A PREDICTIVE CORRELATIONAL STUDY OF THE RELATIONSHIP BETWEEN GRIT

AND SELF-EFFICACY BELIEFS AMONG PRE-SERVICE TEACHERS

by

Rosetta Arlene Lawson Riddle

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this predictive correlational study was to examine the relationship between the personality trait of grit and self-efficacy levels. The predictor variable of grit to the criterion variable of self-efficacy for pre-service teachers enrolled in a teacher preparation program at a Mid-Atlantic university was studied. Investigating connections between motivation and resilience that might result in self-efficacious behaviors was the focus of the study. The study was important because although some research studies existed regarding content specific self-efficacy of pre-service teachers, limited research had been conducted regarding self-efficacy beliefs of pre-service teachers based on school level. This was a correlational research design study to determine if a significant relationship existed between grit and self-efficacy of pre-service teachers. The Short Grit Scale (Grit-S) and the Teacher's Sense of Efficacy Scale (TSES) were the instruments used for the collection of data. The instruments were completed online and data was collected electronically. A bivariate regression analysis was used to determine the strength and direction of the relationship. Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The study included responses from 73 participants obtained from a voluntary convenience sample of students completing the student teaching phase of the clinical field experience at a Mid-Atlantic private university. Results of the study indicated a moderately significant positive correlation between grit and self-efficacy ($F(1, 71) = 42.45$, $p < .001$, $r^2 = 0.37$).

Keywords: clinical field experience, grit, grit theory, pre-service teachers, resilience, self-efficacy, teacher preparation

DEDICATION

I dedicate this dissertation to the memory of my Mom, Dad, and Aunt Florence. Though you have departed this earth, you all remain in my heart forever. I also dedicate this manuscript to my husband Larry, son Lawrence, my daughter-in-law Kim and my wonderful grandchildren Lauren, Matthew, Kaleb, and Lawrence Junior. Always remember that "all things are possible to them that love the Lord and are called according to his purpose" (Romans 8:28). Keep going, persisting, and persevering. Never, ever, ever quit and you will reach every dream God has placed in your hearts.

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First, giving all glory and honor to God for the successful completion of this endeavor. I dedicated this project to Him and He has showered me with immeasurable blessings as I pursued the completion of this degree.

I thank God for blessing me with my wonderful husband, Larry, who served as my knight in shining armor feeding me, watering me, and encouraging me as I persevered through the difficult times. Without your love and confidence in my ability to complete this huge task, I would not have been persistent in finishing the race. Your belief in my ability to finish what I started kept me going even when I wanted to abandon the journey. Thank you for eating lots of pizza, turkey sandwiches, and many, many chilidogs. Thank you, Emma, for always being there for me. You are my spiritual sister and I am so grateful that God placed you in my life.

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This was a labor of love even though it was a difficult task. I learned so much and I thank God for the opportunity to find myself and learn more about who I am through the process. I am glad to be at this place in time and at this point in my life and to have found my passion in preparing pre-service and new teachers. I am ready for what lies ahead as God provides more

opportunity for ministry and spiritual growth. I trusted Him and here I am at last at the end of

one phase of the journey and ready to accept the next assignment as I continue on the path

leading to the fulfillment of my divine purpose.

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LIST OF ABBREVIATIONS

American Recovery and Reinvestment Act (ARRA)

Council on Accreditation of Educator Preparation (CAEP)

Every Student Succeeds Act (ESSA)

General Teacher Efficacy (GTE)

Institutional Review Board (IRB)

National Council for the Accreditation of Teacher Education (NCATE)

National Council for Teacher Quality (NCTQ)

No Child Left Behind (NCLB)

Original Grit Scale (Grit-O)

Race to the Top (RT3)

School of Education (SOE)

Short Grit Scale (Grit-S)

Teacher Education Accreditation Council (TEAC)

Teacher Efficacy Scale (TES)

Teachers' Sense of Efficacy Scale (TSES)

United States Department of Education (U.S. DoEd)

CHAPTER ONE: INTRODUCTION

Overview

Brown, Lee, and Collins (2015) propose that "Teachers with a high sense of teaching efficacy are likely to view a challenging situation as a challenge to be overcome, whereas a teacher with low efficacy will see it as a roadblock" (p. 78). Developing the belief in one's ability to implement effective teaching and learning strategies is one of the major functions of teacher preparation courses. However, teacher preparation programs across the nation have been criticized for failing to prepare effective new teachers adequately (Zeichner, 2014). Pre-service teachers in most teacher preparation programs participate in a clinical field experience designed to develop confidence in their ability to implement essential knowledge and skills related to effective teaching (National Council for the Accreditation of Teacher Education [NCATE], 2010). This study investigated the personality trait of grit as a predictor of self-efficacy beliefs of pre-service teachers completing a teacher preparation program in a Mid-Atlantic university. This chapter provides the historical, social, and theoretical backgrounds that detail the foundation for the study. In addition, the problem, purpose, and significance of the study are discussed along with the guiding research question.

Background

Teacher preparation has been a topic of intense debate in American education for more than 40 years (NCATE, 2010; Gurvitch & Metzler, 2009). One of the desired outcomes of teacher education programs is the production of graduates who will become high quality teachers; therefore, it is important for teacher candidates to believe that they can positively influence student achievement and performance (Derosier & Soslau, 2014; Mansfield, Beltman, Broadley, & Weatherby-Fell, 2016). The clinical experience is one of the most important

components of the pre-service teacher preparation program in developing pre-service teachers' confidence levels (Kim & Cho, 2014; Martins, Costa, & Onofre, 2015; NCATE, 2010). In addition, confidence is important for pre-service teachers in building a positive attitude toward their ability to motivate students to learn (Derosier & Soslau, 2014). Besides developing professional attitudes during the clinical practice, pre-service candidates implement motivational strategies to influence student learning with the intended outcome of assisting each student in achieving academic success (Mansfield et al., 2016). This perspective regarding the importance of teacher beliefs and attitudes suggests that the construct of self-efficacy is an essential trait for pre-service teachers to possess as they begin to practice using instructional and motivational strategies confidently in their clinical field experiences.

Historical Context

Recently, Congress passed the Every Student Succeeds Act (ESSA, 2015) to address the application of standards and criteria in each state aimed at measuring the effectiveness of both university teacher preparation programs and alternative certification programs. This increased emphasis on teacher preparation programs reflects the perspective of several public and private organizations regarding the ineffectiveness of university programs for teacher preparation (NCATE, 2010; Ziechner, 2014). From the 1960s to the 1990s, higher education monopolized the preparation of teachers; however, beginning in the 1990s many teachers entered the field of teaching through alternative teaching programs instead of the traditional university teacher preparation programs (NCATE, 2010; Ziechner, 2014). More than three decades following the publication of *A Nation at Risk: The Imperative for Educational Reform* (National Commission on Excellence and Education, 1983), the problems and challenges regarding ineffective programs faced by educator preparation in the United States continue as a topic of debate. Problems

associated with teacher preparation such as a lack of attention to differentiation for diverse learners continued with the passage of the No Child Left Behind (NCLB) in 2001, which presented teachers and schools with new requirements focused on meeting the needs of students with various learning needs such as English Language Learners, children from impoverished families, and students who receive special education services (No Child Left Behind Act, 2002). These conditions created challenges for school districts and teacher preparation programs that resulted in increased discussion among educational and political organizations regarding teacher preparation programs as less than worthy investments (Zeichner, 2014).

In response to issues with teacher preparation, the United States Department of Education (U.S. DoEd) awarded $75 million dollars in grant funding in 2010 that financed several major competitors of the traditional university preparation programs such as Teach for America and the New Teacher Project (Zeichner, 2014). Additionally, the American Recovery and Reinvestment Act (ARRA, 2009) addressed the issue of pre-service and new teacher preparation by increasing levels of teacher preparation program accountability. Support for new teacher induction programs was also instituted in 2008 through the establishment of the Race to the Top (RT3) federal funding education initiative (ARRA, 2009).

Theoretical Contexts

The construct of self-efficacy originated from Bandura's work regarding social behavior theory (Bandura, 1977). Almost two decades later, Bandura (1997) presented the construct of self-efficacy that is defined as an individual's belief regarding their capacity to produce designated levels of performance. During the clinical experience, pre-service teachers are guided to mastery through various structured activities including the apprenticeship in the classroom with a veteran teacher and the observations of university faculty (Gurvitch & Metzler, 2009;

Moulding, Stewart, & Dunmeyer, 2014). Pre-service candidates often exhibit great anxiety; however, according to Bandura (1997), a strong sense of self-efficacy can help to reduce anxieties associated with performing job responsibilities. In addition, pre-service teachers can benefit from understanding the construct of self-efficacy in their development of effective teaching practices.

Bandura (1997) authored pioneering research on the teacher-efficacy theory and he is the author of numerous articles and books on self-efficacy as well as the creator of Bandura's Teacher Self-Efficacy Scale. Most journal articles and books on the topic of self-efficacy or teacher-efficacy usually cite Bandura's seminal work that sparked widespread interest in the construct of self-efficacy. Building on Bandura's work, Jamil, Downer, and Pianta (2012) affirm a connection between self-efficacy and positive outcomes for pre-service teachers including increased retention rates for new teachers. Additionally, Chestnut and Burley (2015) argue that teachers' decisions to remain in the field of education originate from their self-efficacy beliefs and expectations for success.

Furthermore, it is important to understand grit as it relates to self-efficacy. Duckworth (2016) defines the personality trait of grit as the combination of long-term perseverance and passion while asserting that grit and effort are more important in achieving and sustaining success than an individual's talent. Several research studies found correlation between grit and the academic performance of students (Duckworth & Quinn, 2009; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). Although grit is a relatively new concept, it can help to provide perspective on pre-service teacher self-efficacy due to the importance of effective teachers believing in one's own abilities associated with grit, resilience, and self-efficacy (Hoy & Spero, 2005; Moseley, Bilica, Wandless, & Gdovin, 2014).

While extensive research exists regarding the broad topic of self-efficacy, limited research regarding specific sources of self-efficacy are available and little to no research has been conducted on the potential relationship between grit and self-efficacy (Mansfield et al., 2016; Martins et al., 2015). Few if any studies address specific methods for developing teacher resilience (Mansfield et al., 2016). Exploring the connection between grit and self-efficacy will be useful for teacher education programs in designing experiences that target the development of grit, perseverance, and resilience (Mansfield et al., 2016; Martins et al., 2015).

Social Context

According to NCATE (2010), effective teachers have greater effects on student learning than any other school interventions. For the last four decades, universities have been challenged to transform and improve teacher preparation programs (NCATE, 2010). Effective teachers demonstrate the ability to manage classrooms, use instructional strategies, and manage classroom environments (Moulding et al., 2014; Tschannen-Moran & Hoy, 2001). In addition, the programs provide the pipeline for many of the teachers currently practicing in public and private schools. Along these lines, Ashton (1984) asserts that teacher effectiveness is determined by the level of self-efficacy.

Correspondingly, Morris and Usher (2011) concluded that pre-service teacher effectiveness can be predicted by assessing self-efficacy levels. In addition, Goldhaber and Cowan (2014) reported that attrition rates across various university teacher preparation programs have increased substantially. These assertions suggest that developing pre-service teachers' level of grit and self-efficacy can assist with decreasing teacher shortages as well as increasing the number of students enrolling in college and university teacher education programs. Enrollment in teacher preparation programs in the United States declined from 719,081 to 499,800 between

2008 and 2013 (U.S. DoEd , 2016). Fewer students completing teacher preparation programs

affects both the quantity and quality of new teachers available for teaching positions in public

school districts across the nation (Goldhaber & Cowan, 2014). Encouraging the conversation

regarding self-efficacy and grit can provide university teacher preparation programs, school

districts, and alternative certification programs with information to support meaningful program

changes that may increase pre-service teacher success rates and therefore may help decrease

attrition rates among new teachers.

Problem Statement

Teacher preparation programs across the nation are criticized for not adequately

preparing pre-service teachers to meet the demands of the classroom (Martins et al., 2015;

NCATE, 2010). In addition, prospective teachers often express a lack of self-efficacy related to

their ability to assume the responsibilities of the regular teacher during the practicum and

internship clinical experiences (Goldhaber & Cowan, 2014). Some candidates exhibit strong

self-efficacy while others remain unsure of their ability to manage the classroom, use effective

instructional strategies, and engage students in relevant learning opportunities (Martins et al.,

2015; Meristo, Ljalikova, & Löfström, 2013). This condition affects not only student teachers

but also the quality of student learning for the students in classrooms led by pre-service and new

teachers (Martins et al., 2015). Current research explains the effects of self-efficacy beliefs on

pre-service teacher behaviors; however, the research has not addressed possible sources of

efficacious behaviors (Morris, Usher, & Chen, 2016; Moulding et al., 2014). The problem is that

numerous pre-service teachers struggle during the completion of the clinical field experience

possibly due to a lack of grit and self-efficacy.

Purpose Statement

The purpose of this predictive correlational study was to investigate the relationship between grit and self-efficacy of pre-service teachers. The predictor variable of grit to the criterion variable of self-efficacy for pre-service teachers enrolled in a teacher preparation program and completing the clinical field experience at a Mid-Atlantic university was studied. The predictor variable of grit is defined generally as the combination of passion and perseverance demonstrated in the pursuit of accomplishing long term goals (Duckworth & Quinn, 2009; Maddi, Matthews, Kelly, Villarreal, & White, 2012). The criterion variable of self-efficacy was defined as an individual's belief regarding his or her ability to influence the behavior and academic performance of others effectively (Bandura, 1994; Jamil et al., 2012).

Significance of the Study

More than 4000 universities across the nation offer teacher preparation programs as a major area of study (NCATE, 2010; U.S. DoEd., 2016). Teacher preparation programs provide a learning foundation for many aspiring teachers and provide pre-service teacher candidates with the initial knowledge, skills, and dispositions that are associated with effective teachers (Cano, Swan, & Wolf, 2011). Most teacher education preparation programs require a clinical field experience ranging from one semester to one year that provides students with the opportunity to apprentice in a real-life school setting (NCATE, 2010). The clinical experience is an important component in the preparation of aspiring teachers (Cano et al., 2011; NCATE, 2010). Though the effectiveness of teacher preparation programs has been investigated, there is a scarcity of information related to the influence of self-efficacy in the development of pre-service teacher candidate behaviors as outcomes of the clinical field experience (Cano, et al., 2011; Jamil et al., 2012).

This study adds to the body of research related to improving and transforming the effective preparation of pre-service and new teachers. Research addressing many facets regarding self-efficacy in content and subject areas exists (Hoy & Spero, 2005; Moseley et al., 2014). However, increasing the research base regarding self-efficacy and grit may provide teacher preparation programs with information to initiate meaningful program changes that will increase student teacher success rates. Although extensive research has been conducted regarding content specific self-efficacy of pre-service teachers, limited research studies have been conducted regarding the effectiveness of pre-service teachers (Jamil et al., 2012; Mansfield et al., 2016).

This study investigated connections between motivation and resilience that may result in self-efficacious behaviors. According to Cano et al. (2011), behaviors learned and exhibited in the clinical experience are instrumental in defining professional teaching practices. Therefore, the development of the construct of self-efficacy needs to be explored to identify methods of developing self-efficacy during the pre-service clinical experience. Additionally, although some research has been conducted regarding content specific self-efficacy of pre-service teachers, limited research has been conducted regarding self-efficacy beliefs of pre-service teachers based on teacher preparation program levels such as elementary, middle, high, undergraduate, and graduate (Gurvitch, & Metzler, 2009; Moseley et al., 2014).

These observations suggest the need for additional study regarding the influence of self-efficacy on the effectiveness of pre-service teacher candidates in university teacher preparation programs. Additionally, the development of pre-service teacher self-efficacy can assist universities, teacher accreditation agencies, school districts, school administrators, and cooperating teachers with the design and implementation of effective clinical experience models

focused on immersing pre-service teacher candidates in experiences that intentionally build and promote self-efficacy (Kim, & Cho, 2014; Brown et al., 2015).

Research Question

This study was designed to answer the following research question (RQ):

RQ: Can the grit score as measured by the Short Grit Scale (Grit-S) predict pre-service teachers' self-efficacy beliefs as measured by the Teachers' Sense of Efficacy Scale (TSES)?

Null Hypothesis

This study was designed to test the following null research hypothesis:

H_0: There is no statistically significant correlation between pre-service teachers' grit level as measured by the Short Grit Scale (Grit-S) and self-efficacy as measured by the Teachers' Sense of Efficacy Scale (TSES).

Definitions

1. *Clinical Field Experience* – Residency completed by pre-service teachers during the internship phase of a university teacher preparation program (NCATE, 2010; Oh, 2011).

2. *Grit* – The psychological trait characterized by individuals with the demonstration of strong motivation, conscientiousness, courage and persistence (Duckworth, Peterson, Matthews, and Kelly, 2007; Lucas, Gratch, Cheng, & Marsella, 2015).

3. *Grit Theory* – The combination of passion and perseverance demonstrated in the pursuit of the successful accomplishment of long-term goals (Duckworth & Quinn, 2009; Maddi et al., 2012).

4. *Passion* – Infatuation with an idea or concept (Duckworth, 2016).

5. *Perseverance* – Determination to accomplish a task despite the obstacles and challenges (Hong, 2012; Klassen & Chiu, 2011).

6. *Pre-service Teacher* – Individual enrolled in a university teacher preparation program (Dorel, Kearney, & Garza, 2016; NCATE, 2010).

7. *Resilience* – Capacity to survive in difficult circumstances (Duckworth, 2016; Mansfield et al., 2016).

8. *Self-efficacy* – An individual's perception of his or her effectiveness (Bandura, 1984).

9. *Teacher-efficacy* – Teachers' beliefs about their own ability to affect successfully student behaviors and performance (Ashton, 1984; Dorel et al., 2016; Jamil et al., 2012).

10. *Teacher Preparation Program* – Course of study for prospective teachers at a college or university (NCATE, 2010).

Summary

In this chapter, the historical, social, and theoretical backgrounds that provide the foundation for the study were discussed. Additionally, the problem, purpose, significance of the study, and guiding question were presented. Next, in Chapter Two, the theoretical frameworks and the related literature will be addressed.

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter Two addresses the theoretical framework that will guide this research study. This study addressed the construct of self-efficacy and the personality trait of grit as related to the development of pre-service teachers along with the various themes found in the current literature. Research related to the themes of educator preparation programs, pre-service teachers' attitudes and beliefs, self-efficacy sources, teacher effectiveness, grit and self-efficacy measurement, and student achievement are discussed. Additionally, the identification of gaps in the literature and a summary of the chapter discussion conclude this section.

Theoretical Frameworks

This research is grounded in the theoretical frameworks of self-efficacy, which is based on Bandura's (1977) social behavior theory (1977) and Duckworth's (2009) Grit theory (2009) which focuses on the effect of the power of passion and perseverance on achieving success. Bandura's self-efficacy construct has provided the basis for research regarding beliefs, attitudes, and behaviors among numerous social groups for more than 50 years while Duckworth's Grit theory has served as the focus of studies related to behaviors and success for the last decade. These frameworks provide the foundation for this study regarding the investigation of the relationship between reported levels of grit and pre-service teacher self-efficacy.

Self-Efficacy Theory

The concept of self-efficacy originated from Bandura's work regarding social behavior theory (Bandura, 1977). Almost two decades later, Bandura (1997) presented the construct of

self-efficacy which is defined as an individual's beliefs regarding one's ability to make a difference by influencing the capacity of others to achieve desired performance levels. During the clinical experience, pre-service teachers have the opportunity to practice their beliefs by participating in the teaching internship that is designed to guide the development of teaching mastery (NCATE 2010; Zeichner, 2014). During the internship phase, pre-service teachers engage in activities that support the acquisition of teaching knowledge and skills while working in the classroom with a veteran teacher (NCATE 2010; Zeichner, 2014). Thus, the clinical student teaching experience can be an excellent opportunity to develop students' sense of efficacy (Bandura, 1997).

During the internship, pre-service candidates often report feelings of extreme anxiety and according to Bandura (1997), a strong sense of self-efficacy can help to reduce the anxieties associated with performing job responsibilities. Pre-service teachers can benefit from understanding the construct of self-efficacy in their development of effective teaching practices. Confidence in one's ability to complete particular tasks successfully results from a level of perceived self-efficacy (Bandura, 1984, 1977). In classrooms across the nation, teachers and students engage in various learning events daily that determine the trajectory of learning and mindsets regarding one's ability to learn. Student teachers design and execute student-learning activities as one component of the clinical field experience. In order to design effective learning that addresses the needs of all students, pre-service teachers must believe in their ability to design appropriate learning activities (Pendergast, Garvis, & Keogh, 2011).

Therefore, teacher self-efficacy is "an important characteristic of teachers and one strongly related to success in teaching" (Gavora, 2010, p. 17). Further, Gavora (2010) describes "teacher self-efficacy" (p. 18) in terms of teachers' beliefs in their abilities to plan and

implement effective instruction. This view supports the exploration of self-efficacy sources of pre-service teachers that assist in developing behaviors to help teachers examine their practices and make adjustments that positively affect the learning environment (Dorel et al., 2016; Pendergast et al., 2011). Bandura (1977) identified mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states as the major sources of developing self-efficacy. According to Bandura (1977), self-efficacy is the belief that one possesses the ability to plan and successfully execute plans that produce the attainment of desired results. Achieving this goal presents the urgency for teacher education programs to review and revise program designs to focus on teacher-efficacy in the preparation of pre-service teachers and warrants exploration for development during the pre-service clinical experience (Zeichner, 2014).

In addition, Bandura (1977) notes that teachers who are high in self-efficacy tend to be confident about their ability to help low achievers in spite of the conditions of the home or the environment. Additionally, because of their levels of confidence, high-efficacy teachers spend more class time on instructional tasks, persevere in working with slower students, and are more successful in motivating struggling students (Bandura, 1997). In contrast, teachers who are low in self-efficacy tend to spend class time on tasks other than learning tasks such as classroom behavior management (Bandura, 1997). These observations suggest the need for additional study regarding the influence of self-efficacy on the effectiveness of pre-service teacher candidates in university teacher preparation programs.

Grit Theory

The Grit theory is a relatively new construct developed by Angela Duckworth that focuses on personality as a factor in achieving levels of success. Duckworth (2016) asserts that

grit is the "combination of passion and perseverance" (p. 8) that defines high achievers. The Grit theory proposes that talent and ability are less important for long-term success than the combination of the characteristics of passion and perseverance. The distinction must be noted that the Grit theory does not apply equally to short-term and long-term success. For example, regarding long-term success, Robertson-Kraft and Duckworth (2014) conducted studies on two longitudinal samples of first- and second-year teachers in low-income districts and found that "Grittier teachers outperformed their less gritty colleagues" (p. 1). In addition, the Grit theory complements the work of Dweck (2006) regarding the role of fixed and growth mindsets as motivational success factors. Building on the growth mindset concepts, Duckworth (2016) alludes to the importance of "truly believing" (p. 162) in the ability of individuals to grow. This statement supports the viewpoint on the demands of teaching as noted by Robertson-Kraft and Duckworth (2014) when they suggest that grit may be a personality trait that factors in the development and retention of novice teachers. Thus, developing grit during the pre-service experience can potentially assist teacher candidates in becoming highly resilient and effective teachers (Von Culin, Tsukayama, & Duckworth, 2014). Additionally, Von Culin et al. (2014) suggest that the development of grit may be promoted by encouraging sustained engagement in challenging activities over an extended period of time, while engagement in pleasurable activities may impede the growth of grit.

Along the same lines, Duckworth (2016) asserts, "Grit, talent, and all other psychological traits relevant to success in life are influenced by genes and experience" (p. 82). This statement acknowledges that there are other factors affecting success besides grit. Furthermore, Duckworth (2016) proposes that grit is a flexible psychological character trait that increases with age as individuals develop the capacity for long-term passion and perseverance. Four stages

constitute the Grit theory including interest, practice, purpose, and hope (Duckworth, 2016).

These phases translate into success by individuals focusing on intrinsic enjoyment, practicing a

daily discipline of improvements, identifying the essential work associated with the purpose, and

applying the concept of hope in perseverance toward a stated goal (Duckworth, 2016). In other

words, individuals with high levels of grit find intrinsic enjoyment in accomplishing their goals

and include hope as an element across the four Grit Theory stages. This perspective suggests

that one can build grit by cultivating interests and engaging in the daily practice of associated

challenging skills.

Additionally, studies regarding the relationship between the constructs of grit and self-

efficacy as well as the corresponding themes related to the two theories are relatively absent

from current research. Current literature rarely addresses the significance of grit and self-

efficacy combined and even less frequently addresses self-efficacy and grit as related to pre-

service teacher development. Furthermore, Duckworth (2016) asserts that developing grit

depends critically on other people like parents, coaches, teachers, bosses, mentors, and friends.

In addition, Robertson-Kraft and Duckworth (2014) concluded that due to the many and diverse

challenges inherent in the beginning years of teaching, it appears logical for the character trait of

grit to impact positively teacher performance. Although grit is a relatively new construct in the

study of academic performance, research studies in the field are increasing and several studies

suggest that individuals reporting higher levels of grit demonstrate greater tenacity and

commitment in the accomplishment of goals over a sustained period of time (Duckworth, 2016;

Duckworth & Gross, 2014; Robertson-Kraft & Duckworth, 2014; Von Culin et al., 2014).

Related Literature

In observing pre-service teachers' development, questions frequently arise regarding the

ability of some aspiring teachers to continue in spite of challenging situations during the clinical experience while other students exhibit an inability to cope with personal and professional challenges. The causes of the various approaches and the effects inevitably encourage questions regarding the different responses to situations with students, parents, peers, and professors. The ability to cope with challenging behaviors from different groups will eventually define the success or failure of an individual in the teaching profession. Some pre-service teachers successfully navigate the challenges and others encounter more difficulties as they pursue the completion of the journey related to becoming a teacher. Reviewing the literature can provide insight on previous research conducted on the topics of pre-service teacher self-efficacy and the elements of grit as a personality trait.

Teacher Preparation Programs

University teacher preparation programs serve as the major suppliers of new teachers for classrooms across the nation. Educators at various school levels including elementary, secondary, and post-secondary engage in debate regarding the quality of these programs and the readiness of program graduates to enter the teaching profession (Gurvitch & Metzler, 2009; NCATE, 2010). The role of teacher education programs in the development of teacher efficacy is central to prospective teachers' ability to motivate change in students' classroom performance (Ashton, 1984; Gurvitch & Metzler, 2009). Transforming students' performance in the classroom is one of the qualities of effective teachers and self-efficacy is related to teachers' ability to use motivational techniques that promote student success and increase pre-service teacher effectiveness.

In the university setting, the clinical experience provides pre-service teachers with opportunities to focus on developing confidence in their abilities to teach, motivate, and promote

student development. Hence, the development of self-efficacy must begin long before the culminating teaching experience during the senior year (Martins et al., 2015). In the examination of teacher preparation programs and from the perspective of the role of the university clinical faculty and school-site cooperating teachers, the field experience is integral in assisting pre-service teachers in acquiring knowledge and skills associated with lesson planning, student discipline, and building student-teacher relationships (Martins et al., 2015).

In addition, several studies affirm the role of teacher preparation programs in the self-efficacy development process (Ashton, 1984; Martins et al., 2015; Meristo et al., 2013). For example, using the reflections of program graduates, teaching practices were examined to determine the impact of the issue on pre-service teachers in the classroom (Meristo et al., 2013). Furthermore, research confirms the role of cooperating teachers and university faculty in implementing plans that focus on developing pre-service teachers' instructional practices (Martins et al., 2015; Meristo et al., 2013). Moreover, the findings of these studies acknowledged the use of targeted activities that support the development of self-efficacy of pre-service candidates and novice teachers.

Ashton (1984), as well as Mitchell, Hopper, Daniels, George-Falvy, and James (1994), support the notion that self-efficacy is a strong predictor of performance. They suggest that preparation programs that focus on building the confidence of pre-service teachers can better support prospective teachers in using effective teaching practices. Additional research confirms the idea that confidence-building activities can be beneficial for teacher education programs in selecting candidates and in determining the types of potential support candidates may require based on their own perceptions of their individual self-efficacy (Ashton, 1984; Mitchell et al., 1994).

In 2014, changes to federal policies increased accountability measures for teacher preparation programs with new requirements for programs to provide evidence of success to qualify for support including grant money (Kumashiro, 2015). The consolidation of the Teacher Education Accreditation Council (TEAC) and the National Council for the Accreditation of Teacher Education (NCATE) into the Council for the Accreditation of Educator Preparation (CAEP, 2016) also creates measures for the observance of quality standards and criteria for the evaluation of educator preparation programs (Greenberg, McKee, & Walsh, 2015; National Council on Teacher Quality [NCTQ], 2017). Additionally, pre-service teacher certification rules in 33 states have made significant preparation policy changes in attempts to improve teacher quality (Kumashiro, 2015). During this same period of time, the U.S. DoEd introduced legislation that provided significant funding for alternative educator preparation programs and pathways (Kumashiro, 2015; Zeichner, 2014).

Despite the expansion of alternative preparation programs, teacher preparation programs in universities are still considered a major pipeline for providing beginning teachers for the nation's schools (Gurvitch & Metzler, 2009; NCATE, 2010). Both traditional and non-traditional programs across the country focus on preparing students to become effective teachers. Effective teachers demonstrate the capacity to generate higher levels of learning in their students in a single year than would be expected based on the background, ethnicity, race, and/or socio-economic status (Kumashiro, 2015). Therefore, it is important for teacher preparation programs to provide experiences that build teacher candidate capacity to become effective teachers.

Furthermore, CAEP (2016) requires university teacher preparation programs to address the knowledge and skills required by teachers to become successful in the teaching profession. Arguments frequently arise among national educator preparation accreditors, universities, and

state accrediting agencies regarding the appropriate inclusion of rigor and strong academic requirements in the university admission's process (Kumashiro, 2015; Lewis & Young, 2013; NCATE, 2010). As a result of this situation, certification programs in several states are moving forward with the implementation of measures that require more stringent initial certification rules and have also, in some cases, implemented tiered certification programs that include multiple levels of educator certifications (Kumashiro, 2015).

One of the reported problems associated with teacher preparation programs is that students enrolled in teacher education programs either do not complete the programs or they leave the teaching profession as new teachers within the first 3 to 5 years in the classroom (Penn-Edwards, Donnison, & Albion, 2016). This situation is evidenced by the results of a study of first-year teacher education students that concluded the causes of teachers' early departure from education may occur due to a lack of resilience and coping skills. Based on the results of the study, the preparation program that participated in the study initiated a plan to focus on the development of a curriculum designed to support students in acquiring essential skills and qualities related to resilience and coping mechanisms.

Along these same lines, Dial (2015) noted that future teachers must be prepared with the required skills to differentiate instruction and to monitor student learning. Additionally, Dial (2015) asserted that it was imperative that teacher preparation programs build efficacy related to preparing students to teach the content, understand learning standards, scaffold learning for students, and to persist through challenges inherent in teaching by building confidence and resilience. As an example, the ability to scaffold learning for students is an essential skill for teachers as they implement strategies to fully support academic achievement for all students (Dial, 2015, Penn-Edwards et al., 2016). Pre-service teachers may also express a high sense of

self-efficacy early in their programs that may be a false sense of efficacy. According to Dial (2015), pre-service teacher efficacy tends to decrease early in preparation programs and later increases as the aspiring teachers acquire the reality of managing the various teacher domains. This observation supports the need for university programs to intentionally build pre-service teacher self-efficacy through components of the clinical field experience. While teachers must persevere in spite of personal and professional failures with students, they must also acquire the tools to keep moving forward as they endeavor to make a positive difference in student learning.

Pre-service Teachers' Attitudes and Beliefs

Attitudes and beliefs are inherent in the construct of teacher-efficacy. Several studies examined the beliefs and attitudes of pre-service teachers regarding the teaching profession and found that beliefs indeed affect attitudes (Demirtas, Comert, & Ozer, 2011; Karakus & Akbulut, 2010). Findings from these studies also indicated that it is difficult to change teacher beliefs once established (Demirtas et al., 2011; Karakus & Akbulut, 2010). In some cases, this resistance to change is demonstrated by pre-service teachers who continuously approach planning as a chore instead of a necessity of providing quality teaching and learning (Demirtas et al., 2011; Karakus & Akbulut, 2010). Likewise, several studies examined the self-efficacy of freshman and senior pre-service teachers of mathematics and concurred with the apparent connection between beliefs and attitudes toward teaching abilities as well as the educational community (Demirtas et al., 2011; Karakus & Akbulut, 2010). These findings support the importance of universities focusing on the development of self-efficacy as they prepare pre-service teachers to practice the implementation of teaching responsibilities during the internship period.

Research also investigated the views of beginning teachers and the beliefs the teachers espoused regarding the teaching profession (Carr, 2004; Pendergast et al., 2011). In addition, studies determined that perceptions of self-efficacy are important in the approach used by pre-service teachers toward their own abilities (Demirtas et al., 2011; Karakus & Akbulut, 2010). These findings support the argument related to the effects of the translation of perception into reality-based activities encountered during pre-service teachers' clinical experiences. As pre-service teachers initially enter the field experience, they frequently demonstrate some reluctance in using innovative strategies and may rely on techniques used by their previous teachers during their formative learning years (Cano et al., 2011; Demirtas et al., 2011; Meristo et al., 2013). This situation presents a unique dilemma for teacher education programs in developing pre-service teacher efficacy as students may evaluate their teaching success based on preconceived notions regarding teaching and learning (Cano et al., 2011).

While believing in one's ability to perform can be beneficial, there may also be some drawbacks when beliefs are excessively strong (Pendergast et al., 2011). Pre-service teachers indicating very strong beliefs entering the field experience may encounter "reality shock" (p. 55) during the actual performance of teaching duties as reported in a mixed-methods study of 175 undergraduate and graduate pre-service teachers at an Australian university (Pendergast et al., 2011). Similarly, Kim and Cho (2014) studied 533 pre-service teachers and found that most of them also experienced varying levels of perplexity once they entered the internship phase of their preparation programs. While there is some indication that positive beliefs lead to a feeling of satisfaction with the profession and may result in increased performance of work-related tasks, there is also some indication that conversely, the feeling of satisfaction may result in a reduction in performance (Kim & Cho, 2014). This may be especially true for pre-service teachers without

validated confidence and esteem (Cano et al., 2011; Kim & Cho, 2014). The connection between positive beliefs, confidence, and self-esteem may provide support for the investigation into the importance of pre-service teachers' development of self-efficacy and grit as implements for developing effective teachers.

Not only is it important for teacher candidates to develop positive attitudes, they must also demonstrate the capacity to implement subject area curricula (Erdem, 2015). In a study of chemistry teacher candidates, Erdem found that a positive linear relationship existed between attitudes and self-efficacy beliefs and concluded that it was beneficial for teacher candidates to engage in preparation activities that develop positive attitudes, self-reliance, and the ability to include practical skills in the teaching practice. The results of this research indicated that the self-efficacy of undergraduate teacher candidates was related to their attitudes and it is important to improve the self-efficacy and attitudes of student teachers as they practice in the field. In addition, these results inferred that positive attitudes toward subject area content can be enhanced by including concepts and skills such as making generalizations and analyzing information in college education courses.

According to the results from this study data, there was a meaningful linear relationship between self-efficacy scores and attitude scores of teacher candidates. An increase in self-efficacy scores and attitude scores of teacher candidates was also observed. It should be noted that this research study was conducted with elementary teacher candidates completing the field experience in elementary school. However, a meaningful difference in self-efficacy scores and attitude scores of students interning in secondary school was not observed in the study (Erdem, 2015).

Regarding the role of coursework in the development of self-efficacy, Flores (2015) examined the effect of specialized coursework on the teaching practices of 30 preservice teachers enrolled in a university methods course. The course focused on building content knowledge, pedagogical methods, and innovative curriculum development through course assignments. The study results indicated that general efficacy and personal teaching efficacy increased significantly (Flores, 2015). In addition, Uzunboylu and Selcuk (2016) noted that self-efficacy beliefs affect success in life's endeavors and therefore, universities should include experiences that raise awareness of self-efficacy with pre-service teachers to ensure their success as beginning teachers.

Sources of Self-Efficacy

Several studies have investigated the sources of self-efficacy originally proposed by Bandura (1997), which included mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states. These sources, in particular, should be examined to investigate how they function in and impact pre-service teachers' self-efficacy. In addition, Ahn, Usher, Butz, and Bong (2016) identified cultural background as a potential source of self-efficacy in a study of more than 3,000 middle school students from Korea, the Philippines, and the United States. The study results indicated that the interpretation and examination of self-efficacy sources vary according to the cultural context and the position of the person modeling the behavior. For example, students with family members who demonstrated strength in math concepts were more likely to express higher self-efficacy in math than other students. While Bandura (1997) did not address personality characteristics as one of the identified sources of self-efficacy, studies in recent years have expanded to include other sources of self-efficacy including personality characteristics, motivation, and enactive mastery experiences (Oh, 2011).

One area of study regarding self-efficacy sources relates to levels of preparation during the field experience. Brown et al., (2015) used a mixed-methods study of 71 elementary pre-service teachers to investigate the growth of pre-service teachers' feelings of preparedness during the clinical experience. Their findings indicated that feelings of preparedness increased during the internship. Also, Gavora (2010) reported that relatively high self-efficacy levels in pre-service teachers can be a positive outcome and should underlie successful teaching after they actually enter the teaching profession. However, further research was recommended to determine the educational, personal, social, and other factors that contribute to levels of teacher self-efficacy. Some concern has been expressed regarding the design of teacher education programs so they can successfully impact pre-service teachers' self-efficacy (Gavora, 2010).

Furthermore, Milner and Hoy (2003), in their study of an African-American teacher's self-efficacy, found that verbal feedback and encouragement can assist in creating a supportive environment while limited feedback and criticism can create a negative environment. Several research studies support these sources as accepted and verified means of developing self-efficacious behaviors. For example, Carr (2004) asserts that individuals who focus on their strengths generally have higher self-esteem than individuals who focus on their weaknesses. Moreover, Carr (2004) implies that people with lower self-esteem attempt to correct their areas of challenge by focusing on their weaknesses.

Additionally, Bautista (2011) investigated the effectiveness of a methods course that focused on providing various mastery and vicarious experiences to increase preservice elementary teachers' self-efficacy beliefs. The study included 44 preservice elementary teachers and noted that personal science teaching efficacy and science teaching outcome expectancy beliefs increased significantly over the semester field experience. The relevance of various

course factors on preservice elementary teachers' personal self-efficacy about teaching diverse student groups was the subject of the study (Bautista, 2011). Several additional major sources of self-efficacy including enactive mastery, cognitive pedagogical mastery, symbolic modeling, and cognitive self-modeling were identified as major sources of self-efficacy as a result of the study (Bautista, 2011). Moreover, the study found that gaps of understanding exist for many pre-service teachers due to their entry into the clinical field experience unprepared and without confidence in teaching a diverse student population (Bautista, 2011). The importance of the teacher as a determining factor in student success or failure in educational pursuits was also noted (Bautista, 2011).

In another study regarding sources of self-efficacy, Howardson and Behrend (2015) examined sources of self-efficacy identified by Bandura (1997) to determine if there was unique information about pre-training self-efficacy beliefs that was unrelated to achievement goal orientation. They noted that while there are several sources of self-efficacy, some sources such as vicarious experiences may be stronger or weaker in improving self-efficacy (Howardson & Behrend, 2015). This point aligns with Bandura's (1997) assertions that some interventions related to sources positively impact self-efficacy greater than others and that verbal persuasion is the weakest self-efficacy source. In addition, these findings may suggest that preparation programs can benefit by considering the sources of efficacy identified by Bandura when assessing pre-service teachers and planning practicum interventions (Bandura, 1997; Howardson & Behren, 2015).

While Morris et al. (2016) acknowledge that a considerable amount of information has been learned about teachers' sources of self-efficacy and the resulting effects on teachers and students, they highlight problems associated with self-efficacy research. According to Morris et

al. (2016), the measures of self-efficacy currently used to measure sources of self-efficacy are inconsistent with Bandura's descriptions. Additional research concurs with Morris et al.'s findings regarding the misinterpretations of concepts and methods used in some current measures of self-efficacy (Klassen et al., 2009). Furthermore, Morris (2017) argues that teacher education programs and professional development programs typically use multiple sources of information to improve teachers' knowledge of content and pedagogical skills which may not be included in the sources included on self-efficacy measurement scales. Among studies of self-efficacy sources, consistent findings were noted regarding the influence of mastery experiences, vicarious experiences, and social persuasions on participants' teaching self-efficacy regarding content and pedagogical knowledge (Morris, 2017; Uzunboylu & Selcuk 2016). Hence, well-designed studies with validated measures of the sources can be used to collect information on perceptions of the relationships between social cognitive traits and teaching practices (Morris, 2017).

Teacher Effectiveness

Oh (2011), in a study of 43 pre-service teachers' self-assessments of teaching efficacy, found that motivation and capabilities were significant contributors to the development of teacher-efficacy. While the majority of the research related to teacher effectiveness has been conducted with in-service teachers, there is evidence that building awareness and the capacity for effective teaching should begin with the mastery experiences included in the clinical field experiences. According to Oh (2011), teacher-efficacy is related to teachers' ability to influence student achievement. There are numerous contributing factors regarding the formulation of pre-service teachers' attitudes and beliefs regarding their abilities to meet the multidimensional roles of an effective classroom teacher (Skaalvik & Skaalvik, 2007). Teacher effectiveness has been examined in several studies regarding self-efficacy levels (Derosier & Soslau, 2014; Duckworth,

Quinn, & Seligman, 2009; Gavora, 2010; Morris & Usher, 2011). The findings of these studies suggested that self-efficacy "may account for individual differences in teacher effectiveness (Gavora, 2010, p. 18). In addition, Morris and Usher (2011), as well as Derosier and Soslau (2014), investigated confidence, self-efficacy, and the framework of social cognitive theory through an examination of sources of confidence and self-efficacy of university professors. Their findings implied that pre-service teachers need more interaction with exemplary mentors who display desirable teacher behaviors.

The issue regarding the selection and preparation of pre-service teacher mentors is an additional factor in the development of self-efficacy. Exploring the concepts of satisfaction, motivation, and persuasion, Morris and Usher (2011) question the influence of self-efficacy on career choices and the relationship of self-efficacy to persuasion and motivation. These studies support the conclusion that pre-service teacher effectiveness can be predicted by assessing self-efficacy levels. This insight supports investigation of the relationship between self-efficacy and grit levels along with the influence of specifically designed coursework and embedded clinical field experiences for pre-service teachers.

One of the essential skills of effective teachers is the capacity to manage the classroom environment. There is evidence that during the teacher education process, pre-service teachers' self-efficacy levels change regarding classroom management and student discipline strategies. Woodcock (2011) examined the extent of change reported by 467 aspiring elementary and secondary teachers regarding increases in their beliefs about their abilities to motivate students and promote student learning. Results showed that the teacher preparation courses for pre-service elementary school teachers appeared to have no influence on teacher efficacy levels. In addition, the results demonstrated that after completing the prescribed coursework, secondary

school pre-service teachers reported an increase in their general teaching efficacy. The results of this study suggested that pre-service teachers differ according to their coursework curriculum and school context in regards to the development of teacher efficacy (Woodcock, 2011).

Along these same lines, Yılmaz and Cavas (2008) examined preservice elementary teachers' classroom management beliefs tended to change with the teaching practice, while pre-service teachers' beliefs related to instructional management decreased with teaching practice. In addition, Flores (2015) investigated the effect of the teaching practice on 185 preservice elementary teachers' from two universities regarding science teaching efficacy and classroom management beliefs. The results of the study indicated that almost all pre-service elementary teachers maintained high self-efficacy beliefs regarding science teaching throughout the clinical experience; however, their beliefs related to classroom management increased as the field experienced progressed.

Grit as a Personality Trait

The character trait of grit includes several different elements including conscientiousness, resilience, perseverance, and passion. Duckworth (2016) argues that grit is a non-cognitive and essential characteristic demonstrated by high achievers. Maddi et al. (2012) concur with this perspective of Duckworth's Grit theory. The character trait of grit is an element of the personality traits of conscientiousness and courage (Ivcevic & Brackett, 2014; Lucas et al., 2015; Roberts, Lejuez, Krueger, Richards, & Hill, 2014). Conscientiousness is demonstrated by effort and courage is exemplified by continuing to pursue a task to completion despite one's fears (Lucas et al., 2015). In addition, Hill, Burrow, and Kendall (2016) assert that purpose and a positive emotional state are additional elements that comprise the personality trait of grit.

While ample research regarding attitudes and beliefs of pre-service and in-service teachers has been conducted, little to no research addresses requirements for psychology or other college courses that discuss the impacts of personality in teacher education programs (Wiens, 2012). Research regarding whether educational psychology coursework for pre-service teachers is helpful in preparing teacher candidates to be more effective in the classroom is absent (Wiens, 2012). In a study examining the predictive validity of personal qualities, Robertson-Kraft and Duckworth (2014) used a psychological framework to explore how biographical data on grit explained variance in novice teachers' effectiveness and retention. In a study of 461 novice teachers assigned to schools in low-income districts, grit scores and retention rates along with other data including SAT scores and college GPA were used to predict teacher effectiveness (Robertson-Kraft & Duckworth, 2014). The study found that teachers with higher levels of grit were more successful working with diverse demographic student populations. These findings imply that teachers with higher levels of grit may achieve increased success with students from lower socio-economic backgrounds or with learning challenges.

In contrast, some negatives must also be acknowledged regarding the personality trait of grit. Lucas et al. (2015) argue that the presence of grit may have some potential drawbacks. In a study investigating the actions of individuals persisting in completing tasks, individuals with higher grit levels invested more time in persisting toward the completion of the assigned tasks than might have been necessary and the participants continued to pursue the goals using an approach that had proven unsuccessful. In addition, participants who were identified to possess higher levels of grit were found to be less willing to give up when they encountered failure even though they were likely to incur a severe penalty as a result of their persistence with the task.

Moreover, study participants with higher levels of grit expended more effort and refused to withdraw from the assigned task. They expressed positive emotions regarding the task and insisted on persisting despite the circumstances indicating that they would probably fail. Study results showed that "gritty" individuals were even willing to risk suffering a monetary loss to persist toward the accomplishment of the goal (Lucas et al., 2015, p. 15). This tendency to resist changing direction when losses could be cut could have various implications for individuals with high levels of grit. The study findings also indicated that when the participants were succeeding with a task, groups with high and low levels persisted with the task; however, in the face of failure, the group with high grit levels persisted while the other group disengaged from the task.

In like manner, Shechtman, DeBarger, Dornsife, Rosier, & Yarnall (2013) examined the role of grit in the ability of 426 undergraduate students in solving amalgams on the computer or solving math problems. Through three distinct studies, it was found that those with more grit pressed through while those with less grit more quickly abandoned the process before solving the tasks. Additionally, risks and cost associated with grit were reviewed and it was reported that it can be unproductive to persevere with some challenges. The study found that continuously persevering for extrinsically motivated reasons could result in high levels of stress, anxiety, and distraction. In addition, these may have a negative impact on students' well-being (Shechtman, et al., 2013). Along these same lines, Kohn (2016) asserts that displaying a high level of grit in untenable situations for which there are no apparent solutions can be disadvantageous and harmful in some cases.

During the last decade, while the majority of the research has supported the tenets included in the Grit theory, opposing views of the significance of the Grit theory have been expressed toward a belief that the grit personality trait is not a significant determining factor of

success (Klassen et al., 2009; Morris, 2017). They propose that behavior is impacted in a minimal way by passion and perseverance. The repeated acts of engaging in overcoming and meeting challenges build an individual's capacity to address additional and more difficult future challenges.

Grit and Resilience

Resilience has been identified as an essential element of grit (Duckworth, 2016; Mansfield et al., 2016; Perkins-Gough, 2013). Recovery from stressful situations as well as the ability to handle challenging events describe the behaviors of a resilient individual (Komarraju, Karau, & Schmeck, 2009; Mansfield et al., 2016). The relationship between grit and resilience was investigated in a study conducted by Cassidy (2015) with 435 British undergraduate students. Academic self-efficacy and resilience of undergraduates in the first, second, and third years of study were measured to provide insights into the constructs of grit and resilience. The study results supported the association of self-efficacy as a predictor of academic resilience and noted a positive correlation between student self-efficacy and academic resilience. Self-efficacy has been identified as a key construct in previous studies examining factors affecting academic achievement and findings indicated that high self-efficacy is typically associated with high academic performance (Cassidy, 2015; Dial, 2015). However, some questions exist regarding the connection between motivation and perseverance as described by Bandura in the self-efficacy theory (Cassidy, 2015). In addition, Mansfield et al. (2016) confirmed the association between self-efficacy and resilience and noted that the lack of teacher resiliency is one of the contributing factors to teacher attrition and burnout. Hence, developing grit among pre-service teachers may help to reduce the numbers of new teachers who leave the nation's classrooms in the first few years of teaching.

Grit and Mindset

Another essential element related to the development of grit is an individual's mindset. According to Duckworth (2016), mindset may play a pivotal role in teachers' belief in their ability to make a difference with all students. The concept of mindset was developed by Dweck (2006) and identifies growth and fixed as the two types of mindsets that individuals typically demonstrate. A fixed mindset is characterized by an individual's belief that intelligence is an unchangeable factor and a growth mindset is characterized by an individual's value of displaying effort (Dweck, 2006). In other words, those with a fixed mindset subscribe to the belief of measuring intelligence by a particular number while those with a growth mindset operate with the belief that intelligence levels can be increased. While both categories of mindset help to provide insight into individuals' internal thinking processes, most people are combinations of both mindsets (Dweck, 2006). Duckworth (2016) concluded that having a growth mindset could be an asset in helping an individual in the development of grit.

Identifying students' levels of grit is one way to assist students in determining their view of the importance of effort as they learn to persist in the face of academic and personal challenges (Duckworth, 2015; Dweck, 2006; Yeager & Dweck, 2012). According to Uzunboylu and Selcuk (2016), individuals who perceive their self-efficacy to be less than it actually is, expend less effort and persist less in completion of tasks than individuals who have higher self-efficacy perceptions. Building on the collaborative work of Duckworth (2016) and Dweck (2009), these studies determined how a fixed belief that failure is permanent could prevent students from academic success. Experiences that develop growth mindsets are essential in the development of teachers with a strong sense of self-efficacy. Since self-efficacy involves the

approach over a long-term to achieving success, it seems reasonable to expect that a growth mindset helps in reaching those goals.

Similarly, Hochanadel and Finnamore (2015) researched competencies related to persistence in reaching academic goals through grit and a growth mindset at the university level. In addition, they recommended that faculty in university teacher preparation programs should concentrate more than the need for students to earn good grades; they should challenge students to think and devise solutions to problems to support an increase in the development of the growth mindset, thereby facilitating the achievement of the process in achieving long-term goals. They concluded that a growth mindset could be taught to faculty, students, and parents. Additionally, recommendations were provided for increasing growth mindset, persistence, and grit in college and university students.

The connections between mindset, grit, and self-efficacy are intertwined as the characteristics of one psychological trait and one's beliefs and attitudes influence the other areas on the ability to develop and achieve success with long-term goals. As stated previously, the Grit theory relates to the accomplishment of long-term goals and, therefore, a mindset for long-term success is important in the development of a strong sense of teacher efficacy. Using encouraging phrases that motivate pre-service teachers to continue to engage in learning and challenging field experiences can be beneficial in assisting them in focusing on continued progress. For example, when students express self-defeating responses in situations, they should be encouraged with words such as "not yet" or "your brain is growing" to serve as a reminder that failure is an important step in success (Dweck, 2010, p. 19). The focus should be on the realization of the final goal of success and not on the momentary failure of clinical field

experiences such course assignments, student activities, lesson plans, or assessment results (Duckworth, 2016; Dweck, 2006).

Measuring Teacher Efficacy

Teacher efficacy has been investigated for more than 30 years (Gavora, 2010; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Perspectives on the various techniques of measuring self-efficacy have been the subject of debate over the last few years. In response to the growing need for an accurate teacher-efficacy instrument, Tschannen-Moran and Hoy (2001) developed an instrument based on the assessment originally developed by Bandura (2006). The instrument was designed to assess the self-efficacy of pre-service and in-service teachers. The survey instrument consists of questions categorized into three areas: instructional planning, classroom management, and student engagement (Tschannen-Moran et al., 1998). The questions serve as a basis for determining the types of desirable teacher behaviors. Numerous research articles on the topic of teacher-efficacy reference this study and the questionnaire that was developed as an outcome of this research. Tschannen-Moran et al. (1998) present an integrated and cyclical model to assist in building the confidence of pre-service teachers.

In contrast, Lee and Bobko (1994) found that self-efficacy is isolated to the performance of individual tasks and is not necessarily cyclical in nature. The goal of the clinical experience is to prepare prospective teachers to perform well as professional teachers. Perspectives on the various techniques of measuring self-efficacy have been the subject of debate over the last few years. In response to the conversations regarding self-efficacy measurements, Tschannen-Moran and Hoy (2001) developed an instrument to measure teacher-efficacy. Their instrument was based on the assessment originally developed by Bandura (2006). The original instrument

developed by Bandura (2006) included categories designed to measure the most challenging areas of teaching such as efficacy in the areas of decision-making, instruction, and discipline.

Following the creation of the initial assessment, several instruments were developed to measure teacher and pre-service teacher self-efficacy including the RAND foundation as well as several versions of the Teacher Efficacy Scale (TES) developed by Gibson and Dembo (Gavora, 2010). Findings from the instruments promoted the development of additional instruments designed to measure teacher self-efficacy in specific content areas (Ashton, 1984; Hoy & Spero, 2005; Morris & Usher, 2011). Demonstrations of high levels of self-efficacy in pre-service teachers should serve to provide indications for success as they assume the roles of professional teachers in their own classrooms (Gavora, 2010).

The Teachers' Sense of Efficacy Scale (TSES) instrument was developed as a result of the early assessments and is designed to assess the self-efficacy of pre-service and in-service teachers (Tschannen-Moran & Hoy, 2001). The survey instrument consists of questions categorized into three areas: instructional planning, classroom management, and student engagement. The questions serve as a basis for determining the types of desirable teacher behaviors. Numerous research articles on the topic of teacher-efficacy reference this study and the accompanying questionnaire. Tschannen-Moran et al. (1998) note that the instrument questions can also be used as the basis for discussion of the cyclical nature of teacher-efficacy and they present an integrated model to assist in building the confidence of pre-service teachers. The goal of the clinical experience is to prepare prospective teachers to perform as well as professional teachers. Measuring self-efficacy is an integral component in determining pre-service teacher effectiveness. In addition, Wheatley (2005) notes that the data collected through

these instruments may be "too broad or too narrow to be interpretable," due to the "complex meanings of teachers' efficacy beliefs" (p. 758).

Measuring Grit

Regarding grit measurement techniques, Duckworth et al. (2007) developed a grit scale to assess an individual's level of passion combined with perseverance. The scale measures several factors that contribute to the Grit theory equation including the concepts of perseverance of effort and consistency of interest (Duckworth et al., 2007). Assessing attitudes and behaviors that were characteristic of high-achievers was the intended purpose that propelled the creation of the grit scale (Duckworth et al., 2007). The items developed for use in the scale addressed an individual's ability to stay focused on goals in spite of adversities and include items such as "I often set a goal but later choose to pursue a different one" and "I have achieved a goal that took years of work" (Duckworth et al., 2007, p. 1091). After collecting data from more than 1,545 participants from 2004-2007, the Grit scale was administered to several groups including West Point Cadets (Duckworth et al., 2007). The findings from the study of 2,566 West Point Cadets indicated a predictive relationship between the personality trait of grit and success (Duckworth et al., 2007). Based on the results of this study, the Grit theory gained momentum and has since been used as the basis of several studies (Christensen and Knezek, 2014; Lucas, et al., 2015; Maddi et al., 2012; Morris, 2017).

According to Hochanadel and Finnamore (2015), the grit scale was developed to measure the characteristics of grit. The scale can be used to help educators identify their own levels of grit as well as to teach students to measure and analyze their own levels of grit. Knowledge regarding student grit levels can assist educators in creating learning environments that support

students in learning to persist and thrive as they pursue the achievement of long-term academic and personal goals (Hochanadel and Finnamore, 2015).

Christensen and Knezek (2014) examined the relationship between traditional measures of motivation and persistence in contrast to more recently developed measures of grit. In this study of 152 secondary school students, two types of grit were identified. According to the study grit-related measures include study habits, persistence, interest, and perseverance in the accomplishments of goals and another is related to achieving consistency over time. These study results supported the definition of grit as the power of passion and perseverance over an extended period toward the realization of a goal.

Student Achievement

At the heart of teacher preparation is the goal of developing teachers who possess the knowledge, skills, and capacity to provide students with curriculum, instruction, and assessment experiences that lead to increased student achievement. Regarding self-efficacy and student achievement, a body of research asserts that self-efficacy contributes to teachers' abilities to model learning for students that leads to increases in student engagement and ultimately to improvements in student achievement (Snyder & Fisk, 2016; Wheatley, 2005; Tschannen-Moran et al., 1998). Pre-service teachers benefit from using the clinical experience to actively practice methods of engaging all students in effective learning experiences. This responsibility to implement engaged learning necessitates the ability of pre-service teachers to design various differentiated learning activities.

Wheatley (2005) reported that confident teachers with high levels of self-efficacy are more likely to use innovative instructional methods and participate in more professional development opportunities. Furthermore, teacher confidence leads to a positive teacher attitude

toward the ability to motivate students to learn (Derosier & Soslau, 2014). In the clinical experience, pre-service candidates practice using motivational strategies to influence student learning with the intended outcome of assisting each student in achieving academic success. Along these lines, Judge, Jackson, Shaw, Scott, and Rich (2007) examined the level of a teacher's self-efficacy to predict individual performance levels for student achievement. The increased use of democratic teaching and constructivist approaches is more often observed in classrooms of teachers who report higher self-efficacy perceptions (Woolfolk Hoy & Hoy, 1998). Since learning experiences help to develop student knowledge and ability, concentrating pre-service experiences on the development of self-efficacy and grit ultimately leads to the creation of effective pre-service and first-year teachers. Other studies also provide evidence that an individual's ability to impact student achievement is accompanied by cognitive processes and teacher competencies that result from higher perceived self-efficacy (Cone, 2009; Dial, 2015; Snyder & Fisk, 2016).

Teacher candidates must believe in their ability to affect student achievement and performance positively for all students. This ability is required with diverse student populations who often present unexpected challenges such as disruptive student behavior and unmotivated students that require the application of creative learning strategies over an extended period of time (Pendergast et al., 2011). For example, Morris and Usher (2011) note that pre-service teachers working with more and more diverse populations are required to believe in their ability to design learning tasks that meet the needs of all students. In addition, Cone (2009) suggests that it is advantageous for pre-service teachers to engage in interactions with diverse learning populations before the beginning of the student teaching semester.

In contrast, some researchers reference evidence that supports opposing arguments regarding the significance of self-efficacy in the development of quality teachers (Morris & Usher, 2011; Pajares, 1996). Although the effectiveness of pre-service teachers is not currently connected to student learning results, the practice of evaluating teacher performance based on student performance is currently implemented in several states and will perhaps become an element in the pre-service evaluative criteria in the not too distant future. This view is supported by the increase in the number of states requiring teacher interns to obtain pre-service certificates to qualify for placements in teaching internships (Kumashiro, 2015).

In a mixed-methods study of 15 African-American pre-service male teachers, Yates et al. (2015) examined the role of grit in the participants' recruitment, retention, and certification. While the study sample was small, results indicated that grit can be taught and also confirmed grit as a better predictor of success than talent and intelligence. These findings suggest that the inclusion of grit in the curriculum of teacher preparation programs through challenging and rigorous course assignments may support the development of skills, attitudes, and behaviors that lead to successful careers in the classroom. Also, based on the study findings, it was predicted that the study participants would become successful teachers and demonstrate the ability to support their students in the development of grit and other persevering behaviors.

As diversity in classrooms across the nation increases, the education field will require a cadre of teachers who are capable of relating to and meeting the needs of students from various ethnic, socio-economic, and socio-cultural backgrounds (Cone, 2009). This impending change supports the need for the development of teachers who have a strong sense of self-efficacy and believe in their ability to assist all students in achieving academic success. Low teacher expectations can also negatively affect both the efficacy and performance of the teacher and the

students in the classroom (Cone, 2009). Additionally, the development of self-efficacy as a focus of university teacher preparation programs is important if pre-service teachers are to develop the skills and abilities required to continue forward momentum when faced with obstacles and challenging circumstances with students (Bautista, 2011; Cone, 2009).

Summary

The literature discloses several approaches regarding the impact of the perceptions and practices of pre-service teachers related to self-efficacy. In addition, several conclusions can be drawn from the review of the literature related to self-efficacy. Every student has the right to learn in a classroom with a teacher who possesses the knowledge, skills, and confidence required to help students attain success. Pre-service teachers in most teacher preparation programs participate in a clinical field experience designed to develop confidence in their ability to implement essential knowledge and skills related to effective teaching (Kumashiro, 2015; NCATE, 2010).

The types of experiences that contribute to the development of self-efficacy are open for debate. One potential factor that experiences can provide that may contribute to self-efficacy is the character trait of grit, which forms the basis of the concept of the Grit theory (Duckworth, 2016). The exceptional demands of teaching suggest merit in the relevance of grit as a contributor to pre-service as well as new teacher success rates (Robertson-Kraft & Duckworth, 2014). Research from a variety of sources indicates that self-efficacy is important but there are few clear directions that can be used to ensure that pre-service candidates are engaged in field experiences that build individual self-efficacy. Pre-service teachers who consistently demonstrate passion, perseverance, resilience, and self-efficacy in meeting common challenges

successfully address teacher tasks such as implementing classroom management techniques, planning effective lessons, and engaging students in active learning.

Teacher preparation programs that develop a culture of self-efficacy and grit may be instrumental in changing the nationwide landscape regarding the preparation of new teachers. Numerous articles and studies have been conducted on the topic of self-efficacy during the past five decades. Reviewing the available literature for themes related to pre-service teachers reveals a gap in the research regarding the relationship between self-efficacy and grit. Although the research addresses several topics associated with self-efficacy including student achievement and the effects of beliefs on success, limited research exists related to the role of self-efficacy of pre-service teacher candidates in responding to addressing and overcoming challenges encountered during the field experience. Furthermore, sparse research exists related to the use of strategies in university teacher preparation programs focused on developing knowledge and skills such as grit and self-efficacy that may lead to increased success in initial teacher preparation and in the beginning years as a classroom teacher.

In this chapter, the theoretical frameworks of self-efficacy and Grit theory were delineated. Additionally, themes of current literature related to the research topics were presented and gaps in the literature were discussed. Next, in Chapter Three, the methodology and data used to investigate the research question will be detailed.

CHAPTER THREE: METHODS

Overview

Chapter Three discusses the methodology and data that will be used to address the research question. This study will investigate the predictive correlational relationship between grit and self-efficacy. This chapter includes the design, research question, hypothesis, participants and setting, instrumentation, procedures, and data analysis.

Design

This study used a predictive correlational research design to determine if a predictive relationship exists between grit test scores and self-efficacy scores of pre-service teachers. The correlational research design is appropriate for this study due to the use of two quantitative variables in the prediction of a relationship (Gall, Gall, & Borg, 2007). In addition, the Pearson product-moment correlation is the bivariate measure that was computed to determine the strength and direction of the relationship (Gall et al., 2007). For the purposes of this research study, the Grit-S scale score was the predictor variable and the Teachers' Sense of Efficacy Scale (TSES) score was the criterion variable.

Research Question

The research question for this study was:

RQ: Can the grit score as measured by the Short Grit Scale (Grit-S) predict pre-service teachers' self-efficacy beliefs as measured by the Teachers' Sense of Efficacy Scale (TSES)?

Hypothesis

The null hypothesis for this study was:

H₀: There is no statistically significant correlation between pre-service teachers' grit level as measured by the Short Grit Scale (Grit-S) and self-efficacy as measured by the Teachers' Sense of Efficacy Scale (TSES).

Participants and Setting

The participants for this study were drawn from a voluntary convenience sample of students majoring in education at a private Mid-Atlantic university who are completing the student teaching phase of the clinical field experience during the 2017-18 school year. All students completing student teaching were invited to participate. The School of Education (SOE) at the University places more than 300 students each year in local and remote public and private elementary, middle, and high schools. The University enrollment consists of more than 100,000 students including residential and online students. According to State University (2017), student enrollment demographics of the University include 41% male and 59% female, representing all 50 states and 86 countries. Additional demographics include Caucasian (46.3%), African American (18.2%), Hispanic (1.7%), American Indian (.05%), Asian/ Pacific Islander (.08%), International Students (2.6%), and unknown ethnicities (31%).

For this study, the number of participants sampled was 73, which exceeds the required minimum for a medium effect size. According to Gall et al. (2007), the number of participants required for a medium effect size with the statistical power of 0.70 at the 0.05 alpha level is 66. The sample originated from the students enrolled in the teacher preparation program in the SOE at a Mid-Atlantic university. The target population included University students completing the student teaching phase of a teacher preparation program. The accessible population consisted of the 534 students enrolled in the teacher preparation program at the selected university. The study consisted of naturally occurring groups of students entering the internship phase of the SOE in

undergraduate and graduate programs who were assigned to clinical field placements in elementary, middle, and high schools. The sample also reflected the internship subject areas of language arts, math, science, social studies, and music. In addition, students were identified who were completing the requirements for certification in special education.

<div align="center">**Instrumentation**</div>

Participants in this study completed two questionnaires, the Short Grit Scale (Grit-S) and the Teacher's Sense of Efficacy Scale (TSES). The Grit-S was used to measure the grit level and the TSES was used to measure the level of teacher-efficacy. Scores on the instruments were analyzed to determine if a correlational relationship exists between the two variables of grit and self-efficacy.

Short Grit Scale

The Grit-S (see Appendix A) was developed at the University of Pennsylvania (Duckworth, 2016; Duckworth & Quinn, 2009). Grit, as a personality trait, is defined as the combination of perseverance and passion (Duckworth & Quinn, 2009). The scale contains the two subscales of perseverance of effort and consistency of interest. There are eight items included in the scale with four in each subscale. The Grit-S contains 8 items and was developed based on the Original Grit Scale (Grit-O) in response to feedback that raised questions regarding the reliability and validity of the initial scale, which consisted of 12 items (Duckworth & Quinn, 2009).

Scoring is determined based on a 5-point Likert scale ranging from 5 = very much like me to 1 = not like me at all. Possible total scores range from 5 (high score meaning extremely gritty) to 1 (low score meaning not at all gritty). For purposes of the instrument, gritty refers to the spectrum of lower or higher scores received on the Grit-S scale (Duckworth et al., 2007).

Total scores are divided by eight using questions such as "Setbacks don't discourage me, I am a hard worker, I finish whatever I begin, and I am diligent" (Duckworth & Quinn, 2009).

Reliability for the scale and subscales was established through confirmatory factor analysis from four of the six samples. Reliability for the scales was reported using Cronbach's alpha across the four samples that ranged from 0.73 to 0.83, 0.73 to 0.79 for the consistency of interest subscale, and 0.60 to 0.78 for the perseverance of effort subscale (Duckworth & Quinn, 2009). Predictive and consensual validity was confirmed by collecting data twice over a 1-year time period for three of the six samples ($r = 0.68$, $p < 0.001$). This instrument has been used in numerous studies including Bowman, Hill, Denson, and Bronkema (2015), Maddi et al., (2012), and Strayhorn (2014). Permission to use the instrument is not required for researchers and educators.

Teachers' Sense of Efficacy Scale

The Teachers' Sense of Efficacy Scale (TSES) was developed at Ohio State University and was created based on the Bandura scale in response to the need for a more effective instrument to measure teacher efficacy following an investigation of existing self-efficacy assessments (Tschannen-Moran & Hoy, 2001). Previous self-efficacy instruments such as Gibson and Dembo's teacher efficacy scale and the RAND measure included ambiguous language and were not widely accepted by researchers (Tschannen-Moran & Hoy, 2001). Self-efficacy is defined as an individual's perception of his or her effectiveness (Bandura, 1994).

Correspondingly, teacher-efficacy is defined as teachers' beliefs about their own ability to successfully affect student behaviors and performance (Ashton, 1984; Dorel et al, 2016; Jamil et al., 2012). There are two forms of the self-report questionnaire. For the purposes of this study, the long form will be used. The instrument measures three factors of self-efficacy:

efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement. Scoring is determined based on a 9-point scale for each item using the following ratings: 1 = Nothing, 3 = Very little, 5 = Some influence, 7 = Quite a bit, and 9 = A great deal. Possible total scores on the 24-item form total scores range from 24 (low score indicating low self-efficacy) to 216 (high score indicating high self-efficacy). Items on the questionnaire are worded asking how well, how much, or to what extent do teachers engage in the criterion behaviors such as, "To what extent can you gauge student comprehension of what you have taught?" (Tschannen-Moran & Hoy, 2001, p. 800). Reliability was established through factor analysis for the 24-item instrument as well as for each subscale.

Reliability for the sub-scales was reported using Cronbach's alpha at 0.91 for instruction, 0.90 for management, and 0.87 for engagement. Reliability for the 24-item scale was 0.94. Construct validity was confirmed by positive correlation of the TSES scores to the RAND Items (r = 0.18 and 0.53, p < 0.01), the Gibson Dembo TES (r = 0.64, p < 0.01), and the general teacher efficacy (GTE) factor (r = 0.16, p < 0.01). Peer reviewed studies using this instrument include Hoy and Spero (2005), Klassen and Chiu (2010), Klassen et al., (2009), and Poulou (2007). The questionnaire is included (see Appendix B). In addition, permission to use the instrument was granted (see Appendix C).

Procedures

Preceding the initiation of the study, the researcher contacted the SOE for permission to conduct the study and submitted the study proposal to the Institutional Review Board (IRB). Once the IRB granted permission to move forward, an e-mail was sent to the SOE at the University selected for the study requesting assistance with contacting potential study participants and providing the recruitment letter (see Appendix D). The participants accessed the

survey online through the Qualtrics survey platform. Demographic information was included at the beginning of the survey (see Appendix E for the demographic questions). Once the questionnaires were available in Qualtrics and approvals were received from the SOE and the IRB, an e-mail was sent to the SOE to forward to students currently completing the clinical field experience (see Appendix F for the SOE approval form and Appendix G for the IRB approval form). The e-mail explained the study, invited student participation, and provided links to the online consent form and research surveys. One week later, a reminder e-mail was sent to the accessible population. The time required to complete the questionnaire was 20-25 minutes.

The consent form provided participants with information regarding the study including the voluntary nature of the study and the right to withdraw from the study at any time (see Appendix H). In addition, the participants were informed that results of the study might be published; however, identifying information would be excluded. The consent forms were included as the first page of the online survey and respondents were required to check a box indicating consent. One week following the first reminder, a second reminder was sent to the accessible population. The online questionnaires closed 10 days later. An e-mail was sent to the instructors of the participating courses to forward to students in their respective classes thanking the students for their participation and providing them with instructions for requesting study results following the completion of the study.

Following the closing of the questionnaires, the researcher collected and exported the data from Qualtrics into SPSS and began analyzing the data. Scores for each instrument were tallied and characteristics were coded. Data was transmitted electronically using Qualtrics on a password-protected network. Data files were created and organized. All files, documents, and questionnaires were stored and organized via the researcher's computer in a password-protected

folder with the back-up of files on external storage devices. Data organization allows the researcher to consolidate all information in one central location to facilitate data analysis (Creswell, 2013).

Data Analysis

The dataset was entered and processed using the SPSS to conduct a bivariate linear regression analysis, which was used to determine the strength and direction of the two variables of grit and self-efficacy. The product-moment correlation coefficient (r) was used to analyze the null hypothesis and to determine the strength and direction of the relationship between the two continuous variables. Data was screened for outliers using a Box and Whisker plot.

In addition, the preliminary analysis included conducting assumption tests to check for continuous independent and dependent variables, normality using the Kolmogorov-Smirnov because the sample size is greater than 50 ($n > 50$), and scatter plots to check for bivariate outliers and violations of linearity and bivariate normal distribution. Assumptions of normality, linearity, and bivariate normal distribution were reported at the 0.05 confidence level. Values for R^2, F Statistic (F), and degrees of freedom were reported. Additionally, significance was reported at $p < 0.05$ alpha level and a medium effect size with 0.07 statistical power.

Summary

In this chapter, the methodology and data that were used to address the research question were discussed. Components of the chapter included the design, research question, hypothesis, participants and setting, instrumentation, procedures, and data analysis. The plans for preliminary analysis of the data and assumption testing were also discussed. Next, in Chapter Four, the findings of the research study will be detailed.

CHAPTER FOUR: FINDINGS

Overview

Chapter Four discusses the findings from the data analysis which was used to address the research question. This study investigated the predictive correlational relationship between grit and self-efficacy. The Short Grit Scale (Grit-S) and the Teachers' Sense of Efficacy Scale (TSES) were the instruments used to collect the data regarding the relationship. This chapter includes the research question, null hypothesis, descriptive statistics, and results of the study.

Research Question

RQ: Can the grit score as measured by the Short Grit Scale (Grit-S) predict pre-service teachers' self-efficacy beliefs as measured by the Teachers' Sense of Efficacy Scale (TSES)?

Null Hypothesis

H₀: There is no statistically significant correlation between pre-service teachers' grit level as measured by the Short Grit Scale (Grit-S) and self-efficacy as measured by the Teachers' Sense of Efficacy Scale (TSES).

Descriptive Statistics

The descriptive statistics for the quantitative variables of grit ($M = 2.58$ and $S.D. = .58$) and self-efficacy ($M = 171.03$, and $S.D. = 26.06$) were obtained for a sample of 73 pre-service teachers. The study participants were completing the student teaching phase of the teacher preparation program at a Mid-Atlantic university. Total grit scores ranged from 1.38 to 3.88 out of a possible maximum score of 5.0 and total self-efficacy scores ranged from 116 to 212 out of a possible maximum of 216. Grit scores were determined based on a 5-point Likert scale and self-efficacy scores were determined based on a 5-point Likert scale with values of 1, 3, 5, 7, and 9. Surveys were distributed to 564 pre-service teachers and 73 (13%) were returned. The

sample consisted of 56 (77%) females and 17 (23%) males. Most of the survey respondents

were graduate students (62%) and most were completing their internships in elementary schools

(46%). Regarding ethnicities, there were 21 (29%) African-Americans, 46 (62%) Caucasians,

and 6 (8%) Hispanics. More than half of the participants (60%) were pursuing certification in

special education. Descriptive statistics for grit and self-efficacy are listed in Tables 1 and 2.

Table 1

Descriptive Statistics for the Variables of Grit and Self-efficacy

Variables	N	Mean	*SD*	Min	Max
Grit Score (Predictor Variable)	73	2.58	.58	1.38	3.88
Self-Efficacy Score (Criterion Variable)	73	171.03	26.06	116.00	212.00

Table 2

Participant Demographics and Characteristics

Characteristics	n	%
Gender		
Female	56	77.0
Male	17	23.0
Ethnicity		
African-American	21	29.0
Caucasian	46	63.0
Hispanic	6	8.0
Degree Program		
Graduate	45	62.0
Undergraduate	28	38.0
Program Delivery Mode		
Online	59	81.0
Residential	14	19.0
Student Teaching School Level		
Elementary	46	63.0
Middle	20	27.0
High	7	10.0
Completing Special Education Certification		
Yes	44	60.0
No	29	40.0

Data Screening

Data screening for this research study was conducted on the predictor variable of grit scores and the criterion variable of self-efficacy with specific attention given to data inconsistencies and outliers. Data screening included examining data using box and whisker plots and histograms. Box and whisker plots (see Figures 1 and 2) were used to identify extreme outliers and histograms were examined to determine normal distribution of data points. The

researcher scanned the data for inconsistencies. No data errors or inconsistencies were

recognized in the visual process. The histogram for self-efficacy was somewhat asymmetrical;

however, the scores were similar enough to a normal distribution to meet the data screening
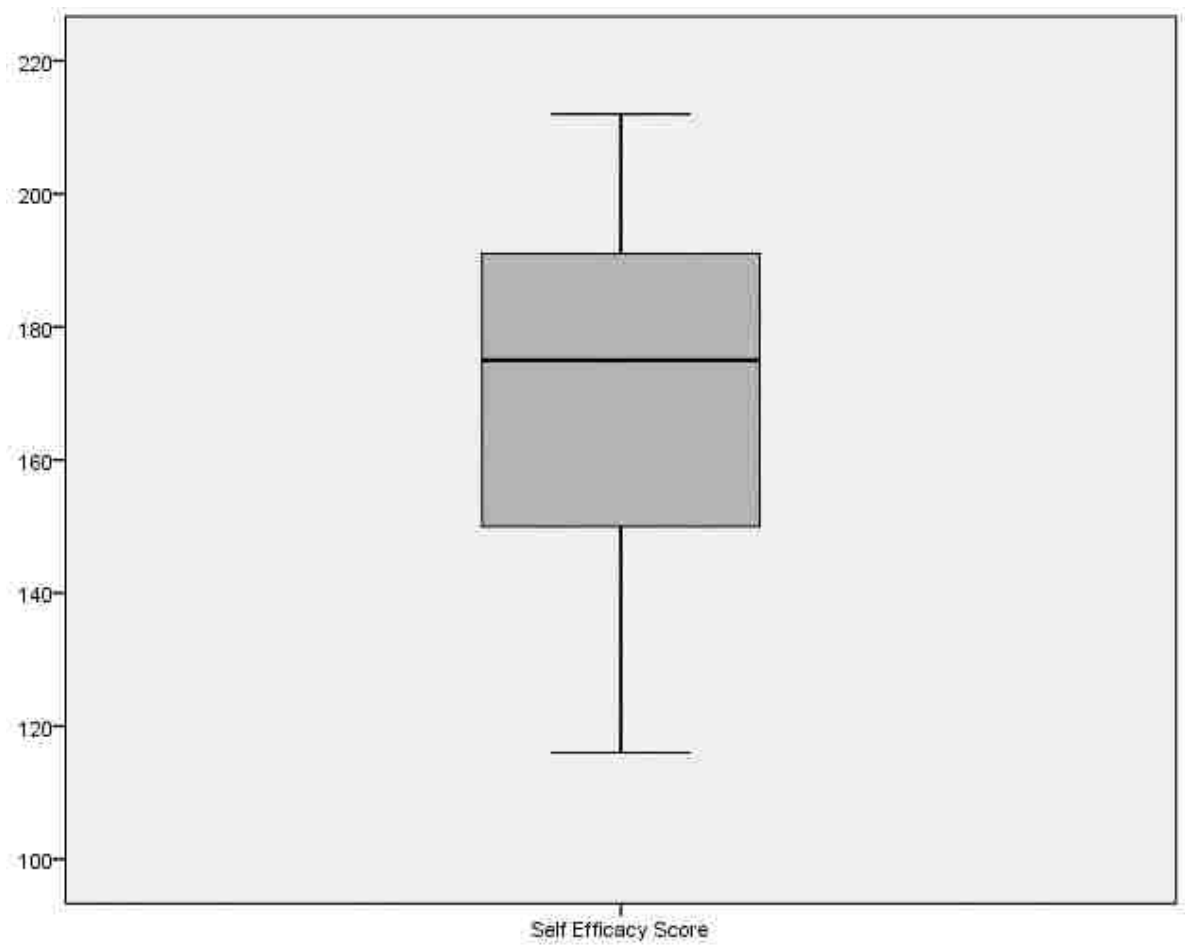
requirements (see Figures 3 and 4).

Figure 1. Box and whisker plot for self-efficacy scores of pre-service teachers completing the
student teaching phase of a teacher preparation program at a Mid-Atlantic university.

Figure 2. Box and Whisker Plot for Grit scores of pre-service teachers completing the student teaching phase of a teacher preparation program at a Mid-Atlantic university.
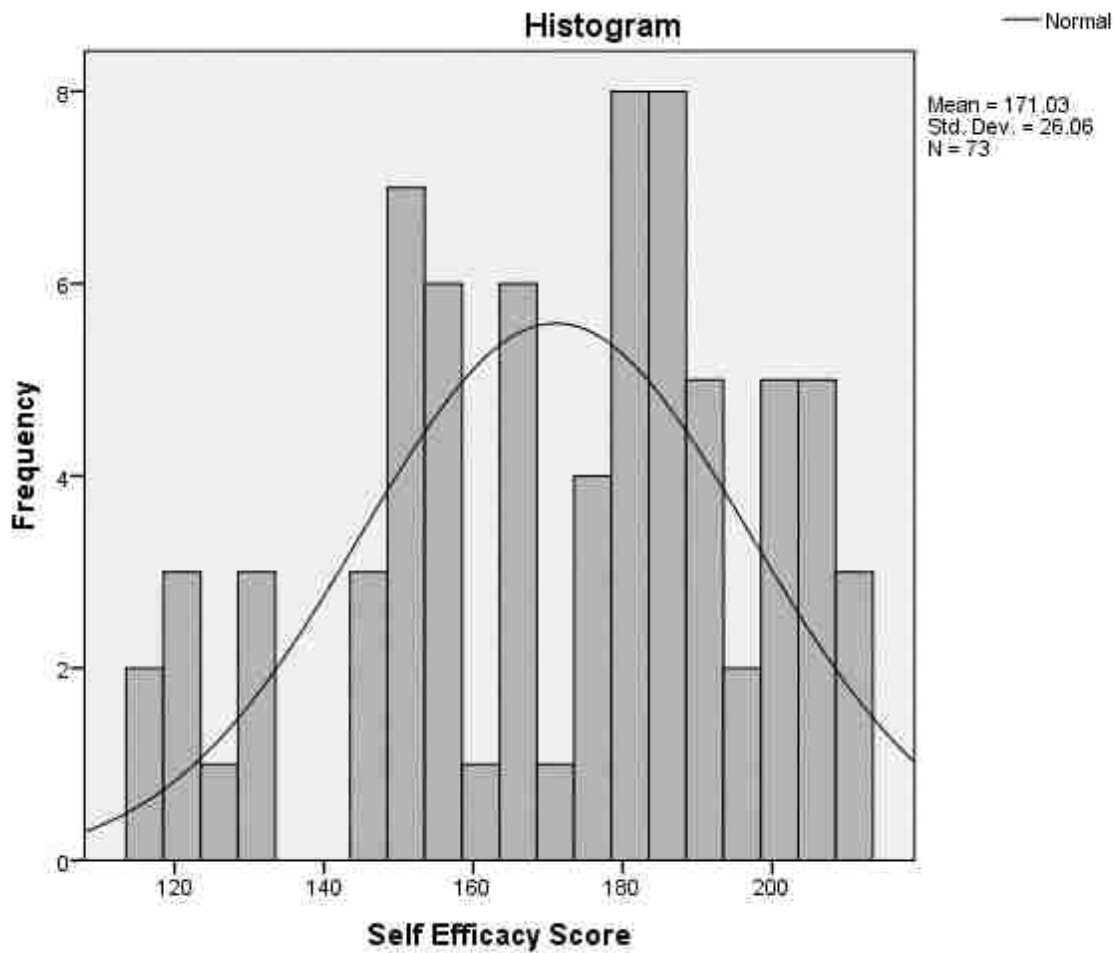
Figure 3. Histogram of total self-efficacy scores of pre-service teachers completing the student teaching phase of a teacher preparation program at a Mid-Atlantic university.
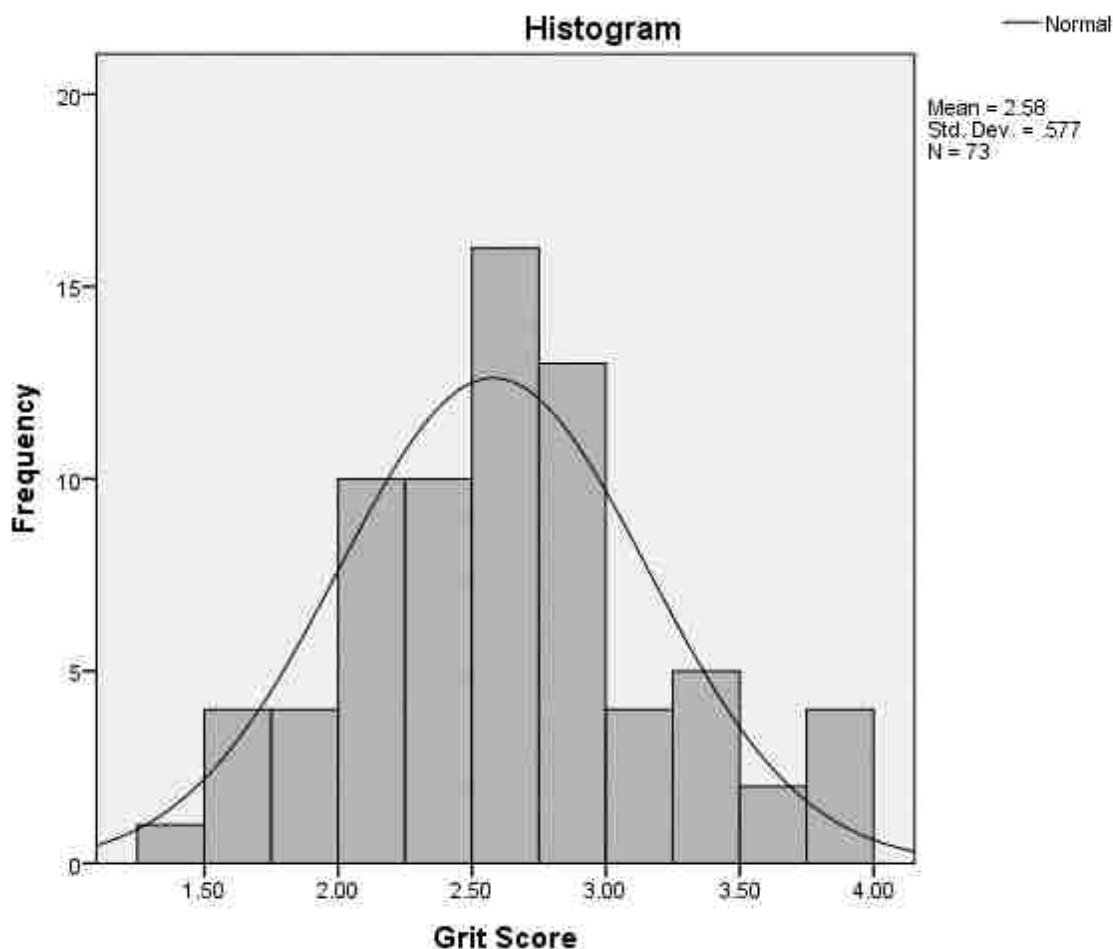
Figure 4. Histogram of total grit scores of pre-service teachers completing the student teaching phase of a teacher preparation program at a Mid-Atlantic university.

Assumptions

A Pearson's product-moment correlation test was used to analyze the null hypothesis and to determine if a statistically significant relationship existed between the predictor variable (grit scores) and the criterion variable (self-efficacy scores). The Pearson's product-moment correlation test required that the assumptions of measurement level, independent observations, normality (similar variability in both variables), bivariate outliers (no unusual variable combinations), linearity (variables are linearly related), and homoscedasticity (normal distribution across two variables) were met. A scatter plot was run between the predictor

variable (grit scores) and the criterion variable (self-efficacy scores). The scatter plot did not indicate any extreme bivariate outliers and the data appeared to be normally distributed (see Figure 5). The cases represented a random convenience sample from the accessible population, and the scores were independent of each other.

Figure 5. Scatterplot of overall grit and self-efficacy scores of pre-service teachers completing the student teaching phase of a teacher preparation program at a Mid-Atlantic university.
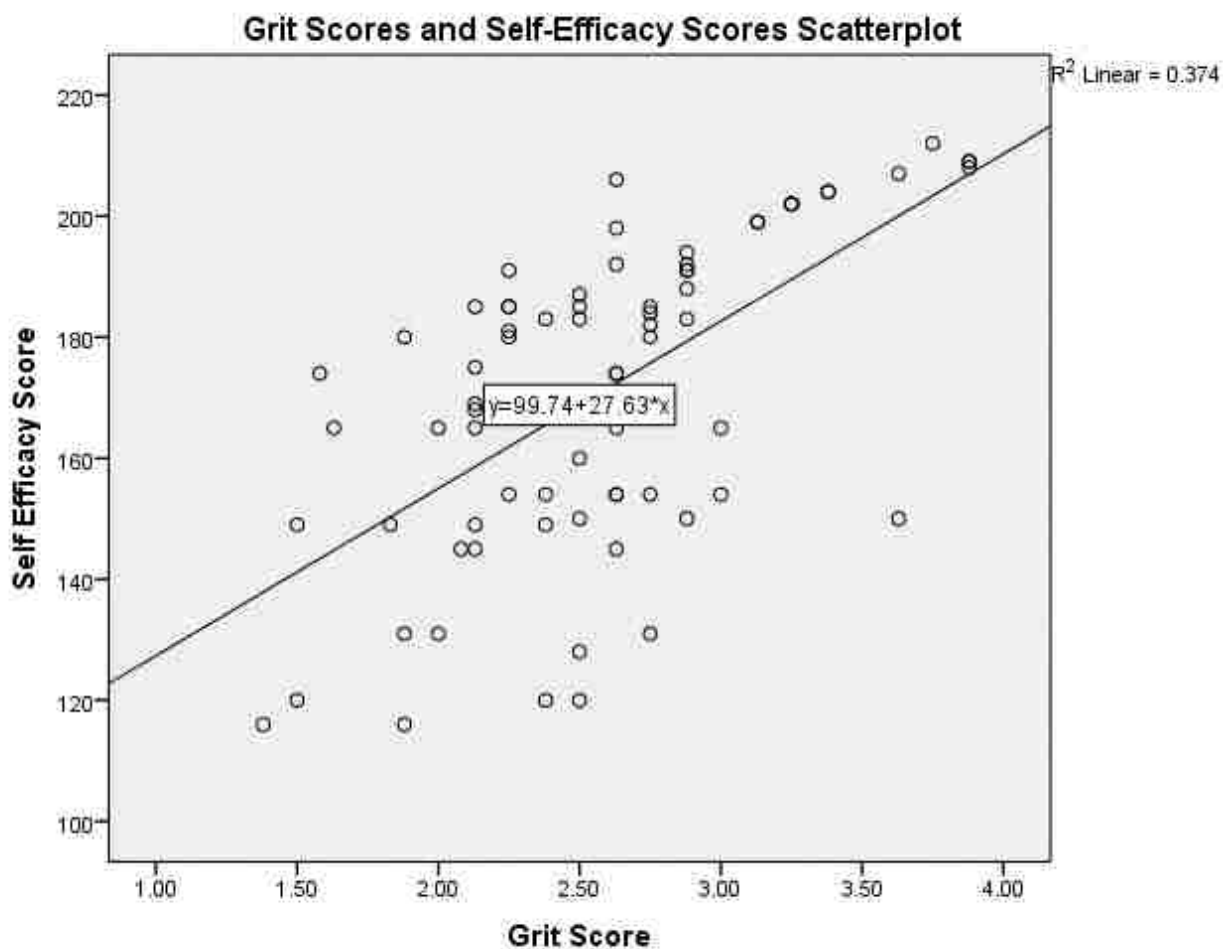
Assumption of normality was examined using the Kolmogorov-Smirnov as $n > 50$ (Green & Salkind, 2014). No violations of normality were found for grit scores; however, the

assumption of normality for self-efficacy scores was not met. See Table 3 for the Kolmogorov-Smirnov test results.

Table 3

Kolmogorov-Smirnov[a] Test of Normality

Variables	Statistic	Df	*Sig*
Grit Score	.096	73	.094
Self-Efficacy Score	.128	73	.006

a. Lilliefors Significance Correction

Further analysis of the data revealed negative skewness (-.341) and a slightly negative kurtosis (-.009) for grit scores showing a longer tail on the left-hand side of the distribution, indicating many high scores. Self-efficacy scores displayed a negative skewness (-.483) and negative kurtosis (-.765) which contained multiple peaks with a longer tail on the left-side of the distribution indicating that lower scores were recorded for few respondents. Normal distribution is indicated by skewness and kurtosis values of 0; however, skewness and kurtosis values are acceptable between the range of -2.00 to +2.00 (Warner, 2013). Since the skewness and kurtosis for grit and self-efficacy were within the stated ranges, the researcher continued with the analysis procedures. See Table 4 for skewness and kurtosis results.

Table 4

Description of Skewness and Kurtosis

Variables	Skewness	Kurtosis
Grit Score	-.341	-.009
Self-Efficacy Score	-.483	-.765

Results for Null Hypothesis

A Pearson's product-moment correlation coefficient was conducted to test the null

hypothesis that there is no significant relationship between grit scores and self-efficacy scores of

pre-service teachers (N = 73) completing the student teaching phase of a university teacher

preparation program and to assess whether the levels of pre-service teacher self-efficacy could be

predicted by levels of grit. Data were obtained for the quantitative variables of grit scores (M =

2.58 and *S.D.* = .58) and self-efficacy scores (M = 171.03, and *S.D.* = 26.06). The Kolmogorov-

Smirnov normality test indicated normal distribution for grit scores; however, the assumption of

normality for self-efficacy scores was rejected. Due to this result, the non-parametric

Spearman's rho test was run in addition to the Pearson's product-moment test. According to

Warner (2013), Spearman's rho can be used to address problems with non-normal data. The

strength of the relationship as measured by Spearman's rho (*rs* = .627) was slightly greater than

the strength of the relationship as measured by the Pearson's correlation (*r* = .612). Because

there was minimal difference in the two correlation results, the researcher continued with the

bivariate analysis using the results from the Pearson's correlation.

The Pearson's correlation was statistically significant ($r(71) = .612$, $p = .000$, $r^2 = .37$)

indicating that a moderately strong significant positive correlation existed between the predictor

variable of grit scores and the criterion variable of self-efficacy and that grit explained 37% of

the variance in self-efficacy scores. Refer to Table 5 for the Pearson correlation test results and

to Table 6 for the Spearman's rho results.

Table 5

Pearson Correlations Between Grit Scores and Self-efficacy Scores

		Grit Score	Self-efficacy Score
Grit Score	Pearson Correlation	1	.612**
	Sig. (2-tailed)		.000
	N	73	73
Self-efficacy Score	Pearson Correlation	.612**	1
	Sig. (2-tailed)	.000	
	N	73	73

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

Table 6

Spearman's rho Correlations Between Grit Scores and Self-efficacy Scores

		Grit Score	Self-efficacy Score
Grit Score	Correlation Coefficient	1.000	.627**
	Sig. (2-tailed)	.	.000
	N	73	73
Self-efficacy Score	Correlation Coefficient	.627**	1.000
	Sig. (2-tailed)	.000	.
	N	73	73

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

Based on the Pearson's correlation ($r(71) = .612$, $p = .000$, $r^2 = .37$), the null hypothesis was rejected suggesting that increases in grit scores of pre-service teachers are accompanied by

increases in self-efficacy scores. The results were significant ($F(1, 71) = 42.45$, $p < .001$, $r^2 = 0.37$). The df was 71 with .70 statistical power. The alpha level used was 0.05. There was a medium effect size. A 95% confidence interval (CI) was established for the variables. After determining the existence of a moderately strong positive correlation between the two variables, a bivariate linear regression analysis was used to generate a bivariate predictive equation for the predictor variable (grit) and the criterion variable (self-efficacy). The generic bivariate linear regression equation is $y = b_0 + b_1X$. In this equation, y = self-efficacy, x = grit, b_0 = y-intercept, and b_1 = slope. There was a strong enough positive correlation between the two variables to generate the following prediction equation based on the coefficients from the linear regression analysis: $y = 99.74 + 27.63x$. Therefore, the resulting predictive linear regression equation is: self-efficacy = 27.63(grit) + 99.74. See Table 7 for the linear regression coefficients.

Table 7

Bivariate Linear Coefficients for the Prediction Equation

Model	Unstandardized Coefficients[a]		Standardized Coefficients[a]		
	B	Std. Error	Beta	T	Sig.
(Constant)	99.741	11.208		8.899	.000
Grit Score	27.633	4.241	.612	6.515	.000

a. Dependent Variable: Self Efficacy Score

Summary

Chapter Four discussed the findings from the data analysis which was used to address the research question. This study investigated the predictive relationship between grit and

self-efficacy. The Short Grit Scale (Grit-S) and the Teachers' Sense of Efficacy Scale (TSES) were the instruments used to collect the data on the variables to investigate the relationship. Included in this chapter were the research question, null hypothesis, descriptive statistics, data screening, assumption testing, data analysis, and results for the study's null hypothesis. Study findings indicated a moderately strong positive significant relationship between the two variables of grit and self-efficacy. Chapter Five will discuss study findings, implications, and limitations. Additionally, recommendations for further research will be presented.

CHAPTER FIVE: CONCLUSIONS

Overview

This study investigated the personality trait of grit as a predictor of pre-service teachers' self-efficacy beliefs. Chapter Four discussed the findings from the data analysis which was used to address the research question. Chapter Five presents a discussion of the findings, implications, and the limitations of this study. Recommendations for future research and the concluding summary are also included in this chapter.

Discussion

The main purpose of this predictive correlational study was to determine if a statistically significant relationship existed between grit and self-efficacy beliefs of pre-service teachers. The predictor variable of grit to the criterion variable of self-efficacy for pre-service teachers enrolled in a teacher preparation program and completing the clinical field experience at a Mid-Atlantic university was examined. The research question for the study sought to ascertain how well the grit score as measured by the Grit-S could predict pre-service teachers' self-efficacy beliefs as measured by the TSES. A linear regression was conducted and found that a moderately strong positive significant relationship between the two variables of grit and self-efficacy ($F(1, 71) = 42.45$, $p < .001$, $r^2 = 0.37$). According to Creswell (2013), correlation coefficients between .35 and .65 are useful for limited predictions; therefore, these results also indicate a limited predictive relationship between grit and self-efficacy.

Bandura's (1977) social behavior theory and Duckworth's (2009) Grit theory provided the theoretical foundations for this research. The question for the study was formed based on the identified gap in the research regarding the constructs of self-efficacy and the personality trait of grit. As formerly indicated, studies regarding the relationship between the constructs of grit and

self-efficacy as well as the corresponding themes associated with the two theories are relatively absent from current research. Existing literature rarely addresses the topics of grit and self-efficacy either as individual interests or as a combined area regarding the development and practices of pre-service teachers. Though the Grit theory is a relatively new construct, it does provide context for looking at the requirements for the selection and preparation of resilient teacher candidates and new teachers.

The findings for the present study support the results, implications, and recommendations from several previous studies related to grit and self-efficacy. For example, study results support the assertions of Dweck (2006) regarding the positive connections between mindset, grit, and self-efficacy beliefs as influences on the ability to successfully achieve long-term goals. Analysis of the data showed negative skewness (-.341) with slightly negative kurtosis (-.009) for grit scores and negative skewness (-.483) with negative kurtosis (-.765) for self-efficacy scores. The concentration of self-efficacy scores on the higher end of the score distribution indicated that relatively few study participants held low self-efficacy beliefs regarding their knowledge, skills and abilities in the areas of instructional strategies, classroom management, and student engagement. Along similar lines, the high self-efficacy scores support the argument presented by Dial (2015) regarding the false sense of efficacy that pre-service teachers may express in the initial stage of the internship experience. In this present study, the participants were in the first weeks of the internships which may account for the numbers of high self-efficacy scores.

In addition, the findings of this research agree with the small-scale study conducted by Yates et al. (2015) which examined the role of grit in the participants' recruitment, retention, certification, and overall success. Results from this small-scale study identified grit as a predictor of success. Likewise, in the present study, grit is associated with pre-service teacher

effectiveness using overall self-efficacy scores as a measure of pre-service teacher trajectory for success in the classroom. In addition, Robertson-Kraft and Duckworth (2014) concluded that it appears logical for the character trait of grit to impact positively teacher performance due to the many and diverse challenges inherent in the field of teaching.

In contrast, study results do not agree with the previous studies including Klassen et al. (2009) and Morris (2017) which concluded that grit as a personality trait is not a significant determining factor of success. These studies proposed that behavior is impacted perhaps minimally by passion and perseverance. The results of the present study indicate that there is a strong relationship between grit (the combination of passion and perseverance) and self-efficacy.

Additionally, in the area of student achievement, the findings of this study confirmed the development of self-efficacy as a needed focus of university teacher preparation programs. This confirmation of the relationship between grit and self-efficacy agrees with the findings from a study conducted by Cone (2009) regarding the importance of the skills and abilities required for pre-service teachers to continue forward momentum when faced with obstacles and challenging students. The skills and abilities that define grit and self-efficacy will be instrumental in the preparation of a cadre of new teachers who are capable of relating to and meeting the needs of students from various ethnic, socio-economic, and socio-cultural backgrounds (Cone, 2009).

One of the distinguishing findings of this study involved the collection of data regarding grit and self-efficacy beliefs of pre-service teachers during the clinical experience. Goldhaber and Cowan (2014) noted that pre-service teachers often express a lack of self-efficacy related to their ability to assume the responsibilities of the regular teacher during the practicum and internship clinical experiences. These assertions were not confirmed by this study based on a review of the overall mean score for self-efficacy (171 out of a possible 216). However, the 37%

variance of grit on self-efficacy scores as reported by the data, confirmed the conclusions of several previous research studies regarding the factors that affect self-efficacy. In the present study, results indicated that 63% of the variance in self-efficacy scores could be attributed to additional factors. These findings are in alignment with Duckworth (2016) which asserted that developing grit depends critically on other people, such as parents, coaches, teachers, bosses, mentors, and friends. In addition, Skaalvik and Skaalvik (2007) found that numerous factors contribute to the formulation of pre-service teachers' attitudes and beliefs regarding their abilities to meet the multidimensional roles of an effective classroom teacher.

Implications

Teacher preparation programs in universities across the nation face continued scrutiny and critique from public and private organizations. There are several implications that can be derived from the results of this research study to make an important contribution to improving and transforming the effective preparation of pre-service and new teachers. The findings of this research also add to the body of research related to the role of motivation in the effective preparation of aspiring teachers. Some research exists regarding content specific self-efficacy of pre-service teachers; however, limited research has been conducted regarding self-efficacy beliefs of pre-service teachers during the student teaching phase of the teacher preparation program (Gurvitch, & Metzler, 2009; Ziechner, 2014).

Encouraging the conversation regarding self-efficacy and grit can provide teacher preparation programs and school districts with information to access programs and institute changes to address retention and success rates for pre-service and new teachers. Additionally, exploring the connection between grit and self-efficacy can be beneficial for teacher education

programs as they endeavor to develop experiences for pre-service teachers that target the development of grit, perseverance, and resilience (Mansfield et al., 2016; Martins et al., 2015).

The findings of this present research support the previous study results recommending that faculty in university teacher preparation programs should challenge students to problem-solve and focus on development of the growth mindset as a means to achieving long-term goals (Dweck, 2006). According to Bandura (1977), self-efficacy is the belief that one possesses the ability to plan and successfully execute plans that produce the attainment of desired results. Achieving this goal presents the urgency for teacher education programs to review and revise program designs to focus on teacher-efficacy in the preparation of pre-service teachers and warrants exploration for development during the pre-service clinical experience (Zeichner, 2014). Therefore, the inclusion of grit and self-efficacy assessments as components in identifying candidates for teacher preparation programs which may assist in the determination of the pre-service candidates' needs for specific skill development. Including these types of assessments may provide extra insight for the identification and effective preparation of quality new teachers. Furthermore, incorporating opportunities to develop grit and self-efficacy in introductory teacher preparation programs can provide essential data to support the growth of confident and effective teacher candidates. In addition, universities might consider partnering with high school administrators and guidance counselors to extend the early development of grit and self-efficacy to high school students interested in pursuing a career in teaching before they enter college. This early identification and preparation practice could also lead to increased retention rates.

Limitations

Several important limitations need to be considered related to this study. Researchers need to identify both internal and external threats that may affect the validity of the study (Creswell, 2013). One limitation of the study involved an external validity concern related to population validity which addresses the ability of the results of the study to be applied to the target population (Gall et al., 2007). In this case, the study was conducted with participants from a singular university in the Mid-Atlantic region of the United States and the generalizability of these results may or not be transferable to the target population of pre-service teachers at universities in other regions of the county.

Another limitation of the study was related to the distribution of the surveys through various professors. This process may have impacted the number of surveys returned; however, a sufficient number was received for the study. This threat was addressed by communication between the researcher, the SOE contact, and instructors resulting in the distribution of the invitation several times to remind the students of the opportunity to complete the survey.

Another limitation of the study was related to an internal validity concern regarding the number of surveys received from individual school levels. Most of the participants in this study were completing the student teaching experience at the elementary level; thus, only a few surveys were received from those completing student teaching in secondary and middle schools. Receiving the majority of the survey responses from only one school level could have impacted the overall self-efficacy scores or grit scores since different school levels may contain different challenges with the implementation of classroom management processes and the execution of student engagement strategies.

The nature of the TSES and Grit-S instruments presented another limitation to the study. The fact that both instruments were self-reporting questionnaires created an internal validity concern regarding the influence of the participants' personal biases or opinions on their responses. According to Dial (2015), pre-service teachers often express a higher belief in their abilities than practicing teachers. For this reason, validity concerns related to the over-confidence of the study participants in their own abilities could have been reflected in their responses.

Recommendations for Future Research

The findings and results of this study present a number of important recommendations for future practice by university teacher preparation programs in the effective development of pre-service teachers. A natural progression in the continuation of this work might include the following research opportunities:

a) Examination of pre-service teachers' student teaching grit and self-efficacy scores compared to the grit and self-efficacy scores upon completion of the student teaching experience to determine change in beliefs during the clinical field experience.

b) Comparison of the self-efficacy beliefs of pre-service teachers and their assigned mentors to determine if a relationship exists between the mentors' self-efficacy beliefs and the beliefs of the teacher candidate.

c) Replication of the present study at universities in various regions across the country to address the limitation of this study associated with collecting data from a single university.

d) Investigation of strategies that build grit and resilience in student teachers during the practicum and internship experiences through the university program of study.

e) Examination of differences in self-efficacy and grit scores of participants based on various characteristics such as online and residential delivery modes or certification programs such as special education and regular education.

f) Investigation of the relationship between grit and self-efficacy on the retention rates of new teachers

Conclusion

In conclusion, this study investigated the relationship between the two variables of grit and self-efficacy of pre-service teachers. The results of the study indicated a limited predictive relationship between grit and self-efficacy ($F(1, 71) = 42.45$, $p < .001$, $r^2 = 0.37$). As the United States continues to face problems associated with increases in teacher shortages, as well as the retention of quality teachers, discussing avenues to prepare effective teachers is an essential focus for educational discourse. Further studies investigating variables related to the topics of grit and self-efficacy are needed.

As previously discussed, at the onset of this study in Chapter One, the following quote conveys the message of the importance of grit and self-efficacy related to teacher candidates, "Teachers with a high sense of teaching efficacy are likely to view a challenging situation as a challenge to be overcome, whereas a teacher with low efficacy will see it as a roadblock" (Brown et al., 2015, p. 78). Inherent in this quote is the idea that teachers with higher efficacy actively seek resolutions for challenging situations while teachers with lower efficacy are discouraged by obstacles presented by difficult students and classroom issues.

Throughout this study, references have been made to the absence in the current body of literature centered on the relationship between personality traits such as grit and self-efficacy on beliefs and practices of aspiring teachers. Preparing high quality teachers is important work for

universities and by addressing grit and self-efficacy, new teachers may be better prepared to meet the continually increasing challenges in today's diverse classrooms. Additionally, the number of effective teachers may increase along with long-term improvements in student achievement. Perhaps the present point in time, with the focus on the development of effective teachers, is the appropriate time for the inclusion of transformative practices in teacher preparation programs that lead to positive results for the nation's future generations of students.

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APPENDIX A: SHORT GRIT SCALE

http://www.sjdm.org/dmidi/files/Grit-8-item.pdf

APPENDIX B: TEACHERS' SENSE OF EFFICACY SCALE (TSES)

https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/2/5604/files/2018/04/tses-scoring-zted8m-1s63pv8.pdf

APPENDIX C: LETTER GRANTING PERMISSION TO USE THE TSES

COLLEGE OF
EDUCATION AND
HUMAN ECOLOGY
OHIO STATE UNIVERSITY

ANITA WOOLFOLK HOY, PH.D.

PROFESSOR
PSYCHOLOGICAL STUDIES IN EDUCATION

Dear

You have my permission to use the *Teachers' Sense of Efficacy Scale* in your research. A copy the scoring instructions can be found at:

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

Best wishes in your work,

Anita Woolfolk Hoy, Ph.D.
Professor Emeritus

COLLEGE OF EDUCATION
29 WEST WOODRUFF AVENUE
COLUMBUS, OHIO 43210-1177

WWW.COE.OHIO-STATE.EDU/AHOY

PHONE 614-292-3774
FAX 614-292-7900
HOY.17@OSU.EDU

APPENDIX D: STUDY RECRUITMENT LETTER

January, 2018

████████████████████████
████████████

Dear Teacher Candidate:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for the Doctor of Education degree. The purpose of my research is to determine if there is a predictive relationship between grit (the combination of perseverance and passion) scores and the beliefs of pre-service teachers' self-efficacy beliefs, and I am writing to invite you to participate in my study.

If you are 18 years of age or older and completing the student teaching requirement in the ████████████████████████, and are willing to participate, you will be asked to complete an anonymous online survey. It should take approximately 25 minutes for you to complete the procedure listed. Your participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, go to https://liberty.co1.qualtrics.com and click on the link provided.

A consent document is provided as the first page you will see after you click on the survey link. The consent document contains additional information about my research. Please click on the survey link at the end of the consent information to indicate that you have read the consent information and would like to take part in the survey.

Thank you in advance for your willingness to participate in this study. If you have any questions about this research, please contact me at rriddle7@liberty.edu.

Sincerely,

Rosetta Riddle
Doctoral Candidate
Liberty University

APPENDIX E: DEMOGRAPHIC QUESTIONS FOR SURVEY

This section is designed to gather demographic and program data. Please provide appropriate answers to each question.

1. Please indicate your gender.
    Male
    Female

2. Please select your race/ethnicity.
    African-American
    American Indian
    Asian
    Caucasian
    Hispanic
    Other (please specify) _____

3. Please indicate the degree you are pursuing.
    Bachelors
    Masters

4. Please select the school level where you are completing your student teaching.
    Elementary
    Middle
    Secondary

5. What are your areas of concentration? (Middle Only – Select two subjects.)
    ELA
    Math
    Science
    Social Studies
    Other (please specify) _____

6. What is your subject area? (Secondary Only)
    ELA
    Foreign Language
    Health/PE
    Math
    Science
    Social Studies
    Other (please specify) _____

7. Are you seeking certification in special education?
    Yes
    No

8. What is the delivery mode for your student teaching course?
   Residential (On-campus)
   Distance (Online)

APPENDIX F: INSTITUTIONAL REVIEW BOARD APPROVAL

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

February 2, 2018

Rosetta Riddle
IRB Exemption 3110.020218: A Predictive Correlational Study of the Relationship between Grit and Self-efficacy Beliefs among Pre-service Teachers

Dear Rosetta Riddle,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

APPENDIX G: CONSENT FORM

CONSENT FORM
A Predictive Correlational Study of the Relationship between Grit and Self-Efficacy Beliefs
among Pre-Service Teachers
Rosetta Lawson Riddle
Liberty University
School of Education

You are invited to be in a research study on the self-efficacy of pre-service teachers. The purpose of this study is to determine if there is a relationship between the psychological trait of grit (defined as the combination of perseverance and passion) and student teachers' beliefs about their teaching skills and abilities. You were selected as a possible participant because you are 18 years of age or older, you are a student in the Liberty University School of Education, and you are completing the student teaching requirement in the teacher preparation program. Please read this form and ask any questions you may have before agreeing to be in the study.

Rosetta Lawson Riddle, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The research question for the study is as follows: How well does the grit score as measured by the Short Grit Scale (Grit-S) predict pre-service teachers' self-efficacy beliefs as measured by the Teachers' Sense of Efficacy Scale (TSES)?

Procedures: If you agree to be in this study, I would ask you to do the following things:
1) Participants will complete an anonymous online survey. The survey will require 25 minutes to complete.

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include the preparation of pre-service teachers and new teachers who are ready to assume the duties and responsibilities of classroom teachers. This preparation may assist in reducing the teacher attrition rate by supporting increases in the retention of new teachers.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Identifying information will not be collected.
- Data will be stored on a password-locked computer for three years after the study. After three years, all electronic records will be deleted.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

How to Withdraw from the Study: If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Rosetta Lawson Riddle. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at ███████ and/or rriddle7@liberty.edu. You may also contact the researcher's faculty advisor, ████████████████████.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.