2016-01-01

Teacher's Sense of Self Efficacy and Grit and Its Relationship to Student Achievement

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TEACHER’S SENSE OF SELF EFFICACY AND GRIT AND ITS RELATIONSHIP TO STUDENT ACHIEVEMENT

DINO MARIO CORONADO

Doctoral Program in Educational Leadership and Administration

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Dedication

To Roxanne

Roxanne, when our journey started, I was at my lowest. We started as friends and you believed in me more than I believed in myself. I will forever be grateful for our marriage and the love that we share together.

To Educators

Never forget that we can make a difference in every child, every day. It is a profession not for the faint of heart.
TEACHER’S SENSE OF SELF EFFICACY AND GRIT AND ITS RELATIONSHIP TO STUDENT ACHIEVEMENT

by

DINO MARIO CORONADO, M.Ed., M.A.

DISSERTATION

Presented to the Faculty of the Graduate School of The University of Texas at El Paso in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

Department of Educational Leadership and Foundations (EDLF) THE UNIVERSITY OF TEXAS AT EL PASO

August 2016
Acknowledgements

I want to thank my dissertation committee for their assistance, knowledge, and their contributions to the field of public education. I would also like to thank Dr. Richard Sorenson and Dr. Rodolfo Rincones for believing in me and encouraging me to continue despite the obstacles that I faced.

To my mom and dad, thank you for never giving up on me and always being there when I needed you the most. You have taught me to persevere, follow my dreams, and always be the best person I can be.

Finally, this dissertation would not have been possible without the support of my best friend, my love, my wife, Roxanne. Thank you for your untiring support, praise, and sometimes push. We did this together—I love you!
Abstract

Darling-Hammond (2006) stated that “one of the most damaging myths prevailing in American education is the notion that good teachers are born and not made” (p. xi). On the other hand, if there is a need to improve the education system in the United States, there must be a conscientious effort to identify, recruit, select, and develop quality people to become teachers—there needs to be an emphasis on “quality people.”

The purpose of this quantitative study is to determine the relationship between a high school teacher’s grit and sense of self-efficacy and the Houston Independent School District’s teacher’s Educator Value-Added Assessment System (EVASS) Performance Growth Level, which is a “conservative estimate of students’ academic progress (Houston ISD, 2015)” as measured by the State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) Assessments.

The study took place in the Houston Independent School District which is the largest school district in the State of Texas and the seventh largest school district in the United States. The data was obtained from a survey that was sent via Survey Monkey to 604 current high school teachers assigned to the 19 Title One campuses that taught a content area associated with a State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) assessment (English I, English II, Algebra I, Biology, and U.S. History). However, only 186 of the 604 teachers surveyed actually had student data linked to the district’s Educator Value-Added Assessment System (EVAAS) for the 2014-2015 school year.
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Chapter 1: Introduction to the Study

Introduction

Teachers have the daunting task of educating other people’s children, and in most cases are held accountable for their students’ learning, achievement, and growth. The public education system in the United States has gone through some significant and visible changes over the last 50 years. The process of teaching and learning, which is the foundation of schooling, has been replaced by the process of assessment and accountability, also known as “teaching to the test” or “gaming the system.” To reestablish the basics of teaching and learning, it is critical that school districts recruit and select teachers of high quality and improve the effectiveness of the existing teaching staff. A common belief is that all children can learn. However, can all teachers effectively teach any child? Increasing the academic performance of students requires high quality teaching.

Whitaker (2002) described two ways to improve a school: hiring better teachers or improving the effectiveness of the current teachers. The value of having effective teachers in every classroom cannot be understated. However, determining the characteristics of effective teachers may have more to do with who they are than what they do. So, what makes an effective teacher?

According to the No Child Left Behind (NCLB) Act of 2001, a highly qualified teacher is a person with a bachelor’s degree, full state certification or licensure, and proof that he or she knows each subject he/she teaches (U.S. Department of Education, 2004). The definition under the NCLB Act should not have been
perceived as equating a “highly qualified” teacher with a high quality teacher or an effective teacher. In the subsequent Every Student Succeeds Act (ESSA) of 2015, the term “highly qualified” was replaced by the term “effective” (U.S. Department of Education, 2015, p. 214).

Albert Einstein once said, “It’s not that I’m so smart, it’s just that I stay with problems longer” (10 Great Life Lessons, 2012). What was it about Einstein that allowed him to be tenacious about solving problems? Can such tenacity be taught? There is a limited body of knowledge that identifies a teacher’s innate personality characteristics such as grit and self-efficacy and their impact on student achievement. Duckworth (2012) defines grit as “sticking with things over the very long term until you master them” (para. 2) and Bandura (1997) believes that self-efficacy is the “belief in one’s capabilities to organize and execute the sources of action required to manage prospective situations” (p. 3).

The purpose of this quantitative study is to determine the relationship between a high school teacher’s grit and sense of self-efficacy and the Houston Independent School District’s teacher’s Educator Value-Added Assessment System (EVASS) Performance Growth Level, which is a “conservative estimate of students’ academic progress (Houston ISD, 2015)” as measured by the State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) Assessments.

**Background of the Study**

It appears that the U.S. education system is constantly under discussion and revision (Tyack and Cuban, 1995). Indeed, many educational initiatives have been
proposed with the aim of closing the student achievement gap and providing equal opportunity for students to receive a free, common and fair education. As the political landscape changes with each new federal administration, so does the idea behind building or repairing the process by which youth are educated in the United States. Whether it is the Elementary and Secondary Education Act of 1965 and its subsequent reauthorizations under Presidents Ronald W. Reagan, George H. W. Bush, and William J. Clinton, the 1983 report *A Nation at Risk*, the NCLB Act of 2001, or the ESSA of 2015, there is a common belief that public education in the United States lags behind that of other developed nations. Stronge and Tucker (2003) argue that “without capable, high quality teachers in America’s classrooms, no educational reform effort can possibly succeed” (p. 3). From a different perspective, Berliner (2006) argues that improving the education system requires a conscientious effort to address poverty in the nation. However, despite the passage of multiple programs designed to reform public education, many still consider the United States to lag behind other countries academically; hence, we experience an ongoing evolution of educational reform (Hanushek, Peterson, and Woessmann, 2012).

The National Commission on Teaching and America’s Future (2002) estimated that one-third of all new teachers leave the profession after three years, and 46% exit the field within five years. Hussar (1998) predicted that the United States would need 2.7 million new teachers between 1998 and 2009 and another 200,000 each year afterward for the foreseeable future. With retirement being the
primary reason teachers leave the field, there are severe shortages in teachers of mathematics, science, special education, bilingual education, English as a second language, and foreign language (American Association for Employment in Education, 2009). Urban schools in particular face consistent challenges when seeking teachers to fill vacancies in hard-to-staff schools.

Most people support the belief that a teacher must have a positive effect on students in order to increase student achievement. Futernick (2010) argues that improving teacher quality is the single most important thing policy makers and education officials can do to close the gap in student achievement. Gordon, Kane, and Staiger (2008) suggest that the

“success of U.S. public education depends upon the skills of the 3.1 million teachers managing classrooms in elementary and secondary schools around the country. Everything else—educational standards, testing, class size, greater accountability—is background, intended to support the crucial interactions between teachers and their students. Without the right people standing in front of the classroom, school reform is a futile exercise” (p. 189).

Hanushek (1992) found that students could improve their academic achievement by a full grade in one school year if they were being taught by an effective teacher. The Alliance for Quality Teaching (2008) reported that “although there is no single ‘definition’ or description of a quality teacher, research confirms many characteristics that have a positive effect on student learning” (p. 6). Darling-Hammond (1997) suggests that the quality of the teacher makes a significant
difference in closing the achievement gap and increasing the academic performance of students. For every research paper that attempts to define a quality teacher, it seems there is another to challenge that definition. Berliner (2005) offers perhaps the most profound description of an effective teacher:

“If you are a teacher, good practice may include greeting students warmly at the classroom door. Good is normative. It is what is expected of competent people in the field. In education, good practice might require that: homework will be graded in a reasonable amount of time; feedback will be given for assignments and soon after tests; polite and private reminders about student conduct are provided before public statements are made; fairness in grading and in classroom experiences are perceived by the students; parents are kept informed of their children’s progress; and so forth. As distinguished from good teaching, effective teaching is about reaching achievement goals. It is about students learning what they are supposed to in a particular class, grade or subject. A teacher of high quality shows evidence of both good and effective teaching” (p. 6).

The U.S. Department of Education’s Race to the Top program defined an effective teacher as one

“whose students achieve acceptable rates (e.g., at least one grade level in an academic year) of student growth (as defined in this notice).” That is, to be considered effective, teachers must raise their students’ learning to a level at
or above what is expected within a typical school year” (Lomax and Kuenzi, 2012, Summary).

Ineffective teachers generally cannot deliver adequate, aligned instruction so that their students can be successful. For example, an ineffective teacher may not be able to explain the content at the appropriate level so that all students understand it.

Darling-Hammond (2006) stated that “one of the most damaging myths prevailing in American education is the notion that good teachers are born and not made” (p. xi). On the other hand, if there is a need to improve the education system in the United States, there must be a conscientious effort to identify, recruit, select, and develop quality people to become teachers—there needs to be an emphasis on “quality people.” Mair and Youngs (2009) claim that high quality teachers are less likely to teach at schools that have a large non-white population, have students that come from a low socioeconomic class, and/or an urban setting. Conversely, students who are racial/ethnic minorities, have limited English proficiency, and/or are from low-income families and students who attend urban and/or low performing schools are much more likely than other students to be taught by teachers of a much lower caliber (Lankford, Loeb, and Wyckoff, 2002). The National Center for Educational Evaluation and Regional Assistance (2013) reported that “schools serving low-income students struggle to attract effective teachers, particularly in science and math” (p. 1).
Teachers who cannot relate to a given student often find it more difficult to teach that student, particularly when the student is struggling or is associated with a label such as “at risk,” “English language learner,” or “requires special education.” From the student’s perspective, it is also important that students can observe adults from different ethnic backgrounds effectively holding leadership positions in society (Vegas, Murnane, and Willett, 2001). Greenberg, McKee, and Walsh (2013) suggest that countries with high performing schools limit entrance into the teacher preparation program to the top one-third of their secondary graduating class; whereas 75% of the teacher preparation programs in the U.S. admit the top half of the high school graduating class. Furthermore, Vegas et al. (2001) make a strong case that most teachers come from less than stellar backgrounds.

For example, Baines (2010) is very critical of the Alternative Teacher Certification Programs that advertise a fast-track method to obtain teaching credentials and supports his claim that the “no sweat route to (teacher) certification” (p. 49) is “market-driven, not quality driven” (p. 56). Although there are national standards for both competencies and ethics in most major professions, little has been done by any public association of educators to create a sense of professional identity that is well respected. Furthermore, little has been done to establish a consistent relationship between observable elements of the hiring process and teacher retention and effectiveness (Hanushek, 1997; Rockoff, Jacob, Kane, and Staiger, 2008).
Problem Statement

If the United States is to prepare its young people with the problem-solving and communication skills that are essential in modern society, it is more important than ever to recruit and retain high-quality, talented teachers (Murnane and Steele, 2007). Despite the rigorous selection process and competitiveness to enter specific career paths, public universities in Texas admit more than 90% of their applicants (Lincove, Osborne, Mills, and Bellows, 2015). In contrast, Lincove et al. (2015) suggest that independent nonprofit and for-profit institutions admit fewer than 60% of applicants.

While the literature has reflected the continuing debate about the characteristics of an effective teacher, there has been little research on the innate qualities in educators that relate to student achievement, especially in urban areas and schools considered “hard to staff.” Many observations of teacher performance relate to student demographics such as ethnicity, socioeconomic status, or limited English proficiency. However, one cannot discount the determination of a teacher who is committed to ensuring his/her students experience success. A clear understanding of the intrinsic behaviors of a good person could begin to define a core quality of an effective teacher. According to Gary Gordon (2004), a strategic consultant at Gallup Education:

“Gallup’s research, spanning more than 30 years in education and the private sector, suggests that individuals with teaching talent develop that talent well before they enter a university or alternative certification program. Separate
from skills and knowledge, talents are the intangibles usually thought of as ‘the art of teaching.’ Talent distinguishes outstanding performance from average performance” (para. 5).

Duckworth, Quinn, and Seligman (2009) define grit as “perseverance and passion for long-term goals, [which] has been shown to predict the accomplishment in challenging circumstances” (p. 541). Furthermore, Bandura (2001) argues that the demands of teaching require that an individual possess a strong commitment to the task and be resilient in the face of adversity.

The idea of self-efficacy stems from Bandura’s (1997a) work grounded in social cognitive theory, which refers to an individual’s beliefs about their capabilities to successfully carry out a particular course of action. In an interview of Woolfolk, Shaughnessy (2004) stated, “Teachers’ self-efficacy for teaching—their perceptions about their own capabilities to foster students’ learning and engagement—has proved to be an important teacher characteristic often correlated with positive student and teacher outcomes.” Belden and Plattner (1999) suggest that teachers with a high sense of self-efficacy significantly affected and/or improved student learning. Several other researchers have linked the level of teacher self-efficacy with student achievement (More and Esselman, 1992; Rose and Medway, 1981; Ross, 1992).

Earlier studies or survey instruments to measure teacher self-efficacy include the Responsibility for Student Achievement (Guskey, 1981), Teacher Locus of Control Scale (Rose and Medway, 1981), and the Teacher Efficacy Scale (Gibson and
Dembo, 1984). Tschannen-Moran and Hoy (2001) developed the *Ohio State Teacher Efficacy Scale*, also known as the *Teachers’ Sense of Efficacy Scale (TSES)*, which mirrors Bandura’s (1997b) framework of mastery experiences, vicarious experiences, verbal persuasion, and physiological cues. The TSES contains 24 items and uses a 9-point response scale with the following levels of influence corresponding to the points: 1 (nothing); 3 (very little); 5 (some influence); 7 (quite a bit); and 9 (a great deal).

Rockoff et. al. (2008) argue that in order to improve the effectiveness of the teaching force, there must be a conscience effort to recruit individuals with certain adaptive personality traits. This researcher believes that there are innate personal characteristics of an effective teacher, and the underlying premise of this proposed qualitative research study is to explore the connection between a teacher’s grit and sense of self-efficacy and student achievement. Learning more about the relationship between a teacher’s self-efficacy and grit could help in identifying potential teacher candidates and predict their success in improving student achievement.

**Purpose of the Study**

The purpose of this study is to determine the strength of the relationship between student growth and a teacher’s sense of self-efficacy and grit, comparing secondary teachers who demonstrate high self-efficacy and score high in personal grit to those who do not demonstrate high self-efficacy or score high in personal grit. Student achievement, rather, growth, is measured by the STAAR EOC.
Assessments; the teacher’s self-efficacy will be measured by the TSES (formerly called the Ohio State Teacher Sense of Efficacy Scale), developed by Tschannen-Moran and Hoy (2001), in conjunction with the 8-item Grit Scale (Short) developed by Duckworth and Quinn (2009).

The study will use the TSES (Tschannen-Moran and Hoy, 2001) to identify teachers with high self-efficacy and low self-efficacy and the Grit Scale (Short) (Duckworth and Quinn, 2009) to identify the teacher’s personal grit. The characteristic of grit is measured with scores of one through five, one indicating that the teacher has no grit, and five indicating that the teacher has an extreme level of grit. The researcher conducted a confirmatory factor analysis to identify specific elements that have the most effect on a teacher’s sense of self-efficacy and grit score and examine the correlation between the two groups of teachers and their student scores on the state assessment to determine whether there is a positive correlation between the two measures.

**Research Questions**

There are three central questions that guided this study:

(1) What is the strength of the relationship, if any, between the factors of a teacher’s sense of self-efficacy (*)efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management* and student performance?

(2) What is the strength of the relationship, if any, between a teacher’s grit and student performance?
(3) What is the strength of the relationship, if any, between a teacher's years of experience and the teacher's sense of self-efficacy and grit?

Significance of the Study

In 2012, the State of Texas replaced the Texas Assessment of Knowledge and Skills test with the STAAR test. The annual assessments include reading and mathematics for grades 3 through 8; writing for grades 4 and 7; science for grades 5 and 8; social studies for grade 8; and the EOC Assessments for Algebra I, English I, English II, biology and U.S. history in high school. According to the Texas Education Agency (2015), “the STAAR is an assessment program designed to measure the extent to which students have learned and are able to apply the knowledge and skills defined in the state-mandated curriculum standards, the Texas Essential Knowledge and Skills (TEKS), and every STAAR question is directly aligned to the TEKS currently implemented for the grade/subject or course being assessed” (p. 1).

In Texas, the Professional Development and Appraisal System, which began in 1997, is currently the state recommended evaluation system for teachers. It focuses on eight domains and learner-centered instruction. Student achievement can be one indicator of teacher quality, which in large part plays a vital role in quantifying teacher effectiveness. During the 2015–2016 school year, the Texas Education Agency was scheduled to implement the new Texas Teacher Evaluation and Support System (Texas T-TESS). This evaluation system for Texas teachers is designed to support teachers in their professional development and help them grow
and improve as educators (Texas Education Agency, 2014). T-TESS has three measures that will determine teacher effectiveness: observations, teacher self-assessment, and student growth.

With the passage of House Bill 3 by the Texas Legislature in 2009, a new education accountability system was put into place. Since the 2012–2013 school year, the state’s accountability rating system has been based on a performance index framework. Performance indicators are grouped into four indexes and are used to assign accountability rating labels based on performance targets that are set for each index (TEA, 2013). The four indexes:

Index 1: Student Achievement. Provides a snapshot of performance across subjects, on both general and alternative assessments, at the satisfactory performance standard (TEA, 2013, p. 8).

Index 2: Student Progress. Provides a measure of student progress by subject and student group, independent of overall student achievement levels (TEA, 2013, p. 8).

Index 3: Closing Performance Gaps. Emphasizes advanced academic achievement of the economically disadvantaged student group and the lowest performing racial/ethnic student groups at each campus or district (TEA, 2013, p. 8).

Index 4: Postsecondary Readiness. Emphasizes the importance for students to receive a high school diploma that provides them with the
foundation necessary for success in college, the workforce, job training programs, or the military (TEA, 2013, p. 8).

It is Index 2, Student Progress, which measures student growth, which in large part is based on the effectiveness of the teacher. Given the anticipated high demand for teachers, understanding self-efficacy and grit could have an impact on the recruitment, selection, and retention of future educators, and the professional development needs of teachers, especially in public schools that are considered hard to staff.

**Nature of the Study**

This study involves high school teachers in a large Texas urban school district who are accountable for the academic growth of their students and their performance on the STAAR EOC Assessments for the courses Algebra I, English I, English II, biology and U.S. history. Those teachers will be administered the 12-item TSES–Short Form and the 8-item Grit Scale (Short) form. The relationships between each teacher’s TSES score, grit score and the Educator Value-Added Assessment System (EVASS) Performance Growth Level will be studied through correlational and linear regression statistical methods.

**Definition of Terms**

The following definitions are provided.

*Grit:* “Defined as perseverance and passion for long-term goals, has been shown to predict the accomplishment in challenging circumstances” (Duckworth, et. al., 2009, p. 541).
Self-efficacy: “Belief in one’s capabilities to organize and execute the sources of action required to manage prospective situations” (Bandura, 1997, p. 3).

State of Texas Assessments of Academic Readiness (STAAR): “The STAAR is an assessment program designed to measure the extent to which students have learned and are able to apply the knowledge and skills defined in the state-mandated curriculum standards, the Texas Essential Knowledge and Skills (TEKS) and every STAAR question is directly aligned to the TEKS currently implemented for the grade/subject or course being assessed” (Texas Education Agency, 2015, p. 1).

Teacher’s self-efficacy: A teacher’s “judgment of his or her capabilities to bring about desired outcomes of student engagement and learning” (Tschannen-Moran & Woolfolk-Hoy, 2001, p. 783).

Teacher’s sense of efficacy: Teachers’ “beliefs in their capability to make a difference in student learning, to be able to get through even to students who are difficult or unmotivated” (Tschannen-Moran, 2015).

Assumptions

There is an expectation that the teachers in this study will answer honestly and to the best of their ability on the TSES and the 8-item Grit Scale survey.

Limitations

The TSES is partial for measuring 1) efficacy in student engagement, 2) efficacy in instructional practices, and 3) efficacy in classroom management. Since there is no clear definitive for an effective teacher, the study is limited to the teacher’s level of self-efficacy and grit and its association with student performance
on a single high-stakes test and does not take into account other factors that can measure student success. Additionally, the sample population does not consider the years of experience of the teacher who is taking the TSES survey and the 8-item Grit Scale survey.

**Delimitations**

The TSES survey and the 8-item Grit Scale survey are delimited to only one large urban school district in Texas, which limits the demographic sample.
Chapter 2: Literature Review

The review of the literature for this proposed study includes an introduction and background as well as the theoretical foundations that support the associated research questions.

Introduction and Background

If there is a sense of urgency to close the student achievement gap in schools and improve student performance, there must be an effort to understand what drives or motivates a person to persevere, especially among teachers who educate the youth of today. The premise of self-efficacy and grit is a person’s “will” or “desire” to accomplish something. The classic children’s book, “The Little Engine That Could” (Piper, 1930), gave a descriptive account of a mantra to use to gain self-confidence: "I think I can. I think I can. I think I can. I know I can." [emphasis added]. Henry Ford, the innovative founder of the Ford Motor Company, once said, “Whether you think you can, or you think you can’t – you’re right” (goodreads.com, 2015). There is something to be said about the will of a person—the will to achieve, the will to be the best, and the will to persevere despite obstacles (or people) in their path. So, what is inside a person that compels them to be successful, even in times of adversity? What motivates a person to achieve their personal and professional goals? Finally, and most importantly, can that personal inner drive to be successful be taught?

Although there have been some paradigm shifts between behaviorist and psychologist theories, scientific advances can be achieved by two types of theories:
“those that simply seek to identify correlations between observable events without regard to linking mechanisms; and those that specify the mechanisms governing the relations between observable events” (Bandura, 1999, p. 21). Wechsler (1940) and Cattell and Butcher (1968) argue that the field of psychology has ignored the recommendation to study non-cognitive or cognitive individual differences independently. Moreover, Duckworth, Peterson, Matthews, and Kelly (2007) suggest that there is a large body of research about the importance of intellectual talent to achievement; however, there is a limited body of research on “how personality traits and intelligence are related and about their relative contributions to performance” (p. 1089). McClelland, Baldwin, Bronfenbrenner, and Strodtbeck (1958) argue that there are non-intellective factors that motivate people to achieve; and Schunk, Pintrich, and Meece (2008) believe that motivation is often studied in two forms: intrinsic and extrinsic. Understanding individual qualities such as self-efficacy and grit requires an understanding of how those two elements have been previously studied.

Knapper and Cropley (2000) describe life-long learners as active learners who plan and assess their own learning; they learn in both formal and informal settings; they learn from their peers, teachers, and mentors; integrate knowledge from various disciplines; and use various learning strategies in different situations. Professional educators are life-long learners and must see themselves as students of their craft, consistently learning the art and science of teaching and learning. They must embrace the idea of enriching and developing their technical skill set and
possess an intrinsic love of learning. The review of the literature identifies a significant amount of support for a possible relationship between a teacher’s sense of self-efficacy, grit, and the outcome, either positive or negative, on the students he or she teaches.

**Theoretical Foundations**

An argument can be made that self-efficacy is a product of attribution theory and social cognitive theory. Attribution theory, derived in the field of social psychology, is grounded on the notion that people want to recognize and explain the events in their lives (Weiner, 1985). The theory was based on how people explained the consequences of their decisions and how that affected their own behavior as well as the behavior of other people. In contrast, Bandura (1999) suggests that social cognitive theory explains the “psychosocial functioning in terms of triadic causation” (p. 23) (see Figure 1), and that people are in charge of their life’s course and are “not just onlooking hosts of brain mechanisms orchestrated by environmental events” (p. 22).

*Attribution Theory*

With concepts of social learning theory (Rotter, 1954), beliefs about cognitive dissonance (Festinger, 1957), and the theory of achievement striving (Atkinson, 1957), Weiner (2008) makes reference to the 1950s, which had a significant influence on the research behind “psychological sub-disciplines of personality, social psychology, and human motivation” (p. 151). In the book *The Psychology of Interpersonal Relations*, Heider (1958) introduces the psychological theory of
 attribution. Reisenzein and Rudolf (2008) believe that social psychologists had applied attribution theory to learned helplessness, depression, reward/punishment decisions, and motivation. The hypothesis of Weiner (1972) is that achievement motivation develops with the growth of causal attributions to effort, rather, intention, which is closely related to the work in Piaget’s (1932) developmental process. Furthermore, Weiner (1972) references Kohlberg’s (1963) research that supports the belief that high levels of moral development and moral evaluations are based upon subjective intent, rather than objective outcome.

Kukla (1972) believes that Heider’s (1958) work outlines the manner in which a relatively precise belief system is used to account for the success or failure of undertaken tasks, and further suggests that the “attributional theory of performance, however, is primarily concerned with the relationship between causal attribution and subsequent action” (p. 454). In other words, there are “attempts to specify how a given pattern of attribution to ability, effort, difficulty, or chance determines task performance” (p. 454). Similarly, Harvey, Madison, Martinko, Crook, and Crook (2014) insist that Heider (1958) believed that each person was a naive psychologist with an innate interest in understanding the cause of success and failure and that an understanding of the cause would enable individuals to make sense of their world and control their environments. With respect to motivation, Heider (1958) differentiates between two elements of behavior: “can” and “try.” Weiner’s (2008) perspective offers that
“Can [emphasis added] refers to the relatively invariant properties of the person, such as intelligence, ability, and so forth, while try [emphasis added] is determined by the momentary intentions and effort expenditure of the actor. In achievement-related contexts, success may be attributed to high ability and/or effort, while failure is perceived as due to low ability and/or lack of effort” (p. 204).

In contrast, Heider (1958) offers four major attributional variables: ability, effort, difficulty, and chance. These attributional variables can work independently or through any weighted combination. He also rationalizes that outcomes of events or behaviors are due to a set of external factors (situation, environment) and internal factors (disposition). His work with attribution theory was momentous from a historical context because it explains the power that the individual can have on an outcome. Heider (1958) believed that success and failure was determined by how a person thought about an event rather than what actually happened.

Weiner (1974, 1986) studied the work of Heider (1958) and determined that ability, effort, task difficulty, and luck [emphasis added] were the focal achievement attributions. He also attributed different people, mood, fatigue or illness, personality, and physical appearance as causes for certain outcomes and categorized these attributions into three causal dimensions:

1. Locus of control – an outcome that can be described as either internal or external;
2. Stability – either stable or unstable; and,
3. Controllability – an outcome that is either controllable or uncontrollable. Weiner (1986) believed that success and failure for a person or others is determined by a combination of each dimension, which ultimately influences a person’s motivation.

Social cognitive theory

The notion of social learning theory captured the attention of Bandura and Walters (1963), who studied it extensively. However, fourteen years later, Bandura (1977) realized that “self-belief” was a key ingredient that was missing in learning theories. Pajares (2002) claims that Bandura (1986) altered the present label of social learning theory to social “cognitive” theory to distance it from prevalent social learning theories of the time and to emphasize that cognition [emphasis added] plays a critical role in people’s capability to construct reality, self-regulate, encode information, and perform behaviors.

Bandura (1986) believed that social cognitive theory explained psychosocial functioning in terms of triadic reciprocal causation, which views (a) personal factors in the form of cognition, affect, and biological events, (b) behavior, and (c) environmental factors. He argues that, “In this causal model, behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants that influence each other bidirectionally” (p. 276). Simply put, from Bandura’s (1986) perspective, human functioning is viewed as the result of an active interplay between personal, behavioral, and environmental influences.
Figure 1. Triadic Reciprocal (Pajares, 2002).

Ultimately, social cognitive theory adopts an agentic perspective toward human development, adaptation, and change in something Bandura (1986) refers to as human agency. He argues that “unless people believe that they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties” (p. 28). Furthermore, Bandura (1991) argues that social cognitive theory presupposes that a person’s potential is an active innate quality and that competent performance to accomplish complicated or difficult tasks commonly requires both technical skills and a strong sense of efficacy.

Self-Efficacy

From the social cognitive perspective, “self-efficacy is not a passive, static trait, but rather is seen as a dynamic set of self-beliefs that are specific to particular performance domains and that interact complexly with other person, behavior, and contextual factors” (Lent et al., 1994, p. 84). Self-efficacy “emphasizes the role of self-referent thinking in guiding human motivation and behavior” (Lent, Brown, and Hackett, 1994, p. 81). Bandura’s (1997) definition of self-efficacy is the “belief in
one’s capabilities to organize and execute the sources of action required to manage prospective situations” (p. 3). He further believes that self-efficacy refers to “people’s judgements of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). According to Wolters et. al. (2013), self-efficacy is closely linked with types of attributions that Weiner (2000) insists are part of the attribution process that contributes to beliefs and attitude that form the basis of self-efficacy.

Bandura (1999) cites empirical studies (Alden, 1986; Coureya and McAuley, 1993; Grove, 1993; McAuley, Duncan, and McElroy, 1989; Silver, Mitchell, and Gist, 1995) that claim that highly efficacious people view their failures as insufficient effort, inadequate strategies or unfavorable circumstances. He also contends that “perceived self-efficacy occupies a pivotal role in social cognitive theory because it affects action not only directly, but through its impact on other classes of determinants as well” (p. 28). In contrast, people of low self-efficacy attribute their failures to low ability. Weiner (2000) further argues that there exists empirical support to show connections to certain types of the attribution that affect an expectation for success, self-efficacy, perceived self-competence, or one’s self-concept of ability.

Bandura’s (1989) continued development and research culminates with what he believes are four major psychological processes through which self-beliefs of efficacy affect human functioning. The four processes are cognitive, motivational, affective, and selection:
1. The cognitive process considers that “self-efficacy beliefs affect thought patterns that may be self-aiding or self-hindering. These cognitive effects take various forms. Much human behavior is regulated by forethought embodying cognized goals, and personal goal setting is influenced by self-appraisal of capabilities” (p. 1175).

2. The motivational process considers that “people’s self-efficacy beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles. The stronger the belief in their capabilities, the greater and more persistent are their efforts” (p. 1176).

3. The affective process considers that “people’s beliefs in their capabilities affect how much stress and depression they experience in threatening or taxing situations, as well as their level of motivation. Such emotional reactions can affect action both directly and indirectly by altering the nature and course of thinking” (p. 1177).

4. The selection process considers that “people can exert some influence over their life course by their selection of environments and construction of environments. People tend to avoid activities and situations they believe exceed their coping capabilities, but they readily undertake challenging activities and select social environments they judge themselves capable of handling” (p. 1178).
To be clear, self-efficacy is not an inherent trait that is passed genetically; rather it is a belief in yourself that you can accomplish something with your skills under certain conditions. It is not about what you will do; rather it is about what you can or want to do. Self-efficacy is not related to self-esteem because self-esteem is based on your opinion of yourself. Simply put, self-efficacy is your belief about what you are capable of doing and understanding that this belief can develop over time and with experience.

**Grit**

Another concept that has become popular in recent years is grit. Self-efficacy is one part of grit (Duckworth, 2013). Duckworth, Peterson, Matthews and Kelly (2007) define grit as “perseverance and passion for long-term goals” (p. 1087). Duckworth (2013) believes that there are three reasons why gritty people stick with their goal, even over a long period of time: self-efficacy, valuing the goal, and cost.

1. **Self-efficacy** contributes significantly to grit because it is the belief that one has the capability to achieve the desired results.

2. **Valuing the goal** is having passion about something that is meaningful and worth cultivating. It is different than discovery—cultivation assumes that there is work to do.

3. **Cost** is about working very hard and having a willingness to focus on where one is rather than constantly second guessing the choices one has made.
Duckworth et. al. (2007) state that grit

“Entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress. The gritty individual approaches achievement as a marathon; his or her advantage is stamina. Whereas disappointment or boredom signals to others that it is time to change trajectory and cut losses, the gritty individual stays the course” (p. 1087-1088).

Duckworth et. al. (2007) claim that one of the earliest bodies of work that studied successful people was that of Galton (1892), who determined that ability was only one ingredient for success. He believed that superior achievers had a unique “ability combined with zeal and with capacity for hard labor” (p. 33). Years later, Cattell (1903) compiled an exhaustive list of eminent men and rank-ordered them from one to one thousand. He admitted that all of the men in his study were noteworthy and went on to explain,

“Some [men] are born great, some achieve greatness, and some have greatness thrust upon them. We have men of genius, great men, and men merely eminent. Washington was scarcely a genius, but was truly a great man. Napoleon III was neither a genius nor a great man, but was eminent to an unusual degree” (p. 361).

Cox (1926) studied 301 profiles from Cattell’s (1903) list and found that the men all had “persistence of motive and effort, [were] confident in their abilities, and [had] great strength or force of character” (p. 218).
Although there is a perception that intelligence can be a predictor of achievement, Howe (1988) argues that “intelligence level is in reality only a descriptive measure, not an explanatory concept” (p. 349). Howe (1999) later wrote that high achievement derives directly from exceptional mental ability in that “Perseverance is at least as crucial as intelligence. . . . The most crucial inherent differences may be ones of temperament rather than of intellect as such” (p. 15).

Another common framework that claims to be an exhaustive study of personality traits and characteristics of successful people is the Big Five Model (Goldberg, 1981; John and Srivastava, 1999). However, Goldberg (1993) argues that the taxonomy of the Big Five Model was never designed to be an all-inclusive personality theory, but was established to describe the fundamental interactions among personality traits, and therefore has limitations. The Big Five Model might be able to explain personality types, but it does not explain a person’s internal trait that supports their motivation or “desire.” Duckworth et. al. (2007) argue that a serious limitation of the Big Five Model has to do with the “roots in the factor analyses of adjectives” (p. 1089). In other words, the Big Five Model is merely a descriptive process and does not account for internal behaviors. Paunonen and Jackson (2000) state that

“The ultimate test of whether a dimension of behavior is important to the understanding of human behavior depends not on the size of the factor in the language of personality . . . if such dimensions are able to account for criterion variance not accounted for by the Big Five personality factors, then
those dimensions need to be considered separately in any comprehensive
description of the determinants of human behavior” (p. 833).

Duckworth et. al. (2007) emphasize the historical context of talent and
achievement (Terman and Oden, 1947; Howe, 1999; and Ericsson and Charness,
1994) and personality and achievement (Goldberg, 1990; John and Srivastava, 1999;
McCrae and Costa, 1987; Tupes and Christal, 1992; Barrick and Mount, 1991; Tett,
Jackson, and Rothstein, 1991) to develop the grit scale. In designing the grit scale,
Duckworth et. al. (2007) determine that grit has to meet four measurable criteria:

1. Evidence of psychometric soundness;
2. Face validity for adolescents and adults pursuing goals in a variety of
domains;
3. Low likelihood of ceiling effects in high-achieving populations; and,
4. A precise fit with the construct of grit.

Although there are other instruments (Table 1) that measure perseverance for
children (Lufi and Cohen, 1987), passion (Vallerand, Blanchard, Mageau, Koestner,
Ratelle, and Le´onard, 2003), tenacity (Gartner, Gatewood, and Shaver, 1991),
career advancement (Desrochers and Dahir, 2000), achievement motivation
(Cassidy and Lynn, 1989), and goal commitment (Hollenbeck, Williams, and Klein,
1989), none capture the maximal ability of an individual.
Table 1. Instruments Related to Grit

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Questions</th>
<th>Cronbach’s alpha (reliability)</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perseverance Scale for Children</td>
<td>40</td>
<td>0.66</td>
<td>Not face valid for adults.</td>
</tr>
<tr>
<td>Passion Scale</td>
<td>34</td>
<td>Harmonious Passion (0.79)</td>
<td>Assesses commitment to a subjectively important activity but not perseverance of effort.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Obsessive Passion (0.89)</td>
<td></td>
</tr>
<tr>
<td>Tenacity Scale</td>
<td>11</td>
<td>0.83</td>
<td>Developed for entrepreneurs and is not face valid for adolescents.</td>
</tr>
<tr>
<td>Career Advancement Ambition Scale</td>
<td>11</td>
<td>0.88</td>
<td>Refers to attitudes toward one’s “profession” and “firm.”</td>
</tr>
<tr>
<td>Achievement Motivation Questionnaire</td>
<td>49</td>
<td>0.52 to 0.81</td>
<td>Taps work ethic and desire for excellence, which are consonant with the construct of grit, but also several irrelevant qualities such as the need for money, domination of others, and superiority over competitors, and social status.</td>
</tr>
<tr>
<td>Goal Commitment Scale</td>
<td>9</td>
<td>0.88</td>
<td>Assesses state-level, not trait-level, goal commitment.</td>
</tr>
</tbody>
</table>

The grit scale was developed and validated using six study groups over a period of time. The first study was associated with the level of education attainment and whether or not grit grew with age. Duckworth’s team conducted a cross-sectional study of adults over the age of 25 years and assessed grit by its association with the highest level of schooling among individuals of identical age. In study two, the objective was to determine an incremental predictive validity over and beyond the Big Five traits and to determine whether grittier individuals had a significant
difference in career stability as opposed to individuals who are less gritty. Study three tested the academic performance among undergraduates at elite universities, associating grit and the student’s cumulative grade point average. Study four took place at the United States Military Academy at West Point and was designed to predict success in challenging environments. Study four found that even after undergoing an exhaustive selection process to gain an appointment to the academy, five percent of the cadets drop out after the initial summer training program. That study used the grit scale to predict which cadets would remain after one year and also considered their grade point average at that time. The objective for study five was to mirror study four and determine an incremental predictive validity over and beyond the Big Five traits. Study six involved finalists in the 2005 Scripps National Spelling Bee, with the objective to determine the importance of grit to exceptional extracurricular accomplishment while testing a hypothesis about the mechanism of grit.

Table 2. Summary Statistics for Grit Scale across Studies (Duckworth et. al., 2007)

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample characteristics</th>
<th>α</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1: Adults age 25 and older</td>
<td>0.85 Adults age 25 and older</td>
<td>0.85</td>
<td>1545</td>
<td>3.65</td>
<td>0.73</td>
</tr>
<tr>
<td>Study 2: Adults age 25 and older</td>
<td>0.85 Adults age 25 and older</td>
<td>0.85</td>
<td>690</td>
<td>3.41</td>
<td>0.67</td>
</tr>
<tr>
<td>Study 3: Ivy League undergraduates</td>
<td>0.82 Ivy League undergraduates</td>
<td>0.82</td>
<td>138</td>
<td>3.46</td>
<td>0.61</td>
</tr>
<tr>
<td>Study 4: West Point Cadets in Class of 2008</td>
<td>0.77 West Point Cadets in Class of 2008</td>
<td>0.77</td>
<td>1218</td>
<td>3.78</td>
<td>0.53</td>
</tr>
<tr>
<td>Study 5: West Point Cadets in Class of 2010</td>
<td>0.79 West Point Cadets in Class of 2010</td>
<td>0.79</td>
<td>1308</td>
<td>3.75</td>
<td>0.54</td>
</tr>
<tr>
<td>Study 6: 2005 Scripps National Spelling Bee</td>
<td>0.80 2005 Scripps National Spelling Bee</td>
<td>0.80</td>
<td>175</td>
<td>3.50</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Note: α is level of significance; N is number; M is median; SD is standard deviation

Duckworth et. al. (2007) concluded that “achievement is the product of talent and effort, the latter a function of the intensity, direction, and duration of one’s exertions toward a goal” (p. 1098).
Summary of Self-Efficacy and Grit

Kevin Durant, a professional basketball player on the Oklahoma City Thunder team in the National Basketball Association, stated that “hard work beats talent when talent fails to work hard” (Hard Work vs. Talent, 2012). The key points of self-efficacy and grit have more to do with an individual’s attitude and strong desire to accomplish specific goals. However, there is still little understanding of whether an individual’s desire is innate or if the idea of desire can be taught. However, with little or no empirical evidence, there continues to be an unwritten element among educators that some individuals are born teachers, others can learn to be teachers, and finally, some should not enter the profession at all.

Gritty Teachers

Robertson-Kraft and Duckworth (2014) argue that no significant research includes personal characteristics that are both identifiable prior to a person’s entrance into the profession of teaching, and influence that person’s subsequent engagement, commitment, and ultimately, performance as a teacher. Additionally, they claim that the study by Getzels and Jackson (1963) is still as valid today as it was over 50 years ago, and that in their “prodigious research effort, very little is known for certain about the nature and measurement of teacher personality, or about the relation between teacher personality and teaching effectiveness” (p. 574). Much of the research on grit is about self-success: it describes individuals who never settle for mediocrity and continue to persevere despite setbacks or obstacles.
Therefore, grit, as it pertains to this study, is about measuring individual persistence in teachers.

The challenge in evaluating teacher effectiveness is that some performance ratings may be skewed because teachers who are perceived to be better qualified pursue positions in high performing schools (Duckworth et. al., 2009). In addition, teacher effectiveness cannot be measured adequately without considering the student’s situation. In other words, the student becomes a variable. For example, Hart and Risley (2003) reported that “simply in words heard, the average child on welfare was having half as much experience per hour (616 words per hour) as the average working-class child (1,251 words per hour) and less than one-third that of the average child in a professional family (2,153 words per hour)” (p. 116). Therefore, depending on the location of the school, the school setting, and the socioeconomic status of the student’s parents, the reliability factors that can measure teacher performance may or may not be valid. Flink, Boggiano, and Barratt (1990) claim that most research operationalizes the measurement of teacher effectiveness by using evaluations of student work, observations, or supervisor feedback. However, children from educated parents are more likely to be successful regardless of the effort or quality of their teacher.

Duckworth et. al. (2007) insist that “grittier individuals work[ed] harder and longer in very challenging settings than did their less than gritty peers; sustained effort despite adversity could theoretically have both a direct impact on performance and, through the accumulation of skill over time, an indirect benefit”
Grit is thought to be an identifiable and measurable trait that can be used to predict success in the face of difficulty. At the conclusion of a recent longitudinal study of two groups of novice teachers assigned to elementary, middle, and high schools in low-income districts, grit was the one trait that demonstrated predictive validity for its association with student achievement (Robertson-Kraft and Duckworth, 2014).

**Teachers’ Sense of Self-Efficacy**

Wood and Bandura (1989) argue that people of high efficacy are more resourceful and exercise strategic flexibility that allows them to control their situation more effectively and constructively. Bandura (2001) argues that the demands of teaching require an individual to possess a strong commitment to the task and to be resilient in the face of adversity. In an interview of Woolfolk, Shaughnessy (2004) stated, “Teachers’ self-efficacy for teaching—their perceptions about their own capabilities to foster students’ learning and engagement—has proved to be an important teacher characteristic often correlated with positive student and teacher outcomes.” Belden and Plattner (1999) suggest that teachers with a high sense of self-efficacy significantly affected and/or improved student learning. Several other researchers have linked the level of teacher self-efficacy with student achievement (More and Esselman, 1992; Rose and Medway, 1981; Ross, 1992).
Dweck and Leggett (1988) found that self-efficacy plays a role in achievement goals. This supports Bandura’s position that self-efficacy plays a vital role in the self-regulation of motivation. Social cognitive theory further holds that

“Goals play an important role in the self-regulation of behavior. While environmental events and personal history help shape behavior, people are seen as more than just mechanical responders to deterministic force; by setting goals, people help to organize and guide their behavior, to sustain it over long periods of time even in the absence of external reinforcement, and to increase the likelihood that the desired outcomes will be attained” (Lent et. al., 1994, p. 84).

Previous academic research has found self-efficacy to be significant in the choice of tasks, persistence, use of learning strategies, and achievement (Klassen, 2002; Linnenbrink and Pintrich, 2003; Schunk and Pajares, 2009). Additionally, Bandura (1986) suggests that “people act on their judgements of what they can do, as well as on their beliefs about the likely effects of various actions” (p. 231). Wolters, Fan, and Daughtery (2013) suggest that “people identify specific reasons or causal attributions for explaining their academic outcomes, especially unexpected outcomes and failures” (p. 296).

Schunk (1984) believes that the level of one’s self-efficacy can be influenced by the learner’s past experiences, verbal persuasion (i.e., verbal feedback and encouragement or discouragement), vicarious experiences, and physiological cues and further notes that self-efficacy is an individual’s personal evaluation of whether
they are capable of succeeding at a particular task, that is, not just whether they are generally good at similar tasks, but that they have the specific skills necessary to complete that particular task successfully.

**Teaching in Urban School Districts**

Urban school districts face many of the same challenges as rural or suburban school districts. Most schools face a degree of poverty; however, urban schools also face a larger scale of issues that lead to persistently low student achievement, a lack of instructional coherence, inexperienced teaching staff, poorly functioning business operations, and low expectations of students (Kincheloe, 2010; MDRC, 2002).

Mair and Youngs (2009) claim that high quality teachers are less likely to teach at schools that have a large non-white population, students from a low socioeconomic class, and/or are in an urban setting. Conversely, students who are racial/ethnic minorities, limited English proficient, and/or from low-income families and students who attend urban and/or low performing schools are much more likely than other students to be taught by teachers of a much lower caliber (Lankford, Loeb, and Wyckoff, 2002). The National Center for Educational Evaluation and Regional Assistance (2013) reported that “schools serving low-income students struggle to attract effective teachers, particularly in science and math” (p. 1).

**Poverty**

Living in poverty has been associated with negative outcomes for both individuals and society. In terms of education, children who are born into poverty
are more likely to continue to live in poverty and less likely to complete high school, attend college and complete college (Ladd, 2012). According to the U.S. Census Bureau (2015), families with incomes in 2013 that were below the levels shown in Table 3 were considered to be “living below the poverty line.”

Table 3. U.S. Poverty Threshold Levels in 2013

<table>
<thead>
<tr>
<th>Size of Family</th>
<th>Poverty Thresholds (total annual income)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One person (under age 65)</td>
<td>$12,119</td>
</tr>
<tr>
<td>Family of Two (one adult, one child)</td>
<td>$16,057</td>
</tr>
<tr>
<td>Family of Three (one adult, two children)</td>
<td>$18,769</td>
</tr>
<tr>
<td>Family of Four</td>
<td>$23,624</td>
</tr>
</tbody>
</table>

Source: US Census Bureau (2015)

In the United States, 16% of the total population lives in poverty, while 18% of the total population in Texas lives in poverty. Additionally, the three poorest metropolitan areas in the country are in Texas: McAllen-Edinburg-Mission (poverty rate of 34.3%), Brownsville-Harlingen (poverty rate of 32.5%), and Laredo (poverty rate of 31.1%). The U.S. Census Bureau (2015) reported that the dominant race/ethnicity in Texas in 2013 was White, not Hispanic (44%); however, the race/ethnicity with the largest poverty rate in Texas was predominately Hispanic (52.2%).
Emotional Intelligence

Goleman (1998) defines emotional intelligence as the ability for recognizing one's own feelings and those of others, for motivating oneself, and for managing emotions well in oneself and in one's relationships. Additionally, Mehta (2015) suggests that:

“Teachers' personality contributes to overall effectiveness in classroom teaching. The teachers who are energetic, passionate and empathetic are able to bring the best in the students and are able to create a positive milieu in the classroom. A lot of people aspire to take teaching as a career hence it is imperative for a teacher to have insights into the emotional set up of the students. An emotionally intelligent teacher may be able to establish a better connect with the students (p. 62).

Kirk, Schutte, & Hine (2008) have combined Bandura's (1986) concept of self-efficacy and combined it with emotional intelligence theory and offer that emotional self-efficacy refers to peoples' judgment regarding their own capacity to process emotional information accurately and effectively. For teachers, emotional self-efficacy allows teachers to integrate and fit into the educational and social system while pursuing professional success (Meyer & Turner, 2002) and further enables them to nurture their students by helping them develop high levels of social and emotional competence (Yoon, 2002). Finally, Birol et al. (2009) established that “emotional intelligence levels of teachers are significant in effective teacher-student
communication, achieving a positive work atmosphere, academic success and in reducing stress and conflict (p. 2601).”

**Student Growth (Progress) versus Student Achievement**

Whether or not a student has made gains in learning can be evaluated through value-added modeling (VAM), which is statistical methodology that the district uses to assess student growth. For educational purposes, McCaffrey, Lockwood, Koretz, and Hamilton (2003) argue that VAM can estimate the effect of educational inputs on student outcomes, in particular student achievement as measured by standardized tests. The Houston Independent School District (ISD) determines that

“Value-added analysis measures a teacher’s or school’s impact on the academic growth of a group of students from year to year. It uses a student’s own academic performance across years, grades, and subjects as a basis for determining his/her academic growth. Because so much data is used, the growth measures are typically not related to a student’s socio-economic status or other personal characteristics that often confound more simplistic achievement-based measures” (Houston ISD, 2015, p. 1).

**Summary**

If there is a sense of urgency to close the student achievement gap in schools and improve student performance, there must be an effort to understand what drives or motivates a person to persevere. The theoretical framework explained in this literature review identifies a significant amount of support for a possible
relationship between a teacher’s sense of self-efficacy, grit, and the outcome, either positive or negative, on the students he or she teaches. Additionally, the review of the literature addresses the challenges of teaching in large urban schools and that teacher’s deal with issues such as poverty, low student achievement and inexperienced teachers. Finally, Birol et al. (2009) established that “emotional intelligence levels of teachers are significant in effective teacher-student communication, achieving a positive work atmosphere, academic success and in reducing stress and conflict (p. 2601).”
Chapter 3: Methodology

This chapter provides an overview of the research study. This was a correlational, quantitative study that explored the relationship between student performance and a teacher’s sense of self-efficacy and grit in a large urban school district. This chapter introduces the research questions, research methodology, sample population, informed consent, confidentiality, geographic location, instrumentation, data collection, data analysis, validity, reliability and procedures used in the study.

Research Questions

Three central questions drove this study:

1. What is the strength of the relationship, if any, between the factors of a teacher’s sense of self-efficacy (efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management) and student performance?

2. What is the strength of the relationship, if any, between a teacher’s grit and student performance?

3. What is the strength of the relationship, if any, between a teacher’s years of experience and the teacher’s sense of self-efficacy and grit?

Research Design

This nonexperimental correlational research study examined the relationship strength between the teacher’s sense of self-efficacy and grit and the academic achievement of that teacher’s students. There were two independent, rather,
predictor variables: the level of the teacher's sense of self-efficacy and the grit score. The dependent variable for this study was the Houston ISD teacher’s Educator Value-Added Assessment System (EVAAS) Growth Index measure, which was secondary data.

Lammers and Badia (2004) suggest that correlational research involves “collecting data or searching out records of a specified population and ascertaining the relationships among the variables of interest” (p. 15·3) and “involves neither random assignment nor manipulation of an experimental variable” (p. 15·3). In contrast, Neuman (2003) argues that nonexperimental research has a drawback in that there is little or no control over the predictor variables, so “the truth of the hypothesized relationship between $x$ and $y$ cannot be asserted with confidence” (p. 559).

The present study involved participants completing an online survey instrument consisting of a seven-item demographic questionnaire, the 12-item TSES (Tschannen-Moran & Woolfolk Hoy, 2001), and the 8-item Grit Scale (Short) (Duckworth and Quinn, 2009).

A correlation analysis was performed to determine if there is a relationship between a teacher’s sense of self-efficacy and grit and the academic performance of the teacher’s assigned students, as measured by the teacher’s Houston ISD EVAAS level. Houston ISD (2015) uses the EVAAS to identify the difference between the expected levels of growth of groups of students, based on past performance, and their actual levels of growth, thus taking into account students’ different starting
points. For the purpose of measuring student growth, the district uses the EVASS, which controls for the following factors:

- Students with missing data
- Measurement error on any given test score
- Assessments on different scales
- Test systems that change over time
- Mobility of students and teachers.

The measure is part of the teacher appraisal system because it holds “teachers accountable for what they can control while accounting for other factors” (HISD, 2015, p. 10). There is an expectation that teachers are held accountable for student growth as measured in Table 4.

Table 4. EVAAS Color Legend (Houston ISD, 2015)

<table>
<thead>
<tr>
<th>Value Added Color</th>
<th>District and School Growth Measure Compared to Growth</th>
<th>Index*</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 5</td>
<td>At least 2 standard errors above</td>
<td>2.00 or greater</td>
<td>Significant evidence that students exceeded the growth standard</td>
</tr>
<tr>
<td>Level 4</td>
<td>Between 1 and 2 standard errors above</td>
<td>Between 1.00 and 2.00</td>
<td>Moderate evidence that students exceeded the growth standard</td>
</tr>
<tr>
<td>Level 3</td>
<td>Between 1 standard error above and 1 standard error below</td>
<td>Between -1.00 and 1.00</td>
<td>Evidence that students met the growth standard</td>
</tr>
<tr>
<td>Level 2</td>
<td>Between 1 and 2 standard errors below</td>
<td>Between -2.00 and -1.00</td>
<td>Moderate evidence that students did not meet the growth standard</td>
</tr>
<tr>
<td>Level 1</td>
<td>More than 2 standard errors below</td>
<td>Less than -2.00</td>
<td>Significant evidence that students did not meet the growth standard</td>
</tr>
</tbody>
</table>

Note: When an index falls exactly on the boundary between two levels, the higher level is assigned.

*These rules for effectiveness levels and growth colors apply to all index values in the district, school, and teacher reports.
For a complete explanation of how the district computes growth, see *Technical Explanation of the Teacher Composite* (SAS EVAAS, 2015), Appendix E.

**Instruments Used in the Research Study**

Permission was granted (Appendix A) by Dr. Megan Tschannen-Moran to use the TSES, and permission was granted (Appendix C) by Dr. Angela Lee Duckworth to use the *8-Item Grit Scale*.

*Teachers’ Sense of Efficacy Scale (TSES)–Short Form*

The instrument to measure the teacher’s self-efficacy was the *TSES–Short Form* (sometimes referred to as the Ohio State Teacher Sense of Efficacy Scale) (Appendix B), developed by Tschannen-Moran and Hoy (2001). The survey is a 12-question instrument that uses a 9-point response scale with the following levels of influence corresponding to the points: 1 (nothing), 3 (very little), 5 (some influence), 7 (quite a bit), and 9 (a great deal). The teachers were encouraged to answer each question honestly. The survey measured three correlated factors: efficacy in student engagement (questions 2, 4, 7, and 11); efficacy in instructional practices (questions 5, 9, 10, and 12); and efficacy in classroom management (questions 1, 3, 6, and 8). The teacher’s self-efficacy score was determined by computing the unweighted means of the items that load on each factor.

Tschannen-Moran and Hoy (2001) conducted a factor analysis to test the instrument and report the reliabilities shown in Table 5.
Table 5. Means for TSES Subscales and Total Score for Long and Short Forms.

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>SD</th>
<th>alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSES</td>
<td>7.1</td>
<td>0.98</td>
<td>0.9</td>
</tr>
<tr>
<td>Engagement</td>
<td>7.2</td>
<td>1.2</td>
<td>0.81</td>
</tr>
<tr>
<td>Instruction</td>
<td>7.3</td>
<td>1.2</td>
<td>0.86</td>
</tr>
<tr>
<td>Management</td>
<td>6.7</td>
<td>1.2</td>
<td>0.86</td>
</tr>
</tbody>
</table>

8-Item Short Grit Scale

The instrument to measure the teacher’s grit was the 8-Item Short Grit Scale (Duckworth and Quinn, 2009; Duckworth, Peterson, Matthews, and Kelly, 2007) (Appendix D). The survey is an eight (8)-question instrument that uses a five (5)-point scale. Questions 2, 4, 7 and 8 use the following points: 5 (very much like me); 4 (mostly like me); 3 (somewhat like me); 2 (not much like me); and 1 (not like me at all). Questions 1, 3, 5 and 6 use the following points: 1 (very much like me); 2 (mostly like me); 3 (somewhat like me); 4 (not much like me); and 5 (not like me at all). To determine the teacher’s grit score, all the points were added and the sum was then divided by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).

Duckworth et. al. (2009) confirm that the 8-Item Short Grit Scale is an efficient measure of grit given its superior psychometric properties and comparable predictive validity and that the grit score measures the perseverance and passion for long-term goals, which has been shown to predict accomplishment in challenging
circumstances. Table 6, taken from Development and Validation of the Short Grit Scale (Grit-S) (2009), presents the consistency of the correlations.

Table 6. Internal Consistencies for the Grit-S, the Persistence of Effort Factor, and the Consistency of Interest Factor in Study1

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Grit-S</th>
<th>Persistence of Effort</th>
<th>Consistency of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Point 2008 class</td>
<td>1,218</td>
<td>0.73</td>
<td>0.60</td>
<td>0.73</td>
</tr>
<tr>
<td>West Point 2010 class</td>
<td>1,308</td>
<td>0.76</td>
<td>0.65</td>
<td>0.74</td>
</tr>
<tr>
<td>2005 Scripps National Spelling Bee</td>
<td>175</td>
<td>0.80</td>
<td>0.65</td>
<td>0.76</td>
</tr>
<tr>
<td>Ivy League undergraduates</td>
<td>139</td>
<td>0.83</td>
<td>0.78</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Population and Sample

The study took place in the largest school district in the State of Texas, which is the seventh largest school district in the United States. During the 2014–2015 school year, the district had more than 215,000 students enrolled in 283 schools, and over 29,000 employees, 11,645 of whom were teachers. During the 2015–2016 school year, there were 604 high school teachers assigned to one of the 19 Title I campuses that taught a content area associated with a STAAR EOC Assessment (English I, English II, Algebra I, biology, and U.S. history). Only those teachers were invited to take the TSES survey (Tschannen-Moran and Hoy, 2001) and the 8-item Grit Scale (Short) (Duckworth and Quinn, 2009).

The results of the spring 2015 administration of the STAAR EOC Assessments were used in the study. Although there were 49 Title I high schools in
the district, some campuses were excluded from the study for the reasons that follow. Nineteen campuses had a rigid student selection criterion (i.e., early college high schools, specialty magnet schools, etc.) and some had been designated as an Alternative Education Campus by the Texas Education Agency, and so did not participate in the study. Additionally, to prevent any ethical conflict, the five campuses that were under the supervision of the principal investigator did not participate in this study. In all, 19 Title I comprehensive high schools serving over 33,000 students were invited to participate.

**Ethical Considerations**

The researcher obtained permission for this study from the Institutional Review Board (IRB) for Human Subjects Research at The University of Texas at El Paso. The actual name of each school, teacher, and the students to whom the teacher was assigned remain confidential. Each teacher was identified by an alphanumeric tracking number indicating the school name and content area using the matrix shown in Table 7.

<table>
<thead>
<tr>
<th>School Code</th>
<th>Content</th>
<th>Teacher ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS1</td>
<td>E1 E2</td>
<td>BI AL USH</td>
</tr>
<tr>
<td>HS2</td>
<td>E1 E2</td>
<td>BI AL USH</td>
</tr>
<tr>
<td>HS3</td>
<td>E1 E2</td>
<td>BI AL USH</td>
</tr>
</tbody>
</table>

Table 7. Alphanumeric Tracking Number for Participants.

For example, English II teachers at one high school could have the following tracking codes: HS1E2001, HS1E2002, HS1E2003, etc.
Participation in this study was completely voluntary. The teachers were free to decline to participate or to end their participation at any time for any reason. Their decision of whether or not to participate in this study had no effect on their relationship with the Houston ISD. Respondents were not compensated in any way.

**Procedures in the Research Study**

Invitations to participate in the study were sent upon approval of the IRBs of the University of Texas at El Paso and the Houston ISD. Selected teachers received an invitation to participate in the survey (Appendix F) via e-mail. Surveys were emailed directly to each participant via Survey Monkey and were completed electronically.

Participation in this study involved taking an online survey and completing seven demographic questions along with the *TSES* (Tschannen-Moran and Hoy, 2001) and the *8-item Grit Scale (Short)* (Duckworth and Quinn, 2009). Informed consent was provided at the beginning of the survey and teachers had the opportunity to answer the yes/no question or opt out. Participation required approximately 10 minutes of each teacher’s time. The survey was open for 14 days.

All responses have been and will be confidential. Only the researcher involved in this study and those responsible for research oversight will have access to the information that was provided. Responses were numbered and the code linking the participant’s number and name was stored in a separate locked file cabinet. The confidential information will be destroyed immediately after the defense of this study.
Data Analysis

The data from both survey instruments and the teacher’s EVASS Performance Growth Level, which is a “conservative estimate of students’ academic progress (Houston ISD, 2015)” as measured by the State of Texas Assessments of Academic Readiness (STAAR) End of Course (EOC) Assessments will be linked to each teacher and entered into the Statistical Package for Social Sciences to run the appropriate statistical analysis. Descriptive statistics were used to explain the data collected from the survey instrument. Creswell (2009) offers that descriptive statistics can provide the researcher with data about the distribution of variables that include measures of variability, central tendency, and deviation from normality, spread of distributions, data stability, and sampling error.

The analysis of the data determined the strength of the relationship between the academic achievement of students and the teacher’s sense of self-efficacy and grit. A chi-square procedure to determine degree of association was performed as well as a Spearman’s rank correlation to quantify the relationships. The coefficient was interpreted and annotated as $\rho > 0$ if there was a positive relationship or $\rho < 0$ if there was a negative relationship. In addition, if $\rho = 0$, there was no relationship. Mathematically, the numerical value of $\rho$ ranges from -1.0 to +1.0, and the closer the coefficients are to +1.0 or -1.0, the greater the strength of the linear relationship. For example:
<table>
<thead>
<tr>
<th>Value of $\rho$</th>
<th>Strength of relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.0 to -0.5 or 1.0 to 0.5</td>
<td>Strong</td>
</tr>
<tr>
<td>-0.5 to -0.3 or 0.3 to 0.5</td>
<td>Moderate</td>
</tr>
<tr>
<td>-0.3 to -0.1 or 0.1 to 0.3</td>
<td>Weak</td>
</tr>
<tr>
<td>-0.1 to 0.1</td>
<td>None or very weak</td>
</tr>
</tbody>
</table>
Chapter 4: Data Analysis and Findings

This chapter includes a description of findings based on the surveys completed by the teachers and the correlational results of the analysis between participant responses to the *TSES* (Tschannen-Moran and Hoy, 2001), the *8-item Grit Scale (Short)* (Duckworth and Quinn, 2009) and the teacher’s Houston ISD EVAAS Performance Growth Index level for the 2014–2015 school year. The growth index level is the indicator that measures student growth and is linked to overall student performance. The research questions were the following:

1. What is the strength of the relationship, if any, between the factors of the teacher’s sense of efficacy (*efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management*) and student performance?
2. What is the strength of the relationship, if any, between the teacher’s grit and student performance?
3. What is the strength of the relationship, if any, between a teacher’s years of experience and the teacher’s sense of self-efficacy and grit?

Descriptive Statistics

The data were obtained from a survey that was sent via Survey Monkey to 604 current high school teachers assigned to the 19 Title I campuses that taught a content area associated with a STAAR EOC Assessment (English I, English II, Algebra I, biology, and U.S. history) and reported in Tables 8 through 11 and summarized graphically in Figures 2 through 9.
Demographic Data

Although 75 teachers (12.4%) responded, only 186 of the 604 actually had student data linked to the district’s EVAAS for the 2014–2015 school year. The response rate for the 186 teachers with applicable growth index scores was 10.2%. Demographic questions included in the study included the teacher’s gender, ethnicity, educational degree level, content taught, number of years as a classroom teacher, and whether or not the teacher was certified through an alternative certification program.

The total sample comprised 75 teachers, of whom 47 (63.5%) were female, 27 (36.5%) were male, and one did not answer. Thirty (41.7%) were White/Caucasian, twenty-five (34.7%) were Black or African American, nine (12.5%) were Hispanic or Latino, eight (11.1%) were Asian or Pacific Islander, five (6.9%) classified themselves as Other, one (1.4%) was American Indian or Alaskan Native, and three (4.2%) preferred not to answer. Thirty-seven (50%) had a bachelor’s degree, thirty-one (41.9%) had a master’s degree, six (8.1%) had a doctorate degree, and one chose not to answer. Twenty-eight (49.12%) were English teachers, thirteen (22.8%) taught biology, fourteen (14.04%) taught Algebra 1, eight (14.04%) taught U.S. history, and eighteen (24%) chose not to answer or did not teach a subject associated with an EOC assessment. Twenty-eight (37.8%) of the teachers who responded had 10 or more years in the classroom, fourteen (18.9%) had at least five years but less than 10 years in the classroom, eleven (14.9%) had at least three years but less than five years, and twenty-one (28.4%) had less than three years of classroom
experience. Forty-four (59.5%) of the teachers earned their teaching credentials through an alternative teacher certification program and thirty (40.5%) were certified through traditional means.

Generally, the demographics of the teachers with applicable growth index scores were similar to those of the overall group. The sample of teachers with applicable growth index scores comprised 19 teachers, of whom nine (47.4%) were female and ten (52.6%) were male. Nine (47.4%) were White/Caucasian, seven (36.8%) were Black or African American, two (10.5%) were Hispanic or Latino, and one (5.3%) was Asian or Pacific Islander. Nine (47.4%) had a bachelor's degree, eight (42.1%) had a master's degree, and two (10.5%) had a doctorate degree. Ten (52.6%) were English teachers, five (26.3%) taught U.S. history, three (15.8%) taught biology, and one (5.3%) taught Algebra 1. Seven (36.8%) teachers had 10 or more years of experience in the classroom, seven (36.8%) had between five years and 10 years, four (21.1%) had between three years and five years, and only one (5.3%) had less than three years of classroom experience. Twelve (63.2%) teachers earned their teaching credentials through an alternative teacher certification program, and seven (36.8%) were certified through traditional means.
# Table 8. Summary of Responses to Demographic Data

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total Respondents</th>
<th>Respondents w/Growth Index Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response %</td>
<td>Response #</td>
</tr>
<tr>
<td>Female</td>
<td>63.50%</td>
<td>47</td>
</tr>
<tr>
<td>Male</td>
<td>36.50%</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Response %</th>
<th>Response #</th>
<th>Response %</th>
<th>Response #</th>
</tr>
</thead>
<tbody>
<tr>
<td>White / Caucasian</td>
<td>41.70%</td>
<td>30</td>
<td>47.40%</td>
<td>9</td>
</tr>
<tr>
<td>Black or African American</td>
<td>34.70%</td>
<td>25</td>
<td>36.80%</td>
<td>7</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>12.50%</td>
<td>9</td>
<td>10.50%</td>
<td>2</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>11.10%</td>
<td>8</td>
<td>5.30%</td>
<td>1</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>6.90%</td>
<td>5</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>4.20%</td>
<td>3</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>American Indian or Alaskan Native</td>
<td>1.40%</td>
<td>1</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Degree Level</th>
<th>Response %</th>
<th>Response #</th>
<th>Response %</th>
<th>Response #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>50.00%</td>
<td>37</td>
<td>47.40%</td>
<td>9</td>
</tr>
<tr>
<td>Masters</td>
<td>41.90%</td>
<td>31</td>
<td>42.10%</td>
<td>8</td>
</tr>
<tr>
<td>Doctorate</td>
<td>8.10%</td>
<td>6</td>
<td>10.50%</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Content Taught</th>
<th>Response %</th>
<th>Response #</th>
<th>Response %</th>
<th>Response #</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>49.12%</td>
<td>28</td>
<td>52.60%</td>
<td>10</td>
</tr>
<tr>
<td>Biology</td>
<td>22.81%</td>
<td>13</td>
<td>15.80%</td>
<td>3</td>
</tr>
<tr>
<td>Algebra 1</td>
<td>14.04%</td>
<td>8</td>
<td>5.30%</td>
<td>1</td>
</tr>
<tr>
<td>U.S. History</td>
<td>14.04%</td>
<td>8</td>
<td>26.30%</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years in the Classroom</th>
<th>Response %</th>
<th>Response #</th>
<th>Response %</th>
<th>Response #</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 years or more</td>
<td>37.8%</td>
<td>28</td>
<td>36.80%</td>
<td>7</td>
</tr>
<tr>
<td>At least 5 years but less than 10 years</td>
<td>18.9%</td>
<td>14</td>
<td>36.80%</td>
<td>7</td>
</tr>
<tr>
<td>At least 3 years but less than 5 years</td>
<td>14.9%</td>
<td>11</td>
<td>21.10%</td>
<td>4</td>
</tr>
<tr>
<td>At least 1 year but less than 3 years</td>
<td>28.4%</td>
<td>21</td>
<td>5.30%</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alternative Teacher Certification Program</th>
<th>Response %</th>
<th>Response #</th>
<th>Response %</th>
<th>Response #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>59.5%</td>
<td>44</td>
<td>63.20%</td>
<td>12</td>
</tr>
<tr>
<td>No</td>
<td>40.5%</td>
<td>30</td>
<td>36.80%</td>
<td>7</td>
</tr>
</tbody>
</table>
Figure 2. Respondents by Gender

Figure 3. Respondents' Ethnicity
Figure 4. Respondents' Educational Level

Figure 5. Content Taught by Respondents
Teacher’s Sense of Self-Efficacy Results

The instrument to measure the teacher’s self-efficacy was the TSES–Short Form (Appendix B), developed by Tschannen-Moran and Hoy (2001). The survey was a 12-question instrument that uses a 9-point response scale with the following levels of influence corresponding to the points: 1 (nothing), 3 (very little), 5 (some influence), 7 (quite a bit), and 9 (a great deal). The survey measured three correlated factors: efficacy in student engagement (questions 2, 4, 7, and 11); efficacy in instructional practices (questions 5, 9, 10, and 12); and efficacy in classroom management (questions 1, 3, 6, and 8). To determine the teacher’s self-efficacy score, the unweighted means of the items that load for each factor were computed. In the study reported by Tschannen-Moran & Woolfolk Hoy (2001), the
mean score of the short form TSES was 7.1, with a standard deviation of .98 and alpha of .90; for the correlated factor of efficacy in student engagement, the mean score was 7.2, with a standard deviation of 1.2 and alpha of .81; for the correlated factor of efficacy in classroom management, the mean score was 6.7, with a standard deviation of 1.2 and alpha of .86; for the correlated factor of efficacy in instructional strategies, the mean score was 7.3, with a standard deviation of 1.2 and alpha of .86.

The means from the study by Tschannen-Moran and Hoy (2001) compared to those from the total research sample and sample of teachers with applicable growth index scales are depicted in Figure 7.

Figure 7. Mean Comparisons

\[ \text{Figure 7. Mean Comparisons} \]

![Figure 7. Mean Comparisons](image)

Efficacy in Student Engagement

The range in the responses for efficacy in student engagement was 4.25 to 9.00. A majority of the teachers (63.2%) scored below the mean of 7.1 reported by Tschannen-Moran and Hoy (2001), and only 36.8% scored above the mean. Taylor
and Parsons (2011) argue that there is abundant research to support the assumption that actively engaged students are more likely to experience higher academic achievement and less likely to drop out of school.

Table 9. Respondents’ Results on TSES for Efficacy in Student Engagement

<table>
<thead>
<tr>
<th>Teacher</th>
<th>How much can you do to motivate students who show low interest in school work?</th>
<th>How much can you do to help your student’s value learning?</th>
<th>How much can you do to get students to believe they can do well in school work?</th>
<th>How much can you assist families in helping their children do well in school?</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>8</td>
<td>7.00</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>7.50</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>7.75</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6.75</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5.75</td>
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<tr>
<td>6</td>
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<td>9</td>
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<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>8.75</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>4.25</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
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<tr>
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</tr>
<tr>
<td>14</td>
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</tr>
<tr>
<td>17</td>
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<td>8</td>
<td>5</td>
<td>5.75</td>
</tr>
<tr>
<td>18</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>4.75</td>
</tr>
<tr>
<td>19</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>4.50</td>
</tr>
</tbody>
</table>
Efficacy in Classroom Management

The range in responses for efficacy in classroom management was 4.0 to 9.0. A majority of the teachers (73.7%) scored above the mean of 6.7 reported by Tschannen-Moran and Hoy (2001), and only 26.3% scored below the mean.

Table 10. Respondents’ Results on TSES for Efficacy in Classroom Management

<table>
<thead>
<tr>
<th>Teacher</th>
<th>How much can you do to control disruptive behavior in the classroom?</th>
<th>How much can you do to calm a student who is disruptive or noisy?</th>
<th>How much can you do to get children to follow classroom rules?</th>
<th>How well can you establish a classroom management system with each group of students?</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>6.50</td>
</tr>
<tr>
<td>2</td>
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<td>9</td>
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<td>4</td>
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<td>8</td>
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<tr>
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<td>7</td>
<td>6</td>
<td>6.25</td>
</tr>
<tr>
<td>15</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>9</td>
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<tr>
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<td>8</td>
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<tr>
<td>19</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4.00</td>
</tr>
</tbody>
</table>
**Efficacy in Instructional Strategies**

The range in responses for efficacy in instructional strategies was 6.25 to 9.0. A majority of the teachers (73.7%) scored above the mean of 7.3 reported by Tschannen-Moran and Hoy (2001), and only 26.3% scored below the mean.

Table 11. Respondents’ Results on TSES for Efficacy in Instructional Strategies

<table>
<thead>
<tr>
<th>Teacher</th>
<th>To what extent can you craft good questions for your students?</th>
<th>To what extent can you use a variety of assessment strategies?</th>
<th>To what extent can you provide an alternative explanation or example when students are confused?</th>
<th>How well can you implement alternative teaching strategies in your classroom?</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>6.75</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
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<td>9</td>
<td>8</td>
<td>8.75</td>
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<tr>
<td>3</td>
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<td>9</td>
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<td>7</td>
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<td>7</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>7.25</td>
</tr>
</tbody>
</table>
Teacher’s Sense of Self-Efficacy Scale

In the study reported by Tschannen-Moran & Woolfolk Hoy (2001), the total mean score for the short form TSES was 7.1. The range in teacher responses for this study was 5.25 to 9.0. Just over half the teachers (52.6%) scored above the mean of 7.2 reported by Tschannen-Moran and Hoy (2001), and 47.4% scored below the mean.

Table 12. Respondents’ Results on TSES with EVASS Performance Level

<table>
<thead>
<tr>
<th>TSES Average</th>
<th>TSES Rank</th>
<th>2014–2015 EVAAS Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>6.75</td>
<td></td>
</tr>
<tr>
<td>Teacher 2</td>
<td>8.17</td>
<td></td>
</tr>
<tr>
<td>Teacher 3</td>
<td>8.50</td>
<td></td>
</tr>
<tr>
<td>Teacher 4</td>
<td>6.83</td>
<td></td>
</tr>
<tr>
<td>Teacher 5</td>
<td>6.83</td>
<td></td>
</tr>
<tr>
<td>Teacher 6</td>
<td>8.67</td>
<td></td>
</tr>
<tr>
<td>Teacher 7</td>
<td>8.67</td>
<td></td>
</tr>
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<td>Teacher 8</td>
<td>6.67</td>
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</tr>
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<td>Teacher 9</td>
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<td>Teacher 10</td>
<td>6.33</td>
<td></td>
</tr>
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<td>Teacher 11</td>
<td>6.75</td>
<td></td>
</tr>
<tr>
<td>Teacher 12</td>
<td>7.83</td>
<td></td>
</tr>
<tr>
<td>Teacher 13</td>
<td>8.67</td>
<td></td>
</tr>
<tr>
<td>Teacher 14</td>
<td>6.58</td>
<td></td>
</tr>
<tr>
<td>Teacher 15</td>
<td>8.58</td>
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<td>Teacher 17</td>
<td>7.33</td>
<td></td>
</tr>
<tr>
<td>Teacher 18</td>
<td>5.33</td>
<td></td>
</tr>
<tr>
<td>Teacher 19</td>
<td>5.25</td>
<td></td>
</tr>
</tbody>
</table>
Grit Results

The instrument to measure the teacher’s grit was the 8-Item Short Grit Scale (Duckworth and Quinn, 2009; Duckworth, Peterson, Matthews, and Kelly, 2007) (Appendix D). The survey is an eight (8)-question instrument that uses a five (5)-point scale. For questions 2, 4, 7 and 8, the point range is assigned the following points: 5 (very much like me); 4 (mostly like me); 3 (somewhat like me); 2 (not much like me); and 1 (not like me at all). For questions 1, 3, 5 and 6 the point range is assigned the following points: 1 (very much like me); 2 (mostly like me); 3 (somewhat like me); 4 (not much like me); and 5 (not like me at all). The teacher’s grit score is determined by adding all the points and dividing the sum by 8. The maximum score on this scale is 5 (extremely gritty) and the lowest score on this scale is 1 (not at all gritty).

Table 13. Summary Statistics for Grit Scale Across Studies (Duckworth, et. al., 2007)

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1: Adults aged 25 and older</td>
<td>1,545</td>
<td>3.65</td>
<td>0.73</td>
</tr>
<tr>
<td>Study 2: Adults aged 25 and older</td>
<td>690</td>
<td>3.41</td>
<td>0.67</td>
</tr>
<tr>
<td>Study 3: Ivy League undergraduates</td>
<td>138</td>
<td>3.46</td>
<td>0.61</td>
</tr>
<tr>
<td>Study 4: West Point Cadets in Class of 2008</td>
<td>1,218</td>
<td>3.78</td>
<td>0.53</td>
</tr>
<tr>
<td>Study 5: West Point Cadets in Class of 2010</td>
<td>1,308</td>
<td>3.75</td>
<td>0.54</td>
</tr>
<tr>
<td>Study 6: 2005 Scripps National Spelling Bee finalists</td>
<td>175</td>
<td>3.50</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Table 14. Summary Statistics for Teacher Population

<table>
<thead>
<tr>
<th>Population</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample Population</td>
<td>75</td>
<td>3.90</td>
<td>0.60</td>
</tr>
<tr>
<td>Population with Growth Index Score</td>
<td>19</td>
<td>2.78</td>
<td>0.36</td>
</tr>
</tbody>
</table>
Table 15. Teachers with Growth Index Score – Grit Score

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Grit Score</th>
<th>Grit Rank</th>
<th>2014–2015 EVAAS Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>4.88</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>4.25</td>
<td>8.5</td>
<td>5</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>4.5</td>
<td>11.5</td>
<td>2</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>3.63</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>4.5</td>
<td>11.5</td>
<td>1</td>
</tr>
<tr>
<td>Teacher 6</td>
<td>4.75</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Teacher 7</td>
<td>4</td>
<td>6.5</td>
<td>2</td>
</tr>
<tr>
<td>Teacher 8</td>
<td>5</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Teacher 9</td>
<td>4</td>
<td>6.5</td>
<td>2</td>
</tr>
<tr>
<td>Teacher 10</td>
<td>2.63</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Teacher 11</td>
<td>4.25</td>
<td>8.5</td>
<td>4</td>
</tr>
<tr>
<td>Teacher 12</td>
<td>4.75</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Teacher 13</td>
<td>4.75</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Teacher 14</td>
<td>4.5</td>
<td>11.5</td>
<td>5</td>
</tr>
<tr>
<td>Teacher 15</td>
<td>4.63</td>
<td>14</td>
<td>3</td>
</tr>
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<td>Teacher 16</td>
<td>3.5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Teacher 17</td>
<td>2.88</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Teacher 18</td>
<td>4.5</td>
<td>11.5</td>
<td>4</td>
</tr>
<tr>
<td>Teacher 19</td>
<td>3.25</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

The range in responses for grit was 2.63 to 5.0. Although the mean grit score for the sample population was 4.20, twelve (63.2%) teachers scored above the mean.

**Research Questions**

(1) What is the strength of the relationship, if any, between the factors of a teacher’s sense of efficacy (*efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management*) and student performance?
(2) What is the strength of the relationship, if any, between a teacher’s grit and student performance?

(3) What is the strength of the relationship, if any, between a teacher’s years of experience and the teacher’s sense of self-efficacy and grit?

Because of the limited response rate and sample size, Fisher’s exact test was used to detect any statistical significant in the relationship between the TSES score and the teacher’s growth index. Fisher’s exact test was also used to determine the relationship between the teacher’s grit score and growth index.

Table 16. Fisher’s Exact Test for Teacher’s Sense of Self-Efficacy Scale

<table>
<thead>
<tr>
<th>TSES Avg</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
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<tbody>
<tr>
<td>5.25</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
</tr>
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<td>6.58</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>1</td>
</tr>
<tr>
<td>6.67</td>
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<td>0</td>
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<td>1</td>
</tr>
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<tr>
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</tr>
<tr>
<td>8.58</td>
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<td>1</td>
<td>0</td>
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<tr>
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<td>0</td>
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<tr>
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<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>19</td>
</tr>
</tbody>
</table>

At a 5% level of significance, there was no statistical significance in the relationship between the teacher’s sense of self-efficacy score and the EVAAS growth index measure ($\chi^2_{52} = 56.8$ p-value= 0.675).
Additionally, at a 5% level of significance, there was no statistical significance in the relationship between the teacher’s grit score and the EVAAS growth index measure ($\chi^2_{40} = 50.6$ p-value= 0.067).

Table 17. Fisher’s Exact Test for Teacher’s Grit Score

<table>
<thead>
<tr>
<th>Grit Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.63</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3.25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3.50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>3.63</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4.00</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4.25</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4.50</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4.63</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4.75</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4.88</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5.00</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>4</strong></td>
<td><strong>4</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>
Table 18. Statistical Relationship Chart

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Efficacy in Student Engagement</th>
<th>Instructional Strategies</th>
<th>Classroom Management</th>
<th>Total Self Efficacy Score</th>
<th>Total Grit Score</th>
<th>Student growth index for teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy in Student Engagement</td>
<td>1</td>
<td>.437**</td>
<td>.678**</td>
<td>.860**</td>
<td>.305**</td>
<td>-0.112</td>
</tr>
<tr>
<td>Efficacy in Instructional Strategies</td>
<td>.437**</td>
<td>1</td>
<td>.317**</td>
<td>.731**</td>
<td>.319**</td>
<td>-0.095</td>
</tr>
<tr>
<td>Efficacy in Classroom Management</td>
<td>.678**</td>
<td>.317**</td>
<td>1</td>
<td>.802**</td>
<td>.326**</td>
<td>-0.278</td>
</tr>
<tr>
<td>Self Efficacy Total Score</td>
<td>.860**</td>
<td>.731**</td>
<td>.802**</td>
<td>1</td>
<td>.393**</td>
<td>-0.167</td>
</tr>
<tr>
<td>Grit total score</td>
<td>.305**</td>
<td>.319**</td>
<td>.326**</td>
<td>.393**</td>
<td>1</td>
<td>0.071</td>
</tr>
<tr>
<td>Student growth index for teachers</td>
<td>-0.112</td>
<td>-0.095</td>
<td>-0.278</td>
<td>-0.167</td>
<td>0.071</td>
<td>1</td>
</tr>
</tbody>
</table>

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

There were no statistically significant relationships between any of the three measures and the number of years teaching. EVASS vs years of teaching yielded $\chi^2_{12} = 15.9$ and Fisher’s exact test p-value of 0.328. These results were similar to those for the years of teaching vs TSES ($\chi^2_{39} = 50.6$, p-value= 0.061) and the grit score ($\chi^2_{30} = 26.1$, p-value= 0.942).

Additional analyses to corroborate data for these 19 teachers using the Spearman’s rank correlation coefficient yielded similar results. Of interest were the obtained results with the total self-efficacy scale and subscales. Every one of these produced a negative non-significant association with the EVAAS scores but the Grit scale yielded a positive one.
Summary

The purpose of this study was to determine the relationship between high school teachers’ sense of self-efficacy and grit and the academic achievement of their students as measured by the STAAR EOC Assessments through the Houston ISD’s EVAAS Growth Index measure.

The study took place in the Houston ISD, which is the largest school district in the State of Texas and the seventh largest school district in the United States. The data were obtained from a survey that was sent via Survey Monkey to 604 high school teachers assigned to the 19 Title I campuses in the Houston ISD and who taught a content area associated with a STAAR EOC Assessment (English I, English II, Algebra I, biology, and U.S. history). However, only 186 of the 604 teachers surveyed actually had student data linked to the district’s EVAAS Performance Index Level for the 2014–2015 school year.

Although the relationships between the teacher’s sense of self-efficacy, grit, or the number of years teaching and student achievement were not statistically significant, the survey data revealed that for 10 of the 19 teachers with grit scores over 3.25, evidence indicated that their students met growth expectations according to the value-added growth index chart for the school district. Therefore, 53% of the gritty teachers had a positive impact on student achievement. Oddly enough, only five teachers (26.3%) who had a positive impact on student achievement scored above the mean of 7.1 on the TSES survey (Tschannen-Moran and Hoy, 2001).
Chapter 5: Conclusions and Recommendations

Introduction

Teachers have the daunting task of educating other people’s children, and in most cases are held accountable for their students’ learning, achievement, and growth. To reestablish the basics of teaching and learning, it is critical that school districts recruit and select teachers of high quality and improve the effectiveness of the existing teaching staff.

The value of having effective teachers in every classroom cannot be understated. However, determining the characteristics of effective teachers may have more to do with identifying who they are than what they do. Nevertheless, it is believed that there is no way to increase students’ academic performance with low quality teachers.

Summary of Study

There is a limited body of knowledge that identifies a teacher’s innate personality characteristics such as grit and a sense of self-efficacy and the impact of these characteristics on student achievement. Duckworth (2012) defines grit as “sticking with things over the very long term until you master them” (para. 2) and Bandura (1997) believes that self-efficacy is the “belief in one’s capabilities to organize and execute the sources of action required to manage prospective situations” (p. 3).

The purpose of this quantitative study was to determine the relationship between high school teachers’ sense of self-efficacy and grit and the academic
achievement of their students as measured by the STAAR EOC Assessments through the Houston ISD’s EVAAS Growth Index Level.

The study took place in the school district that is the largest in the State of Texas and the seventh largest in the United States. During the 2014–2015 school year, the district had more than 215,000 students enrolled in 283 schools, and over 29,000 employees, 11,645 of whom were teachers. During the 2015–2016 school year, there were 604 high school teachers assigned to one of 19 Title I campuses who taught a content area associated with a STAAR EOC Assessment (English I, English II, Algebra I, biology, and U.S. history). Only those teachers were invited to take the TSES survey (Tschannen-Moran and Hoy, 2001) and the 8-item Grit Scale (Short) (Duckworth and Quinn, 2009).

Only 186 of the 604 teachers surveyed actually had student data linked to the district’s EVAAS for the 2014–2015 school year. Seventy-five (10.2%) of the 186 teachers with an applicable growth index score responded.

The study involved participants completing an online survey instrument consisting of a seven-item demographic questionnaire, the 12-item TSES (Tschannen-Moran & Woolfolk Hoy, 2001), and the 8-item Grit Scale (Short) (Duckworth and Quinn, 2009). Demographic questions included the teacher’s gender, ethnicity, educational degree level, content taught, number of years as a classroom teacher, and whether or not the teacher was certified through an alternative certification program.
Research Questions and Results

There were three central questions that drove this study:

(1) What is the strength of the relationship, if any, between the factors of a teacher’s sense of self-efficacy (efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management) and student performance?

(2) What is the strength of the relationship, if any, between a teacher’s grit and student performance?

(3) What is the strength of the relationship, if any, between a teacher’s years of experience and the teacher’s sense of self-efficacy and grit?

The analysis of the data determined the strength of the relationship between the teacher’s self-efficacy and grit and the academic achievement of students. Because of the limited response rate and sample size, Fisher’s exact test was used to detect any statistical significance in the relationship. At the conclusion of the study, it was determined that the relationships between student achievement and a teacher’s sense of self-efficacy, grit, and number of years teaching were not statistically significant.

Although the relationships analyzed were not statistically significant, the survey data revealed that for 10 of the 19 teachers with grit scores over 3.25, their students met growth expectations according to the value-added growth index chart for the school district. Therefore, 53% of the gritty teachers had a positive impact on student achievement. Oddly enough, only five teachers (26.3%) who had a positive
impact on student achievement scored above the mean of 7.1 on the TSES survey (Tschannen-Moran and Hoy, 2001).

It is important to understand that although this study did not garner a high response rate, the teachers who did respond offered valid beliefs as to how they think about themselves as teachers. Additionally, the teachers who responded serve an extremely challenging student population in a large urban district; therefore, their views should not be discounted. It can be argued that a low response rate may result in biased results. On the other hand, Cook, Heath, and Thompson (2000) argue that response representativeness is more important than response rate in survey research.

**Discussion of Findings and Implications**

Determining the characteristics of effective teachers may have more to do with identifying *who* they are than *what* they do. There is something to be said about the will of a person—the will to achieve, the will to be the best, and the will to persevere despite obstacles (or people) in their path. Duffrin (2006) reports that only 10% or less of student achievement gains could be attributed to the teacher’s credentials such as education level, certification, and years of experience. The premise of self-efficacy and grit is a person’s “will” or “desire.” Moreover, Duckworth et. al. (2007) suggest that there is a large body of research about the importance of intellectual talent to achievement; however, there is limited research on “how personality traits and intelligence are related and about their relative contributions to performance” (p. 1089).
Whitaker (2002) declares that there are two ways to improve a school: hire better teachers or improve the current teachers. In 2015, The New Teacher Project (TNTP) completed a two-year study on improving teacher performance by looking at professional development. TNTP estimated that teachers miss 10% of the school year to participate in professional development and districts spend approximately $18,000 per teacher per year for professional development (TNTP, 2015). Furthermore, TNTP (2015) suggests that teacher workshops and training cost taxpayers billions of dollars each year, yet there is little evidence that teachers improve substantially from year to year. Instead of spending such funds on professional development for teachers who have already been hired, perhaps it would be best to create a rigid screening process to enable the selection of individuals who will be effective teachers before they enter the field of education.

Darling-Hammond (2006) stated that “one of the most damaging myths prevailing in American education is the notion that good teachers are born and not made” (p. xi). On the other hand, if there is a need to improve the education system in the United States, there must be a conscientious effort to identify, recruit, select, and develop quality people to become teachers—with an emphasis on “quality people.” Futernick (2010) argues that improving teacher quality is the single most important thing policy makers and education officials can do to close the achievement gap. Barber and Mourshed (2007) identify the top 25 school systems in the world and find three commonalities among high-performing school systems:
1. They encourage the right people to become teachers (the quality of an education system cannot exceed the quality of its teachers);

2. They develop those people into effective instructors (the only way to improve outcomes is to improve instruction); and,

3. They put in place systems and targeted support to ensure that every child is able to benefit from excellent instruction (the only way for the system to reach the highest performance is to raise the standard of every student) (p. 15).

Understanding self-efficacy and grit could have an impact on teacher recruitment and selection, the retention of future educators, and professional development, especially in public schools. In order to improve the effectiveness of the teaching force, there must be a conscience effort to recruit individuals with certain adaptive personality traits (Rockoff et. al., 2008). Separate from skills and knowledge, talent is the intangible factor that is usually thought of as “the art of teaching” and which “distinguishes outstanding performance from average performance” (Gordon, 2004, para. 5).

So how do you improve the current teachers already in the classroom? According to the TNTP (2015) study, school systems must do three things:

1. Redefine what it means to help teachers improve

2. Reevaluate existing professional learning

3. Reinvent how we support effective teaching at scale (p. 3)
As mentioned previously, determining the characteristics of effective teachers may have more to do with *who* they are rather than *what* they do.

Finally, more research on emotional intelligence and its relationship with student achievement and performance should be explored. Birol et al. (2009) established that “emotional intelligence levels of teachers are significant in effective teacher-student communication, achieving a positive work atmosphere, academic success and in reducing stress and conflict (p. 2601).”

**Limitations of the Study**

There were several limitations to this study, most of which relate to the timing of the survey and the sample size. Although the Houston ISD IRB approved the study, the principal investigator’s position as a district employee was not used to influence campus principals to encourage their teachers to participate in the survey.

The initial survey was sent out electronically via Survey Monkey almost immediately after it cleared the IRB process. Because the school year had been underway for at least eight months, the teachers were invited to take the survey three weeks before the state test for Algebra 1, biology, and U.S. history. There is a good possibility that the response rate of the English teachers (49.12%) was the highest because the English EOC exam had been completed two weeks before the survey was sent out. Additionally, because of the system the district uses to calculate the growth index score, each teacher was beginning the student linkage process during the period of the survey. The linkage process is critical because
teachers must verify their student rosters for accuracy and the district ultimately uses that information to calculate their EVAAS and Comparative Growth reports. In addition, with one month left in the school year, administrators, teachers, and students were busy with high school graduation plans, prom, and other year-end activities.

The most significant limitation of this study was the number of surveys that were collected, \( n = 75 \) total, of which \( n = 19 \) had a growth index score. Because of the limited sample size, it is difficult to defend the position that a teacher’s sense of high self-efficacy and grit are elements of an effective teacher. However, the opinions of the teachers who did respond should not be discounted and therefore merit careful consideration, especially when conducting future research.

Another limitation regarding the sample was that the response rate did not reflect the student population. Mair and Youngs (2009) claim that high quality teachers are less likely to teach at schools that have a large non-white population, have students from a low socioeconomic class, and/or an urban setting. Conversely, students who are racial/ethnic minorities, limited English proficient, and/or from low-income families and students who attend urban and/or low performing schools are much more likely than other students to be taught by teachers of a much lower caliber (Lankford, Loeb, and Wyckoff, 2002). The ethnicity of the student population compared to that of the teacher sample population is shown in Table 18.
Table 19. Teacher and Student Ethnicity Comparisons.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Total Response %</th>
<th>Teachers w/Growth Index</th>
<th>Students by Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian or Alaskan Native</td>
<td>1.40%</td>
<td>0.00%</td>
<td>2.00%</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>11.10%</td>
<td>5.30%</td>
<td>3.82%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>34.70%</td>
<td>36.80%</td>
<td>24.46%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>12.50%</td>
<td>10.50%</td>
<td>62.09%</td>
</tr>
<tr>
<td>White / Caucasian</td>
<td>41.70%</td>
<td>47.40%</td>
<td>8.45%</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>4.20%</td>
<td>0.00%</td>
<td>n/a</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>6.90%</td>
<td>0.00%</td>
<td>0.98%</td>
</tr>
</tbody>
</table>

**Recommendations for Conducting this Study Again**

After reviewing the discussion and limitations of this study, it is clear that with key modifications of the design, methodology, and most importantly, timing, I believe there could have been a significant difference in the results. Rather than using an online survey, it would have been more appropriate to conduct face-to-face surveys at the beginning of the school year during the week of teacher in-service sessions.

Completing a survey with a pen/pencil in a group setting with one’s peers may influence the way each participant responds to each question as opposed to taking a survey alone on a computer. For example, part of the instructions when completing the Short Grit Scale state:

*For the most accurate score, when responding, think of how you compare to most people – not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!*
Likewise, the TSES survey (Tschannen-Moran and Hoy, 2001) requests that the teacher “respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.” The self-perception of a teacher’s current ability at the beginning of the school year may be different from that at the end of the year.

Not all school districts use a value-added growth index measure to evaluate teachers on student achievement; therefore, measuring teacher effectiveness can be challenging. This study did not produce the expected results; however, it served as a reminder that there is still much to learn about what makes an effective teacher.
References


Baines, L. (2010). The Teachers We Need vs. The Teachers We Have: Realities and the Possibilities. Maryland: Rowman& Littlefield.


performance management in the secondary schools of the TRNC. *Procedia Social and Behavioral Sciences, 1*(1), 2600-2605


doi:10.1023/A:1009017532121


March 4, 2015

Dino,

You have my permission to use the Teacher Sense of Efficacy Scale (formerly called the Ohio State Teacher Sense of Efficacy Scale), which I developed with Anita Woolfolk Hoy, in your research. You can find a copy of the measure and scoring directions on my web site at http://wmpeople.wm.edu/site/page/mxtsch. Please use the following as the proper citation:


I will also attach directions you can follow to access my password protected web site, where you can find the supporting references for this measure as well as other articles I have written on this and related topics.

I would love to receive a brief summary of your results.

All the best,

Megan Tschannen-Moran
The College of William and Mary
School of Education
### Teacher Beliefs

**Directions:** Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) “None at all” to (9) “A Great Deal” as each represents a degree on the continuum. Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

<table>
<thead>
<tr>
<th>Question</th>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite A Bit</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much can you do to control disruptive behavior in the classroom?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How much can you do to motivate students who show low interest in school work?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How much can you do to calm a student who is disruptive or noisy?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How much can you do to help your students value learning?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. To what extent can you craft good questions for your students?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. How much can you do to get children to follow classroom rules?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. How much can you do to get students to believe they can do well in school work?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. How well can you establish a classroom management system with each group of students?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. To what extent can you use a variety of assessment strategies?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. To what extent can you provide an alternative explanation or example when students are confused?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. How much can you assist families in helping their children do well in school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. How well can you implement alternative teaching strategies in your classroom?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Male</th>
<th>Female</th>
<th>African American</th>
<th>White, Non-Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. What is your gender?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. What is your racial identity?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. What subject matter do you teach? (as many as apply)</td>
<td>All (Elementary/ Self-contained)</td>
<td>Math</td>
<td>Science</td>
<td>Language Arts</td>
<td>Social Studies</td>
</tr>
<tr>
<td>16. What level do you teach?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. What is the context of your school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. What is the approximate proportion of students who receive free and reduced lunches at your school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>1 2 3 4 5 6 7 8 9</th>
<th>1 2 3 4 5 6 7 8 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. What grade level(s) do you teach?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. How many years have you taught?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Subject: Re: Request for Permission
From: Duckworth Lab (duckworthlab@gmail.com)
To: dcronaldo_99@yahoo.com
Date: Saturday, March 7, 2015 11:40 AM

Hi Dino,

Thank you for your email regarding the use of Grit Scale. This scale is copyrighted by Dr. Duckworth and co-authors. As detailed here, [https://sites.sas.upenn.edu/duckworth/pages/research](https://sites.sas.upenn.edu/duckworth/pages/research), the scale can only be used for educational or research purposes. The scale cannot be used for any commercial purpose, nor can it be reproduced in any publication. You are free to use it in your research as long as you follow these guidelines.

Best,

Duckworth Lab

On Sat, Mar 7, 2015 at 11:46 AM, Dino Coronado <dcronaldo_99@yahoo.com> wrote:
Dear Dr. Duckworth,

My name is Dino M. Coronado and I am a Doctoral Student at the University of Texas at El Paso. I am working on my Capstone Project, which are chapters 1 through 3 of my dissertation. I am requesting your permission to use the eight-question Short Grit Scale as one of my survey instruments.

I was a successful high school principal for nearly six years and recently began a new role as a School Support Officer with the Houston Independent School District and now responsible for eight high school campuses—five are low performing schools. My research will focus on teacher qualities in an urban setting and its relationship to student achievement.

If you have any questions, please feel free to contact me at any time.

Thank you very much for your support.

Dino M. Coronado
915.526.8459
dcronaldo_99@yahoo.com
Appendix D

Short Grit Scale

Directions for taking the Grit Scale: Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people -- not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!

1. New ideas and projects sometimes distract me from previous ones.*
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

2. Setbacks don’t discourage me.
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

3. I have been obsessed with a certain idea or project for a short time but later lost interest.*
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

4. I am a hard worker.
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

5. I often set a goal but later choose to pursue a different one.*
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

6. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
   - Very much like me
   - Mostly like me
   - Somewhat like me

---

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Appendix E

Technical Explanation of the Teacher Composite

Introduction
This document captures how the policy decisions by the Houston Independent School District (HISD) are implemented in the calculation of composites for teachers who instruct students in grades/subjects or courses assessed with the STAAR 3-8, Norm-referenced test (NRT), and STAAR EOC assessments.

The key policy decisions are:

- The teacher composite includes all subjects and grades that have value-added measures in the current year.
- The teacher composite weights equally each subject/grade/year (for STAAR 3-8/NRT) and each subject/year (for STAAR EOC).
- The teacher and school composites use the most appropriate and robust statistical approach possible in the calculation of the value-added estimate and associated standard error. As a result, these calculations are more sophisticated than the simple averaging of each separate STAAR 3-8/NRT subject/grade and STAAR EOC subject.

In HISD, each teacher who receives a value-added report for at least one grade/subject or course in the current year also receives a value-added report for a composite. The district uses this composite measure in ASPIRE as it represents the most appropriate and robust measure of progress for all of a teacher’s students over the course of a school year.

The examples below illustrate the calculation of the teacher composite for three types of teachers:

- An educator who taught only grades/subjects assessed with STAAR assessments in Math and Reading in Grades 4-8; the gain model (also referred to as the multivariate response model, or MRM) is used to determine value-added measures for these grades and subjects
- An educator who taught only courses assessed with STAAR EOC, the NRT, STAAR Science in Grades 5 and 8, STAAR Social Studies in Grade 8, and/or STAAR Reading and Math in Grade 3; the predictive model (also referred to as the univariate response model, or URM) is used to determine value-added measures for these grades and subjects and courses
- An educator who taught a mix of grades/subjects and courses assessed with both STAAR 3-8, the NRT and STAAR EOC; both the gain and predictive models are used to determine value-added measures for these grades and subjects and courses

Example One
Mrs. Smith provided instruction to students who took either the STAAR Grade 8 Reading assessment or the STAAR Grade 8 Math assessment. She received two value-added reports in 2014, which are summarized below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Subject</th>
<th>Grade</th>
<th>Growth Measure</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Reading</td>
<td>8</td>
<td>0.19</td>
<td>3.80</td>
</tr>
<tr>
<td>2014</td>
<td>Math</td>
<td>8</td>
<td>1.95</td>
<td>1.00</td>
</tr>
</tbody>
</table>

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Calculating the Growth Measure for the Composite:

Because value-added analysis for Grade 8 Reading and Math is completed with the gain model (MRM), the growth measures are in the same scale: normal curve equivalents (NCEs). For that reason, the growth measures can simply be averaged in this case. Mrs. Smith’s growth measure is calculated as follows:

\[
\text{Composite Growth Measure} = \frac{1}{2} \text{Reading}_8 + \frac{1}{2} \text{Math}_8 = \frac{1}{2} (0.19) + \frac{1}{2} (1.95) = 1.07
\]

where Reading\(_8\) represents the growth measure for Grade 8 Reading, and Math\(_8\) represents the growth measure for Grade 8 Math.

Calculating the Standard Error for the Composite:

Before discussing the formula used to calculate the standard error for Mrs. Smith’s composite, it is important to review the idea of independence between two variables, in this case, between her growth measures for Grade 8 Reading and Grade 8 Math. When evaluating two variables for statistical independence, one asks the question “are these two measures related in some way?”

Mrs. Smith’s growth measures may, in fact, be related to each other. Because she provides instruction on both Reading and Math to some of the same students, her Reading and Math growth measures are not entirely independent because the students’ progress in Reading may be related to their progress in Math.

The extent to which Mrs. Smith’s growth measures are related can be captured in the covariance between them. The covariance is a measure of the relationship between the two that includes the correlation between the two measures. The formula for determining the covariance for Mrs. Smith’s growth measures is:

\[
\text{Cov(Reading}_8, \text{Math}_8) = \text{Correlation(Reading}_8, \text{Math}_8) \sqrt{\text{Reading}_8 \text{Math}_8}
\]

The formula for determining the variance for Mrs. Smith’s combined Grade 8 Math and Reading growth measures is:

\[
\text{Var} \left( \frac{\text{Reading}_8 + \text{Math}_8}{2} \right) = \left( \frac{1}{2} \right)^2 \text{Var(Reading}_8) + \left( \frac{1}{2} \right)^2 \text{Var(Math}_8) + 2 \left( \frac{1}{2} \right) \text{Cov(Reading}_8, \text{Math}_8)
\]

where Var represents the variance, or square of the standard error of that measure, and Cov represents the covariance between the two measures.

Now that the variance and covariance have been obtained, the standard error for the composite can be calculated by taking the square root of the variance. The formula for determining the standard error for Mrs. Smith’s composite growth measure is:

\[
\text{Standard Error of Composite Growth Measure} = \frac{1}{2} \sqrt{\text{Var(Reading}_8) + \text{Var(Math}_8) + 2\text{Cov(Reading}_8, \text{Math}_8)}
\]

The position of the covariance in the formula above shows how the relationship between Mrs. Smith’s two growth measures is taken into account. Because those measures may include the same students, the addition of the covariance produces a larger standard error than if it had not been added to the formula. This larger standard error is appropriate since having the same students is not as much
evidence as having completely separate students in each measure, and it provides her with additional protection against her value-added measure being artificially increased or decreased due to the connection between her Grade 8 Reading and Math growth measures.

To simplify the remaining calculations needed to determine Mrs. Smith’s composite, assume that the standard error is 0.50.

**Calculating the Teacher Gain Index for the Composite:**

The teacher gain index for the composite is calculated using the same methods as the calculation of the teacher gain index for Mrs. Smith’s separate Grade 8 Reading and Math reports. The formula for determining Mrs. Smith’s composite is:

\[
Teacher \ Gain \ Index \ for \ Composite = \left( \frac{Composite \ Growth \ Measure}{Standard \ Error \ for \ Composite \ Growth \ Measure} \right)
\]

\[
Teacher \ Gain \ Index \ for \ Composite = \left( \frac{1.07}{0.50} \right)
\]

Mrs. Smith’s composite teacher gain index is 2.14, which corresponds to an effectiveness level of most effective since it is greater than or equal to two.

**Example Two**

Mr. Brown provided instruction to students who took the STAAR EOC assessments in Biology and Algebra I. He received two value-added reports in 2014, which are summarized below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Subject</th>
<th>Growth Measure</th>
<th>Standard Error</th>
<th>Teacher Gain Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Algebra I</td>
<td>7.50</td>
<td>3.80</td>
<td>1.97</td>
</tr>
<tr>
<td>2014</td>
<td>Biology</td>
<td>2.30</td>
<td>1.00</td>
<td>2.30</td>
</tr>
</tbody>
</table>

**Calculating the Index for the Composite:**

Unlike in Example 1, Mr. Brown’s individual growth measures for Algebra I and Biology are calculated with the predictive model (URM). This type of analysis uses student scale scores on assessments, not normal curve equivalents for student scores. As a result, the growth measures are not on the same scale. To combine them into a composite, a new index must be calculated by averaging the teacher gain indices for the applicable assessments. Mr. Brown’s average index is calculated as follows:

\[
Average \ Index = \frac{1}{2}Algebra I + \frac{1}{2}Biology = \frac{1}{2}(1.97) + \frac{1}{2}(2.30) = 2.14
\]

where \( Algebra I \) represents the teacher gain index for Algebra I, and \( Biology \) represents the teacher gain index for Biology.

**Calculating the Standard Error for the Composite:**

To create the teacher gain indices in the table above, the growth measure for a subject in a specific year is divided by the standard error. The effect of this calculation is to standardize the growth measure so that they can be combined with other measures even when they are not on the same scale. This also causes the new index value to have a “standardized” standard error of one.

When these indices are then averaged together, the standard error of the resulting index is smaller than the standard error of 1 for each individual index. With more data included in average index calculation,
the certainty for the measure is higher than the certainty for any of the individual teacher gain indices. The formula for determining the standard error for Mr. Brown’s average index is:

\[
\text{Standard Error of Average Index} = \frac{1}{\sqrt{2}} \sqrt{(1.00)^2 + (1.00)^2} = \frac{1}{\sqrt{2}} = 0.71
\]

**Calculating the Teacher Gain Index for the Composite:**

The teacher gain index for the composite is calculated using the same methods as the calculation of the teacher gain index for Mr. Brown’s individual Algebra I and Biology reports. The formula for determining Mr. Brown’s composite is:

\[
\text{Teacher Gain Index for Composite} = \frac{2.14}{0.71} = 3.01
\]

Mr. Brown’s composite is 3.01, which corresponds to an effectiveness level of most effective.

**Example Three**

To fully explore how the composite is calculated for an educator teaching a mix of grades/subjects and courses assessed with both STAAR 3-8 and STAAR EOC, consider Ms. Martin, who taught Biology and Algebra I during the first semester of the 2013-14 school year. Prior to the start of the second semester, she transitioned to a position at a middle school and taught Grade 8 Reading and Math. While this teaching schedule may be a bit unusual, it provides a strong explanation as Ms. Martin’s composite, essentially, is a combination of the two composites that were calculated in Examples One and Two.

<table>
<thead>
<tr>
<th>Year</th>
<th>Composite</th>
<th>Assessments Included</th>
<th>Teacher Gain Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>STAAR 3-8</td>
<td>Grade 8 Reading Grade 8 Math</td>
<td>2.14</td>
</tr>
<tr>
<td>2014</td>
<td>STAAR EOC</td>
<td>Biology Algebra I</td>
<td>3.01</td>
</tr>
</tbody>
</table>

**Calculating the Index for the Composite:**

The calculations to determine Ms. Martin’s composite are very similar to the steps used in Example Two. First, a new index must be calculated by averaging the teacher gain indices for the STAAR 3-8 assessments and the STAAR EOC assessments. In this case, a simple average will suffice because there are two subjects included in the STAAR 3-8 composite and two included in the STAAR EOC composite. If there were more assessments included in one of the composites, the formula to average them would need to include weights.

\[
\text{Average Index} = \frac{1}{2} \text{STAAR 3-8} - \frac{8}{Stanford} + \frac{1}{2} \text{STAAR EOC} = \frac{1}{2} (2.14) + \frac{1}{2} (3.01) = 2.58
\]

where \(\text{STAAR 3-8} - \frac{8}{Stanford}\) represents the teacher gain index for the composite for Grade 8 Reading and Math, and \(\text{STAAR EOC}\) represents the teacher gain index for the composite for Biology and Algebra I.

**Calculating the Standard Error for the Composite:**

Like in Example Two, each teacher gain index has a standard error of 1.00.

The formula for determining the standard error for Mrs. Brown’s average index is:
Standard Error of Average Index $= \frac{1}{2} \sqrt{((1.00)^2 + (1.00)^2)} = 0.71$

Calculating the Teacher Gain Index for the Composite:

As in Example Two, the formula for determining Mr. Brown’s composite is:

$$\text{Teacher Gain Index for Composite} = \left( \frac{2.58}{0.71} \right)$$

Teacher Gain Index for Composite $= 3.63$

Ms. Martin’s composite is 2.87, which corresponds to an effectiveness level of most effective.
Appendix F

Letter of Invitation to Participate in Survey – Introductory Script

Dear High School Teacher,

I would like to request your cooperation in order to conduct a study concerning Teacher Sense of Self Efficacy and Grit. This study is part of my doctoral dissertation research at The University of Texas at El Paso. The purpose of this study is to examine the perceived level of grit and self-efficacy of teachers teaching content subjects that is associated with the state’s End Of Course Exam. As qualified teachers, your experiences in the field are valuable and it is critical that your voices are heard.

I hope you choose to participate in this study. Please follow the link below and complete the Teacher Demographic Questionnaire (TDQ), the Teachers’ Sense of Efficacy Scale (TSES), and the 8-Item Short Grit Scale. The survey will only take less than 10 minutes of your valuable time.

The TDQ will ask you to provide demographic information for descriptive and categorical purposes. All responses to the survey will be treated confidentially. All data will be pooled and published in aggregated form only; your responses will be held in strictest confidence; only I will have access. Once the study is complete, the data will be destroyed.

Your participation in this research is voluntary; you may choose not to participate and you may withdraw your consent to participate at any time. Although there are no monetary rewards, the information you provide will help educational institutions to prepare teachers both in and entering the teaching profession as well as contribute crucial information regarding the development of teachers. I do hope you will elect to provide the information that is vital to this study.
As the Principal Investigator, I will be pleased to respond to any questions, issues, or concerns you may have. You may either call me at (915) 526-8459 or email me at dmcoronado@miners.utep.edu. This research is being conducted at The University of Texas at El Paso under the supervision of Professor John C. Daresh and he can be reached at (915) 747-7592 or at jdaresh@utep.edu should you wish to contact him.

I will be pleased to send you a summary of the survey results if you desire. Thank you for your cooperation.

To begin the survey, please follow the link below.

Sincerely,

Dino M. Coronado
THE UNIVERSITY OF TEXAS AT EL PASO
Office of the Vice President for Research and Sponsored Projects
Institutional Review Board
El Paso, Texas 79968-0587
phone: 915 747-8841     fax: 915 747-5931
FWA No: 00001224

DATE: March 4, 2016
TO: Dino Coronado
FROM: University of Texas at El Paso IRB

STUDY TITLE: [845116-1] Teacher’s Sense of Self Efficacy and Grit Score and its Relationship to Student Achievement
IRB REFERENCE #: College of Education
SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: March 4, 2016
REVIEW CATEGORY: 45 CFR 46.101(b)(2)

Thank you for your submission of New Project materials for this research study. University of Texas at El Paso IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

Exempt protocols do not need to be renewed. Please note that it is the Principal Investigator’s responsibility to resubmit the proposal for review if there are any modifications made to the originally submitted proposal. This review is required in order to determine if “Exemption” status remains.

Your study has received exemption at UTEP but may require further review and approval from the institutions listed in your application. Please verify with their IRB prior to engaging in research. Please ensure to forward a copy of all IRB approval letters to the UTEP IRB office.

We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB Office at (915) 747-8841 or irb.onp@utep.edu. Please include your study title and reference number in all correspondence with this office.

cc:
Appendix H

HOUSTON INDEPENDENT SCHOOL DISTRICT
Home: Max White Educational Support Center
4400 West 19th Street • Houston, Texas 77092-8501

Ken Howitt, CPA
Associate Superintendent
Research and Accountability Department
www.HoustonISD.org

March 23, 2018

Dina M. Coronado
School Support Officer
Secondary Transformation Schools
Humble Max White Educational Support Center
4400 West 19th Street
Houston, TX 77092-8501

Dear Mr. Coronado,

The Houston Independent School District (HISD) is pleased to approve the research study “Teachers’ Sense of Self-Efficacy and its Relationship to Student Achievement.” The study is being conducted in partial fulfillment of a doctoral degree requirement at the University of Texas at El Paso. The purpose of the study is to determine the strength of the relationship between high school achievement and/or growth and teachers who demonstrate a high sense of self-efficacy and grit. The projected date of study completion is May 30, 2019.

Approval to conduct the study in HISD is contingent on your meeting the following conditions:

- The target population is teachers and students in 18 Title I comprehensive high schools as listed.
- Data collection involve the online survey of 300 teachers using the Tch Cowan-Moren Teacher Sense of Efficacy Scale and the Duckworth Self-Regulation Scale (short), and the 2015 State of Texas Assessment of Academic Readiness (STAAR) End of Course (EOC) students' results.
- It is at the principal's discretion to participate in this study.
- Parental informed consent is required for teacher participation in this study.
- This project does not interfere with the District's instructional testing program.
- The research must follow the guidelines of HISD and University of Texas at El Paso regarding the protection of human subjects and confidentiality of data. The HISD signed letter of agreement must be submitted prior to initiating the program.
- While the Institutional Review Board (IRB) of the university/organization is responsible for oversight of the study, the HISD Department of Research and Accountability will also monitor the study to ensure compliance with ethical conduct guidelines established by the Department of Health and Human Services, Office for Human Research Protection (OHRP) as well as the disclosure of student records outlined in Family Educational Rights and Privacy Act (FERPA).
- Data will only be reported in statistical summaries that preclude the identification of the district or any school participating in the study.
- In order to eliminate potential risks to study participants, the reporting of proposed changes in research activities must be promptly submitted to the HISD Department of Research and Accountability for approval prior to implementing changes. Non-compliance with this guideline could affect the approval of future research studies in HISD.
- The final report must be submitted to the HISD Department of Research and Accountability within 30 days of completion.

Sincerely,

Dina M. Coronado
School Support Officer
Any other changes or modifications to the current proposal must be submitted to the Department of Research and Accountability for approval. Should you need additional information or have any questions concerning the process, please call (713) 555-6700.

Sincerely,

Carla Stevenes
Assistant Superintendent

CS: tds
cc: Andrew Houlihan
    Esther Omogbehin
    Michael Cardona
    Jason Bernal
    Steve Guerrero
    Michael McDonough
    Rene Sánchez
    Julissa Alcantar-Martínez
    Rupak M. Gandhi
    James McSwain
    Jonathan N. Trinh
    Monica Rivas
    Orlando Reyna
    Roy de la Garza
    Rich Fernández
    Diego Linares
    Robert Gasparrillo
    Justin Fuentes
    Edward Dale Mitchel
    Susan Monaghan
    Maguerite F. Stewart
    Duane Clark
    Kenneth Davis
Appendix I

Teacher Self Efficacy & Grit

Informed Consent

Introduction

The purpose of this study is to examine the perceived level of grit and self-efficacy of teachers.

Procedures

The questionnaire consists of seven demographic questions and 20 questions related to self-efficacy and grit and will take approximately 10 minutes or less.

Risks/Discomforts

Risks are minimal for involvement in this study.

Benefits

The information you provide will help educational institutions to prepare teachers both in and entering the teaching profession as well as contribute crucial information regarding the professional development of teachers. I do hope you will elect to provide the information that is vital to this study.

Confidentiality

All responses to the survey will be treated confidentially. All data will be pooled and published in aggregated form only; your responses will be held in strictest confidence; only the principal researcher will have access. Once the study is complete, the data will be destroyed.
Compensation

There is no direct compensation.

Participation

Your participation in this research is voluntary; you may choose not to participate and you may withdraw your consent to participate at any time.

Questions about the Research

As the Principal Investigator, I will be pleased to respond to any questions, issues, or concerns you may have. You may either call me at (915) 526-8459 or email me at dmcoronado@miners.utep.edu. This research is being conducted at The University of Texas at El Paso under the supervision of Professor John C. Daresh and he can be reached at (915) 747-7592 or at jdaresh@utep.edu should you wish to contact him.

1. I have read and understand the above consent form and desire of my own free will to participate in this study.
   ○ Yes
   ○ No

2. Contact Information (Optional)
   
   Campus Name for
   the 2014-2015 School Year

3. What is your gender?
   ○ Female
   ○ Male
4. What is your ethnicity? (Please select all that apply.)

☐ American Indian or Alaskan Native
☐ Asian or Pacific Islander
☐ Black or African American
☐ Hispanic or Latino
☐ White / Caucasian
☐ Prefer not to answer
☐ Other (please specify)  

5. What is the highest degree you have received?

☐ Bachelors
☐ Masters
☐ Doctorate

6. Did you participate in an Alternative Teacher Certification Program?

☐ Yes
☐ No

7. What subject (content) did you teach during the 2014-2015 School Year?


8. How many years have you taught?

☐ At least 1 year but less than 3 years
☐ At least 3 years but less than 5 years
☐ At least 5 years but less than 10 years
☐ 10 years or more
Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

9. How much can you do to control disruptive behavior in the classroom?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. How much can you do to motivate students who show low interest in school work?

<table>
<thead>
<tr>
<th></th>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. How much can you do to calm a student who is disruptive or noisy?

<table>
<thead>
<tr>
<th></th>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. How much can you do to help your students value learning?

<table>
<thead>
<tr>
<th></th>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. To what extent can you craft good questions for your students?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

14. How much can you do to get children to follow classroom rules?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

15. How much can you do to get students to believe they can do well in school work?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

16. How well can you establish a classroom management system with each group of students?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

17. To what extent can you use a variety of assessment strategies?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>
18. To what extent can you provide an alternative explanation or example when students are confused?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

19. How much can you assist families in helping their children do well in school?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

20. How well can you implement alternative teaching strategies in your classroom?

<table>
<thead>
<tr>
<th>None at all</th>
<th>Very Little</th>
<th>Some Degree</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
</table>

Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people -- not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!

21. New ideas and projects sometimes distract me from previous ones.

<table>
<thead>
<tr>
<th>Very much like me</th>
<th>Mostly like me</th>
<th>Somewhat like me</th>
<th>Not much like me</th>
<th>Not like me at all</th>
</tr>
</thead>
</table>

22. Setbacks don’t discourage me.

<table>
<thead>
<tr>
<th>Very much like me</th>
<th>Mostly like me</th>
<th>Somewhat like me</th>
<th>Not much like me</th>
<th>Not like me at all</th>
</tr>
</thead>
</table>
23. I have been obsessed with a certain idea or project for a short time but later lost interest.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all

24. I am a hard worker.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all

25. I often set a goal but later choose to pursue a different one.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all

26. I have difficulty maintaining my focus on projects that take more than a few months to complete.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all

27. I finish whatever I begin.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all

28. I am diligent.
   Very much like me  Mostly like me  Somewhat like me  Not much like me  Not like me at all
Vita

Dino Mario Coronado was born in Münchweiler, Germany to American parents. Like his father, he enlisted in the U.S. Army, where he served his country for nearly 22 years and retired at the second highest rank an enlisted person could attain. While on active duty, he had earned an Associate of Arts, from The University of Maryland (1988), a Bachelor of Arts from The University of Northern Iowa (1999), and a Master of Arts from Webster University (2004).

Following his military retirement, he became a Realtor and Business Instructor. Looking for a profession that was more rewarding, he entered the field of education as a Substitute Teacher and eventually became a fulltime Special Education Teacher and Football Coach for a small rural school district 50 miles east of El Paso, Texas. Heading back to school, he completed his Master of Education with The University of Texas at El Paso (2009) and subsequently became a high school principal. As a principal, he entered the Doctoral Program at The University of Texas at El Paso in 2012.

After nearly six years as a high school principal with two different school districts, he became a School Support Officer (Area Superintendent) in 2015 with the Houston Independent School District.

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This manuscript was typed by the author.