# Teacher Dispositions and Perceived Environment: The Relationship Among Grit, Resiliency, and Perceptions of School Climate

By

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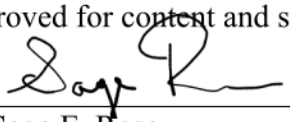
A Dissertation
Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Education
In
Learning and Teaching
At
Hofstra University, Hempstead New York

July 2015

Approved for content and style by:



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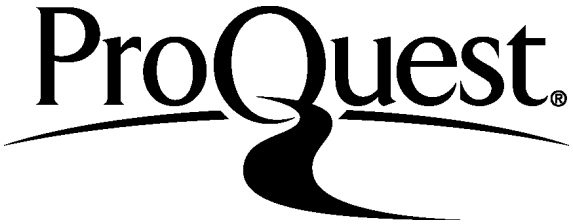

## Abstract

This survey study examined the relationship between grit, dispositional resiliency, and perceptions of school climate attitudes among teachers in the North Eastern suburbs of the United States. Prior research has associated the constructs of grit and dispositional resiliency with positive academic and life outcomes, but little empirical research has documented these personality constructs in teachers, and no current studies have investigated a possible relationship with perceptions of school climate. Positive school climate has been previously correlated in high performing schools and high student achievement; therefore an investigation of its relationship to personality dispositions of teachers was needed. This study provides empirical research linking grit and resiliency with perceptions of school climate. Specifically, this study investigated if related constructs, grit and dispositional resiliency, were factorially distinct constructs. Second, an investigation was performed to identify significant differences between these constructs and teacher demographics. Finally, the study examined whether there was a significant predictive relationship between grit, dispositional resiliency, and teachers perceptions of school climate.

A factor analysis validated that grit and dispositional resiliency were distinct constructs. The validation process revealed some inconsistency in item loading and suggested the need for future research to explore the idea of population-specific dispositional resiliency measures. The study was unable to establish significant teacher demographic differences in grit and dispositional resiliency, due to lack of diversity in the sample participants. Furthermore, a structural equation analysis (AMOS) revealed a predictive path between grit and dispositional resiliency, and perceptions of school climate and dispositional resiliency, and displayed dispositional resiliency as the mediator between grit and perceptions of school climate. Resiliency was found to be a predictive factor in teachers' grit and perceptions of positive school climate.

## Dedication

For my family, my husband, Edward James Kuhner, my son, Christian James Kuhner, who endured, without complaint, the long hours of my absence (spent at Panera Bread) in my pursuit of uncovering the role of grit and dispositional resiliency in a teacher's attitude of school climate, and in essence, contributing to the bigger picture of a teacher's role in student achievement. Edward, you are and always will be my biggest inspiration. You are the embodiment of grit and resilience. You picked yourself up after failure, went back to school, got the new job, earned the transfer, moved back to the Tri-state, and when you arrived you proved yourself to be gritty and resilient again; training for two Ironman's through injury after injury. I love you so much and cannot thank you enough for your unwavering support in all my endeavors. I am so lucky to get to live my life with you as my partner.

For my mother and father, Jeanette and Frank Incantalupo, who taught me what it means to believe in yourself and try for things that at first seem impossible to achieve. Your guidance, motivation, and encouragement taught me that I can do anything if I believe in myself. You both showed me to be gritty and resilient by your example. I am so lucky to be your daughter. Mom, thank you for all the trips to Hofstra with Christian, for babysitting day after day so I could write, for coming over at 8 am even when you were exhausted from babysitting the night before- for going beyond your obligations to my education and giving me the gift of time to finish this journey. For my sister, Mary Incantalupo. Growing up together shaped who I have become, and I would not be who I am today without you. Thank you for being such a great big sister, always cheering me on and believing in me.

For the wonderful and creative teachers who make up the department of Teaching and Learning at Hofstra University; you gave me the opportunity to see TED Talks Education, where I gained the inspiration for this dissertation. Through your expertise and example I renewed my passion for learning and for helping others learn.

For my SUNY Purchase College and CUNY Queens College professors, who were the first to acknowledge my skills as writer, and who taught me how to read research, make connections among studies, and showed me how much fun discovery through research is. The passion they shared encouraged me to pursue this doctorate degree.

For my friends and family, whose incredible cheerleading and support is what gave me the confidence to begin this journey. Christy, Sue, and Elizabeth- thank you for all the days and nights at Panera sitting by my side while I was working on this. Lori- thank you for babysitting so I could find my "lost" document. Paola, Keri, Marina, Dawn, and the Commack boys (Kamil, Josh, Josh, and Ross) and families: Thank you for always pushing me and for keeping my spirits up no matter what happened in life. You are all responsible for my ability to be resilient because you were always there to talk to, laugh with, and cheer me on throughout it all. I hope Christian has friends like you in his life, for I know they are rare.

For my in-laws, who did not complain that my "visits" were spent face down in my laptop writing all weekend, rather than socializing, even though they did not see me as often as we both would like. And for the Tall's ; Christine, my incredible sister-in-law and Chris, my brother-in-law, who not only provided free babysitting anytime I needed to write, also provided proof-reading, deconstructing ideas, discussion, and laughs, as did my nieces and nephew.

For Christian, my adorable little football. You are the light of my life, and I hope to teach you to be gritty- to develop passion for a goal and persevere to see its fruition- and to be resilient- to make meaning of your work, be committed, cope well with life's disappointments, connect with others for support, and stay positive through challenges. These are the greatest gifts I have to offer. I love you with all my heart.

## Acknowledgements

This dissertation would not have been possible without the guidance and the help of several individuals who in one way or another contributed and extended their valuable assistance in the preparation and completion of this study. While there is no way I would be able to fit all those people who deserve an acknowledgement on these pages, I will do my best to include everyone.

First, I want to acknowledge that none of my work on this research and dissertation would have been possible without my dissertation committee chair, Dr. Sage Rose. Without her expertise, guidance, and willingness to meet, text, talk, at all hours of the day and night, throughout my nursing sessions and a crying infant, this dissertation would have never came to be. Dr. Rose was my inspiration as I persevered through all the obstacles towards the completion of my research work. She shared not only her expertise, but her heart as well. Thank you, Dr. Rose, for helping me tame a wild unfocused idea to a well-executed important statement; thank you for nurturing the passion and perseverance for this goal, helping me cope when it seemed impossible, and making the challenges seem like molehills when they were mountains, and pushing me beyond my limits. This would not have been possible without the countless hours that you gave to me in creating the inspiration and direction for this work.

I would also like to thank my entire dissertation committee--Dr. Sage Rose, Dr. Holly Seirup, Dr. Eustace Thompson, Dr. Karen Jackson, Dr. Kevin Sheehan, and Dr. Dennis Henderson—each of you pushed me to think beyond, you inspired, taught and directed the fledgling and sometimes, naive ideas, into adulthood. Thank you Dr. Bruce Torff for your leadership in creating and directing this doctoral program, and for encouraging me to come to Hofstra. And you were right- this is harder with young children!

The faculty of the learning and teaching doctoral program at Hofstra also humbles me. There is no way that this dissertation or I would have come this far without them. Thank you Dr. Torff, Dr. Fromberg, Dr. Fusco, Dr. Elijah, Dr. Libresco, and Dr. Rose. Thank you also to Darlene Adams, for putting up with my consistent failure to meet the procedure that you laid out so carefully for me.

Thank you to all of my cohort crew, who I spent so many Wednesday afternoons and evenings with. You kept me laughing throughout the entire program. A special thank you to Elizabeth and Jeanmarie; you girls were my rock and I leaned on you often. Thank you.

Finally thanks to the two superintendents of the cooperating schools of the study, who shall remain nameless here. In addition to opening up your staff for my research, each of you sat down with me to learn, understand, and grow from this topic. Your unwavering support throughout this process has been instrumental for its completion.

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CHAPTER 1

## Introduction

Studying personality is instrumental in determining human performance in an array of contexts, particularly those that are highly stressful and challenging (Duckworth, Peterson Matthews, & Kelly, 2007; Maddi, 2002, 2006, 2007; Matthews, 2008a; Matthews, 2008b; Matthews, Peterson, & Kelly, 2006). Teaching has been reported to be one of the most stressful jobs in the United States; its rigors present extremely challenging work environments due to overcrowded classes, limited materials, lack of professional support, feelings of isolation, over-stretched budgets, lack of job security, changing curriculums, flurries of imposed mandates, economically- stressed communities, and students withered with poverty (Dworkin, Haney, Dworkin, & Telschow, 1990; Johnson, Cooper, Cartwright, Donald, Taylor, & Millet, 2005). The National Education Association has conducted studies spanning sixty five years indicating that teachers' experience health problems, absenteeism and performance let-down as a result of their working conditions (NEA,1938, 1950,1967). These findings have been more recently confirmed (Kyriacou, 2000, 2001; Travers & Cooper, 1996). Since environmental stress causes physical and emotional problems which lead to lower teacher effort and greater teacher absenteeism, the connection between a teacher's working environment and student learning is a significant relationship (Adeogun & Olisameka, 2011; Ehrenberg et al., 1989). This environment, known as the school climate, has a direct impact on improved instructional quality, community relationships, and student growth (Halawah, 2005; Clifford et. al, 2012; Price, 2012; Gülşen & Gülenay, 2014).

With school climate so important, schools should look critically at how to better develop staff who embrace their passion for teaching, tackle challenges with confidence, stay committed to student learning, and persevere through changing curriculums and high-stakes evaluation systems (McCarthy & Lambert, 2006). The key to these components may be to understand the personality dispositions of the teacher candidates because resilient teachers fare better under stress (Chan, 2003). This study will focus on understanding the impact of two personality dispositions: grit and resiliency, and their impact on school climate attitudes. Understanding these two constructs may be essential for identifying teachers who will be more likely to hold positive attitudes toward their school climate, even when faced with tremendous challenges.

Grit and resiliency are two dispositions that demonstrate predictive implications for an impressive set of challenging real world and career achievements (Duckworth, Peterson, Matthews, & Kelly, 2007; Maddi, 2013). Grit is defined as passion for a goal (consistency of interest) and perseverance in the pursuit of long-term goals (overcoming obstacles) – an unchanging persistence for a consistent interest despite facing adversity or failure (Duckworth et al., 2007). Within education, gritty adults had higher grade point averages and higher educational achievement (Duckworth et. al., 2007), gritty children performed better in the National Spelling Bee (Duckworth, Kirby, Tsukayama, Berstien, & Ericsson, 2011), and gritty military cadets were more likely to graduate from an elite military academy (Duckworth et. al., 2007; Matti et. al., 2012). Grit has recently been examined in first year teachers, and it was reported that gritty novice teachers fostered higher academic achievement in their students and were more likely to retain their

positions after one year compared to their less gritty counterparts (Duckworth et. al., 2009).

Unlike grit, which focuses on the pursuit of already existing goals, an individual's dispositional resiliency, or "hardiness", as it was originally called, is described as a person's ultimate adaptability and performance under stress (Bartone, 1991; 1995; Kardum, Hudek-Knežević, & Krapić, 2012). This definition is almost synonymous to that of overall resiliency; "good adaptation under extenuating circumstances" (Masten & Reed, 2002, p75). Hardiness is the pathway to resiliency, meaning that if someone is inherently hardy, they will exhibit resilient behaviors (Maddi, 2013). Known as dispositional resiliency (DR) in measurement (Bartone, 1995), it is rooted in Kobasa's (1979) theory that some people believe they have control over events they experience, are committed, and perceive changing environments as challenging with an opportunity for growth. DR refers to the *person-focused* model of resiliency, which identifies resilient people and tries to understand how they differ from others who are not faring well in the face of adversity (Masten & Reed, 2002).

**Statement of the Problem**

Now, more than ever, a positive school climate is essential to the teachers' success, evidenced by strong positive correlations between school climate, students' academic achievement, and the ability of a school to recruit and retain high quality teachers (DPS-DCTA partnership, 2009). An abundance of research has reported that school climate has a direct impact on school relationships with its community and improved quality of instruction, resulting in increased student growth (Halawah, 2005;

Clifford et. al, 2012; Price, 2012; Gülşen & Gülenay, 2014). These reports demonstrate the importance of the teacher's attitude of school climate and the impact it has on students, suggesting that teachers who report a positive climate are more involved with the school community, utilize more effective instructional models, and have students who achieve more.

Much of the research for improving school climate has focused on principal's work. In her examination of nationally representative American data from the Schools and Staffing Survey of 2003–04, Price (2012) used structural equation modeling, and relational mechanisms between principals and their teachers to explain positive attitudes. She reported that the relationships between school professionals affect the schooling environment, and particularly the relationships of principals, as the school leader, strongly and directly affected teachers' attitudes, and defined the school climate. These results were similar to previous findings, which linked a positive school climate to the work of the principal (Halawah, 2005; Clifford et. al, 2012; Gülşen & Gülenay, 2014). With the focus on leadership, the influence of teachers' perceptions on school climate have been relatively absent from research, and it is relatively unknown if certain dispositions would make a teacher more likely to view his/her school climate more favorably.

However one study did examine the relationship between dispositional resiliency, alienation of student teachers and school climate (Thomson & Wendt, 2001). They cited the extremely challenging working condition of teachers as a source of teacher alienation (Seeman 1983), which has been related to job satisfaction, student learning, and burnout (Holt, Fine, & Tollenfoson, 1987; Peirce & Molloy, 1990). In their study, dispositional

resiliency protected the student teacher against feeling highly alienated, however this relationship was mediated by the school climate. This suggests that as school climate became more supportive the student teachers who had high DR became progressively less alienated, while those low in DR became more alienated even when school climate was supportive. This study provides evidence that how individuals feel about themselves makes a difference in the degree of perceived alienation. The student teachers brought a prior set of perceptions that could either aid or hinder social interaction, and were not simply at the mercy of the school environment (Thomson & Wendt, 2001). While this study has implications for linking personality and school climate perceptions, the participants were all student teachers. Determining if there is any relationship between personality of veteran teachers and their perceptions of school climate is unexamined in research. Whether the school climate is a warm, nurturing, and positive place or chaotic confusion, investigation is needed about how different teachers feel regarding their school environment.

In 2009, New York State received 700 million dollars from the Federal Race to the Top funding to implement new policy changes. These changes included a new system of teacher evaluation, called the Annual Professional Performance Review (APPR) and compliance with the Common Core Learning Standards (CCSS) (US Department of Education, 2013). This system translated student achievement scores into growth scores, which, combined with observations, resulted in proficiency ratings for teachers. These ratings were further translated into a rating for the principal. Ratings were assigned based on a point system, with teachers and principals who did not receive enough points at risk for future employment (New York State Education, 2011).

Wexler (2014) argued that the adoption of the rigorous Common Core Curriculum has diminished teacher autonomy and ignored the "complexity and diversity of the creative spirit in all educational disciplines" (p.52), as well as marginalized children with disabilities, children in poverty, and the arts by holding them to the same *career and college ready* standard of their peers. This spiraling demands of government initiatives, incessant record-keeping, education plans, targeting and inspections, have left teachers exasperated. (It's Time, 2001). McCarthy and Lambert (2006) reported that when these feelings result in negative perceptions of one's work and workplace, they result in helplessness rather than productivity, uncertainty rather than assurance, and dependency rather than autonomy. These researchers argue that outcome-based accountability, such as practiced by New York State Education Department, have "created a uniformity of responses across school districts regardless of the level of student achievement, the quality of the teachers, and other district resources" (McCarthy & Lambert, 2006, p 61). These responses have in turn created new sources and levels of stress that have tipped the scale from what might have been healthy pressure to unhealthy stress experiences for teachers (McCarthy & Lambert, 2006).

These stressful working conditions for teachers present a high risk for burnout. Chan (2003) found that resilient teachers were less likely to experience burnout. Therefore the most resilient teachers, regardless of their grit, should be able to maintain more positive perceptions of school climate in the face of the challenges the new mandates impose.

**Research Rationale**

Researchers and psychologists have turned their attention to examining the relationship between personality and effective work-related performance (Barrick & Mount, 1991; Bartone 1995, 2014; Duckworth et al., 2007). Grit and resiliency are two personalities that have a predictive relationship to strong professional achievements (Bartone 1995, 2014; Duckworth et al., 2007), however their relationship with teacher perceptions of school climate is unknown. Implications of these relationships will help administrators develop effective professional development, and universities will be better able to make improvements with respect to teacher preparation programs.

**Purpose**

This study will investigate the self-reported grit and resiliency of current teachers in the field. Because these two constructs hold similar theoretical backgrounds, research is needed to determine the level of overlap these dispositions hold within the teacher community. It may be that these two constructs hold little to no difference when measured together. Understanding the similarities and differences of these constructs will allow schools to target their professional development in order to reap the maximum benefits. In addition to these constructs, this study will focus on the current perceptions of school climate held by teachers in the field. By comparing scores on grit and resiliency measures to those of school climate, this will be the first study to examine whether teachers with the psychological strengths to withstand the stressors of today's schools will perceive them to be more positive places to work.

**Research Questions**

The research questions explored in this study are:

*Research Question 1*: Are grit and resiliency psychometrically distinct from one another?

*Research Hypothesis 1*: A factor analysis of the two scales will reveal that grit and resiliency will contain items that share complex loadings across factors.

*Research Question 2*: Are there significant correlations among teacher demographics, grit, resiliency, and perceptions of school climate?

*Research Hypothesis 2*: There will be significant correlations among demographics, grit, resiliency, and perceptions of school climate.

*Research Question 3:* Are there demographic teacher differences on grit, resiliency, and perceptions of school climate?

*Research Hypothesis 3:* There will be teacher differences, particularly related to years of experience on grit, resiliency, and perceptions of school climate.

*Research Question 4*: Will there be significant predictive pathways among grit, resiliency, and perceptions of school climate?

*Research Hypothesis 4*: Resiliency and grit will significantly predict perceptions of school climate.

The purpose of the next chapter is to review the literature on grit, resiliency, and perceptions of school climate. The history of each construct and potential theoretical overlaps will be identified. While motivational constructs like self-efficacy and autonomy

have been linked to positive perceptions of school climate, constructs of grit and resiliency have little to no research linking them to school climate. This research will investigate the possible correlations and predictions these dispositions have on teacher's perceptions of school climate.

# CHAPTER 2

## Review of Relevant Literature

### Development of Grit Theory

In one of his most famous works, Galton (1869), collected biographical data on eminent judges, statesmen, painters, poets, wrestlers, scientists, and others, to support his hypothesis that while human ability was inherited, energy and persistence factored into the ingredients of success. Galton further reported that high achievers demonstrated three qualities that worked symbiotically: "ability combined with zeal and with capacity for hard labour" (Galton, 1892, p.33); a characteristic which Duckworth et al., (2007) later coined as *grit*.

Grit, the non-cognitive trait defined by Angela Lee Duckworth, measures the compounded components of passion and perseverance for long-term goals. This refers to the consistency of one's interests and their perseverance of effort (Duckworth, 2006). The construct of grit originated from an effort by Duckworth and colleagues to determine "why do some individuals accomplish more than others of equal intelligence?" (Duckworth, Peterson, Matthews, & Kelly; 2007 p. 1087). The term, "grit", was adapted from the movie, "True Grit" (Hathaway, 1969), with the hypothesis that this quality was more important in achieving success than intellectual talent (Duckworth, 2009).

The idea of a non-cognitive trait contributing to one's success is not new. In his philosophical writings, James (1907) proposed: "The *first of the two problems is that of our powers, the second that of our means of unlocking them or getting at them"* (p.332). The first part of James' question, about mental ability, was the construct of his

contemporary Sir Francis Galton, who initiated its empirical study. James' second question, which appears to be focused on motivation, encouraged researchers to examine non-cognitive characteristics of high-achieving individuals.

Like James, Cox (1926) was interested in what made individuals successful and analyzed 301 eminent creators and leaders in a variety of fields who could boast great accomplishments. Based on the results, Cox concluded that "persistence of motive and effort, confidence in their abilities, and great strength or force of character" (p. 218) were predictive traits of lifelong success in individuals. Cox went further to conclude that while heredity sets limits, adequate training could raise the success of those with less distinguished intelligence. Rather, 10 years of daily "deliberate practice" separated accomplished performers from their less accomplished peers, and 20 years of dedicated practice was an even more reliable predictor of world-class achievement. According to Cox, success was not solely dependent on talents we were born with, but could be cultivated with persistent effort and deliberate practice.

What Galton, James, and Cox all appear to be tapping into is the necessary presence of motivation and what Duckworth would to refer to as grit. The idea that while we may be born with certain talents or aptitude, a necessary component to being successful is the desire to push forward even when faced with the most difficult challenges (Cox, 1926; Duckworth et al., 2007; Galton, 1892; James, 1907). Without a sense of grit to continue on, our talents may be wasted on frustration. The trait-level construct of grit encompasses a variety of different components. In order to be "gritty," one must successfully maintain motivation for an extended period of time while facing challenges, failures and plateaus and working tirelessly towards their goal, therefore

making grit different from the need for achievement (Duckworth et. al, 2007). The grittier individual stays for the long haul, demonstrating a marathon of stamina through disappointment or boredom. Although the concept that hard work and dedication may not be a new idea, the term "grit" as its own construct (Duckworth et.al, 2007) has a revitalized fame among researchers and educators.

**Grit as a Personality Trait**

Personality has been measured in a variety of ways including self-assessment questionnaires and informant reports, as well as in different types of models. One of the most well- known and accepted models is the Big Five Theory of Personality (Costa & McCrae, 1992). The Big Five Model of personality argues that personalities are the intertwining of five district personality characteristics: Extraversion, Agreeableness, Conscientiousness, Emotional Stability (vs. Neuroticism), and Intellect or Openness to Experience (De Raad & Perugini, 2002; McCrae & Costa, 2003).

Barrick and Mount (1991), conducted a meta-analysis of the Big Five Model and concluded that conscientiousness related more vigorously to job performance than extraversion, openness to experience, neuroticism, or agreeableness. However, they reported weak correlations between conscientiousness and job performance (r=.08). Tett, Jackson, and Rothstein (1991), also reported a weak correlation between these characteristics and job performance. Duckworth, et al., (2007) agreed that the Big Five was an important framework, however, they felt it lacked some traits that were important to study and stood alone from the dimensions this model established. Grit is one of these traits.

Grit was proposed to be distinct from traditionally measured Big-Five conscientiousness because of its emphasis on marathon stamina (Duckworth et al. 2007). Based on their analysis of the Big Five Model, Duckworth et al., (2007) observed that any given personality trait accounts for less then 2% of variance in achievement at best. This would make personality "inconsequential" (p. 1088) when compared with IQ. For this reason, Duckworth et. al. (2007) "did not believe (the Big Five Model) provided an "exhaustive list of traits worth studying" (p. 1089) when investigating achievement. This gave way to the current research focus on what is now termed as the non-cognitive traits.

James Heckman, a renowned economist, was intrigued by the work of Martin Seligman and his development of positive psychology. Heckman also turned his attention to the field of positive psychology, realizing that this was a new field holding promise. He directed his efforts to researching *non-cognitive skills*, a term he coined to define attributes that are different from IQ: personal behavior and social development (Heckman, 2007, 2008, 2011; Heckman & Rubinstein, 2001; Borghans, Duckworth, Heckman, & Well, 2008; Tough, 2012). Like Galton, James, and Cox, one question Heckman examined extensively was that of why are some of less or equal intelligence more successful than others? That was when he and Duckworth, among others, combined their work to investigate this timeless question (Borghans, Duckworth, Heckman, & Well, 2008).

As a doctoral student under Seligman at the University of Pennsylvania, Angela Lee Duckworth was also inspired by his work and had initially began working with Seligman to examine self-regulation and academic achievement (Duckworth and Seligman, 2005). They found that self-discipline out predicted intellectual ability among

140 eighth graders in determining academic success. This initial success led to them to believe that self-regulation was the key to harnessing an individual's potential and perhaps *unlocking* those *powers* James had once been so interested in. This work parlayed into delayed gratification, or the ability to resist distractions from the task no matter how appealing those distractions might be, and explained why students might choose studying over more pleasant alternatives that are available to them (Duckworth and Seligman, 2005).

Duckworth followed this with a six-week experiment where students worked through various self-control exercises and gained rewards for doing homework. Contrary to her hypothesis, the students who had been through a self-regulation program scored no different on standardized achievement tests, GPA, self-control, teacher ratings and even tardiness than the control group (Tough, 2012). According to Tough (2012), this led Duckworth to believe that the most successful people had, not only a set of strategies for resisting short-term goals, but also a desire for the goal that enabled them to stay on course for long-term goals no matter how great the adversity they faced. Based on this failed self-regulation experiment, the idea that grit, the passion for a long-term goal, may be the driving force behind one's perseverance and therefore self-regulation evolved (Tough, 2012). What emerged from this failed research was the belief that grit, the sustained goal pursuit over time and the ability to persevere through setbacks in pursuit of that goal over time, was the key factor to success (Duckworth, 2009, Duckworth et. al., 2007).

In her dissertation, entitled *Intelligence is not enough: Non-IQ predictors of achievement* (2006) Duckworth continued to explore the idea of grit. She harkened back

to Cox (1926) (among others: Ericsson & Charness, 1994; Howe, 1999), and continued the investigation that talent may not be as critical to achievement as previously believed and that persistent use of practice may play a big role. Ericsson and Charness (1994) reported that in chess, sports, music, and the visual arts, deliberate practice was more significant at predicting achievement than inborn ability. Using these findings as a theoretical basis, Duckworth et al., (2007) concluded that grit could account for success in part by promoting self-control, thus allowing people to persist in repetitive, tedious, or frustrating behavior that are necessary for success. She speculated that deliberate practice and perseverance may be most important for success. Her studies on grit gained support and attention from fellow researchers. Her work also influenced Seligman, who included grit (or sturdy perseverance) as one of the nine traits for success, the other eight being self-control, optimism, zest, curiosity, social and emotional intelligence, gratitude, joy, and resilience (Steiner-Adair, 2013).

In addition to self-regulation, grit has also been shown to be distinct from self-discipline (Duckworth et al., 2005). In their investigation of grit and adolescence, Duckworth et al., (2005) found the correlation between self-discipline and academic performance to be one to two times as large as the correlation between academic performance and IQ. High IQ students were reported as having only marginally higher GPA's than lower IQ students. In addition, researchers reported higher self-discipline students had IQ's almost 15 points higher than their peers (93.5 to 80.5). The researchers partially confirmed their hypothesis, self-discipline was a stronger significant predictor of academic performance than IQ, but expressed concern that self-discipline may be related to a latent variable, rather than causing higher performance itself

(Duckworth et. al., 2005). This latent variable was conceptualized to be grit (Duckworth et al., 2007).

**Grit: Consistency of Interest (Passion)**

Passion is defined as "a strong inclination toward an activity that one finds important, invests time in, and likes" (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné, 2003 p.757). Similarly, Duckworth (2006) refers to passion as the consistency of one's interests. Passion is closely connected with motivation, which is defined as the inner power that drives individuals to accomplish goals (Bursalioglu, 2002), and linked to self-determination theory (SDT) (Deci & Ryan, 1985). SDT is an organismic theory of motivation that accounts for psychological needs and motives including autonomy, competence, and relatedness, all of which precede passion (Deci & Ryan, 1985, 1996, 2000). Autonomy is the ability to act independently and to feel a sense of control over one's environment (Benard, 2003). Competence is the ability to produce desired outcomes and to experience mastery and effectiveness (Deci & Ryan, 1991). Relatedness is the feeling of being connected with others and of caring for and be cared for by others (Ryan & Deci, 2002). These three needs are assumed to be innate in SDT, are essential for people's survival, growth, and integrity (Ryan, Sheldon, Kasser, Deci, 1996), and result in an increase of intrinsic motivation for the task, all of which are the conditions for developing a passion. When the three needs are not met, negative emotions such as anxiety and anger may result, and intrinsic motivation for the task is undermined (Ryan, Sheldon, Kasser, Deci, 1996).

According to Vallerand's (2012) "organismic approach" (p.2), individuals desire to be effective (White, 1959), autonomous (deCharms, 1968; Deci, 1980), and related to significant others (Deci & Ryan, 1991) in their attempts to explore, grow, and develop. Eventually, after a period of trial and error, most people will eventually start to show preference for some activities, especially those that are enjoyable. Of these activities, a limited few will be perceived as particularly meaningful and to have some resonance with how people see themselves. A special bond then has been created between the person and the activity. This activity becomes passionate for the person (Mageau, Vallerand, Charest, Salvy, Lacaille, Bouffard, Koestner, 2009).

Therefore a passion involves a special relationship of intertwining the activity and self-identity; an activity into which they invest much time and energy. Vallerand (2012) gives an example of a tennis player: "A passionate tennis player does not simply play tennis; he or she *is* a tennis player. Tennis is part of who he or she is" (p.47). The same logic can be applied to passionate teachers. Rather than simply practicing teaching, a passionate teacher would read about it, reflect and analyze it, discuss is with friends, and seek opportunities to learn more about it; teaching would be engrained in the daily grind of his or her life. They do not simply teach; they are a teacher. According to Duckworth et al., (2007) these teachers would "work strenuously towards challenges" (p. 1087) in teaching and maintain their dedication to their students' success because it is their consistent interest; in other words, their passion.

**Grit: Perseverance of Effort**

Grit is defined as a measure of passion and perseverance for long-term goals, with perseverance referring to efforts (Duckworth, 2006). Perseverance, the act of persistence, entails self-discipline and a willingness to continue to struggle to regain balance after adversity (Ryan & Caltabiano, 2009). Duckworth et al., (2007) defines it as sticking to one's course of action, beliefs, or continuing a purpose "despite failure, adversity, or plateaus in one's progress" (p. 1088). Perseverance appears to be a function of information processing and Lewin (1926, 1935) was the first to propose that individuals have an attentional set that remains active until the corresponding goal is achieved. An attentional set is an innate part of our cognitive information processing that prioritizes certain stimuli, and is more commonly observed as focused thinking. Lewin's perseverance hypothesis entails that attentional control settings are maintained even in the face of failure, therefore allowing a person to maintain focus on a task even when their efforts are unsuccessful.

In their empirical research on the concept of attention, both Houghton and Tipper (1994) and Pashler (1998) determined that embracing a goal or a task is accompanied by a corresponding attentional set that biases automatic cognitive processing in favor of goal- or task-related information. Klinger (1996), Moskowitz (2002), and Riemann and McNall (1995) furthered these observations, and reported that the cognitive accessibility of information relating to a current goal or action plan is increased, and goal-related stimuli automatically attracts attention; therefore the closer you are to achieving your goal, the more focus and attention the goal receives. These researchers concluded that this automatic attentiveness (personal interest) reflects an important principle of

information processing that guarantees a chronically increased sensitivity for information relating to a current goal or task. If the goal is a passion, the individual has an even deeper capacity for attentional control and automatic attentiveness, which could be considered as a person's ability to persevere in the face of failure.

Perseverance has long been associated with other personality traits. Early creativity theorists, Newell, Shaw, and Simon (1962) suggested that creative behavior was accompanied by persistence. This was clearly illustrated in the studies carried out by Csikszentmihalyi (1996), and later by Adelson (2003). Csikszentmihalyi (1996) interviewed 91 renowned creative individuals and questioned them about their relationships, priorities, habits, and insights. Perseverance stood out as a key characteristic of a creative individual. Prabhu, Sutton, and Sauser (2008) provided empirical evidence for the positive impact of intrinsic motivation (persistence) on creativity and its mediating role in the relationship between creativity and the personality traits self-efficacy and openness to experience.

Studies of gifted children have found perseverance to be a stronger predictor of success than intelligence later in adulthood (Terman & Olden, 1947; Winner, 1997). Similarly, a number of scholars have found that a key commonality in high-achieving artists, athletes, chess players, and mathematicians is an ability and willingness to put in long hours of time and effort (Bloom, 1985; Ericsson, Krampe, & Tesch-Romer, 1993; Simon & Chase, 1973, Duckworth et. al, 2009; Duckworth et. al., 2011). In order to be considered a gritty individual, one must have passion *and* perseverance. This perseverance is not only a way to succeed, but a way to cope with stressful circumstances (Caltabiano & Caltabiano, 2006).

With grit being predictive of success for even for the most talented individual (Duckworth et al. 2007), what do those do who lack the grit to succeed? Duckworth (2013) maintains that grit components like perseverance can be taught. She contends that grit, as a psychological trait, is "a function of genes (nature) and experience (nurture)" and that "our particular life experiences… nudge us closer to one end of the perseverance spectrum than the other" (p.1). Though studies documenting the malleability of grit are not yet in publication, efforts to create programs to do so are in place at the grammar and secondary school level, for example, the KIPP Schools (Tough, 2012), has a character report card rewarding efforts and soft skills. Their curriculum focuses on modeling gritty behavior among staff, using a common vocabulary to identify soft skills, analyzing real-world and fictional characters that demonstrate grit, and encouraging students to focus on a growth mindset while they set and track goals (KIPP, 2015). Empirical data on the effectiveness of programs designed to increase grit levels will be available in the near future. However, there are no known post-secondary programs that specifically target grit development.

**Outcomes of Grit**

Early literature of grit comes from six studies that were conducted for Duckworth's dissertation. Each contributes to strengthen the case that grit is an indepedent personality trait worth studying. The first of Duckworth's studies focused on examining grit and level of education. Data was collected via an online survey at www.authentichappiness.org from April 2004 to October 2005. The 1,545 participants indicated their age and level of education (Duckworth, Peterson, Matthews, & Kelly, 2007). As predicted, results confirmed that the level of education positively correlated

with the level of grit in adults of similar age. A post hoc comparison found that when age was controlled, post-college graduates possessed the highest grit. Duckworth et al., (2007) speculated that as people age, they learn from previous experiences and mistakes and often are better at setting achievable goals, but grit only increased when education level was controlled for, indicating that grit didn't change over time. They concluded that those who were pursuing higher levels of education often possessed more tenacity; so controlling for this variable would show that people's grit would not change over time.

The second study in the sample, conducted in 2004, added the Big Five Inventory (BFI; John & Srivastava, 1999) to explore relationships between the Big Five traits and grit, and asked the participants to indicate how many times they changed careers. Data was collected for 706 participants using the same measures as the previous study. Results indicated that grit related to conscientiousness ($r = .77$, $p < .001$) more than any of the other traits, which was expected, as Duckworth sees grit as a subset of this trait. However the predictive validity of grit for education and age was much stronger than conscientiousness and other Big Five traits was supported. (Duckworth et al., 2007), Additionally, the study examined grit and a person's likelihood to change careers. The data revealed that grittier people were less likely to frequently change careers. This study excluded 16 participants for only completing high school or some high school, which perpetuates the idea that this group is less 'gritty'.

The third study in the sample, conducted in 2006, build on the past research to measure if grit could predict the performance of high achievers (Duckworth et al., 2007). Participants included 139 undergraduate psychology students at the University of Pennsylvania (Duckworth et al., 2007). Data collected comprised of SAT scores, GPA,

gender, expected year of graduation, and a completed grit scale. Grit scores were associated with higher GPAs ($r = .25$, $p < .01$) and also with lower SAT scores ($r = -.20$, $p < .03$). These results suggested that students in the lower echelon might actually possess more grit, but compensate by working harder, therefore, achieve higher levels in education (Duckworth et al., 2007).

The forth study in 2004 examined whether grit impacted retention for cadets in their first year at the U.S. Military Academy (USMA) at West Point. The training in question, called *Beast Baracks* (intense first summer training) is extremely challenging, with "about 1 out of 20 cadets drop out during this training" (Perkins-Gough, 2013, p.#16). The study included 1,218 participants, comparing their grit score to their Whole Candidate Score (WCS), a weighted composite of high school rank; SAT score; Leadership Potential Score, which reflects participation in extracurricular activities; and a Physical Aptitude Exam, a standardized and physical exercise evaluation, and self-control. "Grit predicted completion of the rigorous summer training program better than any other predictor. Cadets who were a standard deviation higher than average in grit were more than 60% more likely to complete summer training ($\beta = .41$, $p < .001$) (Duckworth et. al., 2007, p. 1095).

The fifth study in the sample, conducted in 2006, replicated the first West Point study but added the 9-item Conscientiousness subscale of the Big Five Inventory (John & Srivastava, 1999; observed $\alpha = .82$). This study examined whether grit had incremental predictability over and beyond the big five conscientiousness. Duckworth and her team found that grit predicted summer retention at West Point for the 1,308 cadets ($\beta = .31$, ,p

< .02) better than did Conscientiousness ( $\beta$ = .09, ns) or Whole Candidate Score ( $\beta$ = .02, , ns) (Duckworth et. al, 2007, p 1089).

The sixth study in the sample examined the finalists from the 2005 Scripps National Spelling Bee (Duckworth et al., 2007). Participants included 175 finalists who took a verbal IQ measure and completed self-report questionnaires in self-control and grit (Duckworth, et al., 2007). Also measured was the amount of time participants spent studying, the final round they achieved in the spelling bee, and the number of prior competitions in which they had participated. "In an ordinal regression model with final round as the dependent variable, grit ( $\beta$ = .34 , p < .04) and age ( $\beta$ = .28 , p < .05) were significant predictors, indicating that finalists with grit scores a standard deviation above the mean for same-aged finalists were 41% more likely to advance to further rounds" (Duckworth et. al., 2007, p. 1097). While all the children likely had an aptitude for spelling, this success was attributed to the gritty child's ability to engage in more deliberate practice. Deliberate practice was "operationally defined as studying and memorizing words while alone", which was rated the "most effortful and least enjoyable" (p.174). These conclusions are identical to those of Cox (1926) from decades earlier; the deliberate practice aids in achievement. Duckworth et al., (2007) now offered an explanation as to why some people are better able to engage in deliberate practice than others even while having the same levels of talent or intellect. .

These six studies led to the construct validity of grit and provided a case for grit as a meaningful factor in predicting success in students. Now researchers are turning their attention to teachers. The first of these investigations reported that grittier novice teachers were more effective because their students achieved higher test scores (Duckworth et al.,

2009). However, a limitation of that study was that it relied on self-reports of grit. An issue with self-reported measures is that people are more likely to agree with socially desirable statements simply because they think they should (Duckworth et al., 2009). A follow-up study was recently published which aimed to eliminate this concern.

Robertson-Kraft and Duckworth (2014) maintained a focus on teachers and grit, but this time compared self-report grit scores from novice teachers in low-income districts to their grit assessed résumés. Raters, unaware of the outcomes, followed a 7-point rubric system to score each résumé for grit, assigning points to college activities and work experiences as examples of gritty behavior. Researchers used independent sample t-tests and binary logistic regression models to predict teacher retention and effectiveness. Their findings indicated that for novice teachers in high-poverty school districts, higher levels of "perseverance and passion for long-term goals" (aka "grit") were associated with higher rates of effectiveness and retention (Robertson-Kraft & Duckworth, 2014, p.2). Further implications of this study point to a school's role in selecting teacher candidates, on-going professional development, and school climate. In an interview with Holly Yettick, blog writer for Education Week, Robertson-Kraft stated "I think we need to do a lot more to train teachers to understand how to approach their work so they can stay motivated through the end of the year," (Yettick, 2014, para 10). Kraft and Papay (2014) also agreed, but point out that the professional environment in which they work matters. Kraft, also interviewed for the same article, stated "I think a more promising solution is to select grittier teacher applicants and then focus on creating school environments that support them when they do face adversity" (Yettick, 2014, para. 12).

**Is Grit Enough? An Examination of Resiliency**

Grit's extensive examination leaves little doubt that non-cognitive traits are imperative to success, however some researchers have challenged the idea that grit is the most important non-cognitive trait of all. Researchers returned to The United States West Point Military Academy (USMA) and compared grit and resiliency (Maddi & Matthews et. al., 2011), and grit, resiliency and emotional intelligence (Maddi et al., 2012). Both study results have provided evidence that grit and resiliency predicted unique variance in first year retention, but only resiliency predicted first year performance at USMA in both studies. Two years later, another team of researchers (Bartone et al., 2014) went back to West Point to see if they could replicate the same finding. They did not. In contrast, they reported that grit perseverance and resiliency commitment were important contributors to a cadet's performance, however one trait did not have a stronger prediction to success over the other. These results suggested a common overlap for individuals measured in these constructs, but point to resiliency as being a more crucial characteristic than grit when it comes to success and achievement outcomes. These findings suggest that more research must be done to determine which of the two non-cognitive traits has the strongest link to success, assuming that they are two separate traits. In addition, these studies focused on military populations, which beg the question "would finding this be the same for other domain areas, namely teachers?"

**Dispositional Resiliency**

Initial studies of resilience emerged through the resilient qualities of self-esteem, self-efficacy, and support systems (Richardson, 2002), in particular, Armor et al. (1976), with their study of teacher efficacy. Henceforward, several papers examined resilience

indirectly, as an underlying quality of teacher-efficacy (Erawan, 2010; Goddard, Hoy, & Hoy, 2000; Schwarzer & Hallum, 2008). Resilience is defined as the phenomenon of maintaining ones performance and health, despite the occurrence of stressful circumstances (Maddi, 2013). However, ongoing debates have struggled with whether the resilience criteria should include good internal adaptation (psychological well-being versus emotionally stressed), as well as external adaptation (positive behavior versus maladaptive behavior) (Maddi, 2013).

By remaining actively involved and developing new goals if their original plans were unsuccessful, resilient individuals rebound from adversity (Ryan & Caltabiano, 2009). The idea of individual resilience in the face of adversity has been present for centuries and evident in myths, fairytales, art, and literature (Campbell, 1970), as well as reported in research for almost a century. For example, Freud (1928) reported the incredible capacity some people had for triumphing over adversity, even on the way to execution.

Resilient individuals have a greater internal locus of control, or perception of being able to influence his or her current environment and future; in other words they believe their own actions are the reasons for their situations in life (Rotter, 1989). This locus of control also allows them to be optimistic about their ability to create positive outcomes for themselves and others, and this belief makes them more likely to use resilient approaches when facing adverse conditions (Friborg et al., 2006; Kumpfer, 1999; Werner & Smith, 1992). Cognitive and behavioral strategies used by an individual to manage the demands of the stressful situation are called coping skills (Folkman & Moskowitz, 2004). Resilient individuals are able to call upon a range of problem-solving

and emotion focused strategies, allowing them to feel more confident that they can cope with stressful situations (Caltabiano & Caltabiano, 2006; Masten & Reed, 2005; Rutter, 1987).

Several approaches to resilience research have been developed since the starting of this scientific domain, including person-focused models, variable-focused models, pathway models and an integrated factor-process model (Masten & Reed, 2002). Variable-focused approaches try to ascertain what accounts for good psychological functioning by examining characteristics of individuals, environments, and experiences (studies often use multivariate statistics assessing a whole sample or risk group to examine variable-focused resilience) (Masten & Reed, 2005). The purpose of variable-focused research is to capture the mechanism behind resilience development.

Person-focused approaches identify resilient people in an effort to understand how they differ from others who are not faring as well (individuals are viewed as resilient if they are doing well in multiple facets of life) (Masten & Reed, 2005). Characterized by longitudinal design and analysis, pathway models try to disentangle how human adaptation systems operate and how resilience develops by focusing on change before and after the incidence of traumatic events or disasters (Xi, Zuo & Wu, 2012).

The integrated factor-process approach to resiliency measurement, which is the focus of the current study, emphasizes both the processes of resilience development and the factors related to it, and provides a more generic strategy for investigating resilience and interpreting the results (Xi, Zuo & Wu, 2012). In early theoretical development, this type of resiliency is often synonymous with the term hardiness.

Hardiness is a personality style associated with resilience, good health, and performance under stressful conditions (Maddi & Kobasa, 1984; Bartone, 1999; Ramanaiah, Sharp, & Byravan, 1999). To be more specific, resilience is a descriptive term, while hardiness is an explanatory one (Bartone, 2015). Hardiness is only an individual level personality characteristic, while resilience is one's ability (individual level) to navigate and negotiate health sustaining resources (contextual) in the face of adversity, including social support from family and friends, a positive work environment, good nutrition and sleep (Bartone, 2015). When it comes to factors inside the person (internal locus of control) that contribute to resilience, psychological hardiness is considered the key element containing three inter-related tendencies of: commitment (versus alienation), control (versus powerlessness) and challenge (versus need for security) (Bartone, 2015).

In their development of the integrated factor-process approach to resiliency measurement, Ryan and Caltabiano (2009) noted the similarities between resiliency and hardiness, which both "associate(s) perseverance with commitment to work consistently towards a goal, as well as the ability to view changes as challenges" (p. 42). Presently, measures of hardiness are assessed in terms of dispositional resiliency (Bartone, 1995; Maddi, 2013).

Kobasa (1979) first introduced the construct of *hardiness* in her investigation of personality, illness, and stress. Due to its associations with perseverance and commitment to work consistently towards a goal, as well as the ability to view change as a challenge (Ryan & Caltabiano, 2009), hardiness has been put forward as the pathway to resilience under stress (Bonanno, 2004; Maddi, 2005). Though this theory has had a long-standing

history with the term hardiness, the term dispositional resiliency (DR) will be used to describe this construct from this point on. DR is often considered the phenomenon of maintaining your performance and health, despite the occurrence of stressful circumstances (Maddi, 2013); common characteristics of a hardy person.

In her conceptual exploration of DR, Kobasa (1979) examined individuals under stress. Life events that were considered stressful caused changes in, and demanded readjustment of, an average person's normal routine. She defined DR as a pattern of attitudes and strategies one utilizes to turn stressful circumstances from potential disasters into growth opportunities (Kobasa, 1979). Kobasa chose this definition as a result of the empirical demonstration (Holmes & Masuda, 1974; Holmes & Rahe, 1967) that there was a general consensus about the degree to which specific life occurrences involve change and require readjustment. The consensus was established when thousands of subjects varying in age, sex, socioeconomic status, race, cultural background, education, and religion rated the stressfulness of a long list of events. High levels of personal dispositional resiliency promote personal growth and well-being; whereas, low levels result in self-handicapping behavior and distress (Kobasa, 1979). The highly stressed persons who become ill and powerless, nihilistic, and low in motivation for goal achievement would be low in dispositional resiliency. When stress occurs, “they are without recourse for its resolution, give up what little control they do possess, and succumb to the incapacity of illness” (Kobasa, 1979, p.3).

Kobasa’s (1979) original hypothesis for the construct of DR incorporated Maddi’s (1976) categorization of major personality theories in which he identified fulfillment theories (involving future events), and was derived from the existential concept of

authenticity. Authenticity is a self-referential state of being (Sartre, 1943). It is more than a feeling; it has to do with being one's true self, whether alone or engaging with others (Walumbwa, Avolio, & Gardner, 2005, p.6). This theory has an underlying assumption that there is a coherent phenomenological self to which one can be true (Kihlstrom & Klein, 1994). Kobasa (1979) followed the model proposed by Averill (1973) to explain his laboratory observation that some organisms are not debilitated by stressful stimuli, and characterized their DR by three interrelated attitudes: control, commitment and challenge to grow. Thus, these DR attitudes and strategies will result in the best possible perceptions in stressful times and view stressors as challenges and not as threats.

In order to develop the original measure, Kobasa (1979) used discriminant function analysis to examine 18 scales from five different sources to what differences existed between high stress/low illness and high stress/high illness groups. Conceptually, these 18 scales included well over 100 items, and provided a first generation DR measure (Bartone, 2015). Executives who remained healthy under stress scored significantly lower in nihilism, powerlessness, alienation from self and work, vegetativeness, and adventurousness (as opposed to responsibility), and higher in internal locus of control, a pattern she described as *hardiness* (now called dispositional resiliency). Kobasa focused her theory on specific attitudes: These attitudes were loaded into three factors; control, commitment, and challenge.

**Dispositional Resiliency: Control**

Kobasa (1979) defined control as a tendency to believe and act as though one can influence his/her life events through focused effort using imagination, knowledge, skills, and choice. She suggested that one reason why DR people are more effective in stressful

situations is that DR people appraise stressful situations as less threatening; either because they believe that they can control the situation or that they can learn from it. By acting on these control perceptions, DR people will have more mastery experiences with stressful situations (Bartone, 1995; Maddi, 2013). Highly stressed yet highly DR people are hypothesized to have decisional control, cognitive control, and coping skills (Kobasa, 1979).

Kobasa's definitions of each are fundamentally different, distinguishing decisional control as "the capability of autonomously choosing among various courses of action to handle the stress" (p.3)- in other words, DR people have autonomy. Cognitive control was defined as "the ability to interpret, appraise, and incorporate various sorts of stressful events into an ongoing life plan and, thereby, deactivate their jarring effects" (p.3); therefore, DR people do not allow stressful events to sway their confidence. Kobasa explained that coping skills were what allowed someone to feel in control, because "a greater repertory of suitable responses to stress developed through a characteristic motivation to achieve across all situations" (p.3). Maddi & Khoshaba, (2005) agreed, reporting that the attitude of control enables one to take direct, hands-on action to transform changes and the problems one may cause. This attitude helps them believe that stressful changes are important and worthwhile enough to dedicate yourself to influencing them in an advantageous direction (Maddi & Khoshaba, 2005). Therefore, even if DR people were in a crisis, they were confident that they would be able to cope because they had a wider variety of coping methods (Bartone, 1995; Maddi, 2013).

**Dispositional Resiliency: Commitment**

Commitment refers to the tendency to have a genuine interest and curiosity in,

and commitment to, the activity of life one involves oneself in (Bartone, Roland, Picano, & Williams, 2008). Those who feel committed are able to lessen life stressors by calling on a belief system about one's sense of meaningful purpose in life. DR people feel a strong sense of purpose (similar to dimensions of grit passion), preventing any desire to withdraw from a situation by minimizing any perceived threats (similar to the dimension of grit perseverance) (Maddi, 1994; 2002). This suggests that DR people believe that no matter how bad things get, it is important to stay involved with whatever is happening, rather than sink into detachment and alienation (Maddi, 2013). This is because of their "ability to recognize one's distinctive values, goals, and priorities and an appreciation of one's capacity to have purpose and to make decisions support the internal balance and structure to accurately assess a threat posed by a life situation and for competent handling of it" (Kobasa, 1979, p.4). Committed individuals are also able to achieve and maintain positive social relationships, and feel involved with others to a degree that they feel they can call upon others for assistance in demanding times (Maddi, 1994; 2002; Barton et. al, 2008). These traits show theoretical similarities to grit perseverance.

**Dispositional Resiliency: Challenge**

Challenge is the perception that changes, rather than stability, is an expected part of life, and is a necessary ingredient for personal development (Bartone et. al., 2008). Kobasa (1979) hypothesized that DR people "are catalysts in their environment and are well practiced at responding to the unexpected" (p.4) because they feel positively about change. She continues to explain that because these change seekers have filled their lives with interesting experiences and know how and when to utilize resources and seek support, they are better able to cope with stress. DR people have an innate ability to be

cognitively flexible which allows them to integrate into new situations and effectively appraise threats; therefore they can turn stressful situations into advantages by viewing them as an opportunity to learn and grow in wisdom and capability (Maddi, 2013). Their motivation for endurance, similar to grit perseverance, allows them to persist even when the new information is exceedingly incongruous and, thereby, maximally provoking of strain and illness (Moss, 1973). Their skill set includes a fiercely developed sense of self-efficacy, perseverance, internal locus of control and broad range of coping responses and actions which enables the individual to act purposefully, rather than being passive or feeling powerless in the face of stressful and changing situations (Maddi, 1994, 2002; Bartone et. al, 2008; Luthans, Vogelgesang & Lester, 2006; Tedeschi & Kilmer, 2005). This allows them to learn from failures as well as successes, by viewing failures as learning experiences (Maddi, 2013).

**Dispositionally Resilient Individuals**

Dispositional resiliency (DR) has not only been shown to help individuals cope with stressful events, it has also been shown to increase an individual's task effectiveness (Sansone, Wiebe, & Morgan, 1999; Wiebe & Williams, 1992). Therefore, when a worker can foresee a better professional future for himself or herself, they become more effective at their job tasks. These results were originally documented when Maddi (1987) was studying more than 400 supervisors, managers and executives at Illinois Bell Telephone (IBT) before a major downsizing, where the company laid off almost half of their 26,000 employees in one year. From 1981 through 1987, Maddi was able to continue following the original study group on a yearly basis, evaluating their adjustment to new job descriptions, added responsibilities, and new company goals. Results showed

that about two-thirds of the employees in the study suffered significant performance, leadership and health declines as the result of the extreme stress from the deregulation and divestiture, including heart attacks, strokes, obesity, depression, substance abuse and poor performance reviews. However, the other one-third actually thrived during the upheaval despite experiencing the same amount of disruption and stressful events as their co-workers. These employees maintained their health, happiness and performance and felt renewed enthusiasm; therefore they were considered to have high DR.

Maddi's (1987) conclusions were supportive of Kobasa's original theory that DR people can turn adversity into an advantage because of their commitment, control and challenge attitudes. In the case of the IBT employees, the commitment attitude led them to strive to be involved in ongoing events, rather than feeling isolated, the control attitude led them to struggle and try to influence outcomes, rather than lapse into passivity and powerlessness, and the challenge attitude led them to view stress changes, whether positive or negative, as opportunities for new learning.

DR people perform better and stay healthier in the face of stress in many situations and occupations like: business, (Maddi, 2002); sports (Maddi & Hess, 1992), firefighting (Maddi, Harvey, Resurreccion, Giatras, & Raganold, 2006), military (Maddi, 2012; Bartone, 1999, 2014); and college GPA (Maddi et al., 2009). DR has been shown to be positively associated with satisfaction in immigrants (Kuo & Tsai, 1986), HIV patients (Perry, Fishman, Jacobsberg, & Frances, 1992), retirees (Sharpley & Yardley, 1999), athletes (Sheard & Golby, 2006), and has been associated with better performance

in tertiary students (Ruthig, Hladkyj, Perry, & Hall, 2004) and military trainees (Bartone et al., 2008; Maddi et al., 2011).

There have been many studies showing a positive relationship between DR and performance in ongoing stressful situations. In officer-training school, DR was found to predict participant successful completion rates (Westman, 1990). In this study, the Israeli Defense Forces officer cadets who reported higher levels of DR also reported experiencing less stress. Beyond self-reports, this study also utilized the scores of objectively scored rigorous performance outcomes by academy instructors. Further, performance appraisals during the officers' year-end review found that DR predicted performance both during training and through the first year on the job. It was found that DR, measured in fire-fighter cadets predicted who would stay in the program and perform well before their strenuous four-and-a-half-month began (Maddi et al., 2007).

Research has shown that resilient people experience less professional burnout, specifically in the field of education (Chan, 2003; Bernshausen & Cunningham, 2001; Pretsch, Flunger, & Schmitt, 2012). Teaching is traditionally recognized as a highly stressful occupation, associated with high levels of burnout (Hastings & Bham, 2003). Suh (2008), characterized teacher burnout as a state of physical, emotional, and mental exhaustion characterized by an inability to connect with students, and low levels of confidence in their ability to achieve their goals. Teachers who experience burnout, which comes from prolonged periods of stress, suffer physiologically and become detached from their responsibilities and roles (Maslach, Schaufeli, & Leiter, 2001). Low morale and burnout are negatively associated with student achievement (Suh, 2008). One

can speculate that DR teachers would maintain more positive attitudes in the face of professional challenges because they are less affected by burnout.

Although many theories have been proposed, common findings reveal that the internal characteristics associated with resilience include self-efficacy, perseverance, internal locus of control, coping and adaptation skills (Garmezy, 1985; Kumpfer, 1999; Luthans, Vogelgesang & Lester, 2006; Tedeschi & Kilmer, 2005). In addition, the external factors that promote coping include family and social support networks (Friborg et al., 2006; Hardy et al., 2004; Luthar et al., 2000; Werner & Smith, 1992). Assessment tools to measure resilience would therefore need to tap into these qualities and methods to enhance these areas would need to be investigated.

Maddi developed an intervention program, called The Hardiness Institute, in which individuals are assessed for DR and receive DR training (Khoshaba and Maddi 2004 ; Maddi 1987 , 2002). The program channels parent or mentor support into practicing problem-solving coping, supportive social interaction, and beneficial self-care, and also demonstrate how to use the experiential feedback resulting from these strategies to enhance resiliency attitudes (Maddi, 2013). Thus, when one is to function on her own, she will have not only the knowledge of how to problem solve, have socially-supportive interactions, and beneficially self-care, but also the courage and motivation to carry out needed hard work (Maddi, 2013). Results of this training are reported to reduce negative stress reactions, such as anxiety and high blood pressure, while improving job satisfaction (Maddi & Khoshaba, 2004). Of particular significance to the present study, Maddi and others have provided DR -training programs for “several 2- and 4-year colleges offering DR assessment and training as regular credit courses” (Maddi, 2002, p. 182). Such

courses in teacher education programs or professional development seminars have not been reported at this time.

Based on the literature available on DR and the results of the successful training programs, it is possible that DR teachers would also maintain their health, happiness, and performance while working in education. Having a strong sense of resiliency would be beneficial to teachers due the stress teachers face (Chan, 2003; Bernshausen & Cunningham, 2001; Pretsch, Flunger, & Schmitt, 2012).

**Grit and Dispositional Resiliency: Psychometric Similarities**

The Grit Scale (Duckworth, 2004) and the Dispositional Resiliency Scale (Bartone, Ursano, Wright, & Ingraham, 1989; DRS-15) are both moderately correlated with measures of positive and negative affect. Singh and Jha (2008) focused on positive and negative affect and grit as predictors of happiness and life satisfaction. To measure affect, they used a short version of an adjective mood scale (Kardum & Bezinovic, 1992). They found that grit was positively correlated to positive affect ($r=.44, p<.01$), and negatively correlated to negative affect ($r=-.14, p<.05$). The researchers used the 2004 grit scale developed by Duckworth (2004), which consisted of 48 likert scale items. Similar to grit, Kardum, Hudek-Knezevic, and Krapic (2012) reported a positive correlation between positive affect and DR ($r=-.52, p<.001$) and a negative correlation between negative affect and DR ($r=-.40, p<.001$) for the 15-item Dispositional Resilience Scale (Bartone, Ursano, Wright, & Ingraham, 1989). These findings suggest that grit and resiliency are very similar theoretically in the way they relate to affect.

Both grit and DR are theoretically similar when it comes to perseverance. Gritty individuals need perseverance to temper the passion when the going gets tough. With

DR, once a commitment is made, people preserve regardless of challenges. Due to their theoretical similarities and correlations to positive affect, it is possible that gritty and dispositionally resilient individuals are able to persevere and overcome challenges due in part to their positive emotional states, and this may carry over even when placed in negative environments. Grit and dispositional resiliency appear to share theoretical similarities in the ability to maximize commitments to goals through the minimization of negative affect and frustration and the capitalization of positive affect even when difficulties arise. The differences between the constructs appear to be that grit has the added component of passion while dispositional resiliency relies on abilities to cope with stressors (control and challenge). How similar or different these subcomponents are have yet to be determined in the literature, however, it makes sense that both dispositions would be beneficial for teachers working in challenging atmospheres.

**The School Climate**

School climate plays a key part in initiating and maintaining education improvement, and as a result, has been studied extensively over the past several decades (Cohen, McCabe, Michelli, & Pickeral, 2009). It has been called the fourth leg of school success, after curriculum materials, instructional strategies, and teachers (Doll, 2010). Kraft and Papay (2014) studied teacher effectiveness and perceptions of school climate, concluding "on average, teachers working in schools at the 75th percentile of professional environment ratings improved 38% more than teachers in schools at the 25th percentile after 10 years" (p. 476). The findings are clear: teachers with perceptions of positive school climates improve more than teachers with negative perceptions of

climates, hence why perceptions of school climate is so important for all school stakeholders.

Researchers have used various definitions of climate; Kottkamp (1984) suggested that climate consists of shared values, interpretations of social activities, and commonly held definitions of purpose, while Hoy, Tarter, and Kottkamp (1991) stated that "school climate is the relatively enduring quality of the school environment that is experienced by participants, affects their behavior and is based on their collective perception of behavior in schools" (p. 10). Hoy and Miskel (2005) defined school climate as "the set of internal characteristics that distinguish one school from another and influence the behaviors of each school's members" (p. 185). Positive school climates are universally understood to be environments in which the whole school community prospers (Bryk & Driscoll, 1988; Cohen et al., 2009). For the purposes of this review, *school climate* is defined as the interpersonal relationships, goals, values, formal organizational structures, and organizational practices. In other words: "characteristics of school life, which includes the availability of supports for teaching and learning" (Clifford, Menon, Gangi, Condon, Hornung, & American Institutes for Research, 2012, p.3). Kraft and Papay (2014) reported that teachers working in more supportive professional environments improve their effectiveness more over time than teachers working in less supportive contexts, thus reinforcing the need to focus perceptions of school's climate.

Clifford et al., (2012) assert that school climate surveys differ from school audits or school walk-throughs (which involve observations of school activities by trained staff), as well as 360-degree assessments of principal practice (which focus exclusively on gathering multiple perspectives on a principal's performance at a single point in time).

When compared with audits and walk-throughs, climate surveys include the availability of supports for improved teaching and learning, and more broadly assess the quality and the characteristics of school life.

Prior to examining school climate, observations of school culture were made as early as the 1930s in Waller's *The Sociology of Teaching.* Waller observed that schools "have a culture of their own", which included complex personal relationships, irrational sanctions, and a ritual way of doing things (Waller, 1932,p. 103). In the 1970s, as researchers showed a renewed interest in addressing barriers to educational change, school culture saw a resurgence of interest (Goodlad, 1975; Sarason, 1971). It was not until the 1980s that culture became a major theme in organizational science, and students, teachers, administrators and other service personnel were recognized as having vital and specific roles within a school that is unique to its culture. Early studies school climate perceptions suggested that although the relationships among all those who work in the school are varied and complex, a school can only run effectively if those relationships are understood and generally accepted by all involved (Campell, Corbally & Nystrand, 1983; Brookover, Schweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978). However, **i**t is important to note that these relationships are not only constructed for social culture; but also for organizational culture.

Organizational culture "reflects the more directive and descriptive samples of common behavior which characterize the types of organization" (Çelik, 2012, p. 4). A strong organizational culture builds the confidence of its members, empowering them to feel more energetic (Eren, 2010). A positive school culture results in a positive school climate. The products of an educational institution are people; therefore, it is important to

develop a strong social and organizational school culture where the climate perceptions "reflect the touchable and definable elements of culture" (Balcı, 2011, p. 118).

Reports of teachers' satisfaction and school climate have varied by demographics. Results of the 2000/2001 version of the Teacher Follow-up Survey (TFS) to determine teachers' satisfaction with different aspects of their jobs, found that race, gender, and years of teaching experience were related to job satisfaction among teachers. Minority teachers were less satisfied with teaching, and teachers with more years of experience were more satisfied with teaching. Female teachers were reportedly more satisfied than male teachers (Liu and Ramsey, 2008; Bogler, 2001; Menon, Papanastasiou, & Zembylas, 2008). Researchers speculated that this was possibly due to females feeling more emotionally engaged. A Gallup database from the years 2010-2012 reveals a similar 6 percent gender gap favoring women on connection to the workplace, using relationship-based items such as "a supervisor or someone cares."

**Outcomes of a Positive School Climate**

The systematic study on perceptions of school climate has developed into a growing body of research that confirms its importance in a variety of overlapping ways, including: social, emotional, intellectual and physical safety; positive youth development, mental health, and healthy relationships; higher graduation rates; school connectedness and engagement; academic achievement; social, emotional and civic learning; teacher retention; and effective school reform (Center for Social Emotional Education, 2010). Additionally, it should be understood that both the effects of school climate perceptions and the conditions that give rise to them are deeply interconnected, growing out of the shared experience of a dynamic ecological system (Bronfenbrenner, 1979; Ma, Phelps,

Lerner, & Lerner, 2009), and yielding powerful outcomes.

In early adolescence, a positive school climate is predictive of better psychological well-being (Ruus et al., 2007; Shochet et al., 2006; Virtanen et al., 2009). School climate has been shown to affect middle school students' self-esteem (Hoge, Smit, & Hanson, 1990), mitigate the negative effects of self-criticism (Kuperminic, Leadbeater, & Blatt, 2001), and affect a wide range of emotional and mental health outcomes (Payton et al., 2008; Power, Shochet, Dadds, Ham, & Montague, 2006; Way, Reddy, & Rhodes, 2007). A positive school climate is also related to the frequency of its students' substance abuse and psychiatric problems (Ruus et al., 2007; Shochet et al., 2006) including lower levels of drug use as well as less self-reports of psychiatric problems among high school students LaRusso, Romer, & Selman, 2008). Additionally, a positive school climate results in lower rates of student suspension in high school (Lee, Cornell, Gregory & Fan, 2011).

A series of correlational studies have shown that school climate is directly related to academic achievement in elementary school (Sherblom, Marshall & Sherblom, 2006; Sterbinksky, Ross & Redfield, 2006), middle schools (Brand, Felner, Shim, Seitsinger, & Dumas, 2003) and high schools (Stewart, 2008). This is because a positive school climate promotes students' abilities to learn by increasing pro-social practices, including cooperative learning, group cohesion, respect, and mutual trust. These particular aspects of behavior have been shown to directly improve the learning environment resulting in improved student achievement (Ghaith, 2003; Kerr, Ireland, Lopes, Craig, & Cleaver, 2004; Finnan, Schnepel, & Anderson, 2003), and this effect seems to persist for years (Hoy, Hannum, & Tschannen-Moran, 1998). Student behavior is also a factor

influencing school climate. Studies show that when students are encouraged to participate in academic learning, their potential for academic achievement increases (Voelkl, 1995; Ladd, Birch, & Buhs, 1999). In order for teachers to encourage student participation, they must have established trust and rapport, all of which influence a teacher's perception of schools climate.

**Fostering a Positive School Climate**

An abundance of research has reported that school climate has a direct impact on improved instructional quality, community relationships, and student growth, which are all outcomes or results of a principals' work (Halawah, 2005; Clifford et. al, 2012; Price, 2012; Gülşen & Gülenay, 2014). When qualified teachers and principals invest time and effort into creating a positive school climate they provide a foundation for social, emotional, and academic learning (Blum, McNeely, & Rinehart, 2002); protect against risky behavior in youth (Cohen, 2006; Cunningham, 2007; Kuperminc, Leadbeater, Emmons, & Blatt, 1997); foster psychological well-being in school (Berkowitz & Bier, 2005; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004); and experience lower dropout rates by students' senior year (Barile, Donohue, Anthony, Baker, Weaver, & Henrich 2012; Lan & Lanthie 2003). Early research by Brookover (1979), Edmonds (1979), and Rutter, Maughn, Mortimore, and Ouston (1979) found positive correlations between effective schools and strong leadership, a climate of expectation, an orderly but not rigid atmosphere, and effective communication. These researchers suggest that the absence of a strong educational leader and negative attitudes of the teaching staff can directly influence student achievement. However, less research has been focused on how the teacher dispositions affect perceptions of school climate.

Social-cognitive theory (Bandura, 2001) suggests that differing roles of students and teachers within a school will lead to differing perceptions of the climate environment. One school climate factor that leads to positive perceptions is teacher self-efficacy, or the belief that one has the capabilities to be successful in the future. Beard, Hoy, & Woolfolk-Hoy (2010) and Woolfolk-Hoy et al., (2008) investigated the role of self-efficacy, trust, and academic emphasis among teachers and students. Both studies reported these three factors have similar relationships with how teachers felt about their own abilities to succeed at teaching, an attitude that also impacts their view of their school climate. More recently, Kılınç (2013) found that the improvement of student learning and achievement along with building an effective learning environment depended largely on teachers' beliefs (based on their self-efficacy) about students' academic achievement and their focus on academic tasks.

Student behavior is a contributing factor to teachers' attitudes about school climate. In a related study, Collie et. al., (2012) investigated how teachers' perceptions of social– emotional learning and school climate influenced their sense of stress and teaching efficacy. They reported that teachers' perceptions of students' motivation and behavior significantly predicted sense of stress, efficacy, and job satisfaction. Perceived stress related to students' behavior was negatively associated with sense of teachers' efficacy. These results are in line with previous findings; that teachers' self-efficacy was associated with student factors like achievement and motivation (Caprara, Barbaranelli, Steca, & Malone, 2006).

While not being important to students' views of school climate, parental involvement and principal accessibility may have a great impact on how teachers

perceive the quality of their school climate. Early studies suggested that, from a teachers' perspective, positive school climate is not limited to shared norms and expectations (Brookover, Schweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978), level of teachers empowerment (Short & Rinehart, 1992), autonomy (Kreis & Brockopp, 1986; Pearson & Moomaw, 2005), and the psychosocial context in which teachers work and teach (Fisher & Fraser, 1990).

Moreover, one of the very crucial components of sound relationships has been identified as 'trust' among members of the school community (Bryk and Schneider, 2002; Halawah, 2005; Hoy & Miskel, 2010; Rafferty, 2003; Thapa, 2013). For example, Bryk and Schneider (2002) found evidence that schools with high relational trust (good social relationships among members of the school community) are more likely to make changes that improve student achievement (Bryk & Schneider, 2002). Evidence-based school climate reform strategy supports a model where K-12 students, school personnel, parents/guardians and community members learning and working together to promote education. Done well, these efforts will result in even safer, more supportive, engaging, challenging and harmonious schools (Thapa, 2013).

For teachers, school climate is not limited to the working environment (Hoy, 1990) but also a product of the professional teacher–principal relationship (Halawah, 2005; Rafferty, 2003), which is an indication of organizational health (Hoy & Hannum, 1997). Consistent with these findings, Gülşen et al., (2014) also reported that principals play an instrumental piece in the school climate puzzle. Open communication between teachers and administrators leads to shared goals, values, and beliefs- all aspects of a positive school climate (Edgerson, Kristinis, & Herrington, 2006; Halawah, 2005). This

implies that leadership of the principal is a key factor in the formation of school climate. Bolman and Deal (1997) describe the balance between leadership and management:

> Organizations which are overmanaged but under led eventually lose any sense of spirit or purpose. Poorly managed organizations with strong charismatic leaders may soar temporarily only to crash shortly thereafter. The challenges of modern organizations require the objective perspective of the manager as well as the brilliant flashes of vision and commitment that wise leadership provides. (pp. xiii-xiv)

The principal contributes to teacher's perceptions of school climate by building open trust and communication (Halawah, 2005; Hoy & Miskel, 2010), promoting quality and professional relationships among teachers (Hassenpflug, 1986), and demonstrating transformational leadership (Peper & Thomas, 2002). Transformational leadership theory is built around the idea that leaders and followers are held together by some higher level, shared goal, or mission rather than personal transactions (Bass, 1985).

Price (2012) examined principal-teacher interactions to explain teacher attitudes, which impact their perceptions of school climate. Her results indicated that principals' relationships with their teachers affect principals' and teachers' satisfaction, cohesion, and commitment levels. Among principals, these positive work relationships improve job satisfaction, cohesion perceptions, and commitment levels. Among teachers, substantial variation is explained directly by the relationship mechanism of principals sharing expectations with their teachers. She concluded that school professionals' attitudes form under similar organizational conditions as those of other workers. The relationships of principals, as the school leader, strongly and directly affect teachers' attitudes, which

define their perceptions of school climate. These results are similar to those of Şişman (2011b), who reported a positive correlation between educational leadership and perceptions of school climate, resulting in greater school efficacy.

In a 2011 survey of American educators, almost 70 percent of principals reported that their job responsibilities are much different than they were just five years before, and 75 percent of those reported that their jobs are too complex and have led to higher levels of stress and less job satisfaction (Alvoid & Black, 2014). Principals are also subjected to increasing demands including overwhelming evaluations to write, test accountability of students they do not personally know, and subjective evaluation ratings (Alvoid & Black, 2014). Struggling to find the balance between instructional leader and building manager, principals may be unable to support teachers in a meaningful way during this difficult transition (Alvoid & Black, 2014). A teacher may rate their overall school experience based on a principal's efforts in these areas. It is during these difficult challenges that dispositions like grit and DR would be beneficial for teachers who may sense a lack of support. DR teachers would be better equipped to cope with challenges and seek out the collegiality of their colleagues, and gritty teachers could maintain their interest despite the occurrence of obstacles.

The beliefs teachers hold about their capability to influence student learning, known as self-efficacy—is associated with teacher factors such as job commitment and job satisfaction (Caprara, Barbaranelli, Borgogni, & Steca, 2003; Collie, Shapka, & Perry, 2012), an enjoyment of teaching (Lui et al., 2014). Research has shown teacher self-efficacy to be part of grit in predicting perseverance of effort (Wolters & Hussain, 2014), and resiliency because of role in aiding people to articulate effective coping

responses (Keye & Pidgeon, 2013; Hamill, 2003). When teachers' self-efficacy is encouraged, this promotes positive attitudes and behavior that influenced the development of school climates (Nelson & Gould, 1988; Short & Rinehart, 1993). Teachers with high efficacy believe they will experience future success in teaching, they tend to select higher career aspirations and strongly commit to them (Bandura, 1991). It can be speculated that teachers who are self-efficious utilize more effective coping skills (DR) when dealing with stressors and persevere in the face of insurmountable obstacles (grit). Hence, they are probably much more likely to experience satisfaction in their profession, thus resulting in a more positive view of their school climate even when the environment is particularly challenging. It is possible that high grit and DR would result in more positive school climate perceptions because they potentially support high self-efficacy in teachers.

Past research has provided insight about teacher attitudes of autonomy and how they affect perceptions of school climate (Lui et al., 2014). Autonomy is defined as the ability to act independently and to feel a sense of control over one's environment (Benard, 2003) and is one of the precursors for passion (Deci & Ryan, 1985, 1996). Therefore having autonomy may allow teachers to maintain consistent interest (passion). While teaching can be stressful, autonomy allows the teacher the freedom to cope with challenges as he/she sees fit, hence resulting in greater mastery experiences with stressful situations, further building resiliency (Bartone, 1995; Maddi, 2013), and allowing teachers greater job satisfaction and a more positive perception of their school climate.

Kreis et. al., (1986) conducted a study with 60 public school teachers in the state of New York to determine the relationship between three dimensions of job autonomy

and job satisfaction. The three dimensions were (a) teachers' perceived autonomy within the classroom, (b) autonomy outside the classroom but within the school, and (c) an overall sense of autonomy. Perception of autonomy within the classroom was significantly related to job satisfaction, but no other perceptions of autonomy were significantly associated. Thus, teachers' ability to control their own classrooms was found to be important for teachers to be satisfied with their jobs. Control is one of the three components of DR (Kobasa, 1979), and this may be a reason why autonomy and control perceptions have a correlation with job satisfaction.

Moore (2012) investigated teacher control and its role as an important aspect of the school climate that affects teacher dissatisfaction. In her study, the teacher control variable was defined as control over teaching practices, control over grading, control over discipline, and control over homework. These four components typically occur within a teachers' classroom, thus, demonstrating the importance of control and autonomy over classroom decisions for teacher job satisfaction. The administration determines how much autonomy teachers have over the affairs of their classroom, and principal leadership decreased the odds of teacher dissatisfaction, and this decrease was negatively associated with self-doubt and burnout (Moore, 2012). These results indicate the importance of autonomy, and the administrators' role as an integral part of a teachers' perception of school's climate.

Similarly, Pearson et al., (2005) conducted a study with 171 teachers to determine the relationship between teacher autonomy and four other constructs: job stress, work satisfaction, empowerment, and professionalism. Teacher autonomy was separated into two dimensions, curriculum autonomy and general teaching autonomy. Correlations

revealed curriculum autonomy was significantly and negatively related to job stress; moreover, general teaching autonomy was significantly and positively associated with empowerment and professionalism which both have a strong relationship with factors of school climate. Skaalvik & Skaalvik (2014) reported that self-efficacy *and* teacher autonomy were independent predictors of engagement, job satisfaction, and emotional exhaustion- all of which are an integral part of perceptions of school climate.

Demands of teaching positions are very different from those of only a few years ago. The financial crisis has forced districts to cut positions, programs, and resources, while state-mandated scripted curriculums are imposed on teachers who are unfamiliar with them (Klein, 2013). As evidenced by the outbursts of anti-testing rallies across New York, many New York teachers disagree with their standards and methods, and are uncomfortable with the process by which they were rolled out (Taylor & Rich, 2015).

Much like the research of Robertson-Kraft & Duckworth (2014), who found that gritty novice teachers were more effective in challenging educational climates, Thomson & Wendt, (1995) found that DR actually protected the student teacher from feeling alienated in a negative school climate. Peaked by an interest in grit's impact on teacher effectiveness, Kraft and Papay (2014) examined the school environment's role in promoting teacher growth and effectiveness over time. They reported that teachers who work in more supportive environments become more effective at raising student achievement on standardized tests over time than do teachers who work in less supportive environments. Further investigations are needed to determine if the reasons for a more positive outlook are linked to grit and DR in teachers and to determine whether grit and DR facilitates positive perceptions of school climate or whether positive school climate

perceptions are needed to encourage teachers to be gritty and resilient. It is possible that a reciprocal relationship exists among these individual and environmental constructs.

# CHAPTER 3

## METHOD

**Data Collection and Procedure.** The study was conducted in the fall of 2014 via the online survey qualtrics, a web-based survey software tool hosted by a private Northeastern University. To safeguard the rights of all participants (N = 246), IRB approval from the college, as well as informed consent of all participants was obtained. The survey link was posted on social media networks including twitter, LinkedIn, and facebook (on various professional pages including the Long Island Family and Consumer Science Professionals Teachers of Long Island, and on the researcher's personal facebook page), and was sent directly via an e-mail link to roughly 1200 teachers in two downstate suburban New York Public School Districts upon permission of each Superintendent. In one district the researcher e-mailed the teaching staff directly with the survey link and in the other the superintendent of schools emailed the survey link to the teaching staff.

The survey took approximately 10-15 minutes to complete. The voluntary teacher participants worked independently and confidentially. Teachers were able to close the survey and withdraw from participation at any time. Incomplete surveys were not counted in the study. Upon completion of the survey all participants were entered into a raffle to win a $100 VISA gift card. The participants were numbered and a winner was selected at random by arbitrarily choosing a number. The participant whose name matched the number selected was awarded the gift card.

**Participants.** Participants in the study included a convenience sample of K-12 teachers in various subjects (see Table 1). Upon agreeing to the confidentiality agreement,

participant demographic information was collected, including number of years teaching, age when the teacher began teaching, content subject, gender, ethnicity, college attended, and college major (see Appendix 1). Participants were not asked to identify the district where they taught. This was because the superintendent of one of the districts where teachers were solicited had requested that information not be collected; therefore it was not collected from any participants.

Of the 246 participants, the average age one began his/her career was 25.98. The participants had an average of 15.19 years teaching at the time of the survey. The majority of the participants were Caucasian females (82.5% indicated they were female and 94.3% Caucasian) (Table 3). While this is not a diverse sample, it is representative of public school teacher profiles in the area, which is 84% female and 84% Caucasian (Feistritzer, 2011).

**Table 1 Content Area**

| *Content Area* | | Frequency | Percent |
|---|---|---|---|
| | Art | 10 | 4.1 |
| | Business | 9 | 3.7 |
| | Elementary | 66 | 26.8 |
| | English | 23 | 9.3 |
| | English as a Second Language | 3 | 1.2 |
| | Career/Tech Ed | 20 | 8.1 |
| | Science | 19 | 7.7 |
| | Math | 19 | 7.7 |
| | Music | 12 | 4.9 |
| | Physical Education | 5 | 2.0 |
| | Social Studies | 12 | 4.9 |
| | Special Education | 31 | 12.6 |
| | School Counselor | 8 | 3.3 |
| | Languages Other than English | 8 | 3.3 |
| | Total | 245 | 99.6 |
| Missing | System | 1 | .4 |
| Total | | | 100.0 |

**Table 2: Gender and Ethnicity of Participants**

| *Gender and Ethnicity of Participants* | | Frequency | Percent |
|---|---|---|---|
| *Gender* | Male | 40 | 16.3 |
| | Female | 203 | 82.5 |
| | Total | 243 | 98.8 |
| | Missing | 3 | 1.2 |
| *Ethnicity* | Black | 2 | .8 |
| | Caucasian | 232 | 94.3 |
| | Hispanic/Latino | 4 | 1.6 |
| | Asian/Pacific Islander | 3 | 1.2 |
| | Other | 5 | 2.0 |
| | Total | 246 | 100.0 |

## Variables and Measures

**The Short Grit Scale**. The Short (8-item) grit scale developed by Duckworth and Quinn (2009) was designed to assess participants' passion and perseverance for long-term goals, or their grit. Duckworth et. al., (2007) developed the Grit Scale after auditioning a variety of scales measuring perseverance. The scales examined were the Perseverance Scale for Children (Lufi & Cohen, 1987), the Passion Scale (Vallerand et. al., 2003), the Tenacity Scale (Gartner, Gateood, & Shaver, 1991), the Need for Achievement Scale (Lynn, 1989), and the Goal-Commitment Scale (Klein, 1989). In each measure, the researchers found that none of the scales met four desired criteria: evidence of psychometric soundness, face validity for adolescents and adults pursing goals in a variety of domains (i.e. not just work or school), low likelihood of ceiling effects in high-achieving populations, and a precise fit with the construct of grit.

Duckworth and Quinn (2009) began a methodological analyses to measure grit with a questionnaire of 27 conceptually composed items, which were then empirically reduced to 17, then again to 12, and again to eight (α= .73-.83 over four studies), while still maintaining reliability and validity. Their method was as follows (p.166):

> In Study 1, we identified items for the Short Grit Scale (Grit–S) with the best overall predictive validity across four samples originally presented in Duckworth et al. (2007). In Study 2, we used confirmatory factor analysis to test the two factor structure of the Grit–S in a novel Internet sample of adults, compared the relationships between the Grit–S and Grit–O and the Big Five personality dimensions, and examined predictive validity for career changes and educational attainment. In Study 3, we validated an informant version of the Grit–S and established consensual validity. In Study 4, we measured the 1-year, test–retest stability of the Grit–S in a sample of adolescents. Finally, in Studies 5 and 6, we further tested the predictive validity of the Grit–S in two novel samples of West Point cadets and National Spelling Bee finalists.

Items on the scale are reflective of the two empirically related factors of grit, which are *passion*, or consistency of efforts (e.g. "I have overcome set backs to conquer an important challenge) and *perseverance*, or persistence of efforts (e.g. "I finish whatever I begin). Each factor has four items, all of which are presented as statements in a five point Likert response scale ranging from *Not At All Like Me* (1) to *Very Much Like Me* (5). Averaging items compute scale scores, with higher scores indicating greater levels of grit. Duckworth et al., (2009) reported their confirmatory factor analysis of the self-report

version of the Short Grit Scale as supporting a two factor structure: Consistency of Interests (passion), and Perseverance of Effort, which both loaded on grit as a second-order latent factor. Both factors showed adequate internal consistency and were strongly correlated, ($r=.59$, $p< .001$). The Short Grit Scale was used for the current study.

**The Dispositional Resilience Scale (DRS-15)**. In order to measure dispositional resiliency the DRS-15, developed by Bartone et. al., (2007), was used in the present study. Dispositional resiliency (DR) is a measure of attitudes and strategies that facilitate resilience under stress and results in less illness for the person. The DRS-15 was based on Kobasa's (1979) original hardiness measure. Kobasa examined 18 different scales from five sources to see what differences existed between high stress/low illness and high stress/high illness people (Bartone, 2015). These 18 scales would conceptually measure Control, Commitment, and Challenge (Figure 1). At over 100 items, this scale was the first generation of dispositional resiliency measurement. Bartone (2015), in an explanation of the history of DR measurement, included the following chart outlining what scales and sources comprised the first generation if measurement (p. 1).

Maddi and Kobasa (1982) abridged the original 101 items (version 1) to 90 (version 2) based on a factor analysis, which also identified the 36 items with the highest (greater than .30) factor loadings: 12 commitment, 16 control, and 8 challenge items ($r=.86$ for the 36 items). An undated revision reduced the DR measure by eliminating the 19-item cognitive structure scale, which included items from the Jackson's (1974) Personality Research Form designed to measure cognitive structure. This revision resulted in in a 71-item measure (version 3). According to Bartone (2015), the memo he received about this revision did not explain why the cognitive structure scale was

dropped, but based on his conversations with the researchers who developed it, it was because in multiple factor analyses those items were not loading as expected with the Security Scale items (taken from the Hahn's California Life Goals Inventory, 1966)) to define a coherent DR Challenge factor. The Security Scale was used to measure one's ability to seek challenge even in the face of potential psychological, social, and biological threat (Kobasa, 1979).

**Figure 1: First Generation Measure of Dispositional Resiliency**

| | Scale | Source |
|---|---|---|
| Control | | |
| | Nihilism* | Alienation test (Maddi, Kobasa & Hoover, 1979) |
| | External locus of Control* | I vs. E locus of control (Rotter, Seeman & Liverant, 1962) |
| | Powerlessness* | Alienation test (Maddi, Kobasa & Hoover, 1979) |
| | Achievement | Personality Research Form (Jackson, 1974) |
| | Dominance | Personality Research Form |
| | Leadership | California Life Goals Inventory (Hahn, 1966) |
| Commitment | | |
| | Alienation from self* | Alienation test |
| | Alienation from work | Alienation test |
| | Alienation from interpersonal | Alienation test |
| | Alienation from family | Alienation test |
| | Alienation from social | Alienation test |
| | Role consistency | Role consistency (Gergen & Morse, 1967) |
| Challenge | | |
| | Vegetativeness* | Alienation test |
| | Security | California Life Goals Inventory |
| | Cognitive structure | Personality Research Form |
| | Adventurousness* | Alienation test |
| | Endurance | Personality Research Form |
| | Interesting experiences | California Life Goals Inventory |

* Significant differences reported between the low illness and high illness groups (Kobasa, 1979)

However, of the 71 items, many were negatively worded, which made the scale more vulnerable to social desirability response set, and possible confounding with neuroticism or maladjustment. Additionally, a different number of items for each subscale meant the measurement was not well-balanced (Bartone, 2015). The original

authors handled this by converting raw scale scores to standardized Z scores, then summing them together (Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, & Kahn, 1982), but this prevented researchers from comparing DR scores across samples because scores are adjusted to each unique mean and standard deviation. Roth et. al, (1989) critiqued this method because different samples can appear to be identical in DR when means are calculated and compared. A measure with equal number of items for the subscales was needed, and the DR scale experienced its first major revision as part of a research project examining stress and health in Chicago bus drivers (Bartone, 1984). Using available data from a group of 190 lower-level managers at Illinois Bell, a phone company, item frequencies and item-scale correlations were examined for the 53 security, alienation from work and self, and powerless items to measure challenge.

Eighteen of these items were eliminated because of weak item scale correlations (less then .40) and highly skewed frequency distributions. Thirty-five items measuring challenge were left: 10 security, 8 alienation from work, 7 alienation from self, and 10 powerlessness. In order to measure control, the Rotter et. al, (1962) items were replaced by a modified version of the Nowicki and Strickland (1973) locus of control scale (20 items). A research group from the University of Chicago collaborated in writing 21 new items over the three subconstructs, but primarily to measure challenge. This revised 76-item DR scale was included in the survey of the Chicago city bus drivers in 1983. During the factor analysis and correlation, 26 items were eliminated, leaving 50 items (version 3): 20 commitment, 20 control, and 10 challenge (Bartone 1984). In order to score the measure, the challenge scale was double weighted.

Further revision occurred in 1985 in an effort to balance the items for each

subconstruct. Fifty items were selected based on item-scale correlation and reliability analysis: 16 commitment, 17 control, and 17 challenge. This scale, which was still predominantly negatively worded items, was given the name "Personal View Survey" (PVS) in order to avoid the respondent knowing what was being measured. This scale was incorporated into a package of assessment tools and services offered by The Hardiness Institute, Inc., a consulting firm founded by Salvatore Maddi. Maddi and his colleagues later reduced the scale to 18-items (version 4), and currently offer it as part of a comprehensive 65-items health and attitudes assessment called the PVSIII-R (Maddi et. al., 2006). In 1986 and 1987 Bartone (1989) reworked the DR measurement again, and the result was the first balanced DR measure called the Dispositional Resiliency Scale (version 5). It had 15 items for each sub-construct, which were selected from the 76-item pool used with bus drivers and re-worded to be positive rather than negative indicators of DR and correlated with non-overlapping items from the original DR measure (alienation, powerlessness, security). The scale was once again reduced to 30-items based on reliability analyses, item-scale correlations and principal components of factor analysis (Bartone, 1991). In this balanced scale, the strongest items were retained and included an equal number of positive and negatively worded items. Cronbach's alpha reliability coefficient for the total scale ranged from .70 to .85 depending on the sample.

In personal communications with Bartone (2015), he described the history of the DR measurement and his process for developing the DRS-15. A 30-item scale was still considered to be too lengthy and time consuming for participants to answer. This prompted the creation of the first DRS-15 (version 6) (Bartone, 1995), which also used an exploratory factor analysis over several samples to determine which items had the highest

factor loading, allowing 5 items per subconstruct and most items (11) positively worded and 4 items negatively worded. Cross-cultural examination of the items lead to further revisions, including 5 negatively worded items (3 challenge, 1 control, and 1 commitment), in order to be "more resistant to acquiescence and social desirability response sets" (p.4). The current DRS-15 (version 7) improved this further by including 6 negatively worded items (3 challenge, 1 control, and 2 commitment). This latest version is more easily translated into non-English languages and cultures.

The participants assessed the degree to which each item describes them on a 4 point rating scale (0 - *completely not true*, 3 - *completely true*). Scores on the DRS-15 version correlate with the 30-item version ($r=.84$, $p<.01$) (Bartone, 2007). The 3-week test-retest reliability coefficient for the DRS-15 was .78, and corresponding test-retest coefficients for the three dispositional resiliency factors were Cronbach $\alpha= =.75$ (commitment), Cronbach $\alpha=.58$ (control), and Cronbach $\alpha=.81$ (challenge).

**The School Climate Teacher Survey.** Although a variety of measures have been developed to measure school climate from the student perspective, less emphasis has been focused on gaining insight into how teachers view their school climates. As part of a nation-wide six-district evaluation study of the Child Development Project, a multifaceted, school-wide elementary school improvement program, The Developmental Studies Center (DSC; http://www.devstu.org) published the School Climate Teacher Survey (SCTS) in an effort to assess teachers' perceptions of a school's climate (Battistich, Solomon, Watson, & Schaps, 1997; Solomon, Battistich, Watson, Schaps, & Lewis, 2000; Solomon, Battistich, Kim, & Watson, 1997). According to Liu, Ding, Berkowitz, and Bier (2014), the original SCTS was designed to target teachers' sense of

school as a caring community. The scale contained a total of 90 items, had a response scale of 1 to 5 (1 being *strongly disagree*, and 5 being *strongly agree*), and reported as 14 sub-scales: shared educational goals and values; teachers' participatory decision making; principal supportiveness, accessibility, and competence; positive relations among students; school safety; positive student–teacher relations; colleagues as valuable resource; faculty collegiality; teacher efficacy; school norms and rules; prosocial development practices; enjoyment of teaching; and parent involvement. Previous research has reported good factor structures and reliability estimates for the SCTS, with acceptable factor loadings for items on their respective factors (Solomon et al., 2000).

While the survey is popular among schools, Liu et al., (2014) were critical, reporting that it was too long, too time consuming, and too resource demanding to administer, with some outdated content. Therefore, they set out to refine and abbreviate the survey instrument, so that it could be administered to teachers with ease and would reflect an up-to-date school climate structure. In their reasons for revisiting the SCTS, Liu et al. (2014) discussed the results of the Pathways to Character program in Buffalo (2007-2010). This program showed flaws in the original SCTS. Several individual scales of the 14-factor structure unexpectedly collapsed mathematically and produced low reliability scores. In addition, teachers reported lack of motivation and commitment to complete such a lengthy survey. The revision of the SCTS involved elimination of outdated or less relevant items, while also taking into account practical limitations (e.g., funding and time constraints). An abbreviated instrument was created with only 42 items, and has the advantage of being less demanding on teachers, which in turn "improves response rates as well as the quality of responses" (Liu et al., 2014, p.57).

In order to revise the SCTS, the researchers focused on content and statistical properties, employing an expert panel of four educational psychologists specializing in the area of character evaluation to analyze item redundancy and to eliminate less relevant items. Using a scale of 0 (*no*) or 1 (*yes*), each of the survey items with respect to item specificity, content clarity, regency, and relevancy, were evaluated and rated by the expert panel. Items with a score lower than 4 points were dropped. After this procedure, 25 items were dropped, leaving 65 items in the preliminary study. The Kaiser–Meyer–Olkin (KMO) measure, parallel analysis and Velicer's MAP test using the data sample from the Pathways to Character program suggested seven interpretable factors. Based on these analyses, 23 items were excluded from the revised 65-item questionnaire, leaving 42 items in the latest revised version with a seven-factor structure: Factor 1 is Principal Supportiveness, Accessibility, and Competence (PRIN) with 8 items (Cronbach α= .85) Factor 2 is Colleague Collegiality (COLL) with 4 items (Cronbach α= .85). Factor 3 is Prosocial Development Practices (PDEV) with 5 items (Cronbach α= .76). Factor 4 is Student Behavior (SBEH) with 14 items (Cronbach α= .93). Factor 5 is Teacher Efficacy (TEFF) with 3 items (Cronbach α= .74). Factor 6 is Enjoyment of Teaching (ENJT) with 5 items (Cronbach α= .83). Factor 7 is Parent Involvement (PRNT) with 3 items (Cronbach α= .80) (Lui et al., 2014). This final SCTS with 42 items is the measure used in the current study.

**Data Analytic Procedures**

In the following chapters, the data collected from the teachers were analyzed using both demographic information and survey scores. The analyses used to investigate construct differences, correlations, and predictions are summarized below.

***Factor Analysis***: An exploratory factor analysis was performed on the grit and DR items to determine the potential overlap and/or distinct nature of the two measures. It was anticipated that dispositional resiliency and grit would experience an overlap when factored. Particularly attention was paid to dispositional resiliency commitment and its overlap with grit perseverance.

***Correlation***: A correlation matrix was conducted to include grit, DR, school climate, and the demographic items. This correlation provided the positive relationships among all three of the variables. It was hypothesized that grit and DR would share positive correlations. It was unknown to what extent they would correlate with these secondary measures, but based on theoretical similarities, it was anticipated that they would be correlated as well.

***Analysis of Variance (*ANOVA):** An analysis of variance was used to investigate whether content area teachers (math, reading, science, etc.) significantly differed in their scores of grit, DR, and school climate scale scores. In order to gain more insight into the results, a Tukey Post Hoc analysis was conducted to examine content area differences in school climate.

***Analysis for Moment Structures (AMOS) Path Analysis****:* An AMOS Path Analysis was performed to determine any predictive paths between grit, dispositional resiliency and school climate.

# CHAPTER FOUR

## Results

**Summary of Analyses.** To address research questions 1-3, Statistical Package for the Social Sciences (SPSS) 23 was used to perform all analyses. A *p* value of .05 was the level of significance accepted to reject the null hypothesis. To address research question 4, the AMOS program available in the SPSS 23 package was used to perform path analysis. Traditional fit indices were used to accept or reject the model fit.

**Variable Means and Standard Deviations**. Descriptive tests showed the means and standard deviations for the variables included in the study (See Table 3).

**Table 3.** *Variable Means and Standard Deviations*

| Variable | N | Mean | Std. Deviation |
|---|---|---|---|
| Dispositional Resiliency | 246 | 46.19 | 5.52 |
| School Climate Survey | 246 | 143.28 | 17.78 |
| Grit Total | 246 | 31.10 | 4.10 |
| Persevere | 246 | 16.48 | 2.30 |
| Passion | 246 | 14.61 | 2.97 |
| Commitment | 246 | 16.14 | 2.25 |
| Control | 246 | 16.49 | 2.25 |
| Challenge | 246 | 13.56 | 3.10 |
| Colleague Collegiality | 246 | 15.64 | 2.86 |
| Prosocial Practices | 246 | 20.48 | 2.62 |
| Student Behavior | 246 | 42.08 | 7.80 |
| Teacher Efficacy | 246 | 11.27 | 1.93 |
| Parent Involvement | 246 | 9.60 | 2.55 |
| Principal Supportiveness | 246 | 24.21 | 6.38 |
| Enjoyment of teaching | 246 | 20.00 | 3.62 |

The mean for the Grit Scale (31.09) is lower than the range of means in the validation efforts of the samples of the spelling bee finalists (37.50) and West Point cadets (38.15) (Duckworth et al., 2007). Duckworth et al., (2007) maintains that grit

increases with age though this population is likely much older than the participants in the spelling bee and West Point studies.

The mean for the DRS-15 (46.19) was much higher than the range of means in the validation efforts of the samples participants of American military males (30.37) (Bartone, 1995) and re-validation sample participants of Norwegian military males (28.85) (Kardum, Hudek-Knežević, & Krapić, 2012). The gender and nationality of the participants is quite different; American females may over-report dispositional resiliency while American and Norwegian males may under report. The present study population included 82.5% American females while the re-validation efforts population was only 46.1% female, all of which were in the military. The original dispositional resiliency measure was developed based on a sample of exclusively male executives (Maddi & Kobasa, 1984), and that early empirical investigations tend to focus primarily on men. The mean for the School Climate Survey from the current study is unable to be compared to previous research because the validation researchers did not report the mean score for their sample in the original publication.

**Scale internal consistency reliability.** The DRS-15 and the SCS both reflect high Cronbach alpha coefficients demonstrating high internal consistency reliability (Maddi & Kobasa, 1984). The Short Grit Scale had acceptable internal consistency. (Typically an alpha of .60 and above is considered an acceptable range of reliability.) The summary of the calculated alpha coefficient values for each scale is found in Table 4.

Table 4: *Internal Consistency Reliability Statistics for Self-Belief Scales*

| Scale | Number of Items | Cronbach's Alpha |
|---|---|---|
| **GS (The Short Grit Scale)** | 8 | α= .667 |
| • Passion | 4 | α= .731 |
| • Perseverance | 4 | α=.573 |
| **DRS-15 (The Dispositional Resiliency Scale)** | 15 | α= .800 |
| • Commitment | 5 | α=.703 |
| • Control | 5 | α=.742 |
| • Challenge | 5 | α=.785 |
| **SCS (School Climate Survey)** | 42 | α= .914 |
| • Principal Supportiveness, Accessibility, and Competence | 8 | α= .920 |
| • Colleague Collegiality | 4 | α= .856 |
| • Prosocial Development Practices | 5 | α= .776 |
| • Student Behavior | 14 | α= .889 |
| • Teacher Efficacy | 3 | α= .640 |
| • Enjoyment of Teaching | 5 | α= .784 |
| • Parent Involvement | 3 | α= .773 |

**Results for RQ 1: Are Grit and DR Factorially Distinct from One Another?**

An exploratory factor analysis with a Varimax rotation and a Kaiser Normalization was performed on the Short Grit Scale and the DRS-15 and showed the two measures to be separate constructs. A Varimax rotation is an "orthogonal" solution (factors are not highly correlated with each other). It was used because this rotation method produces factors that may be different from each other, and helps interpret the factors by mathematically placing each variable primarily on one of the factors, simplifying the interpretation of factors (Field, 2009).

In Table 5, five factors show the measure of DR as distinct from grit. When analyzed together, the grit items factored as the creators intended; items measuring

passion (1,3,5, and 6) and items measuring perseverance (2,4,8 and 7) factoring out together. The DRS-15 items supported a three-factor structure, with the commitment items factoring as intended. However, a challenge item and a control item factored out of their intended subconstruct. Item 9, intended to measure challenge (3,5,9,11, and 14) factored with items measuring control (2,6,8,12,15). Item 8, intended to measure control, factored with items measuring commitment (1,4,7,10, 13).

**Table 5** *Exploratory Factor Analysis: Grit and Dispositional Resiliency Scales (N = 246)*

| Sub-Constructs | Challenge | Control | Commitment | Passion | Perseverance |
|---|---|---|---|---|---|
| DR-11 It bothers me when my daily routine gets interrupted. | **.894** | -.064 | .108 | .007 | -.040 |
| DR-14 I like having a daily schedule that doesn't change very much. | **.796** | -.026 | .108 | .050 | .015 |
| DR-3 I don't like to make changes in my regular activities. | **.794** | .027 | .019 | -.002 | .059 |
| DR-5 Changes in routine are interesting to me. | **.668** | .326 | .059 | .021 | -.130 |
| DR-12. It is up to me to decide how the rest of my life will be. | .025 | **.803** | .076 | .037 | .060 |
| DR-15. My choices make a real difference in how things turn out in the end. | .049 | **.748** | .228 | .090 | -.023 |
| DR- 6. How things go in my life depends on my own actions. | -.053 | **.734** | -.027 | -.038 | -.092 |
| DR- 2. By working hard you can nearly always achieve your goals. | -.059 | **.540** | .315 | .073 | .200 |
| DR- 9. I enjoy the challenge when I have to do more than one thing at a time. | .314 | **.365** | .180 | -.133 | .166 |
| DR-13 Life in general is boring to me. | .128 | -.062 | **.813** | .095 | -.043 |
| DR-4 I feel that my life is somewhat empty of meaning. | .058 | -.040 | **.794** | .179 | -.029 |
| DR-1 Most of my life gets spent doing things that are meaningful. | .009 | .281 | **.619** | .111 | .034 |
| DR-10 Most days, life is really interesting and exciting for me. | .191 | .348 | **.587** | -.028 | .095 |
| DR-7 I really look forward to my work activities. | .027 | .274 | **.456** | -.045 | .188 |
| DR-8 I don't think there is much I can do to influence my own future. | .195 | .294 | **.349** | .045 | -.033 |
| GRIT-3 I have been obsessed with a certain idea or project for a short time but later lost interest. | .031 | -.039 | .107 | **.785** | -.020 |
| GRIT-5 I often set a goal but later choose to pursue a different one. | .017 | .058 | .094 | **.744** | .076 |
| GRIT-1 New ideas sometimes distract me from previous ones. | -.033 | .028 | .009 | **.725** | -.086 |
| GRIT-6 I have difficulty maintaining my focus on projects that take more than a few months to complete. | .098 | .017 | .156 | **.607** | .301 |
| GRIT-8. I am diligent. | -.081 | -.007 | -.006 | .187 | **.796** |
| GRIT-4. I am a hard worker. | -.015 | -.050 | .015 | .001 | **.772** |
| GRIT-7. I finish whatever I begin. | -.079 | .116 | -.016 | .519 | **.582** |
| GRIT.-2. Setbacks don't discourage me. | .089 | .191 | .158 | -.239 | **.374** |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

**Results for RQ 2: Are There Significant Correlations among Grit, DR, School Climate and the Demographic Items?** A correlation matrix of all of the variables in the study showed the strength and direction of the scores on grit, resiliency, school climate subscales and teacher demographics (Table 6).

Table 6: *Pearson Correlation for Predictor Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Grit Total | 1 | | | | | | | | | | | | | | | | |
| 2 Disp. Resiliancy | .179** | 1 | | | | | | | | | | | | | | | |
| 3 School Climate Survey | .102 | .379** | 1 | | | | | | | | | | | | | | |
| 4 Commitment | .235** | .741** | .503** | 1 | | | | | | | | | | | | | |
| 5 Control | .150* | .677** | .218** | .417** | 1 | | | | | | | | | | | | |
| 6 Challenge | .039 | .753** | .157* | .292** | .177** | 1 | | | | | | | | | | | |
| 7 Years Teaching | .114 | .138* | .094 | .176** | -.086 | .181** | 1 | | | | | | | | | | |
| 8 Age when started teaching | .123 | .074 | -.040 | .037 | -.048 | .140* | -.059 | 1 | | | | | | | | | |
| 9 Colleague Collegiality | -.008 | .127 | .426** | .187** | .142* | -.011 | -.021 | -.178** | 1 | | | | | | | | |
| 10 Prosocial Practices | .108 | .249** | .425** | .277** | .161* | .129 | .078 | .044 | .165* | 1 | | | | | | | |
| 11 Student Behavior | .102 | .260** | .754** | .304** | .121 | .156* | .102 | -.096 | .165* | .178** | 1 | | | | | | |
| 12 Teacher Efficacy | .022 | .331** | .552** | .331** | .269** | .156* | .067 | .032 | .011 | .489** | .397** | 1 | | | | | |
| 13 Parent Involvement | .073 | .246** | .669** | .338** | .088 | .131* | .120 | .007 | .257** | .119 | .512** | .201** | 1 | | | | |
| 14 Principal Supportiveness | -.007 | .157* | .691** | .272** | .090 | .019 | -.015 | .005 | .239** | .160* | .230** | .238** | .393** | 1 | | | |
| 15 Enjoyment OF teaching | .158* | .398** | .664** | .574** | .215** | .140* | .110 | .088 | .222** | .227** | .311** | .402** | .395** | .431** | 1 | | |
| 16 Perseverence | .705** | .139* | .010 | .158* | .184** | -.001 | -.048 | .102 | -.072 | .037 | -.017 | .025 | .004 | .032 | .045 | 1 | |
| 17 Passion | .835** | .144* | .132* | .207** | .071 | .054 | .195** | .092 | .043 | .122 | .152* | .012 | .097 | -.034 | .183** | .199** | 1 |

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

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

As predicted, correlational relationships existed among the variables ranging from weak (<.3) to strong (>.7). The correlation analysis confirmed that there was a correlation between DR and grit ($r$ =.179, $p$ < .01) and a correlation between DR and perceptions of school climate ($r$=.379, $p$< .01). This meant that teachers who reported higher DR scores were also reporting higher grit scores and more positive perceptions of school climate. However, there was no correlation between grit and perceptions of school climate.

The correlation matrix allowed for a deeper analysis of the variables subcontructs. DR's subconstruct of commitment had a moderate correlational relationship with school climate perceptions ($r$= .503, p> .01), meaning that those who scored highest in the

subconstruct of commitment also reported the most positive perceptions of school climate (SC). Commitment was also correlated with *enjoyment of teaching* ($r = .574$, $p < .01$), *parent involvement* ($r = .338$, $p < .01$), *teacher efficacy* ($r = .331$, $p < .01$), and *student behavior* ($r = .304$, $p < .01$). These results highlight the strong relationship between DR and school climate, specifically with commitment, and DR may be a more important construct for teachers professional satisfaction.

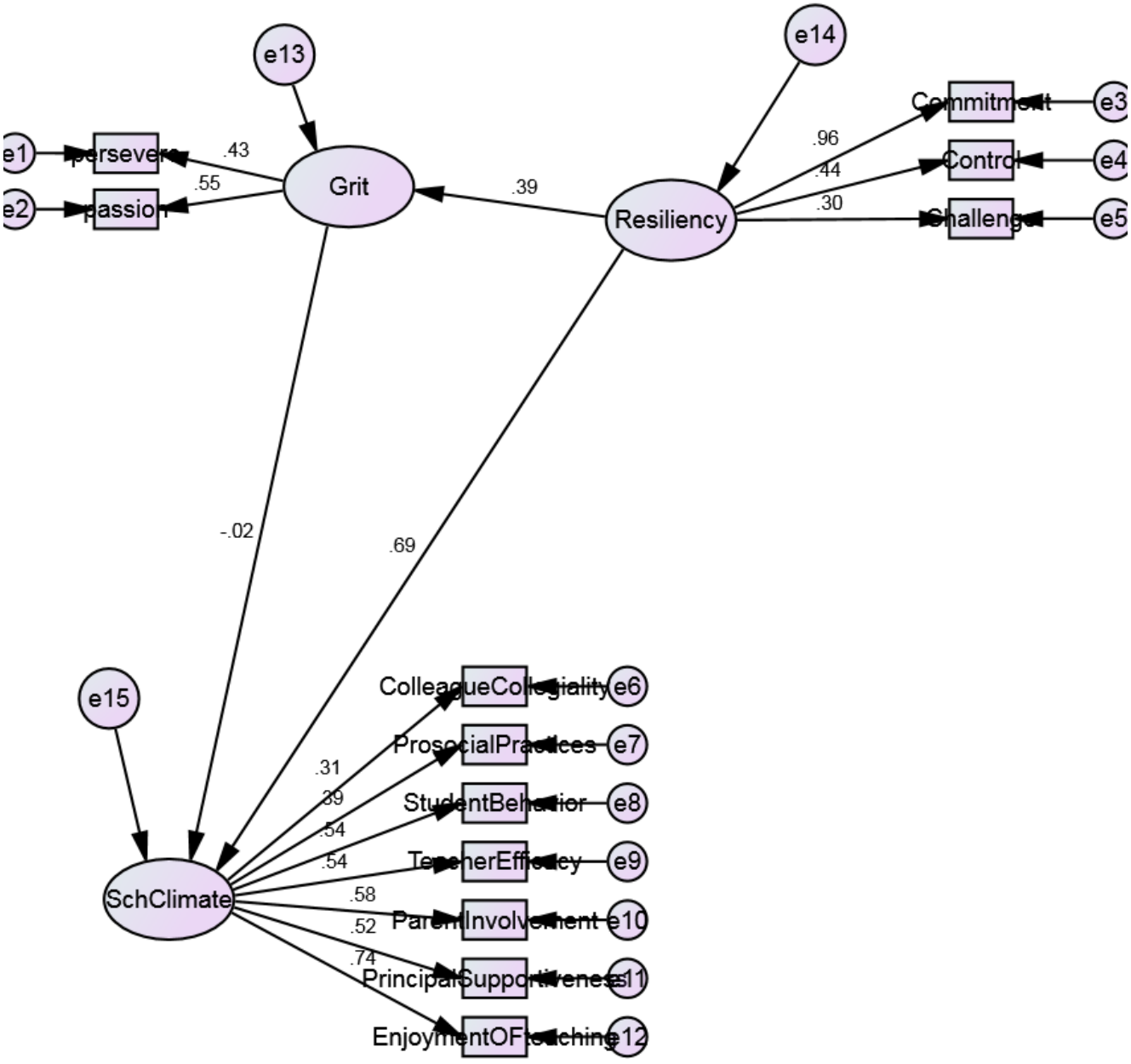
**Results for RQ 3: Are there demographic teacher differences on grit, DR, and school climate?** A multivariate analysis of variance (MANOVA) was proposed to examine the teacher differences of gender, ethnicity, years of experience, and content area (math, reading, science, etc.) as the independent variables (IV) and grit, DR, and school climate scores as dependent variables (DV), however, this analysis was revised because gender and ethnicity could not be included due to the sample being 95% Caucasian and 83 % females, which made comparison to other groups not possible. An Analysis of Varience (ANOVA) with content area as the independent variable and grit, DR, and school climate scores as the dependent variables were conducted, however the analysis showed no significant differences. Teaching different content area does not differ on grit, DR, or perceptions about school climate. Although not statistically significant, a Tukey Post Hoc analysis for content area and school climate showed the largest significant differences in school climate between elementary, English, special education math and science teachers, with elementary, English, and special education teachers scoring higher in prosocial practice when compared with math and science teachers. A larger, more diverse sample size is speculated to result in more differences among the content areas. It was decided not to collapse content areas together in order to

conduct an additional analysis, however collapsing content areas with related areas (for example, combine the core subjects into one group) may have revealed additional differences in teacher grit, DR, and perceptions of school climate.

**Results for RQ 4: Are There Significant Paths among Grit, DR and School Climate?** To address this research question, an AMOS Path Analysis was performed using the scale scores of grit, DR, and school climate and their subscales. Because this model has not been examined in prior studies, an exploratory Chi-square test of goodness-of-fit was used to determine if grit, DR, and school climate were predictive of each other based on path analysis. This investigation was exploratory because it was unknown as to whether grit and resiliency would predict school climate scores or if there might be a reciprocal interaction among all three. It was anticipated that grit and DR scores would predict school climate perceptions because positive teacher dispositions would likely lend to positive perceptions of school climate, regardless of actual environment. This would occur because gritty teachers would use their passion and perseverance to work through a difficult climate regardless of challenges and a resilient teacher would have appropriate methods of coping, viewing difficult situations as challenges and not as threats.

A path analysis was selected for this research question because structural equation modeling allows testing for the overall fit of the model to the data in order to ascertain if the model (theory) is consistent with the observed correlations (actual data). The model (Figure 2) contains the predictive relationships between the variables with beta weight coefficients.

**Figure 2:** AMOS Path Analysis for Grit, Resiliency, and School Climate




The analysis showed a model with a good fit: $\chi^2$ (*df, 51*) = 160.248, CFI = .783, CMIN/df = 3.142, RMSEA = .095. As can be seen in Figure 1, teachers who scored higher in DR and showed higher overall perceptions of school climate (standard coefficient =.69) and higher overall grittiness (standard coefficient= .39). Models depicting a predictive path between teacher grittiness and their perceived school climate

did not show a good fit with the data. In addition, models were tested with school climate predicting grit and resiliency and were shown through inadequate fit indices to not be a good fit for the data.

According to the accepted model, commitment had the strongest impact on DR score (standard coefficient =.96), indicating that participants who felt a stronger commitment to teaching earned an overall higher DR score than their less committed colleagues. Similarly, passion had a stronger impact on grit score (standard coefficient =.55) than perseverance, indicating that teachers who scored higher in passion earned higher overall grit scores than their less passionate colleagues. Enjoyment of teaching (standard coefficient =.73) had the greatest impact on overall school climate score, indicating that teachers who scored higher on this subconstruct earned an overall higher school climate score. The model showed a predictive path between dispositional resiliency and grit, and dispositional resiliency and school climate. However the predictive relationship between grit and school climate was not significant. Within this model, dispositional resiliency acts as the mediator between grit and school climate. This path analysis reflects the correlational results that resiliency was significantly related to grit and school climate but grit and school climate shared little to no relationship between each other. The following tables provide more specific fit indices for the model. Explanations of the tables are based on literature published by the University of Colorado Denver Health Sciences Center (UCDHSC) (2006).

The 'CMIN' (table 7) contains the chi-square values and the number of degrees of freedom for the various models. To avoid the problems of these chi-square tests, alternative indices of model fit have been developed. CMIN/DF stands for the chi-square

divided by its degrees of freedom. Acceptable values are in the 3/1 or 2/1 range. In this case, a result of 3.142 is acceptable to show significance.

**Table 7: CMIN**

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 39 | 160.248 | 51 | .000 | 3.142 |
| Saturated model | 90 | .000 | 0 | | |
| Independence model | 12 | 580.341 | 78 | .000 | 7.440 |

Root Mean Squared Error of Approximation (RMSEA) and Comparative Fit Index (CFI) are two very informative measures of how close the model corresponds with the data. 'Baseline Comparisons' and 'RMSEA' show this alternative measure of model fit (Table 9 and 10, respectively).

**Table 8: Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .724 | .578 | .794 | .667 | .783 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

NFI [Normed Fit Index] (Table 8) shows how far the default model fits between the (terribly fitting) independence model and the (perfectly fitting) saturated model. In this case, it's 72.4% of the way to perfect fit. RFI [Relative Fit Index] is the NFI standardized based on the df of the models, with values close to 1 again indicating a very good fit. IFI [Incremental Fit Index], TLI [Tucker-Lewis Coefficient], and CFI [Comparative Fit Index] are similar.

RMSEA (Table 9) is a corrected statistic that gives a penalty for model complexity, calculated as the square root of F0 divided by DF (RMSEA stands for "root

mean squared error of approximation"). Again, upper and lower bounds of a 90% confidence interval are given. RMSEA values of .05 or less are good fit, <.1 to >.05 are moderate, and .1 or greater are unacceptable. RMSEA = .00 indicates perfect fit. Therefore an RMSEA of .095 suggests a 5% change of rejecting the null hypothesis when it is true. The "PCLOSE" statistic that goes with this result is the probability of a hypothesis test that the population RMSEA is no greater than .05 (so, you want this result to be nonsignificant) [p > .05], because you do not want to prove that the RMSEA is significantly greater than .05). In this case, it is significant, a weak fit index for the support of this model.

**Table 9: RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .095 | .079 | .112 | .000 |
| Independence model | .164 | .152 | .177 | .000 |

The PRATIO [Parsimony Ratio] (Table 10) is an overall measure of how tight the model is. It is defined as the df of the current model divided by the df of the independence model. It can be interpreted as "the current model is X% as complex as the independence model" (UCDHSC Center for Nursing Research, 2006). The difference between this number and 1 is how much more efficient your model is than the independence model. In this case, the default model is 35% more efficient than the independence model.

PRATIO is used to calculate two other statistics: PNFI [Parsimonious Normed Fit Index], another modification of the NFI that takes into account the df (i.e., complexity) of the model. Similarly, the PCFI [Parsimonious Comparative Fit Index] is a df-adjusted

modification of the CFI. These two measures are likely to be lower than the NFI and CFI, because they take model complexity into account.

**Table 10: Parsimony-Adjusted Measures**

| Model | PRATIO | PNFI | PCFI |
|---|---|---|---|
| Default model | .654 | .473 | .512 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

NCP (table 11) is the noncentrality parameter. The columns labeled "LO 90" and "HI 90" give the 90% confidence interval for this statistic. This statistic can also be interpreted as a chi-square, with the same degrees of freedom as in CMIN. FMIN (table 12) includes F0, which is the noncentrality parameter (NCP) divided by its degrees of freedom. This is similar to the CMIN/DF statistic. The results also give the lower and upper limits of a 90% confidence interval for this statistic (LO 90 and HI 90 under the FMIN heading). The fit index for the current model according to the NCP is within range of the LO and HI values.

**Table 11: NCP**

| Model | NCP | LO 90 | HI 90 |
|---|---|---|---|
| Default model | 109.248 | 74.807 | 151.309 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 502.341 | 429.498 | 582.661 |

**Table 12: FMIN**

| Model | FMIN | F0 | LO 90 | HI 90 |
|---|---|---|---|---|
| Default model | .673 | .459 | .314 | .636 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 2.438 | 2.111 | 1.805 | 2.448 |

Hoelter's "critical N" (table 13) is the largest sample size for which one would accept the hypothesis that a model is correct (in other words, the sample size above which the chi-square goodness of fit test would go from nonsignificant to significant). For this data, Hoelter's critical N tells us that the model would be rejected at the [.05/.01] level with a sample size of greater than 102 (95% CI) and 115 (99% CI).

**Table 13: HOELTER**

| Model | HOELTER .05 | HOELTER .01 |
|---|---|---|
| Default model | 102 | 115 |
| Independence model | 41 | 46 |

| | |
|---|---|
| Minimization: | .015 |
| Miscellaneous: | .281 |
| Bootstrap: | .000 |
| Total: | .296 |

According to the majority of the fit indices for the presented model, the data fits the model suggesting that resiliency predicts grit and school climate. Because there is not a significant path between grit and school climate, DR acts as a mediator between the two constructs. This may largely be due to the strong relationship DR shares with both constructs. These findings also support the correlational results showing little to no association between grit and school climate. Though DR is predictive of school climate, it is still unknown as to whether the climate of the school is in fact positive or negative. The connections among these three constructs will be further discussed in the following chapter.

# CHAPTER FIVE

## Discussion

The purposes of this cross-comparative research study were to investigate and explore: (1) whether grit and dispositional resiliency are factorially distinct constructs, (2) whether there were significant correlations between grit, dispositional resiliency and school climate scores among teachers, (3) whether there was a significant difference between teacher backgrounds and perceptions of grit, dispositional resiliency and school climate, and (4) predictive relationships between grit, dispositional resiliency, and school climate based on teacher responses. The current study accomplished these four research goals by establishing the construct validity of grit and dispositional resiliency as being similar but separate constructs; identifying correlations among, grit, dispositional resiliency, and school climate attitudes; determining if any teacher differences were associated with dispositions and climate, and demonstrating that dispositional resiliency was predictive of grit and school climate, as well as mediating their relationship.

**Descriptive Statistics.** The descriptive statistics reveal interesting findings about the study population. The mean grit score for the present study population was 6 and 7 points lower than in the validation populations, demonstrating that the teachers in this study were overall less gritty than both spelling bee participants and West Point cadets respectively. A possible explanation for this is that undertaking a high-stakes spelling bee and enrolling at West Point attract grittier people than the teaching profession. When Duckworth, Quinn, & Seligman (2009) reported that teacher grit was a significant predictor of a students' academic success, they surveyed Teach-For-America (TFA)

teachers, who were a standard deviation higher in grit than a normative comparison sample of young adults (actual numbers were not included in the paper, therefore cannot be compared to means of the participants in this study). TFA teachers are untrained undergraduates who chose to enter into teaching positions in under-sourced public schools. Therefore, TFA students, spelling bee participants, and West Point cadets may all be individuals with exceptional grit that is not typical of the general population. The teachers in the current sample were average individuals working in general fields of teaching. Their grit was not screened prior to the teacher education program they attended or the employment they obtained so it is impossible to know the level of grit they began with. These individuals could have begun their careers with lower grit compared to the participants in prior research. Additional investigation must be done to determine if teacher grit is a predictor of student academic success in sufficiently resourced schools, or in schools where students enjoy socio-economic privilege. Additionally, research must also be extended to teachers who come into the profession through traditional teacher-preparation programs. It is unknown if the education profession has attracted gritty people into its traditional teacher preparation programs; programs which source both high need and low need schools, not only under-sourced schools. Well-resourced and sufficiently resourced schools do not face the same challenges as under-resourced schools; therefore teacher grit may not be a predictive factor in determining student academic success.

The range of sample means in the validation efforts for the dispositional resiliency scale (American military males, M=30.37; Bartone, 1995), and re-validation sample (Norwegian military males, M=28.85; Kardum, Hudek-Knežević, & Krapić, 2012) were

much lower than the mean score of the participants in this present study (M=46.19). A possible explanation for this is the gender and nationality of the participants. American females may actually have higher dispositional resiliency, or may over-report it, while males in general or Norwegian males may under report. The present study population included 82.5% American female teachers while the prior validation populations were only 46.1% female, all of whom were in the military. Inconsistent or equivocal results have been reported in later studies that have included female participants. Some have found that dispositional resiliency moderates the ill effects of stress on health for men, but not for women (Benishek & Lopez, 1997; Klag & Bradley, 2004; Shepperd & Kashani, 1991), while others have found similar effects for the two sexes (King, King, Fairbank, Keane, & Adams, 1998; Robitschek & Kashubeck, 1999; Rosen, Wright, Marlowe, Bartone, & Gifford, 1999).

In his investigation of the gender differences using the DRS-15 Hystad (2012) reported the differences between male (n= 6,609) and female (n= 1,616) participants all appeared in the control subscale. The control dimension of DR involves the perception of your ability to affect the course of events. Given the same score on the underlying control factor, Hystad (2012) found that female participants had a higher mean item score than male participants, meaning that women had a higher tendency to rate these items compared to men, and reported more resiliency control. These findings, although unexpected at the time of publication, are supported by recent research. In an investigation of gender differences in responses to stress, Wei, Yuen, Liu, Li, Zhong, Karatsoreos, McEwen and Yan (2013) found that estrogen protects against the detrimental effects of repeated stress on glutamatergic transmission and pre-frontal

cortex-dependent cognition (working memory, sustained attention), which may underlie the stress resilience of females. Hemlmreich (1992) suggested that socialization may also come into play because society allows women to speak more freely about their emotions. In the case of DR control, Hystad (2012) commented that the amount of gender bias according to his ANOVA was negligible, accounting for minimal amount of variance in item scores. Mean scores for each gender was not reported, therefore cannot be compared to the mean scores in this study.

**Factorial independence of grit and dispositional resiliency.** It was anticipated that the exploratory factor analysis would produce a five-factor structure, with all resiliency items factoring into the subconstructs of control, commitment, and challenge and grit to be factorially distinct from dispositional resiliency and producing its own subconstructs of passion and perseverance. It was unknown whether grit would in fact factor out into one factor or two when compared to the DR scale. However, upon analysis, grit factored out into the two subconstructs of passion and persistence factors, and DR factored out into the three subconstructs of commitment, control, and challenge. This factor structure matches the theory of the two latent constructs of grit and resiliency. It was anticipated that there would be some complex loadings, especially between grit and resiliency because they share the common theoretical overlap regarding their underpinnings and have a strong commonality in the thread of perseverance. This was not found, however, items 8 and 9 of the DRS-15 did not factor as the instrument author intended.

DRS Item 8, *"I do not think there is much I can do to influence my own future",* intended to measure control, factored with items measuring DR commitment. Although

factor loadings were close, item 8 loaded with the control subcontruct with a coefficient of .315 and loading with the commitment sub-construct at .349. A possible explanation for this loading may be the wording of the item, which may have been confusing to the teacher participant. The phrase *"my own future*" may have indicated a commitment over time, looking ahead, rather than eliciting the feeling of control. Those who did not interpret the item as measuring control may have interpreted the items as meaning that if they stayed committed to a task, they would influence the outcome. An additional possible explanation may be that this study population was saturated with females. A female teacher population may interpret the items differently which may result in reporting higher dispositional resiliency. The fact that the item factorially sits on the border of both sub-constructs supports a hypothesis that the DRS-15 may need to either be modified for teachers, or re-tested with a more diverse teacher sample.

DRS Item 9, *"I enjoy the challenge when I have to do more than one thing at a time"*, intended to measure challenge, factored with items measuring control, although factor loading was close, with the item loading with the challenge subcontruct with a coefficient of .314 and loading with the control subconstruct at .365. One explanation lies within the population differences between the current study population (female teachers) and the population for which the scale was designed (military men). The wording of the item may not actually measure challenge for teachers, as it is unclear whether the participant is in control of the things they are taking on. Teachers may interpret the tasks as within their control; where as one in the military may not. In addition, teachers may feel more self-efficacy (confident of success) in multiple challenges as related to teaching than those in the military feel about challenges in combat. Another explanation is that

teachers do not feel the same pressure to succeed as those in the military, which may be a life-or-death high stakes situation. Since the stakes are higher for those in combat, the idea of having to take on multiple challenges are less attractive, as failure at one may be the difference in survival. The lack of clarity in the statement may result in a measurement of control rather than one of challenge. Though these items were viewed as complex loadings, they did comply with the overall structure needed to identify the three factor structures (commitment, control, and challenge) in resiliency. Also, while DR items 8 and 9 did not factor perfectly for the scale, they were still separate from grit passion and perseverance. Grit completely factoring out by subconstruct, separate from the DR subconstructs, supports that while they are related, these theories are tapping into different constructs. This establishes the two scales as psychometrically distinct from each other, something that has not yet been done in published literature due to the newness of grit measurement.

Vallerand (2012) describes passion as something that involves a special relationship of intertwining the activity and self-identity; a relationship that is developed through meaning. However, the items measuring grit passion are worded in a way that may not indicate this to the participant. Rather, the items measuring grit passion *(I have been obsessed with a certain idea or project for a short time but later lost interest; I often set a goal but later choose to pursue a different one; New ideas sometimes distract me from previous ones; I have difficulty maintaining my focus on projects that take more than a few months to complete),* could be true of some activities, but not others. These items appear to be worded in such that may not imply a relationship between the activity and the participant's self-identity. This discrepancy could potentially be an explanation as

to why grit underperformed as a predictor variable and did not have a path to DR or school climate; the wording of the items was not specific enough for the participant to understand, and perhaps domain specific items are necessary for teachers. This idea needs further expansion in future research.

**Correlations**. The correlation analysis presented many interesting relationships among the variables. In an interview with Educational Leadership, Angela Duckworth explained how she saw the relationship between grit and resiliency, "Grit is related (to resiliency) because part of what it means to be gritty is to be resilient in the face of failure or adversity. Grit is not just having resilience in the face of failure, but also having deep commitments that you remain loyal to over many years" (Perkins-Gough, 2013, para 5). These ideas are supported by the positive correlation between grit, DR, and the subscales of commitment and control, as well as the predictive relationship between DR and grit. The correlations suggest that there are not only theoretical similarities between grit and resiliency, but empirical ones as well. The relationship found in this study between overall grit, its subconstructs of passion, perseverance, overall DR, and its subconstructs of commitment and control suggests that teachers who are able to maintain autonomy and a locus of control are also able to maintain a consistent interest in the activity over time (in this case, teaching), and are able to stay committed to their work by making it meaningful to them, which in turn, may also help them to persevere through adversity.

Interestingly, grit was not correlated with DR challenge. This was unexpected because it was thought that grit perseverance of effort and DR challenge was similar in theory. However, the data revealed that there was no relationship between the two. As

mentioned previously, grit perseverance was a result of deliberate practice; those who engaged in more deliberate practice out-performed their peers (Duckworth et al., 2010). DR challenge involves using a broad range of coping responses and actions which enables the individual to act purposefully, rather than being passive or feeling powerless in the face of stressful and changing situations. It was speculated that deliberate practice was one of these coping responses and actions, however the lack of significant correlation indicates that the two are not empirically related among this sample.

Grit was not correlated with overall school climate score, or most of its subscales. This was a surprise, as it was speculated that grit would positively correlate to school climate perceptions because gritty teachers may view their climates as being more positive than those lacking grit. Hoerr (2013) points out that teaching grit can be difficult for educators, because "it runs counter to the caring school environments that we all esteem" (p.1), and that "teaching children how to respond to frustration and failure requires that they experience frustration and failure" (p.5). This would also be true for teaching grit to educators. If teachers who report positive perceptions of school climate have not experienced frustration and failure they would not have the opportunity to learn to be gritty, which may be why there was no significant correlation found between the two. Kraft and Papay (2014) reported that teachers working in more supportive professional environments improve their effectiveness more over time than teachers working in less supportive contexts, which suggests that fostering a positive school climate perceptions may be more important than grittiness when it comes to developing effective teachers, however more research is needed. The only subconstruct that did have any relationship to grit was enjoyment of teaching. This is logical, (because in order to be

passionate about teaching, one would need to enjoy it), and empirically supported; Abuhamdeh and Csikszentmihalyi (2012) found that intrinsically motivated people were more likely to be goal-directed and enjoy challenges that would lead to an increase in overall happiness.

As predicted, DR was positively correlated with school climate and its subscales, where the higher the participant's DR score, the more positive perceptions he/she reported of school climate. Resilience results from positive social relationships, positive attitudes and emotions, the ability to control one's own behavior, and feelings of competence (Doll, Zucker, & Brehm, 2004); all of which are aspects of positive perceptions of school climate, explaining the reciprocal relationship between the two.

Giroux (2012) defines burnout as "essentially the absence of resilience, with feelings of reduced personal accomplishment (efficacy) as one of its key descriptors (p. 5). He describes resilient teachers as "individuals who have encountered circumstances of adversity, but have transcended burnout and feel joy and satisfaction in their work" (p. 84). Consistent with this is previous research that reported resilient people experience less professional burnout, specifically in the field of education (Chan, 2003; Bernshausen & Cunningham, 2001; Pretsch, Flunger, & Schmitt, 2012).

These results may also explain why those who scored highest on DR also scored the highest on the school climate measure, particularly the subconstructs of *principal supportiveness* and *enjoyment of teaching.* This finding is in-line with previous findings that reported that "teachers who had the strongest reported administrative support had the least reported burnout, and the teachers who reported the lowest level of administrative

support also experienced the most severe burnout" (Giroux, 2007, p. 150). A recent survey confirmed this finding as well; according to 2009's The MetLife Survey of the American Teacher: Collaborating for Student Success, 59% of teachers with high job satisfaction are likely to strongly agree that teachers, principals, and other school professionals at their school trust each other. This trust is instrumental to a positive perception of school climate (Halawah, 2005; Hoy & Miskel, 2010; Hassenpflug, 1986; Peper & Thomas, 2002). If a teacher has a genuine commitment and enjoyment of teaching, he/she will perceive his/her environment positively, and may be more likely to feel committed to student success and not succumb to burnout Chan, 2003; Bernshausen & Cunningham, 2001; Pretsch, Flunger, & Schmitt, 2012).

Previous research (Bryk, Camburn, & Louis; 1999) found social trust to be the strongest facilitator of a professional learning community. DR individuals are able to achieve and maintain positive social relationships, have trust in others and feel involved to a degree that they feel they can call upon assistance in demanding times. Teachers need to have opportunities to contribute to the learning, whether it is through sharing with other teachers or joining and influencing conversations about the learning (Armstrong, 2012). These conversations allow teachers to make their work meaningful, whereby eliciting a feeling of commitment, and maintaining a generally more positive attitude towards their professional environment. These findings offer an explanation as to why DR commitment and perceptions of school climate shared such a strong correlation, specifically with the subconstructs of *colleague collegiality, prosocial practices, teacher efficacy, parent involvement, principal supportiveness* and *enjoyment of teaching*. It is understood that when a teacher is able to engage these stakeholders as partners in helping

students, he/she will find his/her work meaningful and enjoyable. When there is trust between a student and teacher, the student will show more engagement in learning, behave better in class and achieve at higher levels academically (Rimm-Kaufman & Sandilos; 2015). This offers an explanation for the positive correlation between DR commitment and *student behavior*. DR teachers may be able to better connect with students, establishing trust, therefore experiencing more favorable student behavior than their non-DR colleagues.

Furthermore, DR control and challenge had a positive relationship with perceptions of school climate. This may be attributed to DR teacher's broad coping responses and actions. According to Bartone, Roland, Picano, and Williams (2008), these characteristics enable the individual to act purposefully, rather than being passive or feeling powerless in the face of stressful and changing situations. These feelings of empowerment transcend into the teacher's perception of their climate; they feel in control and efficacious; therefore they maintain a more favorable view of their environment.

DR teachers, specifically, have the ability to find meaning in their work, measured as their commitment, is the common theme for resilient teachers to derail burnout, report high passion, and view school climates positively.

**Analysis of Variance.** The original research design intended to examine gender and ethnicity differences among teachers and grit, DR, and perceptions of school climate. Although in most cases, no significant differences were found among groups, empirical support for the speculations will be discussed below. In some cases the limitation of unequal groups did not allow for an analysis.

Although Duckworth et al., (2007) reported no significant differences between gender and ethnicity on grit scores during the validation for the Short Grit Scale, Rojas, Reser, Usher, and Toland (2012) found that female students were higher in grit than male students. However, the researchers found no grit differences between ethnicities. This finding supported the hypothesis that females maybe be grittier than males, however the study focused on students and not adults. This study anticipated no grit differences in ethnicity, but had hoped to make a determination; are female teachers grittier than their male colleagues? Unfortunately, there were not enough males in the sample to perform an adequate comparison.

This study also hoped to examine gender differences in DR, speculating that female teachers would score higher in DR than male teachers. Both Morris (2002) and Estji and Rahimi's (2014) examined resiliency in teachers, and reported findings that support this speculation; female teachers recorded higher levels of resiliency than male instructors. However, unequal gender groups did not allow for an analysis in this study.

The anticipated findings were favoring females in grit and DR, and this study expected to find that female teachers would report more positive school climate than their male colleagues. Liu and Ramsey (2008) found that female teachers are reportedly more satisfied with school climates than male teachers, supporting the speculation that females would report more positive school climate attitudes. However, unequal gender groups did not allow for an analysis in this study.

There is conflicting literature on the professional climate perceptions of teachers of different ethnicities. Findings of Allen, Epps, Guillory, Suh, Bonus-Hammarth, &

Stassen (2002) indicated that Caucasian faculty had higher levels of satisfaction with their schools than African Americans. In contrast, Ponjuan (2005) found that African American faculty did not statistically differ from their Caucasian colleagues, but those Latino faculties were less satisfied with their overall jobs than Caucasian faculties. Conflicting yet again was Jaschik (2008), who reported that Caucasian and Latinos had similar perceptions of job satisfaction, and that African American, Asian and Native American faculty was less satisfied on a series of questions on climate, culture and collegiality at their schools. Speculations for this research population were that Caucasian teachers would report higher levels of school climate than their colleagues, however, due to the large majority of the sample being overrepresented by Caucasian females, comparisons to other ethnicities regarding their scores was not available.

Data on teacher content area was also collected with the anticipation that there would be differences in grit, DR, and school climate perceptions. Although there is no empirical research that specifically addresses this topic, speculations were based on a report from the National Center for Education Statistics, which identified the average GPA within a major, the average time it took to complete a degree in that major, and the amount of work and leisure time students could afford while studying in that major (2014). Using these criteria, this report ranked education, math, computers, and health as the easiest and engineering, science, business and social/behavioral sciences as the hardest. Based on these reports, it was speculated that science teachers would report higher grit and resiliency, where as elementary and health/physical education teachers would report the lowest. The results of the current study found no significant differences across content areas and survey scores of three instruments. It was speculated that

English and math teachers would have reported the lowest school climate scores because of the new testing mandates in their content area, however no significant differences were found. This may have been a result of the under-representation of some content areas in the sample, and is worthy of reinvestigation.

While the data showed there was no significant difference between teaching different content areas and grit, dispositional resiliency, and school climate, a Tukey Post Hoc analysis offered interesting insight. Descriptive statistics showed that elementary, English, and special education teachers scored higher in school climate based prosocial practice than math and science teachers. A possible explanation for this is the nature of the content in the subjects for those teachers. The latter subjects are based in hard science and generally follow a scope-in-sequence curriculum where content builds on itself, focusing on reasoning, the scientific method, cause and effect, and formula analysis; concrete learning (Ediger, 1999). Social sciences, such as elementary education, English (and ELA) teachers have content that is more open to interpretation and analysis, including literary criticism, discussion, and analysis (Barrett-Tatum, 2015). In addition, special education teachers have specific training in differentiating instruction (Fullerton, Ruben, McBride, & Bert, 2011). The items measuring School Climate prosocial practice (see Appendix) focus on differentiation of method, self-acceptance and tolerance; a strategy and two themes that may be more engrained and reoccurring in the curriculum of teaching young children, special needs children, and English-language arts. Gender and ethnicity were unable to be analyzed because of the over-representation of Caucasian females.

**AMOS.** The AMOS path model showed a predictive path between DR and grit, and DR and perceptions of school climate, and displayed DR as the mediator between grit and perceptions of school climate. Based on what was found in the correlation analysis, this finding was attributed to the resiliency subconstruct of commitment. The items measuring commitment reflect a sense of meaning in life and work and how they relate to grit perseverance. Commitment was also significantly correlated to all School Climate subscales, with "enjoyment of teaching" as one of its strongest correlations. Teacher enjoyment would likely be most similar to grit passion. These results indicate that commitment was the common thread that connected all the constructs, and further points to the importance of its role in dispositional resiliency. This study supports that a teacher high in DR is going to have more grit and perceive her school climate as more positive, even enjoying teaching there more than a low resilient individual.

This finding could also be due to the similar ways the surveys are measuring commitment. Two of the five resilient commitment items use the term "meaning" verses "empty", and asks the responder if they look forward to work activities. Committed individuals have found meaning in their career, and find genuine enjoyment in what they do. Their commitment allows them to have genuine interest and curiosity in, and commitment to, the activities of life one involves oneself in. They may also feel a strong sense of purpose. This may allow them to be able to recognize facets of their schools in a positive way; therefore they view their school climate more favorably than teachers who do not have a strong sense of commitment. This may be attributed to commitment's positive correlation with grit passion. Those who are passionate may more easily find meaning in what they do. While resiliency is the mediating factor between grit and

school climate, there is growing concern as to the changing educational climate of society and how this will affect teachers, their resiliency, grit, and perceptions of climate.

The model also indicated a negative coefficient between grit and perceptions of school climate, meaning that the higher reported grit, the greater the negative perception of school climate. This relationship begs the questions "Do gritty teachers rely less on a view of school climate to maintain their disposition?" Further investigation is required in order to make a determination on this idea.

**Common Core State Standards, School Climate Perceptions, Grit, and DR**

Dworkin (2008) examined teacher burnout during *A Nation at Risk* and *No Child Left Behind* legislation. He reported that burnout- a known impediment to the last school reform and restructuring- is very much associated with organizational pressures as well as legislated policy-mandated changes. The imposed Common Core Standards, which allow teachers little curricular autonomy, may have compromised teachers' intrinsic motivation, autonomy, and self-efficacy, potentially increasing burnout, thus compromising their view of school climate. Common Core State Standards are currently embedded in new teacher certification and licensure, where a top-down corporate approach has disrupted the autonomy of university programs by forcing their teacher candidates to adhere to CCSS testing for certification (Au, 2013). The Obama administration and education officials who contend, "outdated and inconsistent guidelines leave students ill prepared for college and the work force" (Hernández & Gebeloff, 2013, para 9) back the new Common Core standards.

In a recent survey published by Education Next (2013; 2014) teacher opposition to the CCSS has grown from 13% to 40% respectively. This decrease in popularity is

startling, but not surprising, as CCSS exam scores are now legally linked to measure teacher effectiveness. At times of increased accountability, such a high-stakes teacher evaluation may be viewed as a threat to teachers' autonomy (Day, 2010; Wexler, 2014), thus, impact a teachers' view of his/her school climate. Across New York State, the 2013 Common Core test scores showed that 31 percent of students passed the exams in reading and math, compared with 55 percent in reading and 65 percent in math in 2012. The New York Times reported that complaints of the standards were abundant: "the tests were too long; students were demoralized to the point of tears; teachers were not adequately prepared" (Hernández & Baker, 2013, para 1). When teachers do not feel as though they can help their students to succeed (low teacher efficacy) they have difficulty maintaining positive attitudes such as job commitment and job satisfaction (Caprara et. al., 2003), which in turn impacts their school climate outlook.

Cheng (2012) used a survey and interviews to gather teachers' perceptions of CCSS along with their perceptions about the forthcoming, associated assessment system. The sample consisted of teachers from three elementary schools, two middle schools, and one high school located throughout two neighboring school districts. Though teachers welcomed any improvement that the CCSS would bring to the status quo, they were still mostly apprehensive because they perceived that the CCSS would still retain many of the problems of current and past standards-based-reform efforts. Teachers ultimately exhibited a limited optimism and held modest expectations.

Of the teachers Wexler (2014) surveyed about the CCSS, the majority reported feeling as though these new mandates were eliminating autonomy and intellectual freedom to craft their own curriculum and tests, and they feared that the unpredictable

evaluations might compromise their pride and eventually their career. With reports such as these, it would make sense that a teacher would need a strong sense of commitment to take on challenges (DR) in order to view their climate positively.

As defined above, DR's foundation is its inherent ability to cope with stress, make meaning from work, and connect with others even while facing adversity (Kobasa, 1979). DR was predictive of grittiness and perceptions of school climate. This is why DR is such an important disposition in teachers. Concurrently, raising the standards for students in all grades at once, rather than rolling out the new curriculum, may prove to overwhelm students, increasing negative behavior, whereby changing their teachers' attitudes to negatively view their school climate. Such a short timeline for the Common Core rollout has caused increasing teacher stress levels (The Trouble with the Common Core, 2013), which may also compromised their ability to be gritty and their perceptions of school climate, unless they are high in DR.

**Limitations**

The limitations in this study include the demographics of the sample, the makeup of the data collected, and the nature of the data collected. The use of teachers from a convenience sample (n=246) is a serious limitation of the study. The strength of using an entire teaching staff far surpasses the internal validity of a smaller sample that is gathered. In addition, while the sample was large enough to establish predictive validity, the fact that the researcher recruited from a school where she was employed and knew many of the teachers personally, is also a limitation. Having a personal professional relationship with the researcher may affect teacher responses because of cooperative and positive attitudes associated with working with the researcher while she was a colleague.

Data collected may be more based on social desirability than authentic responses, meaning that participants select answers that they believe are deemed "the right answers" by view of society, and not heir actual beliefs. It is also important to note that at one school where teachers were solicited the superintendent contacted teachers on behalf of the researcher. This may serve as a limitation because teachers may have felt pressure to participate since the invitation came from their direct superior. Additionally, teachers were not asked to identify their school district, which is also a limitation. This data was not collected at the request of one of the superintendents; therefore it was not collected from any participant. As a result, there was no way to determine how many teachers from certain districts participated.

In addition, differences in the makeup of the groups are a limitation of the study. The makeup of the collected samples was limited, based on the convenience of the sample and population and was limited in regard to ethnicity and gender. Prior research has demonstrated that female teachers are reportedly more satisfied with school climate than male teachers (Liu and Ramsey, 2008), therefore the lack of gender diversity (86% female) is expected but limits the conclusions that can be drawn with the overall findings. While gender and race were not equally represented in the sample, the variance in the sample was representative of the teacher populations of suburban schools in the area (Caucasian females). Although the study may not be generalizable to the overall teacher populations in different areas of the United States, it is generalizable to the population where the study was conducted.

A final consideration that must be factored into the study was based on that fact that the study relies on self-report survey data for all information. The investigations of

the constructs in this study were derived from the self-perceptions of the teachers who participated. Despite the fact that some question self-report data, researchers have clearly affirmed that the most informed reporters of one's internal states are the individuals themselves (Duckworth, 2009; Padilla-Walker, Hardy, & Christensen, 2011). Since the focus of the study centered on the intrinsic goal beliefs of the participants and self-perceived states, the self-report data provides a valid and reliable assessment for the study. The factor analysis validated the construct validity of grit and dispositional resiliency, and Cronbach's alpha testing revealed high internal consistency for dispositional resiliency, school climate, and acceptable internal consistency for grit. These results support the measures working the way the creators intended. Further, grit and resiliency did share a significant pathway according to the AMOS results. This is likely do to the shared theoretical component of commitment. Though this research was able to correlate grit, resiliency, and school climate scores in meaningful ways, it is not known whether more resilient teachers do in fact teach in more positive school climates or if they merely perceive the climate as positive while less resilient individuals would view it as negative. It is possible that resilient teachers have more grit and perceive school climate more positively because of their effective coping skills in dealing with daily challenges and minimization of burnout. These include caring, encouraging relationships, role models, and mentors (Theron & Engelbrecht, 2012; Thomsen, 2002; Walsh, 2012); clear and fair boundaries and structure (Benard, 2004; Theron & Engelbrecht, 2012); exploration of other worlds and possibilities (Birdsall, 2013); stories of overcoming adversity in literature, films, and history (Walsh, 2012); and basic human respect and dignity that too many kids do not find in their troubled homes (Benard, 2004;

Thomsen, 2002). It is plausible that these factors promote the resiliency of teachers as well. However interaction is one that was not uncovered because other factors like student, parent, and principal perceptions were not measured.

## Conclusion

Personality dispositions of teachers and their implications in education have recently gained popularity among researchers. This study documented differences between the dispositions of grit and resiliency in teachers, and their relationship to perceptions of school climate. The study further established the construct validity of grit as distinct from dispositional resiliency and also documented statistically significant relationships between grit, dispositional resiliency and perceptions of school climate. The study is generalizable to suburban populations that reflect the same ethnic and gender compositions, but the findings may be significant for many teachers in the field. Further research might seek to validate these findings with a diverse sample reflective of different populations and settings.

Although the research found grit and dispositional resiliency to be distinct constructs, their predictive relationship and their related subconstructs clearly emerges from this research. It seems unlikely that an individual can be gritty without being able to see the meaning in their work, build strong relationships with others, and feel enjoyment in what they do. Dispositional resiliency may be the precursor necessary for teachers to build on if they are to develop grit, the passion and perseverance necessary to maintain goal pursuit over time in the face of stressors.

In addressing the issue of school climate, it would seem that the mission would be to first create climates that are supportive and positive to all, and that the creation of these climates may uncover the commitment needed to feel meaning and purpose in the work teachers do. Finally, with dispositional resiliency in place, teachers may be able to build on that foundation to create the grit necessary to maintain positive perceptions of school climate in the face of obstacles, enduring hardships, making sacrifices and developing the consistency needed for goal pursuit over time. Duckworth and her team from the University of Pennsylvania are exploring the relationship between grit and resiliency with the Upper Darby School District (Perkins-Gough, 2013). In this program, administrators, teachers, counselors, social workers, and psychologists attended courses in positive psychology taught by Duckworth and her colleagues as part of a professional development workshop, which is based on a model called PERMA—Positive Emotions, Engagement, Relationships, Meaning and purpose, and Accomplishments. Its goal is to build resiliency and grit. Evaluation of the program is not available at present.

Duckworth, Quinn, & Seligman (2009) reported that teacher grit was a significant predictor of a students' academic success. In a review of over 300 studies commissioned by the U.S. Department of Education (Vishner, Emanuel, & Teitelbaum, 1999), school climate was found to be a strong predictor of student achievement. These results were confirmed in more recent analyses (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Hanson, Austin, & Zheng, 2011; Voight, Austin, & Hanson, 2013). This study showed that dispositional resiliency in teachers was a significant predictor of grit and school climate attitudes. While the research is correlational and not causal, addressing the deficits in teacher DR may provide a key to unlocking a solution low teacher grit and to

poor perceptions of school climate, both which to impact to student growth (Robertson-Kraft et al., 2014; Cohen et al., 2009; Kraft & Papay, 2014).

Although all the DR subconstructs were related to school climate, commitment was the bridge to strong positive perceptions about school climate and grit. According to Standford (2001), the rigors of teaching suggest that positive traits that determine commitment and resilience in the face of adversity might play an important role in determining teacher effectiveness. This highlights the role of commitment in the DR teacher, which was a common finding in this study. Those who felt committed are able to lessen life stressors by calling on a belief system about one's sense of meaningful purpose in life. If one felt more committed, she would be grittier in coping with problems, and this commitment may reinforce grit. Resilient teachers likely sought out support from others, which allowed them to build stronger social relationships, because they felt involved with others to a degree that they felt they can call upon them for assistance in demanding times. They felt a connection to their students, their colleagues and their principal. This is evidenced by commitment's positive correlations with Student Behavior, Parent Involvement, Colleague Collegial, and Principal Supportiveness. Their sense of commitment translated into a genuine enjoyment of teaching, an activity that they found meaningful, and it is no surprise that they also scored higher on grit's subconstruct *passion* and school climate's subconstruct *enjoyment of teaching*; their work was enjoyable, meaningful, and exciting, all aspects of being passionate.

New mandates, including state-controlled Annual Professional Performance Review, (an evaluation program based on evaluating teachers through standardized tests), saturate a teacher's world with high-stakes testing while eliminating autonomy and

intellectual freedom of their craft, all while working in fear of unpredictable evaluations that may compromise their pride and eventually their career (Wexler, 2014). Prior research established that DR teachers view difficulties as challenges rather than threats, cope better with stress, maintain stronger relationships, and experience less burnout (Schoenig, 1986). Therefore, DR teachers would be more likely to stay in the classroom during this shift in educational philosophy. The results of this study showed that resilience mediates the relationship between grit (through their passion and perseverance) and perceptions of school climate. These findings reinforced Duckworth and Quinn (2009); that consistency of interest (passion) was a better predictor (inversely) of career changes among adults than perseverance.

The relationship between grit and resiliency is already in the literature, however there was little empirical evidence of how the two interacted. In his book, Hoerr (2003) writes "grit gives us resiliency" (p.2). This study found contradictory results to this statement. The findings of this study support a more complex theory: resiliency gives us grit and resiliency supports positive interpretations of our work climates (school in this case). Conflicting with his earlier statement, Hoerr (2003) writes that in order to develop grit, one must be in a position to struggle and exhibit resilience (p.10), which confirms the logical nature that one must have the skills embedded in resilience in order to be grittier. The present research study confirms this through correlation analysis and AMOS path: commitment was positively correlated with passion and DR predicted grit. Those who are committed are more passionate and those who are passionate are more committed. Given the importance of commitment to all the other constructs and their sub-

parts, this study corrects Hoerr's statement, and finds that resiliency gives us grit because of the role commitment plays in being resilient.

The relationship between grit and resiliency is already being seen in other areas of research. Carol Dweck's (2007) theory of mindset has also been associated with teaching grit (Elish-Piper, 2014). Her theory is that there are two types of mindset: fixed and growth. Fixed mindsets keep intelligence static, avoid mistakes, and prioritize looking smart over learning. Because people with fixed mindsets seek situations in which success is practically guaranteed, they are unlikely to develop grit (Elish-Piper, 2014). Growth mindsets acknowledge that even though mistakes may present challenges, they help us learn (this seems to be related to DR). The grittiness of those growth mindsets stems from knowing that the harder they work and the longer they try, the likelier they are to succeed.

The idea of working towards a growth mindset sounds very much like resiliency training. This training, called "Hardiness Training", is widely available already and effective (Maddi, Kahn, & Maddi, 1998). The training focuses on changing mindsets and reprogramming the way the individual thinks. For example, *The Self Under Siege*, a self-help book designed to help people become hardier by coping with adversity and creating meaningful satisfying lives, highlights mindset (Firestone, 2012). In an online blog promoting the book, Firestone (2012) discusses how to separate self-destructive and self-soothing thought processes, which they refer to as ones critical inner voice. One example in the book of a self-destructive critical inner voice is "There is nothing you can do to make things better" (para 7). Clearly this would be a fixed mindset statement and one would need to change it to a growth mindset statement like "There are things I can do to

make things better." Further research is needed to determine if hardiness training and a focus on growth mindset has an impact on DR in teachers, although it seems as though it would. This training can be utilized during a teacher's professional development and incorporated into teacher training programs.

Teacher preparation programs should provide frequent interactions with credible teacher educators, guided and increasingly responsible interactions with practicing classroom educators, repeated and authentic classroom experiences, and high expectations. University programs and professional development sessions for practicing teachers should include coursework and instruction on building resiliency to develop more resilient teacher candidates, thus feeding resilient teachers into the field. Both pre-service and in-service experiences should work proactively with individuals to provide supportive, collegial environments that promote a collective spirit and sense of belonging, meaning, and competence (Bernshausen, & Cunningham, 2001). Additionally, internal factors such as career competence, finding a sense of purpose, and forming supportive connections could be the focus.

Research supports the idea of resiliency as a teachable concept for teachers. Howard and Johnson's (2002) study reports "all our teachers believed that they learned the strategies and dispositions that made them resilient". Bernshausen and Cunningham (2001) go a step further, suggesting that, "A major goal of pre-professional teacher preparation must become the development of resiliency" (p.4). Brown and Nagle (2004) suggest preventing burnout by the "integration of stress management techniques" into teacher education programs, suggesting that the student-teaching component (and not the

first year of teaching) should be where a teacher learns how to "identify and manage sources of stress" (p. 39).

In the current education arena, the teachers highest in DR, (who are also the grittiest and view their climates more positively), will maintain an enjoyment of their craft, which may help their students achieve better. Henderson and Milstein (2003) see a resilient teacher as one who gives of self in service to others and /or a cause, uses life skills, including good decision making, assertiveness, impulse control, and problem solving, and one who has: ability to be a friend, ability to form positive relationships, sense of humor, self discipline, independence, positive view of personal future, flexibility, capacity for and connection to learning, personal competence (is good at something), self-motivation, and feelings of self-worth and self confidence. This is attributed to their ability to find a sense of meaning in what they do and connect with others; and all coping skills that allow them to maintain their genuine enjoyment of teaching.

A review of over 300 studies commissioned by the U.S. Department of Education (Vishner, Emanuel, & Teitelbaum, 1999), indicated that school climate was found to be very important for student achievement. These results were confirmed in more recent analyses (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Hanson, Austin, & Zheng, 2011; Voight, Austin, & Hanson, 2013). The findings of this study suggest that in order to secure the most positive perception of school climate, therefore secure the most opportunity for student achievement, dispositional resiliency is a more valuable construct than grit when developing teachers. This is because teachers will higher DR will likely view their school climate more positively regardless of the challenges they face.

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Appendix 1

## Demographics

**Research Participant Name_____ E-mail:: _____**

**Gender**: ___Male ___Female **Ethnicity:** __ Caucasian __Black __Latin __Asian/Pacific Islander

**Teaching License Content Area: _____ Years of teaching experience: ____ Age you began your first teaching job: _____**

**Current Assignment (majority of classes):** ____ Elementary ___Middle School __ High school

**Undergraduate College Attended: _____ Undergraduate College GPA: _____**

**Did you major in education as an undergraduate? ____**Yes ____No

Appendix 2

**Short Grit Scale**

*Directions for taking the Grit Scale: Please respond to the following 8 items. Be honest – there are no right or wrong answers!*

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

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

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

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

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

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

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

8. I am diligent.
   - Very much like me
   - Mostly like me
   - Somewhat like me
   - Not much like me
   - Not like me at all

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Scoring:

1. For questions 2, 4, 7 and 8 assign the following points:
   5 = Very much like me
   4 = Mostly like me
   3 = Somewhat like me
   2 = Not much like me
   1 = Not like me at all

2. For questions 1, 3, 5 and 6 assign the following points:
   1 = Very much like me
   2 = Mostly like me
   3 = Somewhat like me
   4 = Not much like me
   5 = Not like me at all

Add up all the points and divide by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).

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**Grit Scale citation**

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Appendix 3

## *DRS-15 Dispositional Resilience Scale (v.3)*

***Below are statements about life that people often feel differently about. Please show how much you think each one is true. Give your own honest opinions . . . There are no right or wrong answers. Response options are as follows:***

| 0. Not at all true | 1. A little true | 2. Quite true | 3. Completely true |
|---|---|---|---|

1. Most of my life gets spent doing things that are meaningful.
2. By working hard you can nearly always achieve your goals.
3. I don't like to make changes in my regular activities.
4. I feel that my life is somewhat empty of meaning.
5. Changes in routine are interesting to me.
6. How things go in my life depends on my own actions.
7. I really look forward to my work activities.
8. I don't think there is much I can do to influence my own future.
9. I enjoy the challenge when I have to do more than one thing at a time.
10. Most days, life is really interesting and exciting for me.
11. It bothers me when my daily routine gets interrupted.
12. It is up to me to decide how the rest of my life will be.
13. Life in general is boring for me.
14. I like having a daily schedule that doesn't change very much.
15. My choices make a real difference in how things turn out in the end.

Appendix 4

**An Abbreviated School Climate Survey**

Rate your reaction to each statement by writing a number to the left of each statement showing that you:
1 = Disagree Strongly 2 = Disagree 3 = Neutral 4 = Agree 5 = Agree Strongly

1) ____Students follow the strength of their convictions in spite of what their peers are doing.

2) ____I can get good advice from other teachers in this school when I have a teaching problem.

3) ____The principal does a poor job of getting resources for this school. [R]

4) ____Teachers are supportive of one another.

5) ____I help my students practice thinking before they act.

6) ____Students respect others' right to work and learn without disrupting.

7) ____Students keep commitments made to others.

8) ____Parents are supportive of the school and the teachers.

9) ____I usually look forward to each working day at this school.

10) ____Students follow rules and instructions given by staff members.

11) ____If I try really hard, I can get through to even the most difficult or unmotivated student.

12) ____Teachers and parents think of each other as partners in educating children.

13) ____Students are accepting of people who are different from them.

14) ____Helping students to understand and appreciate people who are different from themselves is an important part of my teaching.

15) ____The principal is capable and well-organized.

16) ____Teachers frequently consult with and help one another.

17) ____Students clean up their own mess, rather than expecting others to do it.

18) ____In general, I really enjoy my students.

19) ____Students take responsibility for their mistakes.

20) ____I take time in my class to teach students skills for working effectively with others.

21) ____Students are kind and supportive of one another.

22) ____By trying a different teaching method, I can significantly affect a student's achievement.

23) ____Students treat others the way they want to be treated.

24) ____The principal takes an active role in most school activities.

25) ____I think that teaching at this school isn't really worth the stresses and disappointments it involves. [R]

26) ____Parents are actively involved in school activities (as volunteers, participants in class and school programs, etc.).

27) ____Goals and priorities for the school are clear.

28) ____I really love teaching.

29) ____Students do not cheat in games or on tests.

30) ____Students are not mean, cruel, or insensitive to others' feelings.

31) ____In my class, I talk with students about emotions and why they are important.

32) ____The principal usually consults with staff members before she or he makes decisions that affect us.

33) ____Staff members are never recognized for a job well done. [R]

34) ____Teachers demonstrate respect for each other.

35) ____I don't seem to have as much enthusiasm now as I did when I began teaching. [R]

36) ____I teach my students ways to resolve conflicts so that everyone can be satisfied with the outcome.

37) ____The principal deals effectively with pressures from outside the school that might interfere with my teaching.

38) ____Students adhere to rules of fair play.

39) ____Students give their best effort.

40) ____If teachers have patience and goodwill, they can help any student to learn.

41) ____Students do not deceive, mislead, or act deviously.

42) ____The principal is accessible to teachers.

Appendix 5

Items Measuring Prosocial Practice (School Climate Survey)

- If I try really hard, I can get through to even the most difficult or unmotivated student
- If teachers have patience and goodwill, they can help any student to learn
- By trying a different teaching method, I can significantly affect a student's achievement
- Helping students to understand and appreciate people who are different from themselves is an important part of my teaching
- In my class, I talk with students about emotions and why they are important