaction at work rather than satisfaction (Herzberg, 1966; Herzberg et al., 1959). In essence, Herzberg's two-factor theory refers to extrinsic indicators such as salary, job security, work conditions, status, fringe benefits, paid insurance and vacation time as hygiene factors whereas motivation factors are intrinsic indicators such as meaningful work, responsibility, involvement in decision making, and sense of importance (Herzberg

et al., 1959). Furthermore, Herzberg's two-factor theory postulates that extrinsic hygiene factors (wages, supervisory practices, and company policy) influence job dissatisfaction, whereas intrinsic motivational factors (achievement, recognition, and personal growth) influence job satisfaction (Herzberg et al., 1959). Herzberg's two-factor theory simplistically explains a complex variable such as job satisfaction within organizations.

At inception, Herzberg's two-factor theory was driven by a review of more than 2,000 job satisfaction studies in which researchers deduced that variables contributing to satisfaction were different from the variables contributing to dissatisfaction (Herzberg, et al., 1957). In the original study, researchers questioned 200 engineers and accountants, asking subjects to recall a time when they had felt exceptionally good about their job as well as a time when they had felt exceptionally negative about their job (Herzberg et al., 1959). After examining themes in subjects' stories, researchers found that most stories related to satisfaction at work consisted of achievement, recognition, interesting work, increased responsibility, advancement, or learning (Herzberg et al., 1959).

Meanwhile, researchers found that most stories related to dissatisfaction involved unfair company policies, unfair supervisors, negative interpersonal relationships, unpleasant working conditions, unfair salary, and job insecurity (Herzberg et al., 1959). Therefore, if the implementation of hygiene factors such as company policy, supervisor evaluations, relationships with colleagues, working conditions, salaries, and job security associated with RTT compensate with motivational factors linked to the teaching profession achievement such as recognition, interesting work, increased responsibility,

advancement, or learning – theoretically job satisfaction may remain unchanged in that hygiene and motivational factors balance out.

The present study is not based on data about specific hygiene and motivational factors, but rather a general average of teacher job satisfaction within a school based on the Likert-scale responses to three individual questions as collected and aggregated by the Office of Human Resources within HIDOE in the annual SQS. Therefore, the specifics of Herzberg's two-factor theory will not be considered, but rather generalizations of the theory are hypothesized but not confirmed.

Past critics, the present, and the future of Herzberg's two-factor theory. Critics of Herzberg's two-factor theory have drawn attention to bias in the methodology, failure in theory to acknowledge individual differences in employees, and the original study's lack of measurement of overall satisfaction. Specifically, Vroom (1964) argued the accounts of interviewee storytelling in determining satisfying and dissatisfying events at work may be biased and are not adequate to test the theory. Furthermore, Vroom (1964) suggested researcher partiality and bias in the coding categorization of the satisfying and dissatisfying stories told by interviewees. In addition to Vroom's criticisms over biased storytelling and coding documentation, Ewen (1964) raised concern over the lack of an overall measure of job satisfaction in the original study. However, despite the criticisms of a biased methodology, failure to address individual motivators and lack of an overall job satisfaction measurement associated with the original study, Herzberg's two-factor theory has been used as a theoretical framework in contemporary job satisfaction studies involving the intrinsic roots of teacher job

satisfaction and motivation, as discussed later in this section (e.g., Anastasiou & Papakonstantinou, 2014; Chu & Kuo, 2015; Collie et al., 2012; Fong, 2015; Gaziel, 1986; Ghazi et al., 2013; Islam & Ali, 2013; Kitheka, 2014). The study addresses criticisms of interviewer bias and lack of overall satisfaction scores with the original study as overall satisfaction scores are based on self-reporting of three questions rather than an interviewer rating.

Further need for the present study is indicated in recent research conducted on teacher job satisfaction in small studies in different parts of the world. In Peshawar, Pakistan, researchers Islam and Ali (2013) replicated Herzberg's original 1959 study in a sample of 170 private sector university teachers. Research findings indicate the 60-year-old motivation-hygiene theory was applicable to the population investigated in that extrinsic hygiene factors (wages, supervisory practices, and company policy) influence job dissatisfaction, whereas intrinsic motivational factors (achievement, recognition, and personal growth) influence job satisfaction (Herzberg et al., 1959). Researchers recommended a future study on a large population to fulfill the requisites of making a generalization of the findings in an entire country (Islam & Ali, 2013).

In another study of 442 secondary educators in Greece, Anastasiou and Papakonstantinou (2014) found teachers were satisfied with the job itself and less satisfied with working conditions. Moreover, in Asia a teacher satisfaction study of 116 educators at an international school found that of the six motivating factors associated with Herzberg's two-factor theory (achievement, recognition, work itself, responsibility,

advancement, and growth) only the "work itself" factor was statistically significant in predicting contract renewal in the data sets for Gen X and Gen Y teachers (Fong, 2015).

In a recent study of 664 teachers in Canada, findings indicate that teacher perceptions of school climate are key predictors of stress, teaching efficacy, and job satisfaction (Collie et al., 2012). A study of 261 teachers in Nairobi reported that perceived stress related to teacher workload, a sense of teaching efficacy, and empowerment were directly related to feelings of job satisfaction (Kitheka, 2014). Herzberg's two-factor theory (1959) presents a simple yet powerful seminal perspective on job satisfaction to explain possible relationships in teacher job satisfaction within the teaching profession under punitive federal education initiatives.

In summary, Herzberg's two-factor theory has not been without critics. Nevertheless, many researchers, as discussed, have indicated that job satisfaction involves high levels of intrinsic motivational factors such as self-direction and productivity related to job content. Meanwhile, job dissatisfaction involved extrinsic hygiene factors such as perceived unfairness in pay, policies, and poor working conditions related to job context. Intrinsic motivation factors involved higher cognitive levels of psychological growth, and extrinsic hygiene factors involved lower cognitive levels of physical and psychological pain avoidance. If HSTE is positively designed by stabilizing factors of hygiene (e.g., salary, job security, work conditions, status, fringe benefits, paid insurance and vacation time) with motivation (e.g., meaningful work, responsibility, involvement in decision making, and sense of importance), there may be no change in teacher job satisfaction in the first two years of HSTE implementation.

RTT

Current federal mandates imposing HSTEs on teachers employed in schools receiving funding are in line with a premise guided by Vroom (1964), an outspoken critic of Herzberg's two-factor theory. Vroom's Expectancy Theory (1964) postulates that the needs of an individual force behavior. Motivation to continue a behavior increases if individuals are confident they can achieve the task and believe the task will gain a reward (Vroom, 1964). Therefore, according to expectancy theory, if teachers do what is required, are confident in their ability to raise student standardized test scores, believe the achievement of the task will be rewarded, the desired outcome of higher standardized student test scores will be delivered.

Demand for teacher accountability. Consistent with expectancy theory, a culture of high-stakes accountability for students, teachers, and administrators started with the No Child Left Behind Act of 2001 (NCLB) and gained momentum in 2009 with RTT. Initiatives associated with RTT followed with the intention to reduce educational achievement gaps across the nation by restructuring to improve student outcomes on standardized tests through targeting classroom instruction and implementing performance standards for students and performance measures for educators (Mehta, 2013). There has been growing interest in education regarding whether performance-based incentive measures for teachers driven by rigorous teacher evaluations can improve teacher performance and retention (Dee & Wyckoff, 2015). Key initiatives of RTT have been riddled with controversy not only for the high-stakes placed on student standardized tests but also for the focus on holding teachers accountable with rewards and sanctions for

student test scores that are significantly impacted by variables outside teachers influence.

Performance-based standards to evaluate teacher effectiveness. Traditionally, public school teachers in America have been compensated on a pay scale based on their experience and credentials in a fixed reward system. Research by individuals such as Chetty, Friedman, and Rockoff (2011) specify that teacher quality is a leading indicator of student achievement and outcomes in life. In effort to account for teacher quality, RTT funded school districts are mandated to implement performance-based standards for teachers to improve teacher effectiveness. Croft et al. (2016) argued that "never before in the history of the United States have we based so many key education policy decisions on test score outcomes" (p.73).

Districts across the nation are investing in rigorous performance evaluation systems to identify ineffective teachers by changing personnel policies to make the dismissal of teachers easier (Drake et al., 2015). Despite the controversy surrounding the high-stakes performance environment for students and teachers, no research has examined the impact of teacher job satisfaction since the implementation of federal initiatives (Croft et al., 2016). It is important to recruit and secure quality teachers in every classroom in America; however, it has not been determined how to accomplish the important goal without undermining the intrinsic motivation that typically drives the best educators.

Perceived fairness of models measuring teacher impact. The measurement of teacher impact on student success beyond the effects of parents, socioeconomic status, environmental stressors, and other teachers is a complex undertaking. It is of critical

importance that teachers perceive evaluation to be consistent, meaningful, and fair. Human resource management researchers indicate the implementation of performance management systems like those associated with HSTEs take significant amount of time and effort to implement (Ghorpade & Chen, 1995). Moreover, as job complexity increases, the task of building a performance management system becomes progressively more challenging (Ghorpade & Chen, 1995). Additionally, in order for a performance management system to be effective, individuals receiving ratings must believe the system is useful and fair; if not, the system is likely to host negative consequences (Ghorpade & Chen, 1995). For example, recent research conducted on a sample of 1983 teachers from 65 schools in Belgium subject to teacher evaluation without high-stakes of promotion or job loss, concluded that teacher perspective of the purpose and method of evaluation were important indicators of positive outcomes (Delvaux, 2013). The perceived fairness of a performance rating by teachers being evaluated by their employer is a critical component in developing any successful evaluation tool.

Despite the controversy surrounding the complexity and fairness of teacher evaluations, to accommodate RTT mandates school districts throughout the United States are using value-added measures (VAM) to measure teacher effectiveness. Estimated teacher VAM scores purport to determine how much of an impact individual teachers have on student learning during a school year by utilizing statistical algorithms that include student standardized test results to determine scores (Hidden Curriculum, 2014). However, VAMs are not universally accepted as sound measurement. In 2014, the American Statistical Association (ASA) issued an official statement revealing “most

VAM studies find that teachers account for about 1% to 14% of the variability in test scores, and that majority of opportunities for quality improvement are found in the system-level conditions and ranking teachers by their VAM scores can have unintended consequences that reduce quality" (ASA, 2014, p. 2). Despite the powerful statement issued by the ASA regarding VAMs, schools are still utilizing the controversial measures to hold teachers accountable to standardized test scores of students regardless of ethics surrounding reliability and validity.

School administrators like those in Hawai‘i and other school districts receiving RTT funding use scores associated with VAMs to make high-stakes decisions about teacher compensation, tenure, and employment (Hidden Curriculum, 2014). High stakes-teacher evaluations (HSTEs) implemented under RTT initiatives are reviewed annually by USDOE officials to; (a) measure for growth of each individual student; (b) design and implement evaluation systems including multiple rating categories that identify student growth as a significant factor; (c) evaluate teachers and principals annually and provide feedback, and; (d) inform decisions regarding professional development, compensation, promotion, retention, tenure, and certification of teachers (USDOE, 2013). This extrinsic push to evaluate teachers by their VAM scores can negatively influence teachers perceived fairness in a measurement tool which may reduce teacher job satisfaction rates.

Research and Theory Related to Key Variables

The key variables and concepts discussed in this section of the literature review include teacher job satisfaction along with school demographics. The present hypotheses for this research predicts significantly lower teacher job satisfaction averages as theorized

by Herzberg's two-factor theory of job satisfaction in association with implementation of an HSTE statewide pilot program. The first section starts with an overview of the relation between teacher job satisfaction, teacher autonomy, and turnover. In the second section, Herzberg's two-factor theory is linked to teacher dissatisfaction in contemporary studies. A section discussing implications of punitive consequences on unproven human resource methods mandated under RTT initiatives in teacher job satisfaction and turnover in modern research follows. This portion is followed with a discussion of known antecedents of high teacher turnover, and finally concludes with the synthesis of information and a review of how previous research findings influence the current study.

Teacher Job Satisfaction and Turnover

Job satisfaction and autonomy are words commonly mentioned together in organizational psychology research. As a term, job satisfaction is usually conceptualized as an affective reaction to one's work and work is complex, encompassing many constructs (Skaalvik & Skaalvik, 2011). Meanwhile, the term autonomous refers to the sustainable motivation as it "emerges from one's sense of self and is accompanied by feelings of willingness and engagement" and has been linked to productivity, creativity, and happiness (Stone et al., 2009, p. 77). Teachers' desire to do a good job is strongly correlated with the freedom given in efforts of addressing the diverse and changing needs of the students they serve as indicated in the level of perceived autonomy of teachers working in the field is indicative of teacher job satisfaction (Crosso & Costigan, 2007). Meanwhile, the recent trend perpetuated by teacher evaluations based on students' standardized test scores is diminishing teacher autonomy (Ballet, Kelchtermans, &

Loughran, 2006). Teacher satisfaction and autonomy are variables highly correlated in research as are teacher job satisfaction and teacher turnover.

Although some turnover may be beneficial for any school or organization, a pattern of chronic teacher turnover takes an instructional, financial, and organizational cost that adversely affects student learning by destabilizing the teaching force in minority and high poverty communities (Rondefelt et al., 2013). In an analysis of national data, voluntary teacher turnover (teacher choice to leave) occurred nine times more than involuntary teacher turnover (employer initiated leave) (Grissom, 2011). In a recent research synthesis, Selin (2016) reported that teacher transfer to teaching positions in other schools with better-working conditions (collegial relationships and management) account for a large portion of teacher turnover. Roughly 60% of teacher turnover is the result of teachers transferring between schools, and 40% is from teachers who have decided to leave the teaching profession (Alliance for Excellent Education, 2008). Marinell and Coca (2013) found that 66% of middle school teachers in New York City's neediest schools exit the school within five years of entry. Although there is a need to remove ineffective teachers from schools, there seems to be a disturbing trend of teachers leaving the profession and teachers leaving schools with more difficult conditions to schools with less demanding conditions. Clearly, there appears to be a relation between turnover and teacher job satisfaction.

Researchers have attributed teacher turnover to many reasons. Causes of teacher turnover vary from lack of preparation to burnout resulting from inadequate administrative support, and include multiple issues relating to gender, age, race/ethnicity,

and professional experience (Cooper & He, 2013; Curtis, 2012). Novice teachers are more likely to leave education, especially if they are ill-prepared to practice in culturally disadvantaged locations (Cooper & He, 2013). The results of the data analysis associated with this study may indicate a decrease or no change in teacher job satisfaction averages pre/post the implementation of HSTEs in Hawai‘i. If assertions made by Herzberg's two-factor theory are false and findings indicate no decrease in teacher job satisfaction pre versus post HSTEs implementation, there may be reason to conclude that a homeostasis between hygiene and motivation factors in the implementation of federal RTT initiatives exists. However, if a negative relation exists in teacher job satisfaction pre and post the implementation of HSTEs, more studies are warranted to explore the specific hygiene or motivating factors associated with the relation.

The research attempts to fill a gap in the contemporary applicability of Herzberg's two-factor theory in relation to teacher job satisfaction in education under a renewed climate of teacher accountability using HSTE. Especially noteworthy is the large data set of 235 schools representing roughly 11,000 teachers that are analyzed. The following section describes and illustrates recent applications of Herzberg's two-factor theory to clarify the gap to be filled by the analysis of teacher job satisfaction in light of HSTE implementation in the United States.

Teacher Job Satisfaction and Turnover in Recent Two-Factor Theory Research

Table 1 summarizes the results of relevant studies that investigated the relation between teacher job satisfaction and indicators of Herzberg's two-factor theory within the last five years. The chosen studies were relative to teacher evaluations. In the table,

relevant research results are listed in chronological order with the most recent study first. The table includes sample area and sizes as well as variables studied, findings, and limitations of research. The number of teachers listed in the study, whether the study was conducted in the United States (US), and whether teachers were accountable to HSTE are indicators highlighted in the limitations column.

The literature review in Table 1 includes studies of Herzberg's two-factor theory in relation to teacher job satisfaction have been conducted in countries outside the United States (e.g., Asia, Canada, Greece, Israel, Kenya, Pakistan, Taiwan; Anastasiou & Papakonstantinou, 2014; Chu & Kuo, 2015; Collie et al., 2012; Fong, 2015; Ghazi, et al., 2013; Islam & Ali, 2013; Kitheka, 2014). The study offers an opportunity to examine data from the state of Hawai‘i in a unique application of Herzberg's two-factor theory in the United States.

Table 1

Herzberg's Two-Factor Theory: Table of Contemporary Teacher Job Satisfaction Research

Author/Date	Sample	Independent Variables	Dependent Variables	Limitations	Significant Findings
Chu & Kuo (2015)	550 elementary teachers from schools in Kaohsiung County, Taiwan	Achievement, challenging work, autonomy, professional growth, recognition, working environment, remuneration, administration and leadership	Job involvement	550 Outside US No HSTE	Results of the study indicated that hygiene factors such as administration/leadership and working environment have a positive and significant effect on the job involvement of elementary school teachers in Taiwan. Salary was not a factor that affected the job involvement of the elementary school teachers in Taiwan.
Fong (2015)	116 teachers at an international school in Asia	Pay, promotion, supervision, fringe benefits, performance-based rewards, operating procedures, coworkers, nature of work, and communication	Job satisfaction	116 subjects Outside US No HSTE	Of the six motivating factors (achievement, recognition, work itself, responsibility, advancement, and growth), only the work itself factor was statistically significant in predicting contract renewal in the data sets for Gen X and Gen Y. Of the seven hygiene factors (company policy, supervision, relationships with colleagues and supervisors, physical work conditions, salary, status and job security), only the supervision factor was statistically significant in the data sets for both Gen X & Gen Y).
Anastasiou & Papakonstantinou (2014)	442 secondary education teachers in the Epirus region of Greece	Factors of job satisfaction: achievement, responsibility, recognition, career advancement, work interest and personal growth	Provision of ethical rewards, good working conditions, motivation by school principal, and participation in school administration, and decision making.	442 subjects Outside US No HSTE	Found that teachers garnered greater satisfaction with the intrinsic elements of their work such as the interaction with students in fulfillment of a desire to help and guide children to realize their potential in life and meanwhile teachers experience dissatisfaction with issues related to the school structures and policy-making associated with promotional opportunities and professional development. Results also indicate that younger teachers were more stressed than their older colleagues with more experience. Relative to men, women reported more levels of stress. Overall secondary teachers in this study in Greece were satisfied with the job itself and less satisfied with their working conditions.

(*table continues)*

Author/Date	Sample	Independent Variables	Dependent Variables	Limitations	Significant Findings
Kitheka (2014)	261 employees at the Teachers' Service Commission headquarters in Nairobi	Employee involvement in decision making, employee remuneration, employee commendation letters, and employee training	Job satisfaction	261 subjects Outside US No HSTE	This study found that as employees are more empowered in their work – job stress decreases. Job satisfaction includes social recognition, which consists of personal attention, mostly conveyed verbally, through expressions of interest, approval, and appreciation for a job well done.
Ghazi, Shahzada, & Khan (2013)	300 university teachers working in public sector universities in Pakistan	Hygiene factors: university policy, supervision, relationship with supervisor, working conditions, salary, relationships with peers, personal life, relationships with subordinates, status, security. Motivator factors: achievement, recognition, work itself, responsibility, advancement, growth	Job satisfaction & motivation	300 subjects Outside US No HSTE	The study concluded that the fulfillment of hygiene factors were related to job satisfaction in university teachers in Pakistan. The findings also indicate that hygiene factors play more important in motivation relative to motivator factors.
Islam & Ali (2013)	170 private sector university teachers in Peshawar, Pakistan	Hygiene factors/dis-satisfiers: supervision; relationship with boss; work conditions; pay/salary; interpersonal relations with colleagues; university policy regarding employees Motivation factors: achievement; recognition; work itself; responsibility; advancement; growth.	Feeling indicators at work; job satisfaction; job dissatisfaction; no dissatisfaction	170 subjects Outside US No HSTE	Motivation-hygiene theory accurately applies to the sample population. However, researchers discovered empirical evidence indicating that hygiene factors also influence job satisfaction rather than previous thought of the factors only influencing job dissatisfaction or no dissatisfaction.
Collie, Shapka, & Perry (2012)	664 elementary and secondary school teachers from British Columbia and Ontario Canada.	Teacher outcomes perceived school climate, and beliefs about social-emotional learning of students.	Job satisfaction, teaching efficacy, and teacher sense of stress	664 subjects	Teacher perceptions of school climate (physical and social emotional safety, quality of teaching and learning, relationships and collaboration, structural environment) are key predictors of stress, teaching efficacy, and job satisfaction. Perceived stress related to teacher workload and sense of teaching efficacy were directly related to a sense of job satisfaction.

Applications of Herzberg's two-factor theory in contemporary teacher job satisfaction have been limited in scope and volume, relative to the roughly 255 public schools represented by roughly 11,000 teachers in the study. Of the seven recent studies of Herzberg's two-factor theory listed in Table 1, the largest consisted of 664 elementary and secondary school teachers (Collie et al., 2012). Meanwhile, the smallest study included 116 participant teachers (Fong, 2015). In a dissertation study of an international school in Asia, Fong (2015) concluded among six potentially motivating factors, only the "work itself" was statistically significant in predicting contract renewal in the subjects studied. Further study findings indicated that only the "supervision" hygiene factor was statistically significant in predicting teacher contract renewal (Fong, 2015). In the largest published study on the topic, 664 teachers from 17 school districts in Canada reported that workload and sense of teaching efficacy were directly related to a sense of job satisfaction (Collie et al., 2012), however, indicators such as pay and threat of dismissal associated with HSTE were not variables indicated in the research.

In 2013 through 2015, only few studies cited Herzberg's two-factor theory of job satisfaction in an educational setting. Nevertheless, the theory was concluded to generally be supported. On the other hand, in a sample of 170 private sector university teachers in Pakistan, Islam and Ali (2013) concluded that not only did the theory apply to study sample, but the evidence suggested that hygiene factors influenced job satisfaction as well as job dissatisfaction. Similarly, Ghazi, et al. (2013) concluded that the fulfillment of hygiene factors correlated with job satisfaction for teachers. Moreover, findings by

Kitheka (2014) indicated that job satisfaction increased when personal attention conveyed through motivational factors such as verbal expressions of interest and approval for a job well done were perceived by employees. Furthermore, Anastasiou and Papakonstantinou (2014), found that intrinsic factors such as fulfillment of a desire to help and guide children promoted job satisfaction, whereas issues related to extrinsic hygiene indicators such as school, structures, policy making, promotional opportunities, and professional development were related to job dissatisfaction. Although, the research discussed are indicators of the validity of Herzberg's two-factor theory, none of the teacher job satisfaction studies linked to the theory examined teacher job satisfaction in conjunction with HSTE.

This study aims to examine indicators of teacher job satisfaction pre and post the implementation of HSTE in the state of Hawai‘i. Additionally, to assess the possibility that school demographics may provide an explanation for differences in the dependent variable, teacher job satisfaction, the study will analyze each school's average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers.

Known Impact of Poverty and Minority Students on Teacher Turnover

Prior to the implementation of federal RTT mandates, public schools in communities primarily comprised of minorities living in poverty experienced problems attracting and retaining qualified teachers. In a quantitative analysis of data from the state of Georgia, Scafidi, Sjoquist, and Stinebrickner (2007) found that new teachers were most likely to leave schools with lower student test scores, lower income, or higher

proportions of minority students. Most industrialized countries in the world have low levels of inequality in learning opportunities, however, in the United States, depending on the geographic region and socioeconomic composition of a community, significantly noticeable educational disparities exist (Causa & Chapuis, 2010). Anderson and Holder (2012) findings suggest that under federal education mandates, teachers working in communities with high concentrations of minorities, living in poverty have the same level of accountability for fulfilling obligations for federal and state licensing requirements as their middle class urban and suburban counterparts. Moreover, Kim and Cho (2014) found a lack of student preparedness and professional resources along with an inability to feel successful in their work can lead teachers to a decrease in overall motivation for remaining in education. As a direct result, teachers leave, and new ones are difficult to recruit, leaving schools with the greatest need for passionate educators understaffed and in a perpetual disarrayed state of demoralizing current teachers and discouraging potentially talented teachers from entering a disheartening profession (EPI, 2010). This long-time underlying situation in education is a likely contributing factor to the fact that in Hawai‘i, Native Hawaiians experience lower student achievement, growth, school engagement, promotion, graduation, and college enrollment relative to other dominant ethnic groups (Kana’iaupuni, 2011). Again, to rule out the possibility of variables such as high concentrations of poverty and minority students within a school providing an explanation for changes in teacher job satisfaction associated with RTT implementation, the present study will analyze school’s average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers.

Summary and Transition

This literature review has discussed how concepts of motivation found in Herzberg's two-factor theory apply to teacher job satisfaction and turnover, considering the implementation of HSTEs. The review of the literature indicated that, although HSTE policies associated with RTT are promoted to improve the learning outcomes of public school students, the initiative may be linked with negative outcomes in teacher job satisfaction and teacher turnover.

There is a lack of research on the implementation of HSTE and the association of changes in teacher job satisfaction with the initiation of federal education policy. The research has implications for future research into the effects of HSTEs on student academic achievement and aims to determine if changes in teacher satisfaction averages per school coincided with the initiation of the HSTE associated with RTT within the state of Hawai‘i. Applications of Herzberg's two-factor theory in contemporary teacher satisfaction have been limited in scope and volume relative to the roughly 255 public schools represented by approximately 11,000 teachers in the study. The information reviewed in this chapter illustrates the need to examine the possible relation of policy implementation to changes in teacher motivation by assessing changes in teacher satisfaction and turnover rates in the state of Hawai‘i pre and post implementation of the HSTE associated with federal RTT initiatives.

The following chapter outlines and details the methodology of the study. This chapter will discuss the specific population from which the sample is drawn, with emphasis on sampling procedures. In this chapter, the details of the analysis and any

relevant assumptions are described. Specific hypotheses to be tested are stated in Chapter 3. The chapter outlines the framework and procedures for the study so that researchers in the future who aim to replicate the findings may do so. Chapter 4 reports the descriptive statistics of schools involved in the results and discusses specific test outcomes for each of the four research questions. Finally, Chapter 5 discusses conclusions, study limitations, implications for positive social change and recommendations for future research.

Chapter 3: Research Method

Introduction

The purpose of the study is to assess the modern-day application of Herzberg's two-factor motivation and hygiene theory by determining if there is a statistical relationship between the implementation of HSTEs and changes in indicators of teacher job satisfaction since the 2012 implementation of the program in the state of Hawai‘i. The hypotheses, grounded in Herzberg's two-factor theory, posit the implementation of extrinsic incentives such as reward- and sanctions-based workplace policies like HSTEs will be associated with adverse outcomes within the teaching profession. By examining teacher satisfaction averages, the present study offers an opportunity to apply the two-factor theory to modern day issues regarding teacher satisfaction.

This chapter begins with a review of the research design and approach of the study. Next, a description of the population connected to the data analysis, sampling procedures, and the instrumentation and operationalization of research variables are discussed. Following the discussion on the dependent variable of teacher satisfaction is an explanation regarding the timing of Hawai‘i's version of HSTEs, the EES, and the data analysis procedures for the research questions involved in the data analysis. Finally, the chapter provides a discussion of threats to validity and ethical procedures and concludes with a summary and introduction to the results chapter.

Research Design Approach

The study will use school years between 2009-2014 related to the RTT mandated implementation of HSTEs in the state of Hawai‘i, EES, and therefore the time pre,

during, and post EES implementation as the primary factor of change. Teacher job satisfaction based on the three indicators of teacher satisfaction are aggregated to serve as three dependent variables in this quasiexperimental longitudinal designed study. The implementation of EES is the independent variable, which divides the data into pre EES implementation in 2009-2010 (Year 1) and 2010-2011 (Year 2), implementation during the second semester of 2011-2012 (Year 3), and post EES implementation in the 2012-2013 (Year 4) and 2013-2014 (Year 5) school years. Year 3 is viewed as potentially an anomaly as EES was implemented state wide during the second semester and the contrasts in the three different timeframes indicated in the research questions are analyzed reflect the potential anomaly. Finally, the dependent variable of teacher satisfaction in the final research question is to make comparisons within the percentage of Native Hawaiian students and free and reduced lunch students, and percentage of fully licensed teachers at each individual school collected before the implementation of the EES and post implementation to evaluate the possibility that such variables may be predictive of teacher job satisfaction in the state of Hawai‘i.

The first three research questions in the study are addressed using a quasiexperimental longitudinal design incorporating a quantitative repeated measures analysis of secondary data on teacher satisfaction, which is measured at the school level (i.e., as an average of all teacher responses for each of the three questions within each school). In following this methodology, an analysis will include the use of three repeated measure analyses of variance (rmANOVAs) conducted using the data analysis plan outlined in this chapter. This approach was selected because of its alignment with data

collection and reporting procedures of the HIDOE. Based on mandatory federal initiatives, all public schools in Hawai‘i were legally required to implement HSTEs, and therefore no control group (i.e., group of schools without HSTE) could legally exist. For this reason, there are no comparison groups available to use a between-group repeated measures analyses. Within-effect testing is the only applicable analysis for those questions.

Consistent with predictions formulated from Herzberg's two-factor theory of job satisfaction, the research hypotheses are that teacher satisfaction decreased when extrinsic mandates associated with HSTEs were implemented. Based on the results of rmANOVAs, this research attempts to determine if significant decreases occurred during the years examined in the analysis. Limited interpretations can be made from the analysis of the data changes within the timeframe that HSTEs were implemented and no direct cause and effect relation can be inferred.

The research questions and hypotheses are not intended to imply any change in teacher satisfaction is solely attributed to the implementation of HSTEs in HIDOE. Besides HSTEs, other independent variables such as the school's percentage of Native Hawaiian students and free and reduced lunch students, and percentage of fully licensed teachers at each individual school are explored in the fourth research question of this study. The variables listed are assessed in comparison to teacher job satisfaction in the 2013-2014 school year to determine possible school demographic predictor variables of teacher job satisfaction.

Methodology

Population, Sample, and the Archived Data Set

While this study is focused on data obtained from HIDOE, generalizations can be made regarding other school districts implementing RTT and even other HSTE applications. Having a school district that encompasses an entire state makes Hawai'i unique. On the other hand, a school in Hawai‘i and teachers in Hawai‘i are not thought to be substantially different from other schools in the country when responding to a top-down implementation of a large program imposing constraints on teachers.

The archived data for this study come from most of Hawai‘i's individual public schools. Public schools in Hawai'i enrolled an average 85% of the roughly 216,500 school age children in the islands in the 2012-2013, 2013-2014, and 2014-2015 school years and employed roughly 11,182 teachers in classrooms (HIDOE, 2016). An average of 96% of teachers are fully licensed, and 60% have an average of 5 or more years in the same school and 13 years of teaching, and 37% hold an advanced degree (HIDOE, 2015). Within HIDOE schools, 19% of students have special needs and 40% are economically disadvantaged, while 41% are not considered special needs (HIDOE, 2015). Data may include counselors, librarians, and teacher mentors who are considered teachers but serve in support capacities. This study may possess generalizable implications for populations of teachers working within schools receiving federal RTT funding in exchange for implementing national mandates.

Hawai‘i's version of HSTE, the EES, was initially piloted among 23 of the lowest performing schools in the state during the 2010-2011 school year. Due to statistical

inconsistencies involved with the early piloted implementation, the 23 pilot schools will not be valid to the present research and therefore are not included in the study. During the 2012-2013 school year, 232 of the 255 public schools in the state of Hawai‘i piloted RTT initiatives. All 255 schools comprising Hawai‘i’s public school system fully implemented all facets of EES following the 2013-2014 school year. To assesses whether the implementation of EES coincided with changes in teacher satisfaction, the study utilizes data from roughly 232 public schools with complete data sets for the sample.

In the spring of 2012, all public schools within the state of Hawai‘i piloted the EES with the plan of full implementation for the following school year. During the 2012-2013 school year, HIDOE implemented key elements of HSTEs within the EES system in 255 public schools. Meanwhile, the 2013-2014 school year marked the first year of full statewide implementation of all elements of RTT mandated HSTEs in Hawai‘i’s EES. Among this sample of 255 schools, the 2012-2013 and 2013-2014 school years represent the implementation of RTT initiatives associated with HSTEs, while the 2009-2010 and 2010-2011 school years represent measures taken before the implementation.

To ensure the study appropriately assesses whether implementation of Hawai‘i’s HSTE, the EES, coincided with changes in teacher satisfaction, the research will use schools that implemented EES in 2012-13 as the sample. Because each observation represents an individual school, the school is the unit of analysis. Some may consider this a full population strategy, and it is the best form of sampling available but is usually too costly to be used in practical terms (Pagano, 2009). Because the entire population of Hawai‘i public schools’ data is available online, this sampling strategy is available to the

present research and is utilized to create accurately generalizable results regarding the process of the EES implementation.

To ensure that the analyses have sufficient variability and observations to achieve empirical validity, a power analysis in G*Power version 3.1.9 was conducted. Parameters of the procedures must first be specified to adequately calculate required sample size for any statistical procedure. The basic parameters of the power analysis include the analytical method's family of the hypothesis test, the effect size, the desired power, and the required benchmark for significance (i.e., alpha level). The rmANOVA is part of the *F* family of tests. Cohen (1992) found the average expectation for effect size should be medium, as this effect size represents a statistical difference that could be discerned by the human eye. Also, the typically desired power of .80 and α of .05 are benchmarks for this analysis. Consistent with the measurement analysis of the independent variable of time, the parameters determine sample size requirements for each study and establish that the rmANOVAs require a total of 21 observations (i.e., 21 schools' data from each year) to discover a medium-sized difference with a power of .80 and at the alpha level of .05. Based on this calculation, the number of schools available for analysis will surpass the sample size requirement by more than 200.

Procedures for Data Permission and Preparation

To comply with mandated accountability laws, the state of Hawai‘i Department of Education Office of Strategy, Innovation, and Performance provides annual educational assessment information for stakeholders and the community on website arch.k12.hi.us/index.html with data dating back to 2001. The Accountability Resource

Center Hawai‘i (ARCH) is a public hub for a variety of HIDOE reports, ranging from educational and fiscal accountability reports to School Status and Improvement Reports (SSIR). The reports include data obtained from statewide surveys and related documents administered to students, parents, and school personnel in statewide SQS. The SQS is administered to teachers on-line during the spring semester. Teacher satisfaction data in this research are extracted from the annual SQS with permission from the System Evaluation and Reporting Section within HIDOE.

After obtaining Internal Review Board approval, raw data were obtained from the state source website arch.k12.hi.us/index.html and include specific data regarding SQS survey return rates, average answers for each of the three questions used to determine average teacher satisfaction, total number of teachers, percent of teachers with five or more years' experience, average years of teacher experience, percentage of teachers with advanced degrees, percent of teachers fully licensed, percentage of Native Hawaiian students, percentage of free and reduced lunch students, and type of school (elementary, middle, high, and mixed grade level) in SPSS to conduct a series of data-analyses. Finally, any information used from the SQS administered through HIDOE is with the agreement that the survey is cited: "This survey has been adapted from the School Quality Survey, developed by the Hawai‘i Department of Education, Systems Accountability Office." Along with the previous statement regarding citation, a copy of the research produced by the secondary SQS data must be provided to HIDOE's System and Evaluation Reporting Section.

Instrumentation and Operationalization of Constructs

The study was conducted to analyze the continuous dependent variables of teacher job satisfaction. These repeated measurements span two years before, the year during, and two years following EES implementation.

Teacher job satisfaction. This dependent variable represents the average level of satisfaction in a school, among all teachers surveyed. HIDOE annually administers a voluntary SQS to parents, students, and teachers. In this research, only teacher satisfaction scores were used within each school as reported by teachers for three questions in the SQS.

The SQS results are intended to "supplement other school information used by leadership teams for school planning, improvement, and other purposes" (HIDOE, SQS Interpretation Guide). Additionally, the SQS is administered in response to statutory requirements (Hawai'i Revised Statutes 302A-1004) and HIDOE policies and to provide information to evaluate the HIDOE Strategic Plan (HIDOE, SQS Interpretation Guide). The first administration of the SQS began in the Spring of 2001. SQS Likert type statements consist of the following: "I am satisfied with the overall quality of this school"; "I am satisfied with how well my students are achieving the standards"; and "I am satisfied with my school's leadership." in 2014, respondents completed the SQS exclusively online and responded to each item on a 4-point Likert-type scale in which 4 = strongly agree; 3 = agree; 2 = disagree; 1 = strongly disagree; and 0 = don't know.

Unfortunately, while the questions asked from Year 1 through Year 5 were the same, the number of anchors on the scales changed as follows:

- 2009-2010 - **5-point scale** (5=strongly agree; 4=agree; 3=neutral; 2=disagree; 1=strongly disagree; 0=don't now)
- 2010-2011 - **5-point sca**le (5=strongly agree; 4=agree; 3=neutral; 2=disagree; 1=strongly disagree; 0=don't now)
- 2011-2012 - **5-point scale** (5=strongly agree; 4=agree; 3=neutral; 2=disagree; 1=strongly disagree; 0=don't now)
- 2012-2013 - **6-point scale** (6=strongly agree; 5=agree; 4=somewhat agree 3=somewhat disagree; 2=disagree; 1=strongly disagree; 0=don't now)
- 2013-2014 - **4-point scale** (4=strongly agree; 3=agree; 2=disagree; 1=strongly disagree; 0=don't now)

To provide comparability between years, the four and five-point scales are transformed so that on all scales, the "strongly agree" anchor is a six and the "strongly disagree" anchor is a one. The following equations will accomplish the result:

$$6 - point\ scale\ value = -0.6667 + 1.6667 * 4\text{-}point\ scale\ value$$

Or, for transformations involving the 5-point scale,

$$6 - point\ scale\ value = -0.2500 + 1.2500 * 5\text{-}point\ scale\ value$$

This approach provides a linear transformation of 5the scores from two of the scales into the six-point scale. Unfortunately, the effect of the different number of anchors on the three scales is confounded with effects that are expected with implementation and examining the effects due to the different number of anchors will not be amenable to analysis.

The unit of analysis is an individual school with responses provided by teachers and instructional support staff within each school. A mean for each survey item is calculated for each school for each of the three satisfaction questions. After summing over the three questions, the satisfaction data used in the analysis represent each school's average satisfaction, calculated as the mean of all teachers within the school who received the survey. Although counselors, librarians, and registrars are included in teacher satisfaction data, administrators and facilities staff are excluded.

RTT initiatives. The implementation of the EES as part of the Hawai‘i Public Schools RTT initiatives served to define the independent variable. RTT is a competitive 4-year grant program designed to encourage innovation and reform by achieving significant improvement in student outcomes, including making substantial gains in student achievement, closing achievement gaps, improving high school graduation rates, and ensuring students are prepared for success in college and careers through the implementation of federal mandates. In the 2010-2011 school year, HIDOE worked to implement HSTEs and establish data systems and foundations to roll out its EES system within the state. In the second semester of the 2011-2012 school year, all public schools within the state of Hawai‘i piloted the EES. During the 2012-2013 school year, HIDOE implemented key elements of the EES system in 255 public schools. Meanwhile, the 2013-2014 school year marked the first year of full statewide implementation of EES. Among this sample of 255 schools, the 2012-2013 and 2013-2014 school years represent the implementation of RTT initiatives, while 2009-2010, 2010-2011, and 2011-2012 school years represent measures taken before the implementation.

School demographics. Aggregations of the school's percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers are assessed for both groups in efforts of identifying factors outside of EES with the potentiality of influencing the acceptance or rejection the study hypotheses.

Percent Native Hawaiian. This variable represents the percentage of Native Hawaiian students within an individual school as reported annually by HIDOE.

Percent free and reduced lunch. This variable represents the percentage of free and reduced lunch students within an individual school as reported annually by HIDOE. The variable is used in this study as an indicator of poverty.

Percent of teachers fully licensed. This variable represents the percentage of teachers who are fully licensed within an individual school as reported annually by HIDOE.

Data Analysis

Data are screened for accuracy, missing values, and outliers using SPSS statistics software program. Descriptive statistics and frequency distributions are reviewed to determine that responses are within a possible range of values and to ensure that outliers do not distort data. The presence of outliers was tested by calculation of standardized values and investigated for salient characteristics. Standardized values represent the number of standard deviations an individual score falls from the mean of those scores. Schools with scores more than 3.29 standard deviations from the mean are considered outliers and were examined carefully and potentially be removed from the data set (Tabachnick & Fidell, 2012). Schools with low survey return rates are assessed to

determine whether they are useful to the analysis by examining the return-rate scale for outliers. Those units missing a value for the dependent variable for any year of assessment are removed from the data set for the corresponding dependent variable. Any such deletions of data were noted before the presentation of results.

Research questions one, two, and three are examined based on the results of three tests of contrasts for each research question and three more general repeated measures ANOVAs (rmANOVA). Each analysis assesses the dependent variable of satisfaction for differences in scores measured over 5 school years. The implementation year, Year 3 is viewed as potentially an anomaly and the contrasts that were tested reflect the anomaly. To treat the years of implementation this way, the three average satisfaction scores from Years 1 and 2 will represent pre implementation satisfaction, Year 3 represents a separate observation to represent the anomalous implementation year, and an average of Years 4 and 5 will represent the post implementation satisfaction scores. In treating the groups of years this way, there were three contrasts, with specific foci on comparing the year groups to one another.

Under the assumption that the null hypothesis is true for RQ 1-3, if the probability associated with specified contrast is less than 5% (i.e., $p < .05$) according to the null hypothesis, the null hypothesis was rejected for the alternative, indicating that there was a significant change in satisfaction after implementation of EES; this is the focus of RQ 1. Similar analyses will address RQs 2 and 3, based on comparing different sets of years to determine what trends existed in teacher job satisfaction. However, it is possible that the

results of regression analysis for RQ 4 may identify one or more variables with a pattern indicating the variable may be predictive of teacher job satisfaction outcomes.

Three assumptions must be met in RQs 1 through RQ 3 to ensure that the rmANOVA is valid. The first assumption of this form of ANOVA is that residuals from the regression of each dependent variable are normally distributed. This assumption is typically only problematic if the sample size (*N*) used in the analysis is below 20 (Stevens, 2009). Normality was evaluated using a Kolmogorov-Smirnov (KS) test for each year's teacher job satisfaction scores, and any violations are noted for further discussion. The second assumption is that data are all taken from a sample that is repeatedly measured; in terms of the analysis, this requires that each school have a single schoolwide measurement of satisfaction that contributes one unique observation to the data over the time frame of the analysis. This can be limited in data cleaning, a process involving the elimination of data that are improperly formatted, incomplete, or incorrect (Tabachnick & Fidell, 2012). To further assess the school data, correlations were conducted among each pair of years. The final assumption is that variance from one measurement in time to the next among each possible comparison among the set of years. This is known as the assumption of sphericity and was tested using Mauchly's test. If sphericity is violated, an average of the Greenhouse-Geisser and Huynh-Feldt correction was applied to the degrees of freedom to adjust for any potential issues.

Results for research question four were calculated using a straightforward regression analysis on the Year 5 demographic variables and is interpreted using the *F* statistic's corresponding *p*-value. As with the other analysis, the *p*-value must be below

.05 to be significant (α = .05). This regression analysis addressed whether the average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers were predictive of teacher job satisfaction. In addition, individual regression coefficients are examined and if non-significant coefficients are identified, models with fewer predictors were examined.

RQ1: Are the federally mandated HSTEs in the Hawai‘i public school system, as operationalized in Years 4 and 5 in the form of EES, associated with a change in school-average teacher job satisfaction compared to pre-implementation in Years 1 and 2?

$H_0$1: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant for Year 4 and 5, following EES implementation in Year 3, compared to Years 1 and 2.

$$H_0 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 \leq 0$$

H_a1: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased for Year 4 and 5, following EES implementation in Year 3 compared to Years 1 and 2.

$$H_1 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 > 0$$

RQ2: Is the implementation process of EES in the Hawai‘i public school system in Year 3 associated with a change in the school-average teacher job satisfaction compared to prior school-average teacher job satisfaction?

$H_0$2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_0 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 \leq 0$$

*H_a*2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_1 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 > 0$$

RQ3: Did a change in school-average teacher satisfaction occur with the implementation of federally mandated HSTE in the form of EES within the Hawai‘i public school system in the two year period post implementation compared to the implementation year?

$H_0$3: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_0 3: \mu_3 - {}^1/_2\ \mu_4 - {}^1/_2 \mu_5 \leq 0$$

H_a3: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_1 3: \mu_3 - {}^1/_2\ \mu_4 - {}^1/_2 \mu_5 > 0$$

RQ4: Do individual Hawai‘i public school demographics such as schools’ average percentage of Native Hawaiians and free-reduced lunch students as well as percentage of fully licensed teachers predict teacher job satisfaction as indicated in Year 5?

$H_0$4: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do not predict average teacher job satisfaction as indicated in Year 5.

H_a4: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do predict average teacher job satisfaction as indicated in Year 5.

Threats to Validity

The results of this research study are useful to the extent teacher job satisfaction can be accurately measured and confidently interpreted regarding the measurement of teacher job satisfaction reported by school personnel in the SQS. The use of secondary administrative data provided by HIDOE of the roughly 232 public schools in the state that piloted EES in the 2012-2013 school year as the sample eliminates the potential for external validity threats. Internal validity may be affected by the possibility that different teachers responding to the SQS, and changes in satisfaction may be due to these differences rather than differences among same teachers from year to year.

Campbell and Stanley (1963) listed eight different classes of extraneous variables that might produce confounding effects to the experiment: the history of specific events, maturations of respondents, testing effects, instrumentations, statistical regression of extreme scores, selection bias, experimental mortality, and selection-maturation interaction. Of the eight extraneous variables, the history of specific events effect may present the most threat to internal validity, as teachers may be influenced by media and peer-induced bias in answering the three satisfaction questions used to determine teacher job satisfaction in this study. This threat is linked to a limitation of the data source not to observe teacher job satisfaction at the individual teacher level, as satisfaction data are only available at the school-wide level. Teachers complete the SQS survey on an

anonymous and voluntary basis; therefore, they should not fear repercussions, although there is a possibility that teachers may have felt pressure to respond in a certain way.

Ethical Procedures

This study complies with the ethical guidelines of the American Psychological Association and Walden University. For research purposes, the study does not have access to raw data, but only school averages. No identifying information is linked to the data. As such, the anonymity of individual teachers was maintained, and their scores will remain school-wide, such that individuals may not be identified. Also, the data are publicly available, and no special permissions are required to access the data beyond approval from the Walden University IRB to use the data for doctoral research.

Summary and Transition

In summary, this chapter covers research design and approach, describes the population, and connects data description to data analysis. Moreover, sampling procedures and the instrumentation and operationalization were discussed as were the constructs of teacher job satisfaction and the implementation of EES, Hawai‘i’s version of HSTE associated with RTT initiatives. Details of each research question were reviewed, with data analysis procedures for each hypothesis test described in terms of the corresponding research question. Finally, the chapter ends with a discussion of threats to validity and ethical procedures and concludes with this summary. The following results chapter includes the statistical outcomes of the analyses and a description of the sample used in each calculation. Meanwhile, Chapter 5 discusses conclusions, study limitations, implications for positive social change and recommendations for future research.

Chapter 4: Results

The purpose of this study was to examine changes in teacher satisfaction pre, during, and post implementation of HSTEs in the state of Hawai‘i public school system. In addition, it was designed to investigate whether demographic variables such as average percentage of Native Hawaiian students, free and reduced lunch students, as well as percent of fully licensed teachers, predict teacher job satisfaction. RQ1-3 focus on contrasts in time to attempt to answer questions regarding changes in teacher satisfaction pre, during, and post implementation of HSTEs in Hawai‘i. This chapter begins with a description of the outliers and data cleaning of the HIDOE data used in the analyses performed for this study and then presents descriptive statistics from the obtained sample. The results of the data analyses are then presented. Finally, the chapter ends with a summary of results.

Data Reduction

Data were available for a total of 255 schools. Data cleaning procedures took place on the HIDOE dataset containing combined school data, but, as reported in Chapter 3, 17 schools were not included in the analysis because of their status as pilot schools. However, because these pilot schools would be included in the analysis of RQ4, the schools were important to include when determining outliers. An observation was designated as an outlier if it was a distance of 3.29 or more standard deviations from the mean, as indicated by *z* scores. In total, 11 outlying scores were identified occurring across a total of seven schools. As many of these outliers were repeated from year to year within the same set of schools, all outlier schools were removed. In total, seven schools

contributed outliers to the dataset, and removal of these resulted in a post outlier sample size of 248.

In the process of determining the eligibility of these seven outlier schools for exclusion in the dataset, Mann Whitney *U* tests were conducted between these schools and the non-outlier schools in terms of response rates (see Appendix B). The strength of the Mann Whitney *U* test is in its non-parametric nature, which allows for a valid comparison of these two groups of schools without consideration of unequal group sizes (Stevens, 2009). For each year, teacher response rates were significantly different between outliers and nonoutliers, with outliers exhibiting consistently lower response rates, meaning that these schools were not as well representative with respect to their teacher population. Based on these findings, these scores were removed prior to reporting the descriptive statistics or results for tests of contrasts in time and in the analysis of RQ4.

Upon removal of outliers, school satisfaction scores were assessed for year-to-year correlations within the data points. Using this analysis verified that each school had been correctly matched from each of the five years, as indicated by the significant year-to-year associations in teacher satisfaction, which indicated that schools with relatively lower satisfaction values tended to maintain those relatively lower scores, even when mean teacher satisfaction in all schools fluctuated from year to year. Similarly, schools with relatively higher satisfaction values tended to maintain those relatively higher scores from year to year, even in the presence of measurable fluctuations. Table 2, Table 3, and Table 4 contain the results of these analyses, with one table displaying each matrix of

correlations for each of the three satisfaction scores. As seen in each table, correlations were highly significant ($p < .001$) and exhibited higher than medium strength ($r > .30$) correlations in each case, with the lowest correlation appearing between the leadership satisfaction scores for 2009-2010 and those for 2012-2013 ($r = .37$). However, each of the consecutive years' scores exhibited very strong correlations ($r > .50$), with a minimum concurrent correlation of $r = .58$. These analyses strengthened the assumption that each school contributed one matched observation over the years in question.

Table 2

Correlations Between Years for Leadership Satisfaction

Leadership satisfaction source year	1	2	3	4	5
(1) 2009-2010	-				
(2) 2010-2011	.67*	-			
(3) 2011-2012	.51*	.66*	-		
(4) 2012-2013	.37*	.47*	.62*	-	
(5) 2013-2014	.40*	.41*	.44*	.58*	-

Note. An asterisk indicates $p < .001$.

Table 3

Correlations Between Years for Overall Quality Satisfaction

Overall quality satisfaction source year	1	2	3	4	5
(1) 2009-2010	-				
(2) 2010-2011	.72*	-			
(3) 2011-2012	.61*	.74*	-		
(4) 2012-2013	.55*	.64*	.73*	-	
(5) 2013-2014	.57*	.62*	.62*	.70*	-

Note. An asterisk indicates $p < .001$.

Table 4

Correlations Between Years for Student Achievement Satisfaction

Student achievement satisfaction source year	1	2	3	4	5
(1) 2009-2010	-				
(2) 2010-2011	.64*	-			
(3) 2011-2012	.63*	.73*	-		
(4) 2012-2013	.50*	.48*	.65*	-	
(5) 2013-2014	.61*	.65*	.72*	.62*	-

Note. An asterisk indicates $p < .001$.

Descriptive Statistics

Of the 248 schools that remained in the sample after deleting outliers, there were several with missing data points for one or more years, and these were accounted for through the use of series mean replacements for pre and post year groups. To accomplish this, any schools with a sufficient amount of data to create a mean prescore received a prescore representative of the existing data; an identical operation resulted in post scores representative of the data existing post implementation. For example, if a school was missing the pre implementation score for Year 1, the Year 2 score for the variable was inputted for the missing value. For the single implementation year, this was not possible, and any missing values from this year were excluded from the corresponding analysis. Schools with missing leadership satisfaction scores were not included in the leadership satisfaction analysis even if they had data representing overall satisfaction or student achievement satisfaction scores.

Upon final scoring, there was a single school with missing data for pre implementation, eight missing for leadership implementation, and six missing for post leadership implementation. Overall quality scoring resulted in two missing values pre,

seven during implementation, and seven post. Student achievement scoring resulted in a total of two missing for pre, eight missing for implementation, and six missing for post. In total, there were ten missing values inputted and seven schools deleted because a value could not be inputted. In Table 5, means for each individual year are reported in their raw year-by-year forms for descriptive purposes along with the sample sizes.

Table 5

Breakdown of School Types Reported by Year

	n (%)				
School type	2009-10	2010-11	2011-12	2012-13	2013-14
High school	28 (11.0)	28 (11.3)	27 (10.9)	27 (10.9)	27 (10.9)
Intermediate/Middle	36 (14.5)	34 (13.7)	34 (13.7)	34 (13.7)	35 (14.1)
Elementary	170 (68.5)	168 (67.7)	167 (67.3)	165 (65.5)	169 (68.1)
Elementary/Middle	5 (2.0)	5 (2.0)	4 (1.6)	4 (1.6)	4 (1.6)
Middle/High	3 (1.2)	3 (1.2)	3 (1.2)	3 (1.2)	3 (1.2)
K-12	6 (2.4)	6 (2.4)	8 (2.4)	5 (2.0)	5 (2.0)
Missing	0 (0.0)	4 (1.6)	7 (2.7)	10 (4.0)	5 (2.0)

The sample consisted largely of elementary schools, with an estimated 170, or 68.5% representing these schools. The slight percentage changes visible from year to year were likely due to missing data, and, because the 2009-2010 school year did not include any missing values, these are likely the most accurate depiction of the school's representation in the dataset. Several schools were combinations of high school, intermediate schools, and elementary schools, though these composed a smaller portion of the sample in comparison to schools of any single type. High schools (28, 11.0%) and intermediate or middle schools (36, 14.5%) both composed similar proportions, with a slightly larger representation of middle schools. Table 5 displays these descriptive statistics.

Table 6

Means and Standard Deviations for Satisfaction and Participation by Year

Mean (Standard deviation)				
Source Year	Leadership satisfaction	Overall quality satisfaction	Student achievement satisfaction	Teacher participation percent
2009-2010	4.50 (0.76)	4.69 (0.54)	4.46 (0.44)	74.45 (17.11)
2010-2011	4.35 (0.84)	4.59 (0.61)	4.45 (0.47)	71.31 (22.06)
2011-2012	4.59 (0.74)	4.85 (0.57)	4.78 (0.45)	61.66 (26.27)
2012-2013	4.46 (0.82)	4.64 (0.62)	4.68 (0.41)	79.22 (20.18)
2013-2014	4.36 (0.73)	4.50 (0.64)	4.14 (0.58)	88.42 (16.41)

In interpreting Table 6, satisfaction scores were adjusted in accordance with the transformations (see Chapter 3), such that the satisfaction values for the five years all ranged from an anchor of 1 for *Strongly Disagree*, which indicated low satisfaction, to an anchor of 6 for *Strongly Agree*, indicating high satisfaction. Descriptive statistics for satisfaction scores were calculated for each year, with one calculation for each subscale of satisfaction. Mean scores for each year were all within one point of one another, ranging from 4.14 (*SD* = 0.58) for 2013-2014's student achievement satisfaction to 4.85 (*SD* = 0.57) for 2011-2012's overall quality satisfaction. These raw means can be found in Table 6. These school means form the data used in the rmANOVA analyses, after being transformed into pre (i.e., mean of 2009-2010 and 2010-2011), intervention (i.e., 2011-2012), and post (i.e., mean of 2012-2013 and 2013-2014).

Assumption Testing

Assumption Tests for Leadership Satisfaction. Prior to evaluating the results for the research questions, the assumptions of the rmANOVA were assessed, beginning with normality of residuals. For these ANOVAs, the two pre implementation years' values were average (Years 1 and 2) and the two post test years' values were also average (Years 4 and 5). Results of a *KS* test for the leadership satisfaction dependent variable, each year's residuals indicated that each of the three series of residuals were significantly different from a normal distribution: $p = .024$ at pre, $p = .049$ at implementation, and $p = .003$ at post. However, these tests are sensitive to large sample sizes and tend to show significance even when deviations from normality are non-problematic (Tabachnick & Fidell, 2012). Further, Stevens (2009) indicated that normality violations are typically not problematic when sample sizes are larger than 30. To better identify the extent of normality, Figure 1 resents the distribution of residuals for leadership satisfaction at pre (average of Year 1 and Year 2), during implementation (Year 3), and post (average of Year 4 and Year 5), respectively. For ease of interpretation, these are condensed into one figure. As seen in Figure 1, deviations from normality were slight and thus unlikely to be problematic given the sample size. Sphericity was assessed using Mauchly's test and indicated no deviation from sphericity ($p = .142$), suggesting that the analysis could be continued using the test statistic where sphericity was assumed; for this reason, the Greenhouse-Geisser and Huynh-Feldt statistics were not necessary for accurate interpretation.

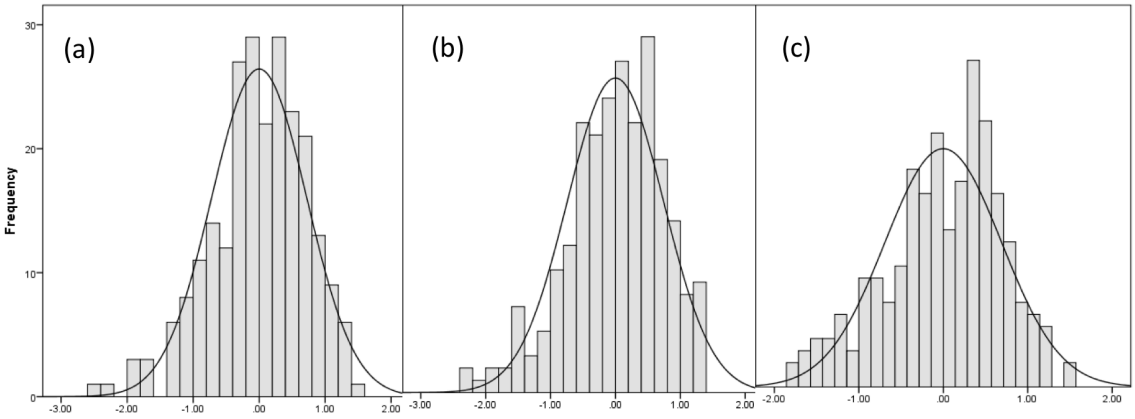

Figure 1. Residual Normality for (a) Pre, (b) Implementation, and (c) Post Leadership Satisfaction.

Assumption Tests for Overall Satisfaction. Tests for the assumptions of the rmANOVA were assessed for the overall satisfaction variable. This method of assumption testing began with normality of residuals through a *KS* test for each year's residuals. Results of these tests indicated that each of the residuals were sufficiently close to a normal distribution: $p = .200$ at pre, $p = .200$ at implementation, and $p = .200$ at post. The use of Mauchly's test indicated no deviation from sphericity ($p = .669$), suggesting that the analysis could be continued using a test statistic under the assumption of sphericity. Thus, the Greenhouse-Geisser and Huynh-Feldt statistics were not necessary for accurate interpretation of the analysis of overall satisfaction.

Assumption Tests for Student Achievement Satisfaction. Tests of the assumptions for the student achievement satisfaction variable was necessary and included testing the assumption of normality and sphericity. Results of a series of *KS* tests indicated that none of the three series of residuals were significantly different from a normal distribution; $p = .200$ at pre, $p = .200$ at implementation, and $p = .200$ at post. Similarly, Mauchly's test did not indicate any significant deviation from sphericity ($p = .294$), suggesting that the

analysis could be continued using the test statistic where sphericity was assumed; for this reason, the Greenhouse-Geisser and Huynh-Feldt statistics were not necessary for accurate interpretation of this analysis either.

Research Question 1

The first research question was: Are the federally mandated HSTEs in the Hawai‘i public school system, as operationalized in Years 4 and 5 in the form of EES, associated with a change in school-average teacher job satisfaction compared to pre-implementation in Years 1 and 2?

$H_0 1$: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant for Year 4 and 5, following EES implementation in Year 3, compared to Years 1 and 2.

$$H_0 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 \leq 0$$

$H_a 1$: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased for Year 4 and 5, following EES implementation in Year 3 compared to Years 1 and 2.

$$H_1 1: \mu_1 + \mu_2 - \mu_4 - \mu_5 > 0$$

In response to Research Question 1, a series of three contrasts were calculated using the formula $Contrast\ 1 = \mu_1 + \mu_2 - \mu_4 - \mu_5$, where the two years prior to implementation were weighted to 1 and the two following implementations were weighted as -1. These contrasts were tested against a difference of zero using a series of *t* tests.

Leadership Satisfaction

A test of the one-tailed contrast for this facet of satisfaction indicated that the contrast of leadership satisfaction was not significantly different from zero ($t(221) = 0.25$, $p = .425$), indicating no evidence for a significant change in leadership satisfaction from before to after implementation.

Overall Satisfaction

Testing the one-tailed contrast of this facet of satisfaction indicated a significant difference from a contrast of zero ($t(221) = 2.18$, $p = .015$), indicating evidence of a significant change in overall satisfaction from before to after implementation.

Student Achievement Satisfaction

Results indicated that the contrast from pre to post implementation with respect to student achievement satisfaction provided evidence for a one-tailed significant change from pre implementation to post implementation ($t(221) = 1.68$, $p = .047$). The degrees of freedom for these analyses were based on the amount of data available, and all three analyses had a total of 222 schools with useful data following the data cleaning procedures used to create means when testing contrasts.

Research Question 2

The second research question was: Is the implementation process of EES in the Hawai‘i public school system in Year 3 associated with a change in the school-average teacher job satisfaction compared to prior school-average teacher job satisfaction?

$H_0$2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_0 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 \leq 0$$

*H_a*2: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant during EES pilot implementation in Year 3 compared to Years 1 and 2.

$$H_1 2: {}^1/_2\ \mu_1 + {}^1/_2 \mu_2 - \mu_3 > 0$$

Leadership Satisfaction

Based on the evidence provided from a test of the contrast, leadership satisfaction likely differed over time to an extent that was not explainable by random fluctuations. To determine whether Years 1 and 2 were significantly different from Year 3, a test of the contrast was conducted on these two points in time in reference to the third. Results indicated significant differences between the first measure (i.e., the average of Years 1 and 2) and the second measure (i.e., the potential anomalous year), where $p < .001$, with a mean difference of 0.15. However, contrary to the alternative hypothesis, leadership satisfaction increased during the implementation year, as seen in Figure 2, As such, null hypothesis two could not be rejected in terms of leadership satisfaction.

Overall Satisfaction

Based on the evidence provided from the test of contrast on overall satisfaction, the data showed that differences over time were not likely explainable by random fluctuations. Results indicated significant differences between the first measure (i.e., the

average of Years 1 and 2) and the second measure (i.e., the potential anomalous year), where $p < .001$, with a mean difference of 0.19. Again, contrary to the alternative hypothesis, overall satisfaction increased during the implementation year, as seen in

Figure *3*, As such, null hypothesis two could not be rejected in terms of overall satisfaction.

Student Achievement Satisfaction

Based on the evidence provided from the test of contrast on student achievement satisfaction, the data showed that differences over time were not likely explainable by random fluctuations. To determine whether Years 1 and 2 were significantly different from Year 3, a test of contrast was conducted on these two particular time points. Results indicated significant differences between the first measure (i.e., the average of Years 1 and 2) and the second measure (i.e., the potential anomalous year), where $p < .001$, with a mean difference of 0.32. However, contrary to the alternative hypothesis, student achievement satisfaction increased during the implementation year. As such, null hypothesis two could not be rejected in terms of student achievement satisfaction. Based on the results of these three analyses, null hypothesis two could not be rejected in favor of the alternative.

Research Question 3

The third research question was: Did a change in school-average teacher satisfaction occur with the implementation of federally mandated HSTE in the form of EES within the Hawai‘i public school system in the two year period post implementation compared to the implementation year?

$H_0$3: For public schools in Hawai‘i, the school-average teacher job satisfaction remained constant in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_0 3: \mu_3 - {}^1\!/_2\ \mu_4 - {}^1\!/_2 \mu_5 \leq 0$$

H_a3: For public schools in Hawai‘i, the school-average teacher job satisfaction decreased in Years 4 and 5 compared to the EES pilot implementation in Year 3.

$$H_1 3: \mu_3 - {}^1\!/_2\ \mu_4 - {}^1\!/_2 \mu_5 > 0$$

Leadership Satisfaction

To determine whether Year 3 was significantly different from Years 4 and 5, a test of contrast was conducted on these two measures. Results indicated significant differences between the second measure (i.e., the potential anomalous year) and post measures (i.e., Years 4 and 5), where $t(223)$, = -3.86, $p < .001$, with a mean difference of -0.17 in leadership satisfaction. In line with the alternative hypothesis, leadership satisfaction did decrease following the third year. As such, the null hypothesis was rejected for RQ 3.

Overall Satisfaction

To determine whether Year 3 was significantly different from Years 4 and 5 with respect to overall satisfaction, a final contrast test was conducted for these two measures. Results indicated significant differences between the second measure (i.e., the potential anomalous year) and post implementation measures (i.e., Years 4 and 5), where $t(223) = -8.97$, $p < .001$, with a mean difference of -0.26 in overall satisfaction. In line with the alternative hypothesis, overall satisfaction did decrease following the third year.

Student Achievement Satisfaction

To determine whether Year 3 was significantly different from Years 4 and 5, a final comparison was conducted. Results indicated significant differences between the potential anomalous year and Years 4 and 5, where $t(223) = -17.14$, $p < .001$, with a mean difference of -0.36 in student achievement satisfaction. In line with the alternative hypothesis, student achievement satisfaction did decrease following the third year.

Repeated Measures ANOVAs

To supplement the tests of the contrast in research questions 1 through 3 and integrate the specific results for the first three research questions, three rmANOVA were conducted, one for each dependent variable. As noted, the two pre implementation variables were averaged to form the first level of time, the implementation year formed the second level, and the fourth and fifth year data were averaged to form the third level. The results are presented for the three dependent measures.

Leadership Satisfaction

The results of the rmANOVA on leadership satisfaction ($F(2, 446) = 8.62$, $p < .001$, $\eta_p^2 = .04$), indicated evidence of a change over time. However, the η_p^2 evidenced a weak effect of this change over time. These rmANOVA results suggests that, from pre implementation, to the year of implementation, to the years following implementation, there were significant differences in schools' levels of leadership satisfaction.

Figure 2 provides a visual representation of these differences, and specific pairwise differences in terms of leadership satisfaction were available for further exploration using pairwise contrasts in the analysis of Research Questions 2 and 3.

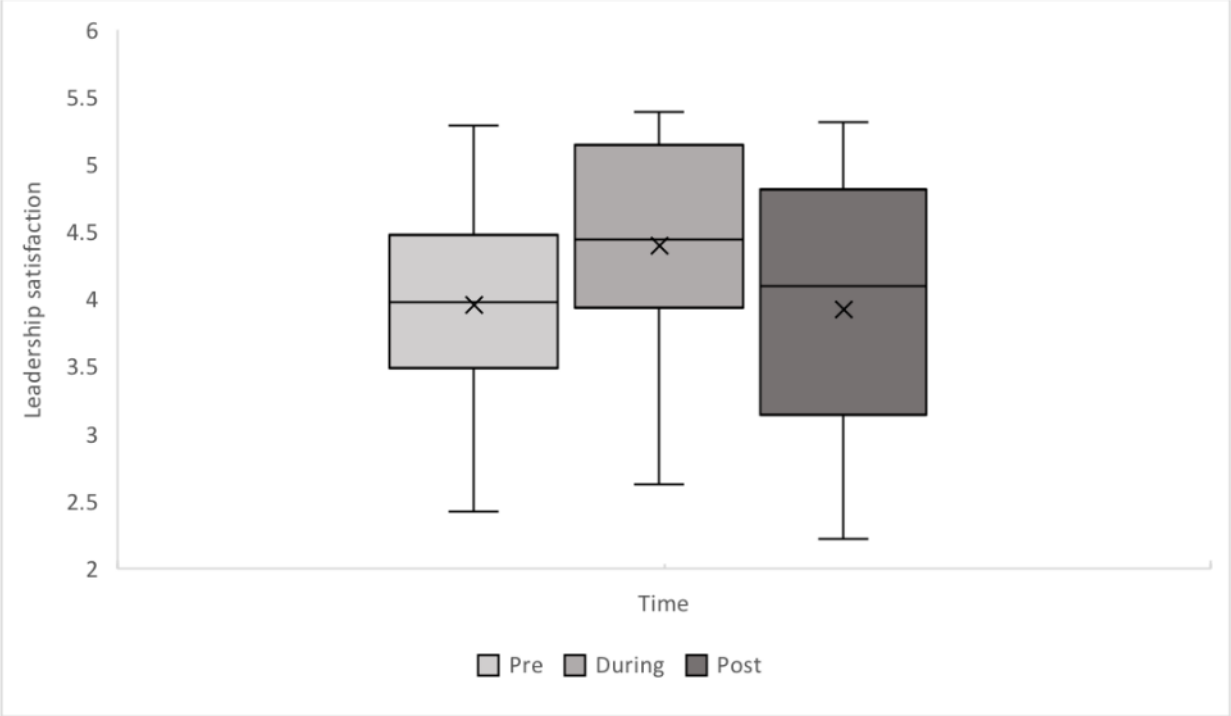

Figure 2. Pre, Implementation, and Post Mean Leadership Satisfaction Fluctuations.

Overall Satisfaction

Again, a rmANOVA used to test overall satisfaction resulted in a significant result, ($F(2, 446) = 45.10$, $p < .001$, $\eta_p^2 = .17$). The η_p^2 was evidence of a weak implementation effect. The contrasts described, suggest that, from pre implementation, to the year of implementation, to the years following implementation, there were significant differences in schools' levels of overall satisfaction, with overall satisfaction increasing during implementation but decreasing in the years following.

Figure *3* provides a visual representation of these differences, and specific pairwise differences in terms of overall satisfaction were available for further exploration using pairwise contrasts in the analysis of Research Questions 2 and 3.

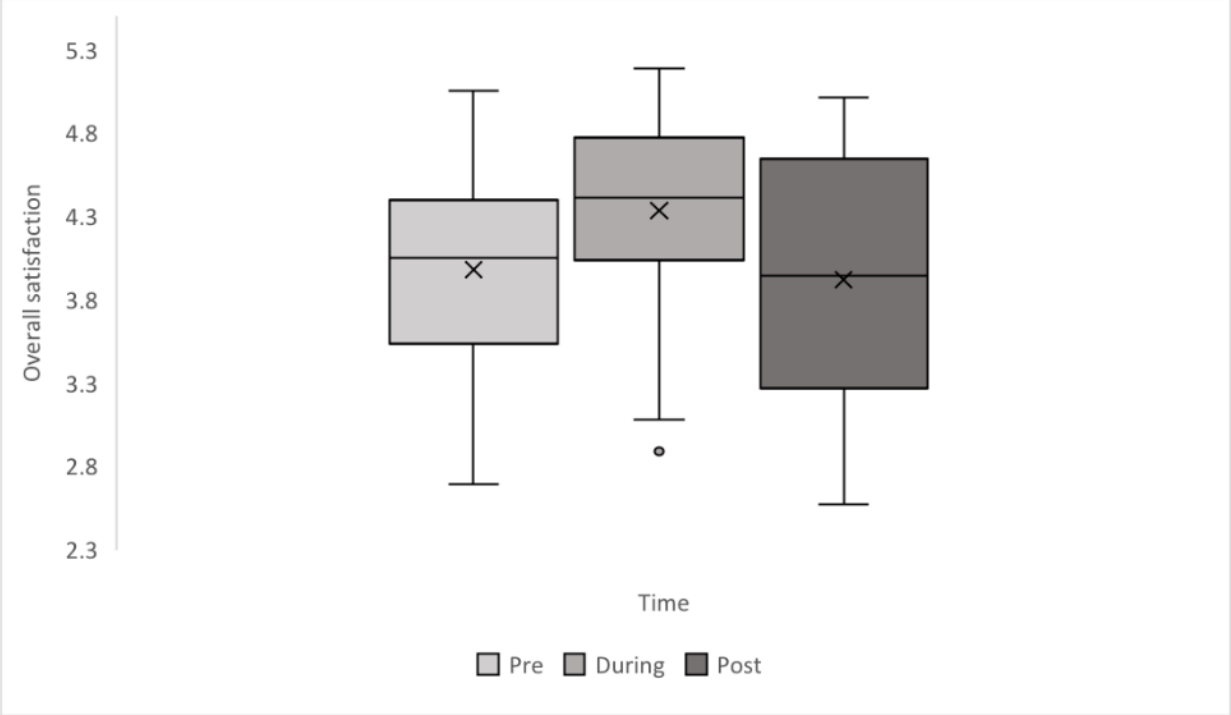

Figure 3. Pre, Implementation, and Post Mean Overall Satisfaction Fluctuations

Student Achievement Satisfaction

The rmANOVA conducted on student achievement satisfaction showed the within-subject effect of time was significant for this facet of satisfaction, ($F(2, 446) = 173.63$, $p < .001$, $\boldsymbol{\eta_p^2} = .44$). The $\boldsymbol{\eta_p^2}$ indicated a strong effect resulting from time**,** indicating that there was likely a difference between one or more of the pairs of time points. This result suggests that, from pre implementation, to the year of implementation, to the years following implementation, there were significant differences in schools'

levels of student achievement satisfaction, showing a decrease in satisfaction and allowing for rejection of the null hypothesis**.**

Figure 4 provides a visual representation of these differences, and specific pairwise differences in terms of student achievement satisfaction were available for further exploration using pairwise contrasts in the analysis of Research Questions 2 and 3.

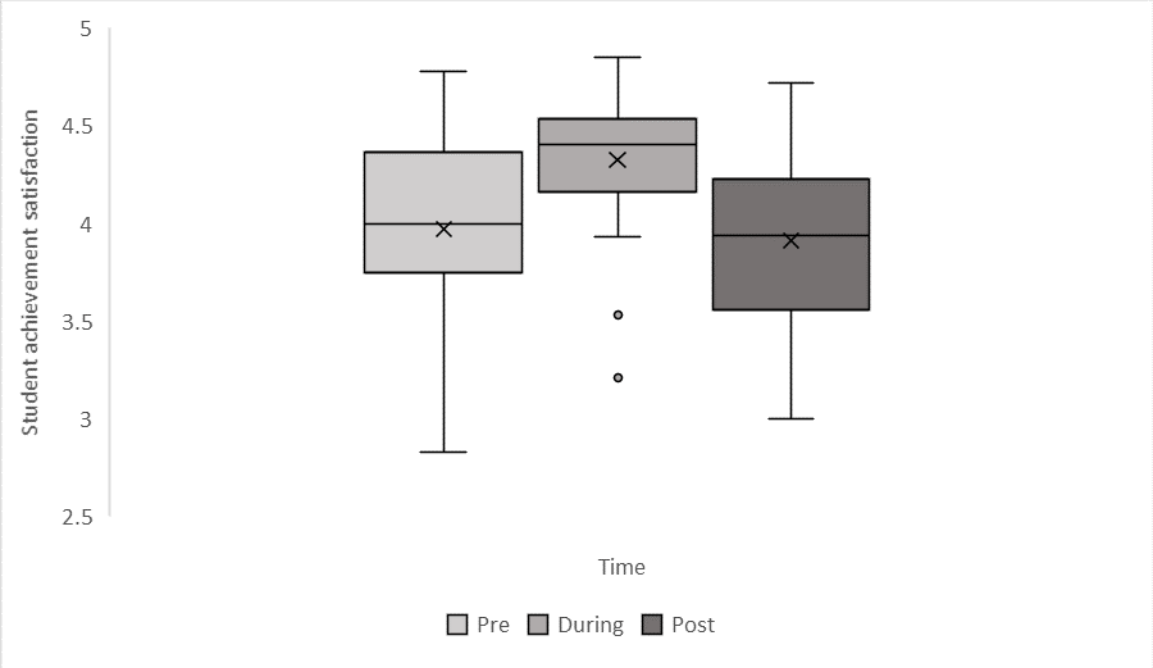

Figure 4. Fluctuations in mean student achievement satisfaction from pre, implementation, and post.

Research Question 4

The fourth research question was: Do individual Hawai‘i public school demographics such as schools’ average percentage of Native Hawaiians and free-reduced lunch students as well as percentage of fully licensed teachers predict teacher job satisfaction as indicated in Year 5?

H_04: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do not predict average teacher job satisfaction as indicated in Year 5.

H_a4: Individual Hawai‘i public schools’ average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers do predict average teacher job satisfaction as indicated in Year 5.

To address this final research question, two regression analyses were conducted, though both regressions were modified based on findings obtained from removing data related to predictors that were non-significant in either model from both models. Further, this analysis included all schools, including those that piloted HSTE before the rest of the sampled schools. The first regression was conducted on the average of Years 1 and 2, or the pre implementation data. In this analysis, the percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers at each school were gathered from the 2009-2010 school year to assess the possibility of each being a predictor variable in the data analysis.

Results of the analysis indicated a statistically significant model ($F(4, 240) = 5.67$, $p < .001$, $R^2 = .09$) where approximately 9% of the variance in aggregate satisfaction could be predicted by a linear combination of these predictor variables. However, the percentage of Native Hawaiian students ($t = 0.75$, $p = .453$) was not a significant predictor and was removed from the model. In the second iteration, the model maintained significance ($F(2, 242) = 10.87$, $p < .001$, $R^2 = .08$), and the predictor variable was statistically significant. Visual examination of a residual scatterplot and normal P-P

plot indicated that the assumptions of homoscedasticity and normality, respectively, were met. However, the R^2 = .08 indicated that only 8% of aggregate satisfaction was predictable using the variables, percentage of free and reduced lunch students and of fully licensed teachers, which was much lower than the effect sizes of the rmANOVAs for overall satisfaction (η_p^2 = .17) and student achievement satisfaction (η_p^2 = .44). However, the effect size for leadership satisfaction was .04, which is roughly half of the effect size for this regression (R^2 = .08). Table 7 displays the results of fitting this final model.

Table 7

Pre Aggregate Satisfaction Regressed on School Demographic Indicators

Source	*B*	SE	*B*	*t*	*p*
Percent free reduced lunch	-0.01	0.00	-.21	-3.32	.001
Percent fully licensed	0.02.	0.01	.17	2.80	.006

The second regression model was fitted on the average of Years 4 and 5, or the post implementation data for the percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers at each school. These predictor variables were all gathered from the 2012-2013 school year, with an aggregate of 2012-2013 and 2013-2014 satisfaction data as the dependent variable.

Results of the analysis indicated a statistically significant model ($F(4, 236) = 7.47$, $p < .001$, $R^2 = .11$) where approximately 11% of the variance in aggregate satisfaction could be predicted by a linear combination of these predictor variables. However, the percentage of Native Hawaiian students (t = -0.21, p = .832) and percent of fully licensed teachers (t = 0.88, p = .379) were not statistically significant predictors and so were removed from the model. The second model, which only included the percent of

students with free and reduced lunch, was also significant ($F(1, 235) = 24.03$, $p < .001$, $R^2 = .09$). Visual examination of a residual scatterplot and normal P-P plot indicated that the assumptions of homoscedasticity and normality, respectively, were met. However, the $R^2 = .09$ indicated that only 9% of aggregate satisfaction was predictable using these two variables. As with the regression of pre implementation data, this was far lower than the effect sizes of the rmANOVAs for overall satisfaction ($\eta_p^2 = .17$) and student achievement satisfaction ($\eta_p^2 = .44$). However, the effect size for leadership satisfaction was .04, or roughly half of the effect size for this regression ($R^2 = .09$). Table 8 displays results of this final model.

Table 8

Post Aggregate Satisfaction Regressed on School Demographic Indicators

Source	*B*	SE	*B*	*t*	*p*
Percentage free reduced lunch	-0.01	0.00	-.31	-4.90	< .001

Summary and Transition

The data analyzed in this study were obtained from Hawaii's department of education and subjected to careful review prior to doing the analyses. Outliers were identified and removed, and missing data were imputed when possible. Moreover, schools used in pilot testing were not included in analyzing the first three hypotheses but were included in examining the fourth research question.

To answer Research Question 1 of the study analysis, a series of three *t* tests for the specified contrast were conducted to compare Years 1 and 2 of the study with Years 4 and 5. In terms of the three indicators of teacher satisfaction (i.e., teacher satisfaction

with leadership, teacher overall satisfaction, and teacher satisfaction with student achievement), results indicate that the within-subject effect of time is significant for overall satisfaction and satisfaction with student achievement. The result for satisfaction with leadership is not significant.

The answers to Research Questions 2 and 3 were based on the evidence provided from a series of *t* tests for contrasts. The analysis of teacher satisfaction on all three indicators (leadership, overall, and student achievement) for Research Question 2 revealed potentially significant differences between the first measure (i.e., the average of Years 1 and 2) and the second measure (i.e., the potential anomalous year). However, contrary to the alternative hypothesis, teacher satisfaction under all three indicators increased rather than decreased as compared to the implementation year. As such, null hypothesis two could not be rejected.

For Research Question 3, to determine whether Year 3 was significantly different from Years 4 and 5 in teacher satisfaction, another contrast was tested. Results revealed significant differences between the potential anomalous year and the average of Years 4 and 5 for all indicators of teacher satisfaction.

To further investigate the information obtained from addressing research questions 1 through 3, three repeated measure ANOVAs were performed—one on each dependent variable. The ANOVAs showed that the three satisfaction variables did vary over the five years of the study. Most importantly, box plots were produced to help visualize the changes.

For the final research question, two regression analyses were conducted for the first and final years of the study. Results of the first year‘s analysis indicated the possibility that changes in teacher satisfaction were not entirely due to HSTE implementation and that the percent of free and reduced lunch students and the percentage of fully licensed teachers may have been confounding variables. Thus, the findings regarding teacher satisfaction should be interpreted with some caution. Furthermore, the results of the second analysis of the last year indicate the possibility that changes in teacher satisfaction with leadership were not entirely due to HSTE implementation and that the percent of free and reduced lunch students may have been a confounding variable. The findings with regards to the relations between the percent of free and reduced lunch students and lowered teacher satisfaction and the relations between the percent of fully certified teachers and heightened teacher satisfaction strengthen the caution that findings regarding leadership satisfaction should be more heavily scrutinized. Chapter 5 contains a discussion of these findings in relation to previous literature and the theoretical framework guiding this study. Additionally, Chapter 5 contains an evaluation of the findings in light of the hypotheses discussed in the existing literature, as well as recommendations for future research based on the findings.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative quasiexperimental study of teacher satisfaction pre, during, and post implementation of HSTEs in the state of Hawai‘i was to determine if teacher satisfaction rates changed subsequent to the implementation of this controversial teacher evaluation program associated with federal RTT initiatives. Also, the study was designed to investigate whether demographic variables such as average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers were associated with teacher job satisfaction before and after the implementation of HSTEs in Hawai‘i. Relatively few empirical studies on the effects of HSTEs on the teaching profession exist (Lavigne, 2014). To my best knowledge, no prior study conducted on a statewide level has examined teacher job satisfaction pre, during, and post initiation of HSTEs in the United States.

Analysis of a secondary data set obtained from the HIDOE revealed significant differences in the three areas of teacher satisfaction (leadership, overall quality, and student achievement) based on the implementation of HSTEs over a 5-year span. As is typical in regression analyses, results do not necessarily indicate a cause and effect relationship. For example, within this study alone, changes in teacher satisfaction may have been explained by the percent of free and reduced lunch students a fully licensed teachers within the school. Specifically, study results indicated a positive relationship between percent of fully licensed teachers in a school and teacher satisfaction and a slight negative relationship between percentage of free and reduced lunch students and teacher satisfaction. These findings do not represent cause and effect relationships but, rather,

quantitative relationships that further qualitative study could deepen the understanding of politicians, policy makers, and education administrators in regards to teacher satisfaction before, during, and after the implementation of federal education initiatives in America. This chapter provides an interpretation of the study findings in the context of existing literature, study limitations, recommendations for further research, discussions of study implications for practice and social change, and a conclusion.

Interpretation of Findings

The study research questions were designed to allow exploration of whether teacher satisfaction rates changed with the implementation of HSTEs associated with federal RTT initiatives in the state of Hawai‘i. Critics of these federal initiatives have suggested that implementation of HSTEs could generate demanding environments that are not supportive of teacher and student attempts to flourish (Reeve, 2012; Ryan & Deci, 2011; Sheldon & Ryan, 2011). The results of this study are discussed in full and tend, with limitations, to support this view.

The study was based on four research questions. RQ1 allowed for examination of the main results of the data analysis, with RQ2 and 3 providing deeper data analysis. Finally, RQ4 explored the presence of confounding variables that may be predictive of teacher satisfaction. Rejection of at least some of the null hypotheses related to RQ1, 2, and 3 indicates that study findings were consistent with predictions of Herzberg's two-factor theory.

RQ1

RQ1 asked whether each of the three aspects of teacher satisfaction (leadership, overall satisfaction, and student achievement) post HTSE implementation (Years 4 and 5) differed significantly from those prior to implemenation (Years 1 and 2) of HSTEs in Hawai‘i public schools. Schools who completed the SQS during the school years between 2009 and 2014 reported marked changes in teachers’ collective satisfaction for two of the three indicators of satisfaction (overall satisfaction and student achievement), and so the null hypotheses for these two indicators were rejected. Although teacher satisfaction with school leadership changed, the change was not statistically significant, and therefore, for the leadership measure of teacher satisfaction, the null hypothesis was retained.

In spite of the small effect sizes, findings related to RQ1 for overall teacher satisfaction and teacher satisfaction with student achievement were statistically significant and consistent with Herzberg's two-factor theory, which asserts that extrinsic hygiene factors such as wages, supervisory practices, and company policy are associated with job dissatisfaction, while intrinsic motivational factors such as work achievement, recognition, and personal growth at work influence job satisfaction (Kovach, 1987). According to Herzberg (1959), most narratives related to dissatisfaction at work involved employees’ perceptions of unfair company policies, unfair supervisors, negative relationships with coworkers, unpleasant working conditions, unfair salaries, and job insecurity. In the study reported here, the implementation of HSTE is viewed as being focused on the extrinsic hygiene factors of Herzberg’s two-factor theory.

RQ2

RQ2 was designed to determine whether teacher satisfaction changed during Year 3 (the year in which HSTEs were implemented) relative to the two years preceding HSTE implementation. Teachers who completed the SQS reported marked changes in their collective satisfaction on all three indicators of satisfaction. Contrary to the alternative hypothesis related to RQ2, which stated that the three measures of satisfaction during implementation would exhibit decreases relative to the years preceding implementation, all three measures increased during the implementation year. This finding may be explained by the fact that during the 2011-2012 school year the Hawai'i State Teachers Union ratified a new contract that called for a more than 10% pay raise over the next 6 years, with the contingency that HSTEs would be implemented and maintained and teachers could lose their jobs with 2 years of unsatisfactory ratings. Moreover, despite the extrinsic loss of pay during the implementation year which is discussed in detail in the RQ3 discussion, HSTEs may initially have been interpreted by teachers as an intrinsic factor in that teachers may have perceived the EES as an opportunity for work achievement, personal growth, and recognition for work performed as indicated by Herzberg's two-factor theory to be motivating factors in job satisfaction.

A strategic error was made in the use of one-tailed research design in the study because the effect occurred in the direction opposite to the one indicated in the alternative hypothesis. The design should have been a two-tailed. Consequently, the researcher took a deep look at historical events over time beyond just the implementation of HSTEs as discussed in the section proceeding the discussion of RQ3 in this chapter.

RQ3

Results related to RQ3 revealed statistically significant differences between all three indicators of teacher satisfaction for the implementation and post implementation period. Schools whose teachers completed the SQS reported significant changes in their collective satisfaction on all three indicators during post HTSE implementation years of the study relative to the implementation year, which was consistent with the alternative hypotheses. Specifically, teacher overall satisfaction showed the most significant effect size, $d = 0.13$, followed by teacher satisfaction as measured by student achievement, $d = 0.11$. Finally, teacher satisfaction as measured by leadership exhibited the smallest effect size, $d = 0.02$. According to Cohen (1988), these effect sizes are small, but Cohen cautioned against setting hard cutoffs for effect sizes. Cohen stated, "there is a certain risk inherent in offering conventional operational definitions for those terms for use in power analysis in as diverse a field of inquiry as behavioral science" (p. 25). Although the effect sizes in the present study are small, the results can be interpreted as being consistent with Herzberg's two-factor theory of motivation. However, the results of this research may have been influenced by historical events surrounding the implementation of HSTEs in this study.

Historical Events Related to RQ1 through 3

As previously stated an historical event occurred over the time-frame of the study that involved changes in teacher pay and the implementation of HSTE in the state of Hawai‘i that may have influenced teacher satisfaction rates. A Year 3 contract settlement between the union and the state reversed previous pay cuts in the form of furloughs

initiated in Year 1, but implemented an across the board pay cut. Table 9 indicates the changes in teacher pay that may have impacted teacher satisfaction during the timeframe of the study.

Table 9

State of Hawai'i Teachers Pay Effect 2009-2014

School year	Study year	Pay rate change	Furlough
2009-10	1	0%	17 days
2010-11	2	0%	17 days
2011-12	3	-5% Across the board	0 days
2012-13	4	0%	0 days
2013-14	5	+3.6% average raise	0 days

The historical events outlined may be consistent with SDT studies. Specifically, SDT researchers, Deci et al. (1999) demonstrated a link between extrinsic motivation systems and long-term decreased intrinsic interest in work. These findings appear to be consistent with the short-term increase in teacher satifaction at the announcement of teacher pay increases and the drastic decline in teacher satisfaction following the announced payraises during the timeframe studied in the present research. Before contract ratification in 2011-2012 (i.e., implementation in year 3), teacher pay had suffered through two years of cutbacks. In 2009-2011, teachers experienced an decrease in pay and students experienced the loss of 17 instructional days. Therefore the 2010-2011 announced pay raise distributed in 2013-2014 and 2014-2015 school years represented a strong extrinsic motivator for teachers to accept HTSE. Consequently, study findings concerning teacher satisfaction could have been influenced by teacher-

union negotiations and the subsequent contract ratification related to teacher pay. As indicated in research conducted by Self-Determination Theory (SDT) researchers, Stone et al. (2009), external reward systems such as those associated with a pay raise often contribute to a short-term increase in motivation, but the effect of the reward on motivation is short lived and unsustainable over the long term.

Despite a new teacher contract, the implementation of HSTE, and increases in pay for teachers in the post implementation time frame, teacher satisfaction plummeted to below pre implementation levels. Important to note within this historical event is that, in Years 4 and 5, punitive sanctions, (i.e., probation and termination), could have been imposed on teachers earning less than satisfactory HSTE ratings for two consecutive school years. These aspects of the situation may have further influenced teacher satisfaction in Years 4 and 5 and could have outweighed the effect of the pay raise initiated in the HTSE implementation year and promised for subsequent years. According to Herzberg et al. (1959), pay provides a minimal incentive in job satisfaction and is more likely to lead to dissatisfaction at work rather than satisfaction. When coupled with extrinsic threats of dismissal, this may lead to even more adverse effects on employee satisfaction.

The historical events described may have influenced the results of this study. If teachers were motivated by an extrinsic hygiene factor such as pay, the negative 5% change in wages during Year 3 should have been associated with a decrease in teacher satisfaction indicators, yet the study indicated a marked increase in satisfaction. This suggests that teachers may have interpreted HSTE to be an intrinsic motivating factor in

the opportunity for personal growth, work achievement, and potential recognition of a job well done (Herzberg, 1959). Meanwhile, in Year 5 when teachers received an increase in pay, teacher satisfaction indicators decreased to levels lower than the pre implementation timeframe when teachers lost pay worth the 17 instructional days their students lost. According to Herzberg (1959), extrinsic hygiene factors such as employees' perceptions of job insecurity, unpleasant working conditions, negative relationships with colleagues, supervisors, and perceived unfair policies lead to job dissatisfaction. The findings of this study suggest that intrinsic rather than extrinsic factors are more powerful in the satisfaction and motivation of teachers. More importantly, the confounding situation may open the path for further studies that explore the extrinsic factors such as pay and threats of sanctions and dismissal on the intrinsic factors that often draw teachers to the education field from an SDT perspective.

RQ4

Research Question 4 was designed to investigate the possible effect of demographic variables such as average percentage of Native Hawaiians and free and reduced lunch students as well as percentage of fully licensed teachers on teacher job satisfaction within a school before and after the implementation of HSTE in state of Hawai‘i public schools. More specifically, the percentage of free and reduced lunch students and of fully licensed teachers in a school may have acted as confounding variables within the analysis. However, the results of the regression models showed that only a small proportion of variations in satisfaction could be explained by including these predictors, as the effect size for two of the rmANOVAs was around two times higher than

the effect size for the regressions (over three times higher for the student achievement satisfaction). Examining the correlations between school demographics and teacher satisfaction revealed that a greater percentage of fully certified teachers and a fewer percentage of free reduced lunch students were associated with high and low levels of all three indicators of teacher satisfaction, respectively. Because of limitations addressed in the next section, more research will be needed to reach definitive conclusions regarding any hypotheses included in this study.

Limitations of the Study

All research has limitations, and the use of a longitudinal quasiexperimental research design entails a host of restrictions regarding interpretations, observations, and interactions. Moreover, like most research in behavioral sciences, it cannot demonstrate definitive cause-and-effect relations between variables but only provide evidence of possible associations between study variables. Aside from the limitations inherent in the use of any quasiexperimental design, the historical event regarding teacher pay that coincided with the implementation of HSTE may have impacted teacher satisfaction before, during, and after HTSE implementation. Determining any effect would be difficult due to the lack of randomization of assignment into treatment and control groups along with a general confounding of the pay issues with other elements of HSTE implementation.

The exclusively quantitative nature of the study presented a secondary limitation. The use of a quantitative approach limits results to acceptance or rejection of a null hypothesis, a report of effect sizes, and presentation of mathematical models. A pure

quantitative research design limits the ability of findings to provide a comprehensive assessment of specific perceptions relevant to the study focus. Lack of a qualitative component to the study limits the ability to comment on teachers formulated thoughts on satisfaction. Furthermore, the study did not control for extraneous variables that may have influenced teacher job satisfaction rates during the study period; these include but are not limited to levels of teacher experience, perceived feelings of competence, autonomy, relatedness to colleagues, students, and the community served, as well as levels of administrative experience and support within the school. In addition, the study did not involve soliciting direct teacher input regarding HSTE implementation and its effect on level of satisfaction.

Another limitation of the study was the change in the number of anchors on the scales within the five-year research span. In Years 1, 2, and 3, a five-point Likert scale was used. A six-point Likert scale was then used in Year 4 and a four-point Likert scale was used in Year 5. To provide comparability between years, the four- and five-point scales were transformed so that, on all scales, the "strongly agree" anchor was interpreted as be a “6” and the "strongly disagree" anchor was a “1.” This approach provided a linear transformation of the scores from two of the scales into a six-point scale. Unfortunately, the effect of the differing number of anchors on the three scales was likely confounded with the possible effects associated with HTSE implementation, and the effects of the differing number of anchors on the phenomenon of interest, teacher satisfaction as measured by three indicators, was not amenable to analysis.

As discussed previously, an important historical event occurred over the study time frame involving changes in teacher pay in the state of Hawai‘i that makes interpretation of the results challenging. In 2011, a contract settlement between the union and the state reversed previous pay cuts due to furloughs and implemented across the board cuts. Then in Year 5, there was the initiation of significant pay raises relative to the years pre and during HTSE implementation. While the pay changes may be considered part of the implementation of HSTE, separating out other non-pay related aspects of the implementation is not possible.

Other limitations were common to studies of this nature. The study was situated in the state of Hawai‘i, and results may not be generalizable to other areas and different time frames. Therefore, caution should be exercised in extrapolating them to other situations in different locales and time frames. Moreover, the study was based on data collected for administrative purposes and there are a multitude of factors that can affect teacher satisfaction. Lastly, the use of aggregate data impeded examination of change on an individual level. The nature of satisfaction scales used in this research are general and were utilized to answer specific questions. Nonetheless, the research may open the path for future studies that explore the extrinsic factors such as pay and threats of sanctions and dismissal on the intrinsic factors that often draw teachers to the teaching profession.

Recommendations

Because there is little large-scale quantitative evidence on the long-term effects of HSTE on teacher satisfaction and because research has shown that satisfaction and turnover are often linked, one recommendation is to track teacher turnover during the

same five-year period as encompassed in this research. Moreover, as the present study lacked the specificity required to measure the variables more directly associated with Herzberg's motivational and hygiene factors, a future qualitative study conducted on a large scale and designed to assess teachers' perceptions could be conducted to explore the specific motivational and hygiene factors included in Herzberg's theory.

Nevertheless, the most striking and important finding of the present study was that both overall teacher satisfaction and teacher satisfaction as measured by student achievement spiked during HTSE implementation year and then plummeted to below pre implementation levels during the post implementation years. This result is consistent with Herzberg's two-factor theory. If in fact, a strong extrinsic hygiene factor such as pay is important to teachers one would expect a decrease in satisfaction when a 5% pay cut was implemented and an increase in teacher satisfaction in Year 5 when a 3.6% pay raise was provided. However, the increase in teacher satisfaction came for Year 3 (pay cut), only to dramatically drop in Year 5 (actual raise). Results suggest teachers may be more strongly motivated by intrinsic factors. Given the changes in teacher pay in Hawai‘i during the timeframe of HSTE implementation, results are consistent with research conducted by Stone et al. (2009) in that external reward systems such as those associated with a pay raise often contribute to a short-term increase in motivation, but the effect of the reward on motivation is short lived and unsustainable over the long term. Future research to further examine adverse effects of federal education initiatives and teacher salary on both student performance and teacher turnover aligned with self-determination theory could prove fruitful.

The other significant study finding deserving additional research were the negative relationship between teacher satisfaction and the percentage of free and reduced lunch students in a school and the positive association between percentage of fully certified teachers at a school and teacher satisfaction rates. The positive correlation between percentage of fully certified teachers and increased teacher satisfaction will require deeper exploration as it failed to achieve statistical significance and thus may not be a true indicator of teacher satisfaction. In particular, school administrators concerned about teacher satisfaction and teacher turnover may find the results of this research useful.

Implications for Positive Social Change

The research presented here has important implications for individuals, families, organizational leaders, politicians, and policy makers who believe that state and federal initiatives that impact students, teacher pay, and working conditions do not affect teacher short- and long-term satisfaction. In fact, the results of this study suggest the exact opposite. Overall teacher satisfaction and satisfaction as measured by student achievement were significantly less after RTT mandated HSTE implementation in state of Hawai‘i public schools. The findings also suggest that the influence of extrinsic motivators such as salary increases and threats of dismissal with two-years of unsatisfactory ratings are short term, and potentially long-term decreases in teacher satisfaction and turnover should be further explored. Moreover, the implementation of HSTEs in the state of Hawai‘i was not associated with short-term satisfaction related to student achievement, suggesting that RTT critics may be right in arguing that federal

initiatives manifested on the state and district levels may disadvantage students from high-minority and low-socioeconomic backgrounds, both directly and indirectly (Croft, et al., 2016; Dyson, 2012; Firestone, 2014; Ladson-Billings, 2011; Magill & Rodriguez, 2014; Niemiec & Ryan, 2009; Tienken, 2011; Skaalvik & Skaalvik, 2014; Reeve, 2012; Ryan & Deci, 2011; Sheldon & Ryan, 2011).

Central to Herzberg's two-factor theory, highlighted in the present study, is the dominant concept of intrinsic versus extrinsic motivation: an essential element linking the theory of motivation and organizational policy to teacher job satisfaction. In reference to Herzberg's two-factor theory of motivation, it seems reasonable to conclude that linking HSTE implementation to student standardized test scores with the promise of increased pay and threat of dismissal with two-years of unsatisfactory ratings imposes strong extrinsic hygiene factors on to the complex job of teaching in America. According to Herzberg's theory, this should, in turn, contribute to an acute likelihood of increased job dissatisfaction, thus decreasing teacher job satisfaction in schools enacting the RTT mandate initiative.

Conclusion

This study provided a large-scale quantitative look at relationships between teacher satisfaction and the implementation of federally initiated HSTEs linked to RTT educational funding. Critics of the contentious federal initiatives have suggested the implementation of HSTE may generate demanding environments which are not supportive of all teachers and all students attempts to flourish professionally and academically (Reeve, 2012; Ryan & Deci, 2011; Sheldon & Ryan, 2011). Results of this

study, subject to some limitations, support this view. In spite of the small effect sizes, the research findings for the overall and student achievement satisfaction variables were statistically significant and consistent with Herzberg's two-factor theory, which links job dissatisfaction with extrinsic hygiene factors such as wages, supervisory practices, and company policy and intrinsic motivational factors such as achievement, recognition, and personal growth with job satisfaction (Kovach, 1987).

The most significant finding of the present study was that, both overall teacher satisfaction and student achievement satisfaction, after spiking during the implementation year with a pay decrease of 5% across the board, plummeted to below pre implementation levels in the two years subsequent to implementation of HSTE despite the only pay increase during the study timeframe being in Year 5. Future research is warranted to examine the power of intrinsic motivation over extrinsic motivation in service professions. Additionally, even more research is warranted to study any adverse effects on both student performance and teacher turnover subsequent to the implementation of federal education initiatives that are not infused with contemporary research. Other significant findings were the negative relationship between teacher satisfaction and the percentage of free and reduced lunch students in a school and the positive relationship between the percentage of fully certified teachers at a school and teacher satisfaction rates.

The research offered here is significant for individuals, families, organizational leaders, politicians, and policy makers who believe that state and federal initiatives that impact students, teacher pay, and working conditions do not affect teacher short- and

long-term satisfaction. Actually, the results of this study suggest the exact opposite. The results suggest that the effect of extrinsic motivators such as salary increases have little if any effect on teacher satisfaction and that long-term decreases in teacher satisfaction and quality recruitment into the profession in light of extrinsically based federal initiatives should be further explored. Moreover, after the implementation of HSTE in the state of Hawai‘i, the results show that teacher overall satisfaction and teacher satisfaction with student achievement after spiking during the implementation year, plummet to a level below the pre implementation years, suggesting that RTT critics may be right to argue that the federal initiatives manifested on the state levels may disadvantage students from high-minority and low-socioeconomic backgrounds both directly and indirectly through short-term loss of human capital and long-term impacts of decreased teacher job satisfaction and increased teacher turnover in schools servicing high-needs students (Firestone, 2014). In reference to Herzberg's two-factor theory of motivation, it seems reasonable to conclude that linking HSTE to student standardized test scores with the promise of more pay and, alternatively, threats of job loss imposed strong extrinsic hygiene factors on to the complex job of teaching in America, thereby leading, according to theory, to an acute likelihood of increased job dissatisfaction in schools enacting the RTT mandate initiative.

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Permission to Use SQS Data

Appendix A: Outliers

The decision to remove outliers is often a choice with no clear answer. In the present research, outliers were tested to determine how they fit with the main dataset in terms of satisfaction and teacher responses. These tests indicated that outlier schools, described at the beginning of the chapter, had significantly lower response rates among their teachers as well as a significantly lower average satisfaction rate. These results suggest that this sub-group of outlier schools may not be well-represented in the dataset, as many of the teachers in these outlier schools did not respond to the satisfaction survey. It is also possible that the small portion who did respond only did so due to their dissatisfaction with the school. To remove the possibility that a minority of the outlier school's teachers were dissatisfied but were the only respondents, these schools were removed. This procedure was also adopted based on the degree of difference in satisfaction scores between this subsample of outliers and the mean of the main sample, where inclusion of these schools could have driven the distribution of satisfaction scores away from normal. To test the effects of removing outliers on the interpretation of results, a secondary analysis of the hypothesis one test was conducted with the full dataset, which included the seven outliers that were originally removed. As seen in Table 8, removal of the outliers did not change the statistical significance with respect to leadership satisfaction and overall satisfaction. However, including the outliers did result in a non-significant finding with respect to student achievement.

Appendix B: Mann Whitney *U* Tests for Outliers

Variable	*M*		Mann-Whitney *U*	*p*
	Outliers	Non-outliers		
Teacher response rate 1	36.83	74.45	103.50	< .001
Teacher response rate 2	53.59	71.31	464.50	.040
Teacher response rate 3	40.39	61.66	433.00	.028
Teacher response rate 4	45.63	79.22	349.50	.009
Teacher response rate 5	80.37	88.42	458.50	.032
Leadership (PRE)	3.62	4.42	334.50	.006
Leadership (Implementation)	4.29	4.59	766.50	.693
Leadership (POST)	3.80	4.40	582.00	.158
Overall (PRE)	3.48	4.64	131.50	.000
Overall (Implementation)	3.98	4.85	294.00	.003
Overall (POST)	3.65	4.57	331.00	.006
Student Achievement (PRE)	3.58	4.46	257.00	.002
Student Achievement (Implementation)	4.09	4.78	245.50	.001
Student Achievement (POST)	3.81	4.41	322.50	.005

Appendix C: Fluctuations Over Years of Interest

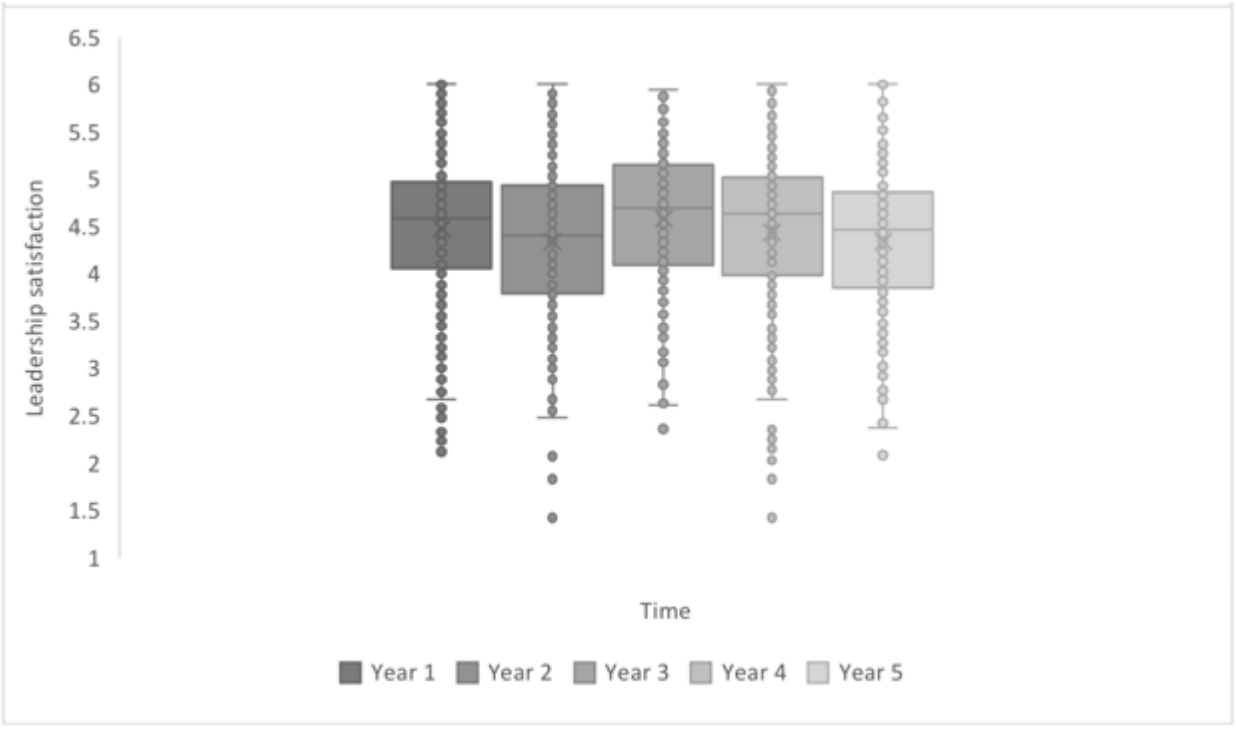

Figure C1. Fluctuations in mean leadership satisfaction over years of interest.

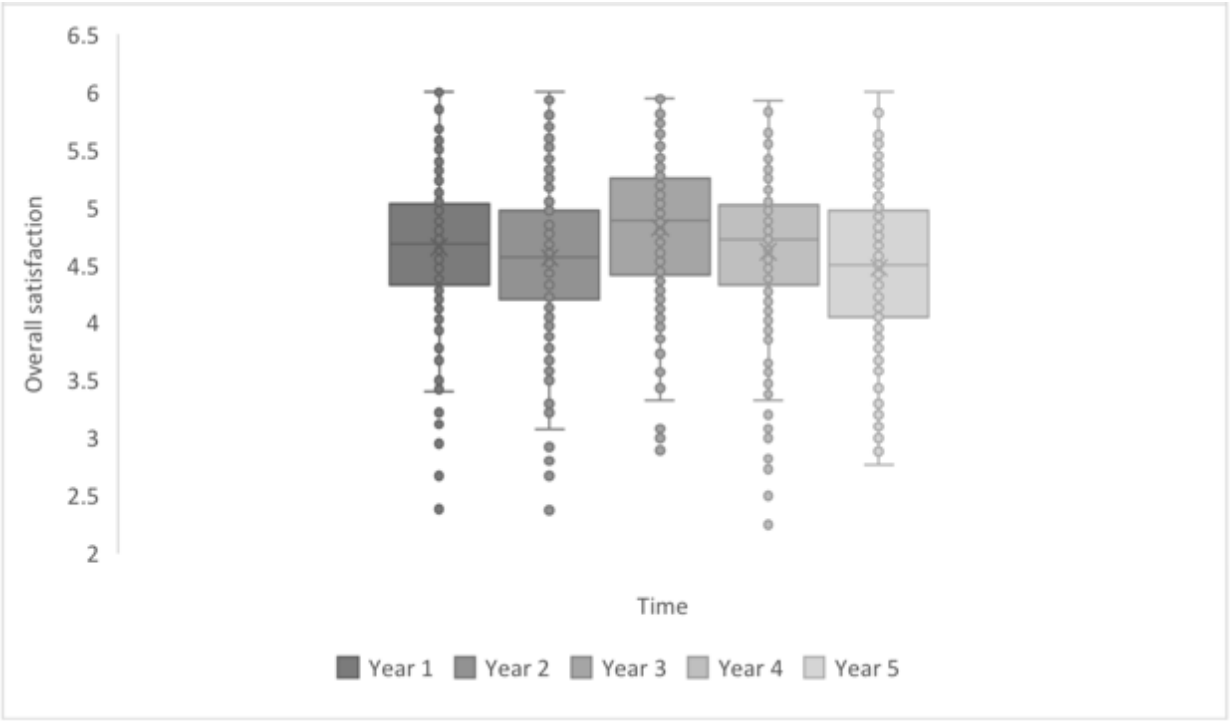

Figure C2. Fluctuations in mean overall satisfaction over years of interest.

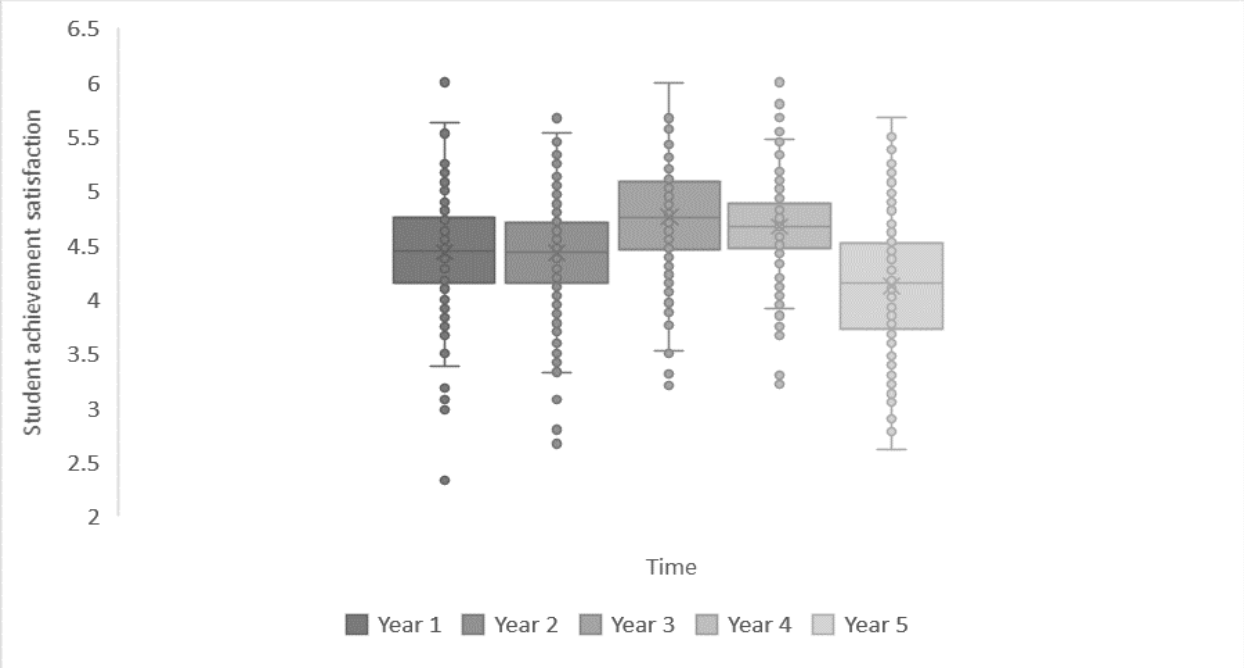

Figure C3. Fluctuations in mean student achievement satisfaction over years of interest.