ABSTRACT

Title of Dissertation:	STRESS AND LITERACY ACHIEVEMENT: THE POTENTIAL MODERATING ROLE OF SOCIOEMOTIONAL FACTORS FOR DUAL LANGUAGE AND NON-DUAL LANGUAGE STUDENTS
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The achievement gap is one of the most pervasive education problems in the United States. Stress may contribute to this achievement gap, since it is inversely related to achievement. Dual Language Learners (DLLs) may face a wide variety of stressors that contribute to their lower grades, relative to their non-DLL peers. Researchers have turned to a slew of socioemotional factors to see which may help reduce the gap between ethnic minority and White students. However, in the face of stress, these factors may not all be equally protective. This study explored the potential protective effects of three socioemotional factors – grit, growth mindset, and anger regulation - by using moderation analyses within both a self-regulation and a risk and resilience framework in an ethnically diverse sample of 3rd, 4th, and 5th grade students. Results were compared between the DLL (N = 81) and non-DLL (N = 170) students. Results indicated that grit was a significant moderator of the relationship between stress and reading achievement for the for the DLL subsample; those with high grit outperformed those with low grit in times of

high stress. Additionally, in the DLL group, growth mindset moderated this relationship; those with high growth mindset outperformed those with low growth mindset in times of low perceived stress, while those with low and high growth mindset performed similarly in times of high perceived stress. Anger regulation was a significant moderator for the non-DLL group; those with reporting high usage of anger regulation skills outperformed those with low use of anger regulation in times of high stress. The findings of this study suggest that there may be different protective factors for different groups facing stress, though more research needs to be conducted to explore this relationship. School administrators and school psychologists should continue to consider the potential benefits of fostering socioemotional skills to promote reading achievement but are cautioned to critically consider and tailor which interventions are selected for which students.

STRESS AND LITERACY ACHIEVEMENT: THE POTENTIAL MODERATING ROLE OF SOCIOEMOTIONAL FACTORS FOR DUAL LANGUAGE AND NON-DUAL LANGUAGE STUDENTS

by

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Chapter 1: Introduction

In the last few decades, there has been a sharp increase in the number of dual language learner (DLL) students[1] enrolling in Pre-K through 12 in the United States. Between 2000 and 2017, the number of DLLs aged 8 and under in the United States grew by 24 percent (Migration Policy Institute, 2017). According to the National Center for Education Statistics (2017), 4.3 million DLL students were enrolled in K through 12 in 2005. In 2014-15, this number increased to 4.6 million, representing about 9% of all students (Department of Education, 2014). The state of Maryland, in which this sample is based, had the largest percentage-point increase in DLL students between 2004 and 2015 – the percentage of public school students who were DLL increased by 4.4 percentage points (National Center for Education Statistics, 2017). Spanish is the most common language spoken by DLL students in the U.S. (60%), followed by Chinese (3%), Tagalog, Vietnamese, and Arabic (2%) (Zong et al., 2018). In the state of Maryland, Spanish is the most common language spoken by DLL students, followed by French and Chinese (Migration Policy Institute, 2017). DLLs most commonly self-identify as Hispanic (62%), White non-Hispanic (16%), Asian (15%), Black non-Hispanic (6%) and American Indian (1%) (Zong et al., 2018).

Though the United States is becoming increasingly diverse, there still exists an achievement gap between non-DLL and DLL students. DLL students attending programs of language assistance in school underperform by 40 percentage points on fourth-grade

[1] For the purposes of this study, Dual Language Learners will follow Migration Policy Institute's (2017) definition and be considered those that have at least one parent who speaks a language other than English at home. These are not students who are studying a foreign language in school.

reading and eighth-grade math tests, a gap that has not readily improved since 2000 (Murphey, 2014). Although statistics on the differential performance between DLL and non-DLL students exist, research has generally focused on identifying potential causes of the achievement gap in terms of those that accompany being an ethnic minority living in the United States. These causes include both early environmental factors that affect achievement even before students even begin school, and factors within the school system. For example, a school readiness gap (Ahmad & Hamm, 2013), the "30-million-word gap," culturally biased standardized testing, and school structural factors like tracking and low resources/unqualified teachers are all factors that may contribute to this gap (e.g., Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008; Burchinal et al., 2011). Due to the wide range of factors that have been hypothesized to contribute to the achievement gap, there have been a wide range of interventions and proposed solutions that include federal acts like No Child Left Behind of 2002, investment in Pre-K programs, teacher training programs including Teach for America, and providing technology to low income students.

Since it is true that many DLL are ethnic minority students (National Academies of Science, Engineering, and Math, 2017), the abundant research exploring causes of the achievement gap among ethnic minority students may be pertinent to a large portion of DLL students. However, one trend that exists in the United States is the increasing "superdiversity" of DLLs (Park, Zong, & Batalova, 2018). In the next chapter, I will further discuss the implications of this superdiversity for this study. Just as the United States is increasing in diversity, DLLs are becoming much more heterogeneous – they speak different languages, have different races and ethnicities, and have different

countries of origin, SES, education levels, and migration histories (Park et al., 2018), which makes it challenging to identify any one cause of the achievement gap that will generalize to all DLLs.

Though it is hard to apply a generalization to such a heterogeneous group, one commonality that may be a relevant cause of the achievement gap for all DLLs is stress (e.g., Levy et al., 2016). Though there is little research about stress among DLL students, these students are often faced with more potential stressors relative to non-DLL students. While one source of stress for some DLLs is poverty (e.g., Keys-Adair, 2015; Major & Steele, 2010), there are other stressors that cut across various socioeconomic statuses and countries of origin. These include acculturative stress (Toppelberg & Collins, 2010), language stress (i.e., anxiety felt when speaking an un-mastered language; Hashemi, 2011), and discrimination. For example, all DLLs may be at risk for discrimination resulting from the perception that they are different than others, regardless of ethnic minority status. Research indicates that Russian, Somali, Puerto Rican, and Chinese American students all report experiencing discrimination as DLL students (e.g., Ellis, MacDonald, Klunk-Gillis, Lincoln, Strunin, & Cabral, 2010; Jasinskaja-Lahti & Liebkind, 2001; Rivera, Lopez, Gurnaccia, Ramirez, Canino, & Bird, 2011), and discrimination is often linked to stress among both adults (Broman, Mavaddat, & Hsu, 2000) and adolescents (Sirin, Rogers-Sirin, Cressen, Gupta, Ahmed, & Novoa, 2015). Given that stress negatively impacts learning and memory (e.g., Arnsten, 2009; Owens, Stevenson, Norgate, & Hadwin, 2008), stress may also be a contributing factor that helps to maintain or exacerbate DLL lower student achievement in the United States, relative to non-DLL students.

There are two broad categories of protective factors that may buffer against the negative effects of stress on achievement: systemic and individual protective factors. Systemic protective factors are societal policies, practices, and procedures that can help buffer against negative effects. Examples of systemic protective factors include strong community and neighborhood support system in low-income areas. On the other hand, socioemotional factors such as grit, growth mindset, and anger regulation may also help buffer against the negative effects of stress on achievement at an individual level. These socioemotional factors are more easily targeted than systemic contributors to stress and the achievement gap. Schools have recently implemented many interventions focused on these factors, seemingly choosing ones that are "en vogue." Grit, growth mindset, and anger regulation are three of the popular socioemotional factors targeted in this proposed study because they are self-regulation strategies commonly used in the face of stress: the factors either motivate students to persist despite stress (e.g., grit), serve as a belief system that motivates students to grow and put forth effort in stressful situations (e.g., growth mindset), or they help students manage stress (e.g., anger regulation).

Though these socioemotional factors are positively related to achievement, none have been explored as protective factors in the face of stress, and very little research has explored the relationship between these socioemotional factors and achievement among ethnic minority students, let alone DLL students. Though there are studies that explore relationships between these socioemotional factors and achievement, previous research has not explored which of these factors may be best in buffering achievement in the face of stress. Given that schools invest time and money into socioemotional interventions, it is important to cultivate research to help schools make better informed decisions.

Currently, there is very little evidence exploring which socioemotional factors are most helpful for which students under stress.

The Current Study

This dissertation addresses gaps in the research and uses a resilience framework to identify which socioemotional supports may work best for DLL and non-DLL speakers in the face of stress. Utilizing a sample of DLL and non-DLL speakers attending two schools in a mid-Atlantic suburb, I examine the relationship between stress and achievement for DLL and non-DLL speakers and the potential moderating effects of the self-regulatory factors of grit, growth mindset, and anger regulation among non-DLL and DLL students.

Chapter 2: Literature Review

In the following section, I will summarize the current literature about the status of the achievement gap and explore the relationship between stress and achievement. After, I will explore the current research on grit, anger regulation, and growth mindset for diverse students and explore how they may be especially important protective factors for DLL students. I will also examine risk and resilience in addition to self-regulation theories to frame my study.

The Achievement Gap

Although there exists an achievement gap between ethnic minority and White students, this study will focus on the achievement gap between DLL and non-DLL students with reading achievement as an outcome. This study will focus on the DLL and non-DLL gap because of the growing number of DLL students in the United States, and the underperformance of DLLs on reading assessments, relative to non-DLL peers (Murphey, 2014). This study focuses on reading achievement because reading predicts future achievement, is a key requisite for success in many other subjects, and is a skill needed to obtain a job and succeed in society (Hernandez, 2011). Reading is also likely to be associated with stress for DLLs, considering that language stress is often experienced by DLL students (Hashemi, 2011).

Statistics indicate that while academic performance and graduation rates are on the rise for DLL students, they are still behind their non-DLL peers. According to recent data from the U.S. Department of Education, 66.9% of DLL in the class of 2016 graduated in four years, which was an increase of two years (National Center for Education Statistics, 2017). Unfortunately, in the state of Maryland, only 48% of DLLs

graduate within four years (National Center for Educational Statistics, 2017). These differences may be due in part, to the lack of adequate instruction and support for DLL students (National Academies of Science, Engineering, and Medicine, 2017).

The achievement gap has lifelong implications. Underperforming students of low socioeconomic status are more likely to earn lower salaries, have poorer health outcomes, and are more likely to be incarcerated (McKinsey, 2009). This means that the achievement gap perpetuates a cycle of poverty and contributes to poorer life outcomes for those already disadvantaged. There are further complications for DLL students – many times students are from not only low income, but also immigrant families (National Academies of Science, Engineering, and Medicine, 2017). Many immigrant parents place emphasis on the fact that they moved to this country to create a better educational and career path for their children (Caplan, Choy, & Whitmore, 1991). It is possible that the existing achievement gap makes it hard for children to live up to their parents' ideals, causing further stress on students to achieve.

Stress and the achievement gap. In this study, I explore stress as a perceived, internal experience of feelings of stress and related emotions as a reaction to distressing life experiences (e.g., Suldo, Shaunessy, & Hardesty, 2008). I am measuring and defining stress as, "the degree to which situations in one's life are appraised as stressful," (Cohen, Kamarck, & Mermelstein, 1983). This perception of stress was chosen instead of a more objective measure of stress because it more accurately captures the interaction between individual and environment (i.e., the appraisal of one's challenges and coping resources) and removes the assumption that an increase in stressful events automatically results in an interpretation of an event as more stressful for all individuals (Cohen et al., 1983). In

this instance, appraisal means a subjective identification and evaluation of recent stressful experiences and includes the identification of the experience as stressful and relevant, and determination of how to cope with the experience that is unique to the individual. The perceived stress measure was also chosen because it may more accurately capture the holistic experience of stress for DLLs (i.e., perceptions of various forms of stress and coping resources) beyond any measure that taps into one specific and narrow stressor in their life (Levy, Heissel, Richeson, & Adam, 2016; O'Neal, 2018). This measure is meant to be unidimensional (Cohen et al., 1983), in that students are asked to think about a time in the past week that they felt overwhelmed and are asked global questions about their thoughts and feelings that reflect their overall perceptions of how they react to and think about stressful experiences. However, others have argued that there are two factors in this scale (e.g., Taylor, 2015); therefore, I am conducting an exploratory factor analysis on the items. One limitation of this measure of stress is that it measures perceptions of stress at a brief moment in time for these students and does not capture the ebb and flow of the stress experience that may occur across time. However, I am examining the ratings of stress across the three proposed time points to see if perceived stress is relatively stable across a short period of time.

Although anxiety and stressful life events are often studied in children, the literature examining the relationship of stress (as operationalized in this study) and achievement is very limited; the studies are cross-sectional and do not explore this relationship among elementary aged children, where the achievement gap begins and worsens. For example, studies have found that stress is associated with poorer academic performance in undergraduate students (Akgun & Ciarrochi, 2010; LePine, LePine, &

Jackson, 2004). Other cross-sectional studies have found that stress may be associated with lower math and reading scores in Latina/o populations in middle childhood (Brabeck, Sibley, Taubin, & Murcia, 2016) and high school (Alva & de los Reyes, 1999; Gillock & Reyes, 1999). Given that many DLL students are Latina/o (National Academies of Science, Engineering, and Medicine, 2017), these associations may hold clues for how stress may influence academic functioning among some DLL students.

General life stress is an important consideration in the experiences of DLL students, given the numerous stressors they face on a day-to-day basis as ethnic and cultural minorities living in the United States (Levy et al., 2016), and the many immigration-related stressors they may face as immigrants or children of immigrants (Zong & Batalova, 2015). Some DLL students, therefore, not only experience many stressors associated with being an ethnic minority in the United States, such as stereotype threat and perceived discrimination (e.g., Clark, Anderson, Clark, & Williams, 1999; Major & O'Brien, 2005; Steele, 2010; Steele, Spencer, & Aronson, 2002), but they also experience stressors related to their first or second-generation immigrant status. These stressors may include bicultural stress (e.g., Romero & Roberts, 2003) and acculturative stress (Arbona, Olvera, Rodriguez, Hagan, Linares, & Wiesner, 2010). These stressors are particularly important because they are often chronic, pervasive, and tied to one's sense-of-self (Devos, Huynh, & Banaji, 2012). As a result, the increased number of stressors faced by DLL is likely to make their general life stress levels particularly high. Research indicates that chronic stressors may have a negative impact on one's performance (Joëls, Pu, Wiegert, Oitzl, & Krugers, 2006), so DLLs may be at particularly heighted risk for poor academic performance related to stress.

Levy, Heissel, Richeson, and Adam (2016) contextualize these stressors within the achievement gap. In their theoretical paper, they propose that biological responses caused by stressors help maintain the achievement gap between White and ethnic minority students. These biological responses affect students' motivation, memory, and executive functioning, which all play a role in academic achievement, by occupying vital cognitive resources necessary for working memory and processing (Arnsten, 2009; Owens, Stevenson, Norgate, & Hadwin, 2008; Qin, Hermans, vaan Marle, Luo, & Fernández, 2009), making it more difficult to learn and remember important information. Given that DLL students face various life stressors, it may make them particularly vulnerable to impairment in motivation, memory, and executive functioning tasks crucial to academic success. Thus, it is necessary to explore what factors may be best in protecting DLL students against the negative effects of stress on academic achievement.

One limitation of this study is that it is not able to assess and include some large, systemic contextual factors that may heighten the importance of stress among some DLL students and also play a role in reducing achievement. For example, poverty may play a role in increasing stress and decreasing achievement (e.g., Evans, Brooks-Gunn, & Kato Kelbanov, 2011). Due to the restrictions imposed by the county in which the data was collected, I do not have any direct measure of poverty or socioeconomic status in my study. However, based on information from the schools' estimates of free and reduced meal status (FARMS), which is generally used as a proxy for socioeconomic status, it seems that less than 5% of White students, about 7% of Black students, and about 6% of Latina/o students are eligible for FARMS. This suggests that socioeconomic status is likely not confounded with ethnic group in this sample. Although FARMS is not

separated by DLL status on the schools' websites, the indication that FARMS is not confounded by ethnic group in the sample hints that it is a possibility that FARMS may not be confounded with DLL status. I will discuss the implications for these limitations in more detail in the discussion and will use this limitation to generate potential avenues for future research as well.

This dissertation explores the relationship between perceived stress and reading achievement. I am particularly interested in reading achievement because reading is a critical skill that underlies achievement in across different content. However, the majority of the present research has explored the relationship between these socioemotional factors and a broad measure of achievement (e.g., GPA, standardized tests). Thus, this literature review explores the existing literature that utilizes broad achievement as an outcome, and this study builds upon current research by focusing on reading achievement.

Theoretical Model

This paper relies on two theoretical frameworks as its basis. All of the potential moderators selected are considered "resilience" factors under Masten's risk and resilience model (2000) and are all self-regulatory factors. In general, the risk and resilience model describes a resilience process in which children capitalize on supports to overcome obstacles. This section will explore the risk and resilience model and explore the commonality underlying all of the selected moderating factors.

Risk and resilience model. In addition to taking into consideration the self-regulatory aspects of the selected socioemotional variables, I am exploring the potential protective role of three factors (i.e., grit, anger regulation, and growth mindset). Thus, a

risk and resilience model also guides my model development and testing. Championed by Masten (2000), the risk and resilience model discusses the potential hazards and protective factors that may influence a child's healthy development. In this model, resiliency is defined as a process that results in positive outcomes despite environmental threats (Luthar, Cicchetti, & Becker, 2000). As such, a therefore a threat must be present in order for a child to be considered "resilient" (Masten, 2000). Although there are many hazardous environmental factors that have the potential to negatively influence a child's development and academic functioning (e.g., low socioeconomic status, child maltreatment, exposure to violence), promotive and protective resiliency factors may help buffer the child and ameliorate the negative environmental effects (Masten, 2000). In the past, some researchers theorized that resilient children were those that had some remarkable strength that helped them push past obstacles (e.g., Pines, 1975). Masten argues, however, that resiliency is a very ordinary process that involves capitalizing on protective factors to overcome or counterbalance negative effects (e.g., Garmezy, Masten, & Tellegen, 1984). In moderation models, this means that protective factors unrelated to the risk factor may moderate the impact of the risk factor (e.g., low reactivity to stress as a moderator of the relationship between stress and an outcome; Masten, 2000).

In this study, I propose that perceived stress is a risk factor because it increases the probability of problematic academic outcomes (see Figure 1 for an illustration of this proposed relationship).

I am exploring grit, anger regulation, and growth mindset as potential protective, moderating factors that may ameliorate the relationship between stress and achievement,

due to indications by past research that they have a positive relationship with achievement. I hypothesize that the resilience process may involve the child relying on self-regulation strategies to move past the obstacle of stress in order to achieve. Figures 2 and 3 below illustrate the proposed resilience model explored in two different ways, one including latent factors and one including observed subscales as moderators. Grit, growth mindset, and anger regulation were selected as moderators, not stress, because the of the use of the resilience model. These factors are hypothesized as modifiable protective factors in the face of stress that influence an already existing relationship between stress and literacy. It is possible that stress could moderate the relationship between social emotional factors and literacy, but the focus of this dissertation is on identifying more easily-modifiable resilience factors that could moderate the stress-literacy relationship.

Self-regulation. This paper examines the potential protective role of three related constructs: grit, growth mindset, and anger regulation and how they may relate to stress and achievement. Although they all fall under the umbrella of socioemotional and protective resilience factors, at first glance they may seem unrelated. However, they are all connected through a self-regulatory framework that will help explain, in part, why they may all be protective factors in the face of stress. This section will examine the self-regulatory learning framework and how grit, growth mindset, and anger regulation may fit within the framework.

The definition of self-regulation is, "the voluntary control of attentional, emotional, and behavioral impulses in the service of personally valued goals and standards," (Duckworth & Carlson, 2013, p. 209). Through self-regulation, individuals

can ignore distraction, modulate negative emotions, and delay gratification to achieve a given goal (e.g., Mischel & Ayduk, 2002). The most famous research conducted on self-regulation is the Stanford "Marshmallow Test" in which 3 to 5-year-old children were asked to delay gratification and self-regulate to avoid eating a marshmallow (a small reward) in favor of later receiving two marshmallows (a larger reward). Children's self-regulation abilities (i.e., resistance of eating the marshmallow) had long term implications – the ability to self-regulate was correlated with higher SAT scores and educational attainment (Mischel, 2014). These results spurred a growth of the self-regulation literature, which has demonstrated similar findings. For example, elementary-aged children who are better able to self-regulate in school have more positive long-term academic outcomes (Duckworth & Carlson, 2013; Nota, Soresi, & Zimmerman, 2004).

***Self-regulated learning*.** Self-regulated learning, or self-regulation within an academic context, has four major domains – cognition, motivation/affect, behavior, and context (Pintrich, 2000). Each of the socioemotional factors selected for this dissertation all play unique and important roles within these domains.

According to Borkowski and Thorpe (1994), motivation and affect set the stage for self-regulatory behavior. For an individual to invest the time and energy in modulating behaviors to meet a goal, they must be inherently interested in or motivated towards achieving that goal. Individuals may feel particularly unmotivated if they feel that they are not capable of reaching that goal. For example, if a student feels like their performance towards a given goal cannot improve with effort (i.e., if they have a fixed mindset), then they would be unlikely to even try to put in the effort (Dweck, 1999; Robins & Pals, 2002), whereas those who feel they can improve with effort (i.e., growth

mindset) may put in the effort and use self-regulation strategies more often (Dweck & Legett, 1988). This may be particularly helpful in the face of stress -- self-regulation is critical in times of stress (Troy & Mauss, 2011) and some may give up on a goal easily if they feel particularly helpless and unable to succeed. As a result, growth mindset may be an important part of self-regulation that motivates and energizes an individual toward a goal.

An aspect of self-regulation that falls under cognition, behavior, and motivation/affect is anger regulation. In the literature, people often mistake self-regulation and anger regulation because they have similar definitions and utilize similar techniques. However, some researchers have considered anger regulation as a component of self-regulation (e.g., Mischel et al., 2011). Like growth mindset, anger regulation may set the stage for self-regulatory behaviors (Howse, Calkins, Anastopoulous, Keane, & Shelton, 2003; Mischel & Ayduk, 2002) in that self-regulation generally requires the regulation of emotion in the face of obstacles. Children who lack effective anger regulation strategies are easily overwhelmed and may be less likely to self-regulate to achieve goals.

The cognition and behavior domain of self-regulation includes setting goals, monitoring progress towards goals, and keeping up effort to achieve a goal (Pintrich, 2000). The cognition and behavior domain's emphasis on persistence towards a long-term goal, is akin to grit's definition, which is, "passion and perseverance towards long term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007).

Thus, all the proposed socioemotional variables tie together because they fit under the self-regulation framework, and a combination of these factors that either support

motivation, affect, or are a part of cognition or behavior domain that may support student achievement and serve as potential moderators in the face of stress. By understanding which potential moderator is most powerful for achievement in the face of stress, schools implementing socioemotional interventions may have a clearer understanding of the types of interventions that might be useful for different groups of students.

The following sections will discuss each of the three potential moderators, grit, growth mindset, and emotion regulation. The discussion will follow a set pattern for each of the variables by: (a) providing a definition of the variable; (b) providing research about the variable's relationship with achievement; and (c) explaining the protective role the variable may play for DLL students. Since DLLs are often culturally diverse students (National Academies of Science, Engineering, and Math, 2017) and because very little socioemotional research has been conducted on DLL students, the following section will also explore studies that utilize culturally diverse samples. This culturally diverse literature serves as the closest approximation to research with DLL students, but may not reflect results that can generalize to all DLL students.

Grit

What is grit? Grit was popularized by Angela Duckworth, who defined it as, "perseverance and passion for long-term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007; pp. 1087). Grit involves consistently working hard to achieve a long-term goal across many years in the face of obstacles. In this study, grit follows the same operationalization as the definition proposed in Duckworth and colleagues' (2007) work and is measured by the Short Grit Scale (Duckworth & Quinn, 2009). Grit was chosen for this study due to its status as a self-regulatory factor and its increasing popularity among

schools, with some treating it as a "magic bullet" to improve academic outcomes among low-income children (Rose, 2014). It has recently been misapplied by some (e.g.., "Grit Week" to boost standardized test scores; Duckworth 2016), critiqued by others (Credé et al., 2017), and seems to require further investigation in its utility for diverse populations (Credé et al., 2017). Though there are some critiques of grit in the literature, its' relationship with achievement across various samples indicates that it could serve as a potential protective factor in the face of stress and thus, is a variable of interest to this study.

Duckworth and colleagues propose that for gritty individuals, achievement is like a marathon in which the individuals capitalize on their stamina (Duckworth et al., 2007). Some authors have argued that grit may share some commonalities with related variables such as motivation (Robertson-Kraft & Duckworth, 2013), conscientiousness (Duckworth et al., 2007), and self-control (Duckworth & Gross, 2014), but overall grit is considered a distinct construct. For example, although self-control is focused on short-term temptation and goals, grit is oriented towards long-term goals and searching for alternatives (Duckworth & Gross, 2014). The same could be said for grit's relationship to conscientiousness – it is believed to overlap with achievement aspects of conscientiousness (e.g., trying to do a good job, completing tasks) but is different in that it focuses on "long-term stamina, rather than short-term intensity" (Duckworth et al., 2007; pp. 1089).

Grit and achievement. The relationship between grit and achievement has varied across studies. While most evidence indicates that grit may be related to achievement (Bowman, Hill, Denson, & Bronkema, 2015; Duckworth, Kirby, Tsukayama, Berstein, &

Ericsson, 2010; Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Strayhorn, 2013), there is also some evidence that this relationship is equivocal (Chang, 2014; Credé, Tynan, & Harms, 2016; Ivcevis & Brackett, 2014).

Of the studies that propose that grit may be related to achievement, most have examined this relationship among adults, university students, and high-performing elementary-aged students. For example, Duckworth and Quinn's (2009) study that validated the Short Grit Scale found that grit predicted GPA in a sample of high-achieving middle and high school students, and that grit was associated with higher educational attainment and fewer career changes among adults, indicating that grit may be related to GPA in high performing students, and that it may have lasting implications for educational attainment. Related, Duckworth and colleagues (2007) also explored the relationship of grit and achievement outcomes among various samples that included adults, Ivy League undergraduates, West Point cadets, and National Spelling Bee competitors. They found that grit could predict educational attainment above and beyond conscientiousness and other Big 5 personality traits among adults, was correlated with higher college GPAs among Ivy League students, predicted completion of summer training at West Point, and was correlated with higher performance in the Scripps National Spelling Bee (Duckworth et al., 2007). Thus, the results of initial studies indicate that grit may be related to achievement in various high-achieving and adult samples.

One meta-analysis by Credé, Tynan, and Harms (2016) explored the grit literature that utilized 88 samples. The results of the meta-analysis suggested that grit is only

moderately related to performance and retention, and that there were mixed results about whether grit was related to performance for all samples. The authors pointed out that while popular, grit interventions may not work equally well for everyone. Their exploration of grit in different samples suggest that very high levels of grit may be harmful, in that it may encourage some to persist too long on a difficult, unsolvable problem (Lucas, Gratch, Cheng, & Marsella, 2015). Another study of grit found that there are different factor structures and relationships with achievement depending on age (Muenks, Wigfield, Yang, & O'Neal, 2016). Thus, grit interventions may not be equally beneficial for all individuals.

Grit and achievement in diverse samples. In addition to grit interventions not being equally beneficial for individuals with different personalities and ages, it is possible that grit may not be related to achievement in the same way for students of all cultural backgrounds. For example, a study by Datu, Valdez, and King (2016) attempted to validate the Short Grit Scale in the Philippines, a country that holds a collectivist culture that differs from the individualistic, performance-emphasizing culture of the United States where the rest of the grit research is conducted. Upon examining the Short Grit Scale in Filipino college and high school students, the researchers found that the factor structure of the grit scale looked different than the one proposed and validated on Western samples (Datu et al., 2016). Both samples found that the consistency of interest subscale of the grit scale did not load onto the higher-order grit scale, and that the consistency and perseverance subscales both negatively predicted negative affect. Only perseverance predicted life satisfaction and positive affect. These preliminary findings of

grit in other cultures suggest that the construct of grit may not function the same way in all samples, possibly depending on the cultural emphasis on collectivism.

One limitation of the existing literature is that most grit research has examined high performing, predominantly White samples whose findings may not generalize to those who are low performing and/or who are ethnic minority students. Of those that do study grit in culturally diverse populations, many of the studies have focused on either high school (Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014), college-level (O'Neal et al., 2016; Strayhorn, 2013), or both (Muenks et al., 2016) populations, though two recently published studies have explored grit in a DLL elementary aged population and will be explored below (O'Neal, 2017; 2018). This study builds upon previous research by adding to the literature in observing how grit may be an important protective factor for one culturally diverse sample (dual language learners) in a population in which grit has been rarely studied (elementary school).

The few studies that have researched the relationship between culturally diverse students' grit and academic achievement have suggested that grit may also be positively related to achievement. For example, in Strayhorn's (2013) research on Black male college students attending predominantly White institutions found that the correlation between grit and college GPA was as strong as the relationship between college GPA and high school GPA and ACT scores. Similarly, in Eskreis-Winkler, Shulman, Beal, and Duckworth's (2014) study that utilized the Short Grit Scale found that for high school juniors in Chicago Public Schools (i.e., a sample that was largely African American), grit explained a small yet significant amount of variance in retention. A study by O'Neal and colleagues (2016) also found that Latina/o non-citizen college students reported

capitalizing on grit to access higher education. Taken together, these findings indicate that grit may also be important for not only high-achieving White students, but also diverse samples of students.

However, grit may function differently in ethnic minority students versus non-ethnic minority students. In a study of Mexican American adolescents, Piña-Watson López, Ojeda, and Rodriguez (2015) found that grit was correlated with academic motivation. It was speculated that grit was particularly salient for the Mexican American adolescent population in their study to push past chronic discrimination and bicultural stressors to maintain academic motivation. Because ethnic minority students face other chronic obstacles that majority -White students do not face (e.g., chronic discrimination, bicultural stressors), grit may be an important motivator for ethnic minority students.

Grit's particular utility for DLL students. To my knowledge, there is only one published research article that has explored the relationship between grit and achievement for elementary-aged DLLs in the face of stress (O'Neal, 2018). In her study, O'Neal found that grit did not significantly mediate the relationship between stress and achievement for third through fifth grade Latina/o DLL students (O'Neal, 2018) though engagement did mediate the relationship. However, more research needs to be done to build support that grit may or may not be particularly important for DLLs. Grit, along with growth mindset and anger regulation, may have particular implications for DLLs, and may be important ways some DLL students manage the challenge of poor quality U.S. dual language literacy education (Gánadara, Rumberger, Maxwell-Jolly, & Callahan, 2003) and English-based school systems. No studies have directly explored grit as a moderating protective factor for academic achievement in the face of risk factors, but

some have called for further exploration of and the moderating role of grit in the prediction of academic performance (Credé et al., 2016).

Grit may be particularly salient for DLL's success in English dominant school systems and literacy achievement. In addition to facing general stress related to school, DLLs face the frustrating task of learning how to speak and read in English to meet their literacy goals and survive in the English-based school systems. Much like the simile used to describe grit, learning English is a marathon in which students must persist past challenges (e.g., flawed literacy instruction) to learn how to read (National Academies of Science, Engineering, and Math, 2017). Though underdeveloped English skills may decrease motivation among DLL learners (e.g., Roche & Kuperminc, 2012; Taboada & Rutherford, 2011), it is possible that grit, and the motivation that comes with grit, can help students push past reading setbacks to become proficient readers and increase literacy achievement.

Some research has already demonstrated that Latina/o DLLs may benefit from the grit of their peers in terms of literacy achievement (O'Neal, 2017). In a study by O'Neal (2017), a largely Latina/o sample of third through fifth grade DLL students found that classroom peer grit, not individual grit, significantly predicted later literacy achievement after adjusting for previous literacy achievement, age, gender, home language, and classroom clusters. It was speculated that the modeling of grit among one's peers and class-level instruction might foster a classroom environment that facilitates DLL students' literacy achievement.

In sum, it is clear that the research on grit is just beginning. While some studies have found that grit is related to achievement (Bowman, Hill, Denson, & Bronkema,

2015; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2010; Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Strayhorn, 2013), more research still needs to be conducted to build upon the few studies that have explored this relationship among culturally diverse samples. As previously discussed, some studies have found that grit is associated with motivation (Piña-Watson et al., 2015), retention (Eskreis-Winkler et al., 2014), and achievement (O'Neal, 2017) in culturally diverse samples, while others have found that grit may not be as important as other socioemotional factors (O'Neal, 2018). This study builds on previous work by exploring the potentially moderating role of grit on the relationship between stress and achievement and compare its relationship to those of other potentially moderating socioemotional factors to help gain clearer insight into the role grit might play for DLL and non-DLL students.

Growth Mindset

What is growth mindset? Growth mindset is another socioemotional factor that became increasingly popular in educational discourse and interventions in recent years. Growth mindset was chosen for this study due to its status as a self-regulatory learning factor, and due to the interest in the participating schools in implementing growth mindset-focused interventions. Growth mindset's popularity in recent years and its relationship with achievement across numerous studies also made it a variable of interest to study.

For the purposes of this study, growth mindset will be defined in line with Dweck and colleagues' (1988) definition of the construct. According to Dweck and Leggett (1988), individuals may have one of two different "theories" of intelligence. These

theories of intelligence are implicit, schematic structures that organize the way individuals perceive the world (Dweck, Chiu, & Hong, 1995; Ross, 1989). One of these theories, fixed mindset, refers to the idea that individuals believe intelligence is fixed, and cannot be improved with practice or effort (Blackwell, Trzesniewski, & Dweck, 2007). Research indicates that these individuals are more likely to give up and withdraw in the face of academic challenge (Dweck & Leggett, 1988). Researchers hypothesize that students with a fixed mindset are likely to be more concerned with performing, not becoming competent in school, and are often likely to forego opportunities for learning (Hong, Chiu, Dweck, Lin, & Wan, 1999).

Growth mindset refers to an individual's belief that intelligence is malleable, rather than fixed (Blackwell et al., 2007). Individuals with a growth mindset are more likely to engage in challenging tasks and put forth effort to grow and overcome obstacles (Dweck & Leggett, 1998). Those who hold a growth mindset also feel more empowered to work towards a goal, viewing failure as due to causes within their control (i.e., a lack of effort). This makes failure seem less threatening, as students view setbacks more as a means to improve (Aronson, Fried, & Good, 2002; Diseth, Meland, & Breidablik, 2014). Researchers found that those who hold a growth mindset are therefore more likely to set goals that focus on increasing ability (versus demonstrating ability) and utilize mastery-oriented strategies (e.g., increase effort, problem solve) instead of withdrawing when faced with challenges (Cury, Elliot, Da Fonseca, & Moller, 2006; Dweck & Leggett, 1988; Hong et al., 1999; Robins & Pals, 2002).

Research indicates that theories of intelligence gradually develop across childhood. By 7-8 years of age, children become more interested in thinking about

ability, and begin to engage in social comparisons – they more frequently compare their abilities with the abilities of others (Dweck, 2002). By 10-12 years of age, children begin to hold either growth or fixed mindset beliefs (Dweck, 2002). In this proposed study, most students will be within the 8 to 10 years of age range, who are just beginning to explore their thoughts centered around intelligence. Because intervention research indicates that theories of intelligence can be taught (e.g., Aronson, Fried, & Good, 2002; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999), this proposed study may help explore whether growth mindset is a protective factor worthy of elementary schools' investment.

Growth mindset and academic achievement. Many studies have found support for the idea that individuals with a growth mindset are more likely to have higher academic achievement (e.g., Blackwell et al., 2007; Diseth, Meland, & Breidablik, 2014; Jones, Wilkins, Long, & Wang, 2012). Some research has explored the idea that growth mindset may decrease stress levels. For example, Yeager, Lee, and Jamieson's (2016) study exploring biological markers of stress and growth mindset found that high school students who learned about growth mindset rated tasks as less stressful, had lower cortisol activity after a stress-inducing task, and had lower sympathetic nervous system activity in addition to higher GPAs.

Holding a growth or fixed mindset also has implications for how students react to challenging academic environments. If students believe intelligence is fixed, they may engage in "self-handicapping" strategies like procrastination or pretending to be sick, to attribute their failure to something other than their "fixed" intelligence (Burkley, Parker, Stermer, & Burkley, 2010; Howell & Buro, 2009; Jones & Berglas, 1978; Rhodewalt,

1994). Unfortunately, this may often bring about failure and feed into a self-fulfilling prophecy, which predisposes students to further disengage from their academics (Nurmi et al., 2003).

Though growth mindset has been more thoroughly explored relative to other socioemotional factors, there are still some limitations of the literature. One limitation is that it been only explored once as a potentially moderating resilience factor for students. In the study, Claro, Paunesku, and Dweck (2016) found that in a sample of high school students from Chile, growth mindset predicted math and language achievement test scores, as well as family income. They also found that students from low-income families who held a growth mindset performed as well on a standardized achievement test as a high-income students with fixed mindset. This study was the first to identify the promise for growth mindset as a potentially moderating role in the face of stress, however more research needs to be conducted to gather more support for this claim. Additionally, another limitation of this research is that, like grit, the majority of this work is cross-sectional and with older students, which may not provide enough generalizable information for schools interested in implementing growth mindset interventions in elementary-aged populations. Children's achievement and growth mindset will be discussed in further detail later in this section, however none of the current studies that involve an elementary-aged sample utilize growth mindset as a moderating variable.

Growth mindset and achievement in diverse samples. Unlike grit, there has been an abundance of studies examining the relationship between growth mindset and achievement in culturally diverse samples. This research has largely taken the form of cross-sectional studies (e.g., Cury, Elliot, Da Fonseca, & Moller, 2006; Kim, Grant, &

Dweck, 2000; King, McInerney, & Watkins, 2012) and interventions (e.g., Aronson et al., 2002; Blackwell et al., 2007; Good, Aronson, & Inzlicht, 2003; Paunesku et al., 2015). Additionally, this research has been conducted across the globe (e.g., Cury et al., 2006; De Castella & Byrne, 2015; Gonida, Kiosseoglou, & Leonardi, 2006; King et al., 2012; Renaud-Dubé, Guay, Talbot, Taylor, & Koestener, 2015), and across socioeconomic statuses (e.g., Blackwell et al., 2007). The vast majority of research has found that growth mindset is related to increased achievement (Cury et al., 2006; De Castella & Byrne, 2015; Jones, Wilkins, Long, & Wang, 2012) and decreased dropout (Renaud-Dubé et al., 2015).

Interestingly, while growth mindset is largely correlated with academic achievement in many groups, growth mindset may not be equally beneficial for all groups. For example, growth mindset was not related to Asian-American high school student achievement (Eaton & Dembo, 1997), but was related to standardized test scores and report card grades in low-income, primarily Latina/o elementary-aged sample (Stipek & Gralinski, 1996). Other research indicates that there may also be a difference in how growth mindsets are held across countries – for instance, Asian cultures have demonstrated to be less oriented towards learning and growth mindset, and more oriented towards a fixed mindset and performance (Kim, Grant, & Dweck, 2000). Despite differences among cultures in growth mindset, researchers have proposed that growth mindset may be helpful in decreasing the achievement gap among ethnic minority students residing in America (Dweck, 2015).

Three particularly relevant research studies are those conducted by Blackwell and colleagues (2007), Paunesku and colleagues (2015), and Mueller and Dweck (1998).

Research by Blackwell, Trzesniewski, and Dweck (2007) explored the relationship between growth mindset and academic achievement by examining the correlations between adolescents' mathematics achievement and growth mindset, and by implementing an intervention to teach students about growth mindset. A longitudinal analysis of a predominantly African American junior high student sample revealed that holding a growth mindset was correlated with an upward trajectory of mathematics grades. After introducing an intervention that taught growth mindset beliefs to seventh graders, the researchers also found that students who participated in the intervention had higher classroom motivation and did not have a downward trajectory in grades as the control group did (Blackwell et al., 2007). A similar study by Paunesku and colleagues (2015) found that ethnically diverse students at risk of dropping out of school had higher semester GPAs and were more likely to earn satisfactory grades in classes after a brief growth mindset intervention (i.e., 45 minutes online).

Mueller and Dweck's (1998) intervention with growth mindset further explored the relationship between growth mindset and achievement among a culturally diverse sample. In their study, students engaged in and received results from a non-verbal IQ test. After taking the IQ test, students were either praised for good performance based on intelligence (fixed mindset) or effort (growth mindset) or received praise with no specific cause. Shortly after being praised, it was found that those who were praised for ability endorsed a fixed mindset and did not find the task as enjoyable as those praised for effort, who endorsed a growth mindset. Later in the study, those praised for ability chose tasks that were more in their comfort zone, whereas those praised for effort chose tasks that are

challenging and could help them learn. Those praised for ability also had lower achievement than those praised for effort.

Taken together, the results of the reviewed studies indicate that holding a growth mindset may have important implications for positive academic achievement among ethnic minority students in the United States. Those who held growth mindset beliefs scored higher on achievement tests, had higher semester GPAs, were less likely to drop out, and were more likely to find pleasure in tasks and choose tasks that were outside of their comfort zones. Although this research all indicates the potential utility of growth mindset, there have not been any studies that have explored growth mindset in DLLs. Because of the nature of the difficult nature of language learning, though, growth mindset may be particularly useful for DLLs. However, it is also possible that since growth mindset is largely a Western ideal, it may not be as beneficial for DLL students from diverse immigrant families.

Growth mindset's particular utility for DLL students. No research to date has explored the particular utility of growth mindset for DLLs; among Chinese students, however, some have found that the relationship between growth mindset and engagement is mediated through resilience (Zeng, Hou, & Peng, 2016). To my knowledge, only one article discusses growth mindset and foreign language learning, which is distinct from dual language learning; foreign language learning is about interest in learning another language whereas DLLs must survive in another language. The research that has been done with foreign language learners has examined the theories of intelligence among those learning another language (Mercer & Ryan, 2009). In their work, Mercer and Ryan (2009) discuss the belief that some individuals are naturally better at learning languages,

relative to others. Through interviews with foreign language learning adults in Austria and Japan, Mercer and Ryan found that some held a fixed mindset, whereas others held a growth mindset. Mindsets also varied across domains – for example, some believed that pronunciation could not be changed through effort, whereas vocabulary learning could be improved with effort. Though this research may provide some insight into foreign language learners' experiences of language learning, it may not adequately tap into all the challenges that DLLs may overcome when learning a language when permanently moving to an English-dominant society.

According to past research, DLLs in the United States must overcome many stereotypes and systemic challenges in their education. Teachers who teach DLL students often over-simplify the material (e.g., Moll, Estrada, Diaz, & Lopes, 1980), or hold lower expectations than they have for non-DLL students (Chamot & O'Malley, 1989). When combined with learning English, a complex language that may be a challenge for many students, these additional environmental challenges may make it hard for DLL students to believe in themselves and persist. Though Dweck has maintained growth mindsets are not solutions for all students, holding a growth mindset may be particularly useful for DLLs in reframing English language learning and viewing the accompanying challenges as things that can be overcome with time and improved, even in the face of much stress. Much like non-DLL students, DLLs may find that growth mindset can help instill in them a desire to take on challenges to improve their own learning. It can help them maintain motivation, and maybe even grit, in the face of many stressors such as learning a complex language and low expectations by teachers. Researchers have found that that growth mindset may help reduce stereotype threat in ethnic minority students (Aronson, Fried, &

Good, 2002), which indicates that growth mindset has the potential to be a similar protective factor in the face of DLL students' stressors.

Anger Regulation

What is emotion regulation? Many researchers have proposed their own versions of the definitions of emotion regulation. One commonly accepted definition of emotion regulation is by Gross (1998/2013), who states that emotion regulation is, "the process by which individuals influence which emotions they have, when they have them, and how they experience these emotions" (p. 1). This study will use the most popular emotion regulation operationalize that was defined by Thompson (1991), who states that emotion regulation is, "the ability to effectively manage one's emotions and control the outer expression of one's internal state in the service of accomplishing one's goals" (p. 28; Thompson, 1994). Emotion regulation can be intrinsic (e.g., working on changing our own emotions) or extrinsic (e.g., trying to influence others' emotions).

It is important to note that emotion regulation studies have relied on broad measures of emotionality and fail to explore specific anger regulation strategies and their relationship to achievement. While studies have relied on broad emotionality, some researchers argue that there is more value in studying discrete emotions. Differential emotions theory states that there are distinct, core emotions that are all experienced the same way, regardless of an individual's cultural background (Izard, Libero, Putnam, & Haynes, 1993). Some have suggested that having discrete emotions means that parents react in emotion-specific ways to their children's discrete emotions (Izard, 1971; O'Neal & Magai, 2005), and that children may use emotion-specific regulation strategies that may not be fully captured by a broad emotionality scale. Thus, this dissertation will also

add to the previous research by examining one emotion (anger) and its specific regulation strategies that students use in the hopes of having a better understanding about what emotion-specific recommendations can be made for practitioners to implement in their classrooms. One specific type of anger regulation strategy, pause anger (or waiting before acting on anger) will be studied because of its particular relevance as a strategy that relies on looking inward and self-regulating before making behavioral decisions. Pause anger is similar to mindfulness, which has been associated with academic achievement in the literature (e.g., Napora, 2013; Brunyé et al., 2013), and may have potential as a protective factor in the face of stress given its focus on living in the moment and self-calm. However, mindfulness has not been explicitly examined as a protective factor in this relationship in the past.

Why anger? Anger is one of the basic emotions that we feel and is frequently experienced as a barrier to learning in school. Anger regulation is a developmental process that occurs via the development of the prefrontal cortex. Younger children are unable to control their anger, but by the time they are in school, they are better able to control it and delay angry impulses. It is generally thought of that anger arises as a result of a blocked goal (Potegal, Stemmler, & Spielberger, 2010), or a perceived wrong (Witherington & Crichton, 2007). Anger can activate an individual to overcome an obstacle (Darwin, 1872) and is distinct from rage in that it is shorter, less intense, and more focused. Anger's utility can be thought of as an upside-down U – it may be beneficial in motivating individuals towards action in moderate amounts but can evolve to frustration and lead to difficulty concentrating and bad behavior in large quantities (Potegal et al., 2010).

Anger was selected, among the many emotions, for this study because of its potential effect on academic achievement. It is a hot, powerful emotion (e.g., Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009) that is more challenging for elementary school students to manage, compared to internalizing or self-conscious emotions. This may result in behaviors that teachers perceive to negatively impact the learning of others (e.g., Wheldall & Merrett, 2006). Other negative emotions like anxiety and fear were not chosen for this study because they are less likely to negatively impact the learning of others, as they often spark internalizing, not externalizing, behaviors. Unregulated anger and frustration in the classroom may ultimately have negative effects on one's own academic achievement (Blair, 2002; Pekrun, Elliot, & Maier, 2009). If students expend their energy on anger or frustration, it is expected that they will not have enough energy to focus and learn in the classroom. The energy typically utilized by higher order cognitive strategies in the classroom, like problem solving and memory, may be consumed by the child's unchecked anger. Anger may also influence the learning strategies we use. In a study of high school and university students, researchers examined the role of academic emotions, or emotions specifically centered around academic achievement, in learning and achievement (Pekrun, Goetz, Titz, & Perry, 2002). They found that when university students experience anger, they less likely use metacognitive learning strategies, and are more likely to use irrelevant thinking and external regulation. The strategies relied on when angry (e.g., rehearsal) are less effective in retaining information.

Though there is some evidence that anger and frustration may impact academic achievement, relatively few studies have explored this relationship since most studies

have focused on other negative emotions, like anxiety (Valiente, Swanson, & Eisenberg, 2012). Those that have researched this relationship have found mixed results – one found that anger was negatively related to GPA (Zhou, Main, & Wang, 2010), while another found there was no relationship (Pekrun, Elliott, & Maier, 2006). A study by Valiente, Lemery-Chalfant, and Swanson (2010) that examined Kindergarten students in regular education classrooms found that teacher-reported student anger was negatively related to math and reading achievement scores. Interestingly, they found that teacher and parent-reported effortful control by children moderated the relationship between anger and achievement. The results of this study indicate that demonstrating control at low levels of anger is related to the highest achievement, whereas at higher levels of anger all students performed similarly, regardless of effortful control.

Given this gap in the literature, the following research will primarily focus on emotion regulation's relationship with academic achievement. Though researchers have generally focused on emotion regulation predicting young children's social or psychological functioning (e.g., Denham, 2007; Eisenberg et al., 1997; Shields & Cicchetti, 1998), few studies have explored the relationship between anger regulation and achievement. Another limitation of the current anger regulation and emotion regulation literature is that none have explored it as a potentially moderating resilience factor for elementary-aged children. As outlined below, emotion regulation has generally been found to be associated with academic achievement in various samples. Since both emotion regulation and anger regulation both work to manage feelings and their potentially negative effects on achievement and goal attainment, anger regulation may be a valuable, yet unexplored, moderator in the face of stress.

Emotion regulation and academic achievement. Some studies have found that emotion regulation may predict achievement and literacy (e.g., Bailey, Denham, Curby, & Bassett, 2016; Graziano, Reavis, Keane, & Calkins, 2007; Gumora & Arsenio, 2002; Howse et al,. 2003; Pekrun et al., 2002), but others have found that the relationship is less clear (e.g., Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009; Willoughby, Kupersmidt, Voegler-Lee, & Bryant, 2011). A study by Graziano, Reavis, Keane, and Calkins (2007) was among the first to examine the relationship between emotion regulation, teacher relationships, and academics in young children. In their study, 325 5-year olds were examined in preschool and kindergarten. Academic performance was assessed by teacher ratings and standardized intelligence measures (i.e., the WPPSI and WIAT). The findings indicated that even after controlling for IQ, general emotion regulation was a significant predictor of academic success and early literacy. In a related study of preschoolers, researchers found that there is an interaction between emotion regulation and emotional support in the classroom, meaning that the relationship between emotion regulation and positive school adjustment is most important for those in less emotionally supportive classrooms (Bailey, Denham, Curby, & Bassett, 2016). Teacher-rated emotion regulation was correlated with prosocial learning and connectivity, whereas dysregulation was negatively correlated with being a positive, engaged learner (Bailey et al., 2016). In middle school students, self-reported emotion regulation predicted GPA even after controlling for IQ (Gumora & Arsenio, 2002), and in college students, emotion regulation strategies were related to class grades and academic motivation (Pekrun et al., 2002).

In other studies, the relationship between emotion regulation and achievement is equivocal. For example, in a study of self-regulation, emotion regulation strategies did not predict kindergarteners' achievement above and beyond attention and inhibitory control (Brock et al., 2009). Similar results were found in a study of preschool students – emotion regulation did not predict achievement when inhibitory control was taken into consideration (Willoughby et al., 2011). However, while these studies did not find a relationship between emotion regulation and achievement, it does not mean that anger regulation is not an important potential moderating factor for DLL students. The below sections will outline the current research on emotion regulation and academic achievement in diverse samples, and explore how anger regulation may be particularly important for DLL students.

Emotion regulation and achievement in diverse samples. Though few studies have explored the relationship between emotion regulation and achievement, even fewer have explored this relationship in diverse samples.

Trentacosta and Izard (2007) examined emotion regulation among young children. In their study, Kindergarteners were recruited from urban areas and followed into first grade. The majority of the sample was African American. Teachers completed the Emotion Regulation Checklist in Kindergarten, and children completed the WIAT – II (a measure of academic achievement) in first grade. Results of the study indicated that teacher-rated emotion regulation was related to academic achievement as rated by the WIAT – II and teacher ratings in first grade. Emotion regulation was also correlated with first grade attention to academic tasks. One could conclude that those with better emotion

regulation skills are more likely to pay attention to academic tasks and outperform those with poorer emotion regulation skills, as rated by teachers.

Additional studies by Elias and Haynes (2008) and Graziano and colleagues (2007) that studied related constructs (social-emotional competence and emotion awareness) also support these findings. Elias and Haynes (2008) used a rating scale of social-emotional competence on a sample of African American and low-income third graders. They found that social-emotional competence early in the year as rated by teachers predicted end-of-year reading and math grades. Graziano and colleagues (2007) found that in a sample of White and African American kindergarteners, parent-reported emotional awareness predicted literacy and math achievement, even after adjusting for IQ. Both research studies support the idea that having emotion regulation and knowledge about emotions may be positively related to academic achievement.

The relationship between anger regulation and achievement in diverse samples remains unclear. This dissertation adds to the literature by examining the use of one specific anger regulation strategy to see how it may relate to achievement in both non-DLL and DLL samples, in the hopes of gaining information about helpful interventions for teachers who are teaching DLL students.

Anger regulation's particular utility for DLL students. Although there is not very much research conducted in diverse samples with emotion regulation and achievement, it is possible that anger regulation may be especially important for DLL. However, there have been mixed results. One study by Vanderbilt-Adriance and Shaw (2008) used a 12-year longitudinal to explore the potential moderating role of emotion regulation between neighborhood disadvantage and social adjustment for low-income

children but found that emotion regulation did not moderate this relationship. Oppositely, some have suggested that related constructs like effortful control may serve as a protective moderator in the relationship between emotions and academic achievement (Valiente, Swanson, & Eisenberg, 2012). As previously discussed, DLL students are often low SES and experience higher rates of environmental stress than their non-DLL peers (e.g., Child Trends Data Bank, 2014; Romero & Roberts, 2003). This stress can be especially distracting when trying to overcome difficulties in learning the English language and can leave students feeling easily angry and frustrated. Having positive, constructive strategies for dealing with frustration and anger in the classroom may be very beneficial for DLLs.

Contribution of this Study to the Literature and Potential Implications for Schools

It is clear that the achievement gap is a pervasive problem that may contribute to worse life outcomes and perpetuate a cycle of poverty (McKinsey, 2009). One factor that researchers suggest may maintain the achievement gap is stress (e.g., Levy et al., 2016). Schools have turned to implementing socioemotional interventions to help increase achievement in the classroom (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012; Lee, Smith, Perry, & Smylie, 1999). However, although there has been research on socioemotional factors and their relationship with achievement, there has been relatively little research on how these factors may help protect reading achievement under stress.

Due to the limited amount of literature on the potential protective role of socioemotional factors for DLLs, this study will be the first to examine the relative utility of grit, growth mindset, and anger regulation for DLLs and non-DLL students in

moderating the relationship between stress and achievement. It is especially important to gain an understanding of these factors because the results can help inform future socioemotional interventions. It is a mistake to assume that interventions and research that apply to one group of students (i.e., English language speakers) will apply to DLL students, who represent a group of students whose needs are vastly different from those of native English speakers. Since researchers in the past have called for culturally-specific socioemotional intervention research and implementation (e.g., Becker & Luthar, 2002), this study hopes to build upon previous work by helping to identify which modifiable protective factors may be most helpful in trying to combat the achievement gap for which students in a previously unstudied population.

Questions and Hypotheses

To explore the relationship between stress and literacy achievement, and how this relationship may be influenced by various socioemotional factors, I propose the following research questions and hypotheses:

1. Model 1: What is the relationship between stress and reading achievement?
    i. *Prediction*: Stress will be inversely related to reading achievement
2. Model 2a: Which socioemotional factors serve as protective factors in the relationship between stress and reading achievement?
    i. *Prediction*: All of the factors will moderate this relationship, but anger regulation will have the strongest impact since it is specifically targeting one's emotions, which can be elicited by stress.

3. Model 2b: Is the moderation process similar or different for DLL and non-DLL speakers?
    i. *Prediction*: Although there has been very little literature exploring the relationships between grit, emotion regulation, growth mindset, and achievement in DLL students, I predict that these factors will be especially important for DLL, more so than for non-DLL students. It is expected that the moderations may be different since some of the variables have different relationships in different samples, however due to the lack of research on DLL students, I cannot make any strong predictions about which would be the strongest moderator.
4. Model 3: Which subscales (if any) are driving the significant moderations in the relationship between stress and achievement?
    i. *Prediction:* Due to the lack of research on each distinct subscale, I cannot make any strong predictions about which would be the strongest moderator, and thus predict that all would be equally driving the significant moderations. This will serve as part of a post-hoc moderation analysis.

Chapter 3: Method

This study is a short-term longitudinal design that uses data from third, fourth, and fifth grade classrooms in two elementary schools in Maryland. Data for this study were collected from February to June of 2015. This data was originally collected to be used as a comparison for variables studied on a lower income student population located

in the same county. The data from the previous study was collected throughout the 2013-14 school year. The measures used in this study were the same as those used in the comparison school study, with the addition of measures of anger regulation and growth mindset. Researchers obtained parent consent and student assent. Students were administered measures that assessed their perceived stress, grit, growth mindset, and anger regulation use at home and in school. Further details on the study design are below.

Participants

Students were recruited from 27 classrooms across two elementary schools in Montgomery County, Maryland. According to the annually published school demographics ("School Facts at a Glance") these two schools are comparable on many demographics. Both schools were located in upper-income neighborhoods but serve some students in the lower-income surrounding areas; about 14% of students are classified as Free and Reduced Meal Status (FARMS), and approximately 6% of students are English as a Second Language (ESOL). Student ethnicities are also relatively comparable; approximately 57% of students are White non-Hispanic, while 9-16% are Hispanic, 12-15% are Black non-Hispanic, 5% are Asian American, 7% are multi-ethnic, and <5% are American Indian. The school district did not allow us to collect information about socioeconomic status or immigrant status.

Team members from the Emotions, Equity, and Education lab visited with teachers during team meetings to discuss student participation and their own participation in the study. They handed out consents for students to bring home to their families. Parents were asked to provide their written consent for students to participate in the study. Of the 718 students across the two schools in 3rd through 5th grades, 266 students

and parents agreed to participate in the study, representing an overall 37% recruitment rate. This rate ranged from 12% to 67% per class. The data from 251 students will be analyzed due to the fact that 15 were not in school during the interview dates. Demographics of the participants in the study are proportional to those found in the schools (62% White Non-Hispanic, 12% Multi-racial, 10% African American, 6% Hispanic, 5% Asian American, and 6% other; see Table 1 in Appendix A). The mean age of participants is 9.71, and 56% of the sample is female. Participants were evenly divided among grades.

Students were identified as DLL if they or their parents reported that a parent spoke a non-English language at home (Migration Policy Institute, 2017). Of the 251 students in the sample, 32% were identified as DLL (n = 81). DLL participants were more ethnically diverse than non-DLL participants (see Table 1); the DLL group is 63% ethnic minority, whereas the non-DLL group is 26% ethnic minority. Though the DLL group is majority minority, it is unlikely that differences between DLL and non-DLL participants would be due to low-income status since ethnic minority and White groups received Free and Reduced Meals (FARMS) at similar rates, according to school-provided demographics.

Procedures

The research was approved by both the University of Maryland Institutional Review Board (IRB) and the Montgomery County Public Schools IRB. The dataset used for this study included three time points. However, this study will only use two of those time points – the first and last time points, Time 1 and Time 3, respectively. There is approximately three months between students' Time 1 and Time 3 interviews. At each

time point, researchers read the surveys aloud to each student to make sure that all students understood the questions. Answer options were also presented to the students on a printed scale so that they had the opportunity to either point to their answer if they did not feel comfortable sharing their response out loud. After completing the survey, students completed a three-minute standardized literacy test. Twenty-one percent of students' data were collected in a small group setting instead of one-on-one due to time constraints. As a result, analyses will determine if the results are the same with and without the group format participants.

Measures

The items for each measure can be found in Appendix B.

Perceived stress. Perceived stress was assessed via a modified version of the ten-item Perceived Stress Scale (PSS – 10; Cohen & Williamson, 1988). The modified version of the Perceived Stress Scale was adapted for use with younger children and contained language that focused on school work. Participants indicate the degree to which respondents view life situations as uncontrollable and overwhelming, and rate statements (e.g., "In the last month, how often have you felt nervous and 'stressed (in school)'?") on a 5-point scale (1= *Never*, 5= *Very often*). This scale demonstrates good internal consistency among college students (α = .89; Roberti, Harrington, & Storch, 2006), but has not been standardized on an elementary-aged sample. Thus, this measure will be evaluated using a Confirmatory Factor Analysis to ensure its factor structure and consistency.

Grit. Grit was assessed via a modified version of the eight-item Short Grit Scale (Grit-S; Duckworth & Quinn, 2009). The modified version of the Short Grit Scale was

adapted for use with younger children and included language that focused on school work (e.g., "I have difficulty maintaining my focus on projects that take more than a few months to complete" was changed to, "It's hard to focus on school work that takes a long time to complete." Students rated their agreement with each item (1 = *Not at all*, 5 =*Very much*), including four items in the grit-consistency of interests subscale (e.g., "I often set a goal in school but later give up and choose a different goal,") and four items in the grit-perseverance of effort subscale (e.g., "I finish whatever I begin in school"). A previous study by O'Neal (2017) that utilized this adapted measure with a low-income DLL sample found adequate test-retest reliability (r = .52) and internal consistency (α = .72).

Growth mindset. The study used an eight-item subscale of a larger growth mindset measure titled the Resiliency: Helpless vs. Mastery-Oriented Responses to Failure scale (Blackwell et al., 2007). Students are read a vignette about failing a quiz in a favorite class. After, students rate how much they agreed with reasons for their failure and strategies for the future (1 = *Disagree a lot*, 6= *Agree a lot*). Some of these statements embodied a growth mindset (e.g., "I would feel motivated, like I wanted to work harder at it"), while other items represented a fixed (e.g., "I would try not to take this subject ever again"). The subscale has adequate internal consistency among ethnically diverse middle school students (α = .76 – .84; Blackwell et al., 2007).

Because the questionnaire was originally standardized on middle and high school students, the author of the measure provided to the researchers adapted questions tailored to a younger age group (L. Blackwell, personal communication, February 11, 2015). The original scale consisted of two subscales: helpless attribution and positive strategies; the

new items included responses to failure such as, "I would feel sad or depressed," or "I would ask someone for help with the subject."

Anger regulation. Anger regulation was assessed using the Emotions as a Child – Emotion Regulation Strategies' pause anger scale (EAC-ER; Magai & O'Neal, 1997), which measures students' self-rated use of strategies that include pausing before reacting in anger. Students were asked to first rate how often they felt angry or frustrated over the past month (1 = *Never*, 5 = *Very often*). Students were then asked to think about those times they felt angry or frustrated and rate how often (1 = *Never*, 5 = *Very often*) they would pause their anger (e.g., "take a few deep breaths before reacting," "calm myself down," and "wait before acting on my anger"). A confirmatory factor analysis was completed on the pause anger items to confirm its factor structure, but the EAC-ER has produced scores with adequate internal consistency and predictive validity with externalizing problems among urban, ethnic minority adolescents (Magai & O'Neal, 1997).

Reading fluency and comprehension. Students' literacy was assessed using a brief measure of reading skills. Each participant completed the Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner, Torgesen, Rashotte, & Pearson, 2010), which is a measure of silent reading fluency (speed), decoding (accuracy), and comprehension. Students read as many increasingly complex sentences as possible within a three-minute time limit and decide if each sentence is true or false (e.g., "An apple is blue"). The TOSREC has high alternate form reliability ($\alpha = .91$; Wagner et al., 2010), and demonstrates convergent validity with other measures of literacy achievement

such as the MAP – R (r = .50 - .71, p <.001) and the Oral Reading Fluency assessment (Johnson, Pool, & Carter, 2011).

Standardized test scores in reading. The school district provided students' scores on a standardized achievement test in reading, titled the Measures of Academic Progress in Reading (MAP-R; Northwest Evaluation Association, 2009). MAP-R is an untimed test conducted on a computer. The assessments are nationally normed tests for children from second grade through high school that demonstrate high internal consistency (α = .61-.92; Northwest Evaluation Association, 2009). MAP – R was used as a reading achievement outcome. MAP – R measures students' identification of key ideas and details in literature and informational text, and vocabulary acquisition and use.

The spring MAP - R performance task was conducted from April to June, 2015. The achievement outcomes were implemented by the school district one month after the Time 1 assessments were started. Therefore, there was overlap in administration of Time 1 moderators and predictor with MAP assessment. Model-testing, however, does include the previous fall MAP assessment as control variables which were implemented from October to December, 2014.

Potential covariates. Since there are many factors that have demonstrated that they may also play a role in the relationship between stress and achievement, I included some potential controls that include age, gifted center participation, interview type (i.e., if students were interviewed individually or in a group), and gender in order to control for as many exogenous variables as possible that may affect this relationship.

Analytic Approach

Missing data. After accounting for those that did not attend their Time 1 interview date, 251 participants were retained in the data set. Of those 251 participants, only 172 had complete data; due to time constraints, some students did not complete Time 3 interviews. In instances where Time 3 TOSREC was missing, Time 2 TOSREC scores were substituted, given that there was a significant chronological overlap between Time 2 and Time 3 data collection and that the TOSREC is generally not sensitive to change over such a short time period. After substitution, 17% of participants remained that did not have a Time 3 TOSREC. Six percent of participants did not have a Spring MAP – R score due to missing data from the school district. To estimate robust missing values from the sample's non-missing data and to handle non-normality of data, the MPlus option for maximum likelihood estimation with robust standard errors, MLR, was used. This method is recommended above FIML because of its ability to be robust to both non-normality and non-independence of observations when used with complex data whereas FIML are only robust to non-normality (Múthen, 2011).

Analytic procedure. Descriptive statistics, correlations and preliminary reliability analyses were run using IBM SPSS Statistics version 23, and factor analyses and structural equation models were run using MPlus Version 8 modeling software.

Prior to any model testing, descriptive statistics (e.g., means, standard deviations, and Cronbach alpha coefficients) were run in SPSS for stress, grit, growth mindset, and anger regulation. To examine the relationship between stress and reading achievement (Question #1) I first conducted an exploratory factor analysis in SPSS using principal axis factor extraction of the perceived stress items with direct oblimin rotation procedure

to examine if perceived stress best fit a one or two factor structure in the entire sample, and within subgroups. Items were considered to load sufficiently onto a factor when loadings measured ≥ .40 on the primary factor, and ≤ .20 on all secondary factors. After conducting factor invariance testing to determine if the factor structure varied across groups, I conducted a latent variable path analysis in MPlus. I initially ran one model that included both Time 1 and Time 3 reading achievement measures in the overall sample. Data-model fit was determined by multiple measures of model fit that included the χ^2 goodness-of-fit value (smaller values indicate better fit), the root mean square error of approximation (RMSEA) (values less than or equal to .06 indicate good fit), the standardized root mean square residual (SRMR) (values less than or equal to .08 indicate good fit), and the comparative fit index (CFI) as an incremental index (values of less than or equal to .95 indicate good fit; Little, 2013). Some models had difficulty converging, and fit indices revealed that after controlling for previous achievement that the model was psychometrically inadequate and the previous achievement explained the majority of the variance in the literacy outcome. Thus, due to a small time difference in T1 and T3 outcomes, the model was run using a cross-sectional design that maximized the sample size and that included Time 1 TOSREC and MAP – R as outcomes and only latent stress as a predictor. The model was also tested using each reading outcome separately, and each outcome with observed stress (not latent stress) as the independent variable, given challenges in convergence. The model was then run for each subgroup.

To examine the potential protective role of grit, growth mindset, and anger regulation in the relationship between stress and achievement (Question #2) and to see if this relationship was different between the two groups (Question #3), I first conducted a

confirmatory factor analysis of grit's and growth mindset's two-factor structure in MPlus, comparing both a one-factor solution and a two-factor solution using AIC Indices in the entire sample and across subsamples. A cutoff of .65 was used for internal consistency as suggested in previous work (e.g., DeVellis, 2003). Due to poor psychometrics (i.e., low internal consistency and low factor loading), one of grit's subscales (consistency of interest) and one of growth mindset's items were removed; note that some grit models have been tested by the grit developer using only grit-perseverance of effort (e.g., Eskreis-Winkler et al., 2014). Confirmatory factor analysis was also used to confirm the one-factor anger regulation scale which loaded adequately onto one factor across the entire sample and across subsamples. After confirming factor structures, factor invariance testing was used to compare factor structures across subsamples. Once factor invariance was found between the two groups, the initial model that included latent factors of grit, growth mindset, and anger regulation as moderators, along with latent perceived stress as an independent variable and each reading variable as a separate outcome was run. After centering all variables to control for classroom effects and double centering the variables for an interaction effect to increase power, the data could not converge. As a result, the observed variable versions of all indicators were used moving forward. Additionally, to avoid further issues of convergence and to maintain consistency between subsamples, I made a decision to run each of the outcomes in separate models. Thus, observed grit, growth mindset, and anger regulation and observed stress were used in two models: one with Time 1 TOSREC as an outcome, and a separate one with MAP – R as an outcome. After, covariates of age, sex, highly gifted center status, school, and ethnicity were added into the model. Finally, a multiple group comparison test was used to determine if the

difference between the estimates of each of the moderators in the subgroups was significantly different from zero.

To explore if any of the subscales were driving these significant moderations (Question #4), each moderator was broken into its subscale and included into one model for each outcome. Thus, grit's perseverance of effort subscale, growth mindset's attributions and strategies subscales, and the anger regulation scale were all included.

Chapter 4: Results

Descriptive Statistics

Tables 2 and 3 display the means, standard deviations, alpha coefficients, and ranges for stress, grit, growth mindset, anger regulation, and achievement outcomes for the total group and by subgroup.

DLL mean perceived stress scores (M = 26.09) were significantly higher than those of non-DLL students (M = 24.03; $t(242) = -2.49$, $p < .05$). Internal reliability coefficients of the perceived stress scale were all in the excellent range (α = .82 for the overall sample, α = .84 for the DLL sample, α = .80 for the non-DLL sample). Younger students also reported more perceived stress (F (3, 240) = 3.10, $p < .05$), though ratings of stress did not differ by sex, interview type, school, ethnicity, and Highly Gifted Center participation.

Full scale scores of grit for the overall (M = 3.87), DLL (M = 3.77), and non-DLL (M = 3.92) samples were all higher than those reported by the high school student standardization sample used in work by Duckworth and colleagues, which are all 3.4 (Duckworth et al., 2007; Duckworth & Quinn, 2009). Internal reliability coefficients were acceptable for the overall sample (α = .66) and the non-DLL sample (α = .70), but were not acceptable for DLL students (α = .55). Perseverance of effort subscale alphas were acceptable for all subsamples (α = .70 for total sample, α = .65 for DLL, α = .72 for non-DLL), however the consistency of interests subscale was not (α = .47-.57). There were significant differences in the means between the DLL and non-DLL groups for the overall grit score $t(246) = 2.03$, $p < .05$ and the perseverance of effort subscale $t(243) = 3.10$, $p < .01$, with non-DLL students rating themselves higher. Females rated themselves

as having a stronger consistency of interests, relative to males $t(239) = -2.12$, $p < .05$. There were also significant differences by age; older students reported higher grit (F (3, 244) = 5.77, $p < .01$) and higher perseverance of effort (F (3, 241) = 6.31, $p < .01$). However, grit did not differ by ethnicity, interview type, school, or Highly Gifted Center participation.

Overall, growth mindset had the same mean across the full, DLL, and non-DLL samples (M = 4.94). The means of the growth mindset attributions subscale for the full, DLL, and non-DLL samples (M = 4.46, 4.44, and 4.47, respectively) were higher than the means of the strategies subscales (M = 5.23, 5.31, and 5.20, respectively). Means did not differ by ethnicity, sex, school, or Highly Gifted Center participation. However, means were significantly different by interview type, t (245) = 2.29, $p < .05$, with those that were interviewed individually (M = 4.98) reporting higher growth mindset than those interviewed in a group (M = 4.74). The growth mindset scale demonstrated acceptable reliability across the full and subsamples (α = .65-.73). However, the attributions subscale (α = .43-.62) and the strategies subscale (α = .52-.68) were not consistently acceptable. Only the strategies subscale was acceptable in the non-DLL sample (α = .68).

Overall, emotion regulation demonstrated strong internal consistency and reliability (α = .70-.71). The pause anger subscale also demonstrated acceptable to strong internal consistency (α = .67-.82). There was no previous research to provide a mean-level comparison.

On the reading achievement outcomes, the MAP – R and the TOSREC, non-DLL students performed significantly higher, relative to DLL students. The mean percentile on the MAP – R for non-DLL students was the 86th percentile, whereas the mean for the

DLL students was at the 74th, which was a significant difference, $t(234) = 4.04$, $p < .001$. Non-DLL students ($M = 113.99$) also significantly outperformed DLL students ($M = 108.16$) on the TOSREC, $t(243) = 2.703$, $p < .01$. Those enrolled in the Highly Gifted Center outperformed those not enrolled in the Highly Gifted Center on the TOSREC, $t(239) = -8.56$, $p < .01$ and on the MAP – R, $t(230) = -6.83$, $p < .01$, and those that were White outperformed those that were non-White on the TOSREC, $t(243) = -2.55$, $p < .05$, and the MAP – R, $t(234) = -4.30$, $p < .001$. Additionally, performance on the TOSREC, $t(243) = -2.92$, $p < .01$ and the MAP – R, $t(234) = -3.53$, $p < .001$, was significantly different between the two schools, while performance on the TOSREC only, $t(243) = 2.32$, $p < .05$ was significantly different by interview type. Performance on the achievement tasks did not vary by sex or age.

Correlations between Variables

Correlations were examined between all of the variables, across the entire sample and within subgroups. Table 4 displays a correlation matrix for the observed variables of interest. Most moderating socioemotional variables were correlated with MAP – R spring in all subsamples. Growth mindset ($r = .16$-$.26$) and grit ($r = .21$-$.29$) were correlated with MAP - R in all samples, and anger regulation was correlated with MAP – R in the non-DLL subsample ($r = .18$). In terms of Time 3 TOSREC, grit ($r = .23$-$.37$) was correlated only in the DLL and full samples, growth mindset was correlated only in the DLL sample ($r = .31$) whereas anger regulation was uncorrelated with the achievement outcome. Perceived stress was also negatively associated with MAP – R ($r = -.17$) and

TOSREC (r = -.17) in the full sample only. Perceived stress was moderately to strongly correlated with itself across all time points (r = .67-.72).

Exploring Model 1: The Relationship between Stress and Achievement

To answer the question, "What is the relationship between stress and reading achievement?", observed stress and its relationship was explored with reading achievement as an observed variable, and then reading achievement as two separate outcomes (MAP – R and TOSREC). The relationship between observed stress and each of the outcomes was also explored.

Exploratory factor analyses. First, an exploratory factor analysis was conducted on the perceived stress scale for all subgroups. As proposed by Cohen and colleagues (1988) it was anticipated that the perceived stress measure would all load onto one factor. Parallel analysis in SPSS was used to determine if one factor would emerge from the data. Based on the cutoff of eigenvalues of greater than 1, it seems that the data would have one factor, indicating that the measure is unidimensional. The one factor explained 48.10% of the variance of the measure.

Factor invariance testing. Next, factor invariance testing was conducted to determine if the proposed factor structure of the perceived stress scale varied by group. The method outlined in Byrne (2012) was used to determine factor invariance. As explored in the confirmatory factor analysis section above, a baseline model structure was established for the perceived stress scale for each group. Once the baseline model was established, two models were run comparing the DLL and non-DLL groups – one that held equality constraints for the parameters (i.e., the measurement model), and one in which the parameters estimated in the baseline model for each group were used (i.e., the

configural model). After running the two models, a Chi-square difference test using the Satorra-Bentler Scaled Chi-Square was run. Results indicated that the $\Delta\chi^2$ of 10.46 (df = 10), was less than the significant value of 18.04 at p = .05, indicating that the factor structure demonstrated factor invariance.

Path analysis: Total sample. Originally, it was proposed that the study design would utilize Time 1 stress with Time 3 achievement measures, while controlling for previous achievement. Using both MAP – R Spring and Time 3 TOSREC as outcomes and controlling for MAP – R Fall and Time 1 TOSREC, the model fit was inadequate, RMSEA = .34, CFI = .91, SRMR = .10, and some models failed to converge. Instead of taking a longitudinal approach to the data, it was decided that the study would proceed using a cross-sectional design with all Time 1 variables and not controlling for prior achievement, given the poor model fit and convergence challenges. Although utilizing a longitudinal design would be ideal, a cross-sectional approach was used because Time 1 and Time 3 literacy outcomes were administered close together (e.g., 1-2 months) and were strongly correlated. Additionally, when the longitudinal model was run, prior achievement explained the majority of the variance in literacy outcomes, making it more challenging to identify variance attributed to the moderators.

Results indicated that across the entire sample, fit statistics were adequate, RMSEA = .04, CFI = .97, SRMR = .05. There was a significant relationship between latent stress and the achievement outcomes when including them in the model simultaneously (Stress Estimate [SE] = -.18 (.07), p <.05, CI [-.31, -.04] for the outcome Time 1 TOSREC, SE = -.17 (.07), p <.01, CI [-.31, -.04] for the outcome MAP – R, see Table 6). This was consistent with the hypothesis for Model 1, that latent stress was

negatively related to achievement outcomes. When using each outcome in its own model, the results were nearly identical; latent stress was still negatively related to Time 1 TOSREC (Estimate = -.18 (.07), p <.05, CI [-.29, -.07]) and MAP – R (Estimate = -.18 (.07), p <.05, CI [-.32, -.04]). In anticipation of an underpowered Model 2 and given that stress displayed a strong alpha level across all subsamples, the relationship between observed stress and the achievement outcomes was also explored. This model demonstrated adequate fit, RMSEA = .00, CFI = 1.00, SRMR = .00. Again, results supported my hypotheses. Time 1 TOSREC (Estimate = -.17 (.06), p < .01, CI [-.29, -.05]) and MAP – R (Estimate = -.16 (.06), p < .05, CI [-.29, -.04]) were both negatively related to stress. Similar results were found when using Time 1 TOSREC and MAP – R as separate outcomes in separate models; see Table 6 for estimates and p-values.

Path analysis: DLL subsample. When attempting to use both outcomes with latent moderators and latent stress, the data could not converge for the DLL sample. Thus, the model was run two times, with each outcome separate. Results indicated that in a model that consists of Time 1 TOSREC as an outcome, model fit was adequate, RMSEA = .05, CFI = .96, SRMR = .04; however, Time 1 TOSREC was not related to stress (Estimate = -.16 (.12), p > .05, CI[-3.52, .03]). Model fit statistics indicate that the model utilizing Time 1 observed stress and MAP – R were adequate, RMSEA = .056, CFI = .95, SRMR = .07, however stress was not related to MAP – R (Estimate = -.09(.12), p > .05, CI[-.32, .15]).

Observed stress was then used as a predictor, with both TOSREC and MAP – R as outcomes in the same model. Results again indicated that stress was neither related to Time 1 TOSREC (Estimate = -.18(.11), p > .05, CI[-.40, .04]), nor MAP – R (Estimate =

-.05(.12), $p > .05$, CI[-.27, .18]). When entering them as separate outcomes in separate models, again stress was not related to either achievement outcome (see Table 6 for estimates).

Path analysis: Non-DLL subsample. A model including latent stress and both achievement outcomes demonstrated adequate fit, RMSEA = .03, CFI = .98, SRMR = .05. Analyses revealed that stress was negatively related to MAP – R (Estimate = -.20(.08), $p < .01$, CI[-.37, -.04]) but not Time 1 TOSREC (Estimate = -.13(.09), $p > .05$, CI[-.30, .04]) for the Non-DLL subsample. Similar results were found when putting the outcomes into their own models (see Table 6 for estimates and p-values).

Observed stress was then used as a predictor, with both TOSREC and MAP – R as outcomes in the same model. Results again indicated that stress was not related to Time 1 TOSREC (Estimate = -.12(.08), $p > .05$, CI[-.28, .03]), but was related to Spring MAP – R (Estimate = -.17(.08), $p < .05$, CI[-.31, -.02]). When entering them as independent outcomes in each, again nearly identical results were found (see Table 6 for estimates).

Exploring Model 2: The Potential Moderation of the Relationship between Stress and Achievement

When exploring Model 1, it was apparent that there may be sample size and model convergence issues. For example, when using latent stress and both outcomes, the DLL model did not converge. To avoid further issues of convergence and to maintain consistency between subsamples, I made a decision to run each of the outcomes in separate models.

Confirmatory factor analysis of grit. Given that the short grit scale has been used in the literature with similarly-aged samples (O'Neal, 2017), a confirmatory factor analysis was used to determine whether it demonstrated a two factor structure in these subsamples, as it had in previous literature. First, CFAs were run with all items loading onto a single grit factor. Next, CFAs were run with all items loading onto their respective subscales (consistency of interest and perseverance of effort). Results from the total sample (RMSEA = .05, CFI = .97, SRMR = .04) and the non-DLL sample (RMSEA = .04, CFI = .98, SRMR = .05) and a comparison of AIC values for the full scale and subscale CFAs (see Table 7) revealed that for both of these samples, a two-factor structure fit the data better than a one-factor structure. In both cases, no additional items were needed to be correlated with each other to attain an adequate fit, and all items loaded on to each subscale with estimates of at least .40 or above.

The CFAs for grit in the DLL subsample, however, displayed different results. Neither the single scale (RMSEA = .07, CFI = .88, SRMR = .09) nor separate subscale (RMSEA = .09, CFI = .81, SRMR = .09) CFAs adequately fit the data. In fact, the

separate subscale factor model was a poorer fit for the data. This was consistent with the findings that the internal consistency for both the overall grit scale (α = .55) and the consistency of interest subscale (α = .47) were poor. Given that both the overall grit scale and the consistency of interest subscale had weak psychometrics in the DLL sample, a decision was made to only use the perseverance of effort subscale as the grit moderator moving forward for all groups in an effort to maintain consistency across groups.

Confirmatory factor analysis of growth mindset. A confirmatory factor analysis was used to determine whether it demonstrated a two factor structure in these subsamples, as it had in previous literature. First, CFAs were run with all items loading onto a single growth mindset factor. Next, CFAs were run with all items loading onto their respective subscales (strategies and attributes). For the total sample, modification indices recommended adding in four covariations for the single scale model and three for the subscale model, which improved model fit. Results from the total sample's single scale model (RMSEA = .05, CFI = .97, SRMR = .04) and subscale model (RMSEA = .05, CFI = .97, SRMR = .04) and a comparison of AIC and χ^2 values for the full scale and subscale CFAs (see Table 8) revealed that there was not a meaningful difference in model fit for the different factor structures. This was also the case for the DLL and non-DLL subsamples. For the DLL subsample, modification indices recommended adding in three covariances for the single scale model and three for the subscale model; for the non-DLL subsample, this was four covariances for both models. To keep the model as simple as possible and to keep consistent with the original proposal, the single factor of growth mindset will be used for Model 2 moderation testing.

One note is that in the DLL sample, the item "I would work harder in the subject from now on," did not load well onto neither the single scale model nor the strategy subscale (i.e., it did not have an estimate of at least .40). In fact, the estimate for this item was .10 or less. As a result, this item was removed from analysis for all groups, to maintain consistency.

Confirmatory factor analysis of anger regulation. Confirmatory factor analysis was used to confirm that the three anger regulation items loaded well onto one scale. All items loaded as expected in all samples and model fit was adequate (RMSEA = .00, CFI = 1.00, SRMR = .000).

Factor invariance testing. After confirming the factor structures separately, all items were then placed into the same model to conduct one large confirmatory factor analysis, with the one growth mindset item and grit consistency of interest subscale removed. All of the items loaded well onto the expected scales as expected (i.e., an estimate of .40 or above), and model fit was adequate for all subgroups (see Table 9). One covariance was recommended by modification indices and put into the model for the Non-DLL group and five for the DLL group.

Then, factor invariance testing was conducted to determine if the proposed factor structure of the moderators varied by group. Again, the method outlined in Byrne (2012) was used to determine factor invariance. After running the configural and measurement models, a Chi-square difference test using the Satorra-Bentler Scaled Chi-Square was run. Results indicated that the $\Delta\chi^2$ 10.36 (df = 13) was less than the significant value of χ^2 = 22.36 at p = .05, indicating that the factor structure demonstrated factor invariance.

Latent variables and power decisions. Originally, it was proposed that the study design would utilize latent variables for both stress and moderators. Again, keeping consistent with the fact that using both achievement variables at the same time meant that the DLL model would not converge, TOSREC and MAP – R were used as separate outcomes in two separate models that contained both latent stress and all latent moderators in the same model. Results indicated that none of the interactions were significant, though growth mindset was trending significant (Estimate = -.22(.116), p = .056). Given that questions were raised during the proposal phase of the dissertation that the study may not have an adequate sample size to find significant results, a z-to-power calculator was used to determine if the total sample was large enough to detect an effect at the .80 power level. Based on the results of the power analysis, I believed that I could not detect a small effect with all latent variables with the sample size that I had. To maximize the power and chance at identifying any significant effects when using the subsamples, and to control for classroom effects, I used a method that involved mean-centering the data three times (e.g., Hancock & Mueller, 2013). First, the items of all variables were mean-centered around the respective classrooms' averages to control for classroom effects. Then, all items were mean-centered an additional two times: around the means of each item, and again after products of pairs were formed for moderation variables. After, a latent moderator was formed for each of the variables by loading each of the mean-centered product pairs onto their respective moderators. Unfortunately, although the overall sample and the non-DLL sample could converge, the data could not converge for the DLL sample, presumably due to low sample size. Thus, to keep things consistent and to increase the chances of convergence, I used all observed variables.

Although the use of observed variables has been used in the literature previously with these variables and although these variables have strong psychometrics, the limitations of the use of observed variables will be thoroughly explored in the discussion section.

Path analysis: Total sample. Path analyses utilized observed variables (e.g., see Figure 4). Additionally, classrooms were entered in as clusters in an effort to control for any classroom effects. Results indicated that across the entire sample, none of the proposed interactions were significant with TOSREC as an outcome, nor with MAP – R as an outcome (see Table 10). Even after controlling for sex, age, Highly Gifted Center participation, and ethnicity, none of the moderators were significant.

Path analysis: DLL subsample. Much like the total sample, using observed stress and latent variables, results indicated that across the DLL subsample, none of the proposed interactions were significant with TOSREC as an outcome (see Table 10). However, the interaction term for growth mindset and stress was significant when MAP – R was an outcome (Estimate = -1.634 (.66), p <.05, CI [-2.93, -.34]); see Figure 5 for interaction), and was still significant after controlling for sex, age, ethnicity, and Highly Gifted Center participation. This indicates that, after controlling for grit and anger regulation, at low levels of stress, those with high growth mindset outperform those with low growth mindset on the MAP – R, but when stress was high, those with high growth mindset appear to perform the same as those with low growth mindset. When growth mindset is added as the only moderator with MAP – R as an outcome, it is a protective factor at both high and low levels of stress (Estimate = -1.133 (.42), p <.01, CI [-1.956, -0.310]); see Figure 6 for interaction. Additionally, the interaction term for grit's perseverance of effort was significant when MAP – R was an outcome and after

controlling for age, sex, highly gifted status, and ethnicity (Estimate = 2.25 (.98), p <.05, CI [.34, 4.17]); see Figure 7 for interaction, which indicates that at low stress, there is not much difference between MAP – R scores for different levels of grit but at high stress, those with high grit outperform those with low grit.

Since Figure 7 unexpectedly appears as if those in the high stress group outperform those in the low stress group, correlations were examined between interaction terms to explore whether collinearity may have contributed to this result (see Table 11).Results indicated that there was a strong correlation between the grit and growth mindset interactions, which could support the idea that there is multicollinearity between the interaction terms and result in difficulties estimating the model and disentangling the changes in one variable with other variables.

Path analysis: Non-DLL subsample. Using observed stress and latent variables, results indicated that across the non-DLL subsample, none of the proposed interactions were significant with TOSREC as an outcome (see Table 10). However, when MAP – R was an outcome, anger regulation was a significant moderator, Estimate = .56 (4.89), p <.01, CI [.17, .96] (see Figure 8 for interaction) and remains significant after controlling for sex, age, Highly Gifted Center participation, and ethnicity. This means that those who have high anger regulation outperform those with low anger regulation under high stress, but perform equally well as those with low anger regulation in times of low stress.

Multiple group comparison. A comparison test was used to determine if the interaction estimates between DLL and non-DLL students were significantly different from zero. The results indicated that the difference between the two estimates for the interactions of grit (t(94) = -2.37, p <.05, CI [-4.27, -.47]) and anger regulation were

significantly different from zero ($t(94) = 1.23$ $p < .01$, CI [.37, 2.09]). The differences in interactions of growth mindset were trending significant, ($t(94) = 1.46$ $p = .06$).

Exploring Model 3: The Potential of Different Moderator Subscales

To further answer the question about what are the moderators of the relationship between stress and achievement, the subscales of each of the moderators were used as part of a post-hoc analysis to determine if there was one subscale that was particularly influential of the relationship between stress and achievement. Due to problematic factor structure, one of grit's subscales had already been excluded from analysis (consistency of interest). Therefore, the only moderator left to separate into its subscales was growth mindset. Given that growth mindset was significant in the DLL subsample only, it was separated for that subsample into its subscales (strategies and attributions) and placed alongside the other moderators. When separated, results revealed that neither were significant, indicating that the growth mindset subscales are only significant when placed together.

Chapter 5: Discussion

The goal of this study was to examine grit, growth mindset, and anger regulation's potentially protective role in the relationship between stress and reading achievement for elementary-aged, ethnically diverse students. This study also explored if the protective factors differ based on dual language status. Initial results revealed that perceived stress was negatively related to both indicators of reading achievement (TOSREC and MAP – R) for the full sample and was negatively related to MAP – R for the non-DLL sample. Overall, the results fit well within the risk and resilience model; in times of "risk," or high perceived stress, different self-regulatory factors served as protective factors and promoted higher literacy achievement for different groups. In the overall group, no moderators were protective. However, in the DLL group grit served as a protective factor; students with high grit outperformed those with low grit on reading achievement when perceived stress was high. Growth mindset was also a significant moderator in an unexpected way; those with high growth mindset outperformed those with low growth mindset in times of low perceived stress, but it seems as though the two groups would perform the same under high perceived stress. For the non-DLL sample, anger regulation was a significant protective factor; those who reported using anger regulation strategies more often outperformed those who reported using anger regulation strategies infrequently when perceived stress was high. Though grit and growth mindset were significant moderators in the DLL group and anger regulation was a significant moderator in the non-DLL group, only the interactions of grit and anger regulation were significantly different between the two groups.

The following discussion will further explore the results and tie them to the literature; first, the relationship between stress and achievement will be explored, followed by an examination of the moderators. Implications, limitations, and avenues for future research will also be discussed throughout.

The Relationship between Stress and Reading Achievement

Originally, I had predicted that stress would be negatively related to reading achievement. This was based on the previous research that demonstrates that stress hinders working memory and processing performance (e.g., Arnsten, 2009; Owens et al., 2008; Qin et al., 2009). Given that working memory (especially verbal working memory) and processing are key components to reading (e.g., Siegel, 1994), I hypothesized that higher reports of perceived stress among all subsamples would be correlated with lower scores on both reading achievement measures. This was largely supported; perceived stress was negatively related to both reading measures in the overall sample and was negatively related to the MAP – R in the non-DLL group. This inverse relationship fits well with previous research that has found that general life stress may be negatively related to academic performance (e.g., Albeg & Castro-Olivo, 2014; Alva & de los Reyes, 1999; Brabeck et al., 2016; O'Neal, 2018; Owens, Stevenson, Hadwin, & Norgate, 2012). Stress was not related to literacy achievement in the DLL group, though it is possible that the DLL sample was too small to detect a negative significant relationship and it is likely that this relationship may have existed if the sample size was larger.

Although the focus on this dissertation was on general life stress, test anxiety is one form of anxiety that has extensively been linked previously to poor performance

among children (e.g., Owens et al., 2012; Putwain, 2009), and may inform the mechanisms that are at play for children with high perceived stress. Research on test anxiety indicates that poor performance on tests may be due, in part, to a combination of a fear of failure and motivation to achieve (e.g., Putwain, 2009). Further, if a child perceives his or herself as having low ability, they were more likely to feel like they would fail. These thoughts, along with impairment in working memory (e.g., Owens et al., 2012) contribute to poorer literacy performance. Perceived stress may act in a similar way. Those endorsing high perceived stress on the perceived stress scale indicate that they feel that they do not have the resources to cope with frustrating or stressful events. Much like those with high test anxiety, those who face a stressful event, such as a task that evaluates their literacy, may perceive themselves as being more likely to fail. Those with high perceived stress may become overwhelmed with their stressful thoughts, draining the critical executive functioning resources that facilitate test performance (e.g., Eysenck, 1992) and may ultimately contribute to a self-fulfilling prophecy – they feel helpless during assessments and underperform. With reading/literacy achievement, this may be particularly true. Research suggests that while emotions and emotional inferences can facilitate the reading process and make it more personally meaningful, negative states like stress may inhibit one's ability to pay attention to what they are reading and may help students develop an association of negative emotions with reading (Renck Jalongo & Hirsh, 2010), if not paired with self-regulatory tools to manage one's thoughts, emotions, and behaviors. Though the principles of test anxiety and conditioning are universal to different subjects, it is possible that these findings could generalize to other realms of

achievement, such as math achievement, but is not a guarantee; future research may wish to explore this relationship.

An Examination of the Moderation Differences between Groups

As predicted, all of the proposed self-regulatory factors served as protective factors. This aligns with previous research that suggested that grit (O'Neal, 2018), growth mindset (Claro et al., 2016), and anger regulation (Valiente et al., 2012) could potentially play a role as a protective factor in the face of stress. Grit and growth mindset were protective factors in the DLL group, and anger regulation was a protective factor in the non-DLL group. Though I had predicted that these factors would be particularly beneficial for DLL students given that self-regulatory skills are often needed and are of benefit when learning a different language, these protective factors were not all significant for DLL students.

One protective factor that did result as expected in the DLL group was grit. Due to shortcomings in the reliability and validity of the grit-consistency of interest subscale, as is common in a number of grit studies (e.g., Datu et al., 2016; Muenks et al., 2016), only the perseverance subscale of grit was used in the data analyses. Perseverance of effort was found to be a significant protective factor for the DLL group, hinting that grit's perseverance of effort may be a point of intervention for a wide range of students. Grit's potential as a protective factor for reading achievement converges with past research that indicates that grit is related to achievement (e.g., Duckworth et al., 2010; Duckworth et al., 2007), motivation (Piña-Watson et al., 2015), and retention (Eskreis-Winkler et al., 2014) in diverse samples, and is generally used as a means to persist despite stressful situations (O'Neal, 2017). Some propose that it is also possible that grit may serve as a

stress management technique (e.g., Costa, 2016), in that those who focus on overcoming obstacles to achieve a long-term goal may shift their focus from daily, perceived stressors towards strengths to achieve their goals and feeling a sense of control in achieving their goals, though no research has solidified grit's status as a stress management tool or as a protective moderator.

One interesting point to note is that it appears in the graph that those with both high and low grit in high stress both outperform high and low grit groups in low stress. (e.g., Figure 8). This may be a result of adding in multiple moderators and covariates whose interactions are highly collinear (e.g., Tables 5 and 11).

One unexpected finding was that in the DLL subsample, growth mindset was a protective factor in times of low stress but failed to serve as a true protective factor in times of high stress (after controlling for anger regulation and grit). In fact, it seemed as though students in high perceived stress conditions performed the same as those who reported low growth mindset. Though the idea that growth mindset was related to reading achievement under low stress was consistent with prior research (e.g., Blackwell et al., 2007; Diseth et al., 2014; Jones et al., 2012), the findings under high stress were surprising. In this instance, growth mindset may not be a true "protective factor" for DLL students. When people consider factors as "protective," they generally look at a combination of the outcomes under conditions with low and high amounts of the protective factor, but also look at the rate of change across different types of the independent variable. While growth mindset was protective for those with low stress only, the slope of the scores for those with high growth mindset going from low to high stress appeared similar to the slope of the scores for low growth mindset. Thus, growth

mindset may not be a strong buffer against stress and its status as a protective factor should be interpreted with caution. However, when not adjusting for other moderators in the DLL sample, holding high growth mindset was a protective factor for those reporting either high and low perceived stress. This may be due, in part, be an artifact of controlling for the other moderators. It may also represent the intertwining of the constructs of grit and growth mindset and how, in isolation, growth mindset may not be as helpful under stress when not utilized with grit or perseverance skills. Recent research has explored the relationship between growth mindset and grit and has found that there are correlations between the two constructs (Duckworth & Eskreis-Winkler, 2013). In this study, the correlations between grit and growth mindset ranged from .27 to .50. Researchers suggest that growth mindset may help boost grit; those that hold a mindset that reframes failures as learning opportunities may promote persistence towards one's goals (Dweck et al., 1995). Perhaps controlling for grit isolates a part of growth mindset that does not include continued persistence despite obstacles. It might be that a combination of holding a growth mindset along with grit (i.e., taking *action* to persevere despite obstacles) is important to reading achievement under stress, whereas growth mindset alone may be protective in times of low perceived stress. Future research may wish to explore whether a combination of grit and growth mindset leads to positive outcomes in the face of stress.

Though I had predicted that anger regulation would be a relevant protective factor for all groups, anger regulation was only significant in the non-DLL population. I had hypothesized that anger regulation could serve as a means of controlling negative emotions for the sake of academic achievement (e.g., Pekrun et al., 2002; Pekrun et al.,

2009). Consistent with my hypothesis, anger regulation was moderately negatively related to stress among all groups. However, it was only weakly positively related to achievement in one group (non-DLL). These mixed results are consistent with previous research, that have found that emotion regulation has predicted literacy in some studies (e.g., Bailey et al., 2016; Graziano et al., 2007; Pekrun et al., 2002) but not others (e.g., Brock et al., 2009; Willoughby et al., 2011). One limitation of this work was that only one subscale of anger regulation (pause anger) was used, and the subscale did not ask specifically about regulation in school. In the future, research that explores a wide range of anger regulation strategies or stress-specific coping strategies in school may be helpful to further explore how emotion regulation strategies used in school may relate to reading achievement. Further, this study had been conducted in schools that had recently been learning about mindfulness and anger regulation. Students may have reported higher levels of anger regulation than what was true in reality; this may have been done to please the interviewers or convey to the interviewers that they were implementing the mindfulness strategies learned in school. Teacher report and observations in the future may help to get a clearer picture of true anger regulation strategy use.

Overall, there were some differences between my hypotheses and the results of the study. Grit and growth mindset were significant moderators in the in the DLL subsample, while anger regulation in the non-DLL group. The interactions between the two groups were significantly different for grit and anger regulation, meaning that there may be some practical implications for the difference between groups.

Implications

The following section will explore three main areas for implications. It will explore (a) the implications for the achievement gap and how the results of the study may potentially promote reading achievement for those traditionally affected by the achievement gap (e.g., DLL students); (b) implications for administrators and some food for thought when implementing interventions in schools; and (c) implications for practicing school psychologists when considering their role as scientist-practitioners.

Implications for the achievement gap. One of the goals of this study was to identify if any of the proposed self-regulatory factors could serve as protective factors for DLL students in the face of stress, in order to find a point of intervention in the face of the achievement gap. It is important to point out that the goal was not to remedy the achievement gap, since many have tried but the gap still persists.

Consistent with previous research (e.g., Murphey, 2014), DLL students did underperform on both reading assessments, relative to their non-DLL peers. Although, the literacy gap was not as large as with most low-income, ethnic minority DLL samples (e.g., O'Neal, 2017). For the DLL students, grit was found to be a protective factor in the face of stress; those that self-rated as higher on grit's perseverance of effort performed better on literacy achievement than those that did not when perceived stress was high. As such, grit may be a useful point of intervention for those who are DLL students. Previous research has found that immigrant parents, many of whom are parents in this DLL sample, emphasize persistence in order to attain school-related achievement goals, relative to non-immigrant parents (e.g., McCombs & Pope, 1994). For instance, Latina/o parents emphasize *ganas* or, "the will to persist" and "determination to overcome

challenges" (Contreras, 2009, pp.618), which is a term closely linked to grit. Thus, interventions that may be particularly useful for DLL students under stress could include building upon these grit and perseverance cultural values in order to refocus energy and effort on superordinate goals.

In addition to the grit-related messages transmitted through cultural values, drive and self-pressure in the form of grit may help students excel on literacy-based assessments under times of high perceived stress. For those who have English as a second language and report high stress, including an inability to properly handle the stress they encounter in their lives, it is easy to become overwhelmed by additional stressors such as learning an additional language. Those learning English may feel an additional pressure to learn because, in the United States, it is difficult to communicate with peers and achieve a dream occupation if the individual cannot proficiently speak English (e.g., Suárez-Orozco, Pimentel, & Martin, 2009). Those that perceive themselves as having grit – as being focused on superordinate goals, like fitting in with peers, and having the capability within themselves to achieve the goals - may be able to better self-regulate the stress and pressure that learning English can entail and transform it during literacy assessments. This self-regulation process and the belief in oneself in achieving one's goals could provide a pathway to energized and improved engagement (e.g., Cummins, 2011), self-confidence, and motivation, key socioemotional factors that boost reading and academic performance (e.g., Cummins, 2011; Fredericks et al., 2004; Guthrie, 2004; Marks, 2000), in the face of stress. Thus, for those who hold high grit, a combination of holding superordinate goals and believing in one's capacity to achieve those goals, could

help DLLs perform higher on literacy measures in times of higher perceived stress via improved engagement, confidence, and motivation.

However, while fostering grit could be a potentially promising means of helping students achieve, it is *very* important to point out that grit alone cannot solve the achievement gap and must not be used as a cure-all. There are many other important factors that play into student success in school, and grit may not be as beneficial in the face of toxic and chronic stress often experienced by those in poverty. Grit is only one piece of the puzzle that may not even be practical to prioritize for students whose most basic needs are not being met (Weston, 2017). For instance, if students are malnourished and living in poverty, increased spending on food resources and early childhood interventions that target parenting and boosting Pre-K resources may be a more effective way of reducing the achievement gap (e.g., Heckman, 2013); however, such an empirical question merits testing.

Implications for schools. Recently, schools have been grappling with how to implement self-regulatory interventions that will work for all students. Typically, these interventions use techniques like mindfulness and stress-reduction to increase mental health and interpersonal functioning, but many of these interventions hold learning outcomes as well (Murray, Rosanbalm, & Christopoulos, 2016). Meta-analyses of these types of interventions have found that there is no consistent advantage for one type of intervention over another, and authors conclude that certain populations were more likely to benefit from some approaches over others, indicating that a one-size-fits-all approach to self-regulatory interventions may not work effectively (Murray et al., 2016).

The need to find interventions that are tailored to specific groups is compounded with the growing superdiversity of students in the U.S. school system. With the growing linguistic and cultural diversity of students in K-12 schools, there is a great need for a better understanding of how to help boost not only language skills, but also socioemotional skills to improve outcomes. And, it is important to factor in the stress these students are under. Unfortunately, there has been a lack of research about how to best serve these students (Park et al., 2018).

Results of this study underscore the importance of cultivating a research base that explores how popular self-regulatory interventions may work for different populations. From this study, it was suggested that some of the self-regulatory interventions may be useful for some groups, but not others, when students report higher perceived stress. For example, grit and growth mindset were both protective factors for DLLs. For non-DLLs, anger regulation seemed to be a protective factor in the face of stress. In the end, though, there was not a significant difference in what factors were more relevant for one DLL group over the other. School administrators need to begin to consider the nuances of self-regulatory constructs and how they may fit into students' lives under complex and different circumstances. For example, most research hints that growth mindset is a promising intervention technique that may promote achievement. However, in this study, after controlling for grit and anger regulation as protective factors, DLLs with high growth mindset facing high stress do not outperform those with low growth mindset and may actually perform worse. Thus, a cursory glance at the large body of existing research may lead to one conclusion (growth mindset is beneficial for all students), but a more nuanced and careful approach may be needed before intervention implementation. This

approach should include considering the populations studied and participants' ecological conditions.

Schools should continue to implement interventions that are systematic, evidence-based, and include explicit instruction as suggested by other researchers (Murray et al., 2016). I also argue that based on the results of the study, a comprehensive and all-encompassing approach may be useful that includes techniques from different constructs. For example, while holding growth mindset under stress was not protective, perhaps acting on growth mindset with grit may prove to be more effective. Self-regulatory interventions that also include a component that specifically targets stress reduction may also be beneficial (e.g., Murray et al., 2016), in order to provide students with more capacity to use growth mindset and grit techniques under stress.

Implications for school psychologists. Results of the study underscore the continued need for school psychologists to function as scientist-practitioners by critically examining research and considering the potential for generalization for culturally diverse students. School psychologists should also continue to consider the ecological contextual factors that may affect student functioning in school (e.g., stressors in the home or neighborhood) and consider how some of the proposed self-regulatory factors may not be equally effective for all students under all conditions. Thus, school psychologists should continue to advocate for interventions that are culturally responsive – not only interventions that take ethnicity and culture into consideration, but also dual language status. School psychologists have the knowledge and responsibility to thoroughly vet any socioemotional interventions put into place in the schools and should use the opportunity

to leverage their knowledge to make sure that interventions put into place are responsive to diverse students' needs.

Additional Limitations of the Study and Future Directions

Additional limitations and considerations for future research that will help to build upon this study. The three primary limitations and considerations were the use of measured variables, sample size and sample demographics, and the use of child self-report.

First, one limitation was the use of measured variables. Originally, the study had proposed the use of latent variables. Latent variables are often preferred because they are capture underlying constructs better than measured variables, and they typically result in higher-powered models. Latent variables indirectly measure an unobserved construct by using measured variables, but the assumption is that the latent variable is an entity that cannot be directly measurable (Hancock, 2018). By using measured variables as a direct measure of a construct, the assumption is that the variable can be precisely measured by the items and that the scale entirely captures the construct. While latent variables recognize that measured variables are imperfect indicators of a construct, measured variables assume that they are perfect indicators while they are not. For instance, measured variables include the use of a unidimensional scale that assumes equidistance between points, even though the respondents may all view a different distance between points, resulting in an imprecise measure of responses. Additionally, children are imperfect in self-evaluation and it is impossible to know if each respondent is using the same set of criteria to judge him/herself on the scale as others (e.g., is a "3" for one child the same as a "3" for another?) This is not to say that measured variables are completely

invalid -- most of the previous research on the studied moderators utilized measured variables (e.g., Blackwell et al., 2007; Duckworth et al., 2007). However, the limitations of measured variables must still be noted.

The second limitation of the study lies in the sample. Though the response/participation rate for the study was adequate, sampling from only two schools limited the power I had to conduct the analyses for my original theoretical model. Despite lower sample size, I was able to find significant results. However, due to limitations in the sample size, it is possible that I was unable to identify any small or moderate effects when utilizing both latent moderators and latent independent variable. Additionally, I was not able to utilize a longitudinal design due to poor model fit and concerns about having adequate power to identify effects when adding additional variables into the model. Ideally, future research would have a large enough sample to use all latent variables and implement a longitudinal design, which was the original intention of the study that fell short. However, it is important to note that despite limited power, this study did detect significant effects, and these significant effects are valid and important.

An additional limitation from the sample was that it consisted primarily of students who were in a public school in a wealthy suburb, though there is some diversity of income, ethnicity, and DLL status in this area. I had originally chosen the perceived stress measure because I felt that it could more accurately reflect a DLL students' stressful experiences by taking a more holistic approach towards measuring perceptions of daily stress and coping (e.g., Levy et al., 2016). Given that perceptions of stress and its negative consequences lead to worse outcomes when combined with stressful events, relative to low perceptions of stress (e.g., Keller et al., 2012), I believed that perceptions

of stress may be an important indicator to measure and understand the implications of stress for reading achievement. In the future, the exploration of different types of stressors may lead to a clearer picture of how stress relates to achievement for various students. Previous studies have explored the relationship of stressful ecological conditions, like dangerous neighborhoods (e.g., Fite, Rubens, & Cooley, 2014), stressful life events (e.g., Carter, 2007; Choudhuri, Santiago-Rivera, & Garrett, 2012; Moore, Ford, & Milner, 2005; West-Olatunji & Conwill, 2011), and family stressors (e.g., Flook & Fuligni, 2008; Thompson & Whimper, 2010) with the outcome of achievement. These factors may be particularly relevant for those who live in areas of poverty (Marcella, Howes, & Fuligni, 2014), many of whom are DLL students (Child Trends Data Bank, 2014). Although it cannot be assumed that every student was from a family of high socioeconomic status, it is likely that the majority of the sample may live under different economic conditions than in many other places in the United States given that there were a low number of FARMS students compared to most schools in the studied school district. As a result, it is possible that the findings of this study may not generalize to all DLL students, especially those living in poverty; extreme and chronic stress (e.g., impoverished neighborhoods, living near high gang activity, trauma) may go above and beyond anything that can be measured by the perceived stress scale. Those with this form of stress may not be able to concentrate on grit, growth mindset, or anger regulation when more trauma-informed care should be implemented first (e.g., Longhi, 2015; National Association of School Psychologists, 2015).

It is also possible that, though higher income, students in this study may have been thinking of these above-studied ecological and life condition stressors when

answering the perceived stress items, however participants were not asked to describe what they were thinking about when answering the question. In the future, a measure that provides an opportunity for students to describe reasons why answers were selected on the perceived stress scale may better elucidate how perceptions of stress and different stressors may interact with and shape a student's reading achievement. Future research may wish to include various measures of stress, along with a sample of students that touches upon different socioeconomic statuses to better elucidate if the findings of this study may generalize to other populations. However, this is only the second elementary sample that utilized the perceived stress scale, which performed well psychometrically.

A final limitation lies in the study's reliance on child self-reported measures. In the results, a t-test revealed that those interviewed in groups self-rated lower on the grit scale items. It is possible that those that were not interviewed in groups could have inflated their responses due to a willingness to look good in front of the examiner. In fact, there are often large discrepancies between child self-report and parent/teacher report (e.g., de los Reyes & Kazdin, 2005). In this study, t-tests indicated that there were some significant differences between child group and individual interview scenarios for some variables (e.g., grit). Although many of the findings of the study were in-line with the hypotheses and expected, it is possible that the results would not have been the same had it included other reports outside of child-report. Thus, future studies may wish to include a multidimensional assessment of the moderators and stress variable. Other dimensions could include teacher and parent report, and classroom observations. Combining results from multiple sources could provide a more holistic look at the child's functioning and

provide a clearer picture of actual strategies that the student is using in the home and school.

Conclusion

School administrators and researchers alike have recently invested more in implementing interventions to boost socioemotional functioning in the classroom (e.g., Durlak, Weissberg, Dymnicki, Taylor, & Schelling, 2011; Murray et al., 2016), with many focusing on ways to build resilience among immigrant and ethnic minority students (e.g., Shechtman et al., 2013). With the constant persistence of the achievement gap despite efforts to find ways to close it, current researchers are turning towards examining how other unexplored factors, like stress, may play a role in maintaining the achievement gap (e.g., Levy et al., 2016). Though some may be quick to connect the idea that these socioemotional interventions could potentially play a role in reducing the achievement gap (e.g., Durlak et al., 2011), many of the more popular self-regulatory interventions, like grit and anger regulation, had not been explored among various demographic groups.

Given this gap, this study set out to explore how these self-regulatory factors may play a protective role in the relationship between stress and reading achievement among one demographic group, dual language learners, to gain a clearer understanding of what interventions may work for who and under what conditions of perceived stress. Results indicated that grit is a protective factor for DLL students, while growth mindset is a protective factor in low perceived stress and is protective in high perceived stress in models that do not control for other moderators. On the other hand, anger regulation was significant for non-DLL students only. Though these protective factors may be one piece of the puzzle, it is essential to again re-iterate that these self-regulatory factors can serve

as a quick fix for the achievement gap. If researchers or schools jump to this conclusion, we would ignore the multitude of other ecological factors that contribute to poorer reading achievement and instead begin to blame poor performance on students not being sufficiently gritty, growth-minded, or able to manage their emotions (e.g., Denby, 2016). For example, this study could not rule out the potential impact of previous achievement on current literacy achievement, which could potentially have a very large effect on literacy outcomes. The data hinted to this in that, when originally controlled for, previous achievement accounted for a significant amount of the variance in later achievement outcomes. Thus, a multi-modal approach that consists of increased funding of early intervention and better literacy instruction (e.g., Park et al., 2016) with elements of self-regulatory factors fused in may be the right track for superdiverse students.

Appendix A

Table 1

Sample Demographics

	Total Sample		Dual Language		Non-Dual Language	
Demographic Variables	*N*	%	*N*	%	*N*	%
Child Sex						
Female	142	56	45	56	97	57
Age						
8 years	23	9	9	11	14	8
9 years	83	33	30	37	53	31
10 years	93	37	27	33	66	39
11 years	52	21	15	19	37	22
Grade Level						
3rd	74	30	23	29	51	30
4th	78	32	31	39	47	28
5th	93	38	26	32	67	39
Ethnicity						
Asian/Pacific Islander	13	5	7	9	6	4
Black, non-Hispanic	25	10	17	21	8	5
Latina/o	14	5	10	12	4	2
White, non-Hispanic	155	62	30	37	125	74
Multiethnic	29	12	13	16	16	9
Other	14	6	4	5	10	6

Note: Total n = 251, Dual Language n = 81, Non-Dual Language n = 170.

Table 2

Descriptive Statistics of Variables of Interest (Total Sample)

Measures	Number of Items	*M (SD)*	α	Range
1. Perceived Stress	10	24.69 (6.10)	**.82**	11.00 – 33.00
2. Grit	8	3.87 (.53)	**.66**	2.00 – 4.88
Consistency of Interests subscale	4	3.57 (.71)	.53	1.75 – 5.00
Perseverance of Effort subscale	4	4.17 (.59)	**.70**	2.25 – 5.00
3. Time 1 Emotion Regulation	--	--	**.71**	--
Pause Anger subscale	3	3.57 (.84)	**.67**	1.00 – 5.00
4. Time 1 Growth Mindset	8	4.94 (.64)	**.73**	1.88 – 6.00
Attributions subscale	4	4.46 (.68)	.43	2.20 – 6.00
Strategies subscale	4	5.23 (.52)	.55	2.83 – 6.00
5. TOSREC standard index scores	--	112.086 (16.05)	--	54.50 – 145.50
6. MAP-R standard index scores	--	223.94 (14.47)	--	176.00 – 253.00
7. MAP-R percentiles	--	81.82 (21.18)		1.00-99.00

Note. Alpha coefficients in bold meet an acceptable internal reliability level of .65 or higher (DeVellis, 2003). TOSREC = Test of Silent Reading Efficiency and Comprehension (Wagner, Torgesen, Rashotte, & Pearson, 2010). MAP-R = Measures of Academic Progress – Reading. Listwise N = 236.

Table 3

Descriptive Statistics of Variables of Interest (DLL and non-DLL Sample)

Measures	*DLL* *M (SD)*	*DLL* *α*	*Non-DLL* *M (SD)*	*Non-DLL* *α*
1. Perceived Stress	26.09* (6.64)	**.84**	24.03*(5.73)	**.80**
2. Grit	3.77* (.50)	.55	3.92* (.53)	**.70**
Consistency of Interests subscale	3.54 (.71)	.47	4.47 (.68)	.57
Perseverance of Effort subscale	4.01* (.61)	**.65**	4.25* (.57)	**.72**
3. Time 1 Emotion Regulation		**.70**		**.71**
Pause Anger subscale	3.60 (.83)	**.65**	3.56 (.84)	**.82**
4. Time 1 Growth Mindset	4.94 (.59)	**.65**	4.94 (.66)	**.76**
Attributions subscale	4.44 (.66)	.57	4.47 (.68)	.62
Strategies subscale	5.31 (.45)	.52	5.20 (.55)	**.68**
5. TOSREC standard index scores	108.16* (16.65)	--	113.99* (15.44)	--
6. MAP-R standard index scores	218.95* (15.72)	--	226.23* (13.31)	--
7. MAP-R percentiles	73.83* (26.56)	--	85.47* (17.09)	--

Note. Alpha coefficients in bold meet an acceptable internal reliability level of .65 or higher (DeVellis, 2003). * = significant difference between means, $p < .05$; TOSREC = Test of Silent Reading Efficiency and Comprehension (Wagner, Torgesen, Rashotte, & Pearson, 2010). MAP-R = Measures of Academic Progress – Reading. DLL Listwise $N = 68$, Non-DLL Listwise $N = 168$.

Table 4

Correlation Matrix of Variables of Interest by Sample

Measure	1	2	3	4	5	6	7	8	9	10	11	12
					Full Sample							
1. MAP-Reading Spring	--	.69***	.19**	.12	.08	.26***	.15*	.29***	.04	-.17**	.84***	.67***
2. TOSREC Time 3		--	.12	.07	.00	.23***	.16*	.22**	.03	-.17**	.69***	.83***
3. GM full			--	.86***	.80***	.33***	.28***	.25***	.28***	-.43***	.20**	.17**
4. GM attributes				--	.54***	.23***	.18**	.21**	.26***	-.44***	.12	.12
5. GM strategies					--	.25***	.20**	.22**	.32***	-.29***	.10	.04
6. Grit full						--	.84***	.76***	.26***	-.58***	.28***	.23***
7. Grit CI							--	.29***	.24***	-.47***	.16*	.19**
8. Grit PE								--	.18**	-.47***	.29***	.19**
9. Anger Regulation									--	-.41***	.08	.06
10. Perceived Stress										--	-.19**	-.17**
11. MAP – R Fall											--	.66***
12. TOSREC Time 1												--
					Dual Language Learners							
1. MAP-Reading Spring	--	.74***	.26*	.08	.09	.29**	.16	.33**	-.13	-.07	.81***	.76***
2. TOSREC Time 3		--	.31*	.20	.04	.37**	.17	.42**	-.02	-.17	.70***	.83***
3. GM full			--	.87***	.75***	.50***	.37**	.40***	.21	-.52***	.28*	.26*
4. GM attributes				--	.51***	.38**	.31**	.27*	.22*	-.49***	.15	.15
5. GM strategies					--	.30**	.31**	.17	.16	-.27**	.12	.07
6. Grit full						--	.80***	.72***	.27*	-.53***	.32**	.33**
7. Grit CI							--	.16	.23*	-.42***	.18	.18
8. Grit PE								--	.18	-.41***	.34**	.35**
9. Anger Regulation									--	-.53***	-.05	-.00
10. Perceived Stress										--	-.19	-.18
11. MAP – R Fall											--	.76***
12. TOSREC Time 1												--
					Non-Dual Language Learners							
1. MAP-Reading Spring	--	.65***	.16*	.13	.12	.21**	.13	.22**	.18*	-.18*	.84***	.59***
2. TOSREC Time 3		--	.04	.02	.02	.17	.16	.11	.07	-.15	.66***	.83***
3. GM full			--	.86***	.82***	.27***	.25**	.19*	.31**	-.39***	.17*	.13

4. GM attributes	--	.57**	.17*	.12	.18*	.28***	-.41***	.09	.10
5. GM strategies		--	.25**	.21**	.21**	.38***	-.34***	.14	.05
6. Grit full			--	.87***	.78***	.27**	-.59***	.22**	.15
7. Grit CI				--	.37***	.24**	-.50***	.14	.19*
8. Grit PE					--	.20**	-.48***	.23**	.05
9. Anger Regulation						--	-.36***	.19*	.11
10. Perceived Stress							--	-.12	-.12
11. MAP – R Fall								--	.58***
12. TOSREC Time 1									--

Note:

*** = significant at the .001 level
** = significant at the .01 level
* = significant at the .05 level

Table 5

Fit Statistics for Perceived Stress Scale Confirmatory Factor Analyses

	Model Fit Statistics				
	χ^2	*RMSEA*	*SRMR*	*CFI*	AIC Index
Total Sample[a]	51.281*	**.047**	**.041**	**.967**	6502.576
DLL Sample[b]	41.228	**.051**	**.061**	**.968**	2109.309
Non-DLL Sample[c]	42.252	**.046**	**.045**	**.967**	4396.013

Note. Boldfaced coefficients meet established criteria for acceptable model fit; smaller chi-square and AIC index values indicate better model fit (e.g., Little, 2013). RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. CFI = comparative fit index.

[a]*N = 251.*

[b]*N = 81.*

[c]*N = 170.*

*$p < .05$.

Table 6

Unstandardized and Standardized Estimates for Model 1

	Total Sample			**DLL**			**Non-DLL**		
Parameter Estimate	***Unstandardized***	***Standardized***	***p-value***	***Unstandardized***	***Standardized***	***p-value***	***Unstandardized***	***Standardized***	***p-value***
Latent Stress → TOSREC and MAP-R	**-5.684 (2.328); -7.288 (3.094)**	**-.179 (.069); -.174 (.070)**	**.010; .013**	N/A	N/A	N/A	-5.139(3.595); **-8.918(4.131)**	-.128(.086); **-.201(.084)**	.135; **.016**
Latent Stress → TOSREC	**-5.654 (2.325)**	**-.179 (.069)**	**.010**	-4.101 (3.044)	-.161(.116)	.165	-5.094(3.579)	-.129(.086)	.137
Latent Stress → MAP - R	**-7.471 (3.120)**	**-0.178 (.070)**	**.011**	-3.514 (5.016)	-.086(.121)	.478	**-8.587(4.104)**	**-.195(.084)**	**.020**
Observed Stress → TOSREC and MAP-R	**-.453 (.170); -.547 (.225)**	**-.169 (.063); -.155 (.063)**	**.007; .014**	-.458(.283); -.184(.456)	-.181(.110); -.047(.115)	.101; .585	-.340(.216); **-.534(.283)**	-.123(.077); **-.172(.076)**	.112; **.023**
Observed Stress → TOSREC	**-.449(.170)**	**-.169 (.063)**	**.007**	-.458 (.283)	-.181(.110)	.101	-.333(.215)	-.121(.078)	.119
Observed Stress → MAP-R	**-.571(.225)**	**-.165(.064)**	**.010**	-.288 (.465)	-.073(.118)	.535	**-.529(.236)**	**-.175(.077)**	**.023**

Table 7

Fit Statistics for Short Grit Scale Confirmatory Factor Analyses

	Model Fit Statistics				
	χ^2	*RMSEA*	*SRMR*	*CFI*	AIC Index
Total Sample Single Scale[a]	49.460*	.080	**.063**	.892	5212.240
Total Sample Separate Subscales	28.666	**.045**	**.043**	**.966**	5191.446
DLL Sample Single Scale[b]	27.413	.074	.085	.880	1795.349
DLL Sample Separate Subscales[b]	33.370	.091	.091	.809	1799.307
Non-DLL Sample Single Scale[c]	42.320	.085	**.063**	.896	3405.689
Non-DLL Sample Separate Subscales[c]	28.121	**.038**	**.046**	**.979**	3386.974

Note. Boldfaced coefficients meet established criteria for acceptable model fit; smaller chi-square and AIC index values indicate better model fit (e.g., Little, 2013). RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. CFI = comparative fit index.
[a]*N = 251.*
[b]*N = 81.*
[c]*N = 170.*

Table 8

Fit Statistics for Growth Mindset Confirmatory Factor Analyses

	Model Fit Statistics				
	χ^2	*RMSEA*	*SRMR*	*CFI*	AIC Index
Total Sample Single Scale[a]	27.526	**.054**	**.037**	**.967**	5523.742
Total Sample Separate Subscales	27.429	**.053**	**.037**	**.967**	5523.646
DLL Sample Single Scale[b]	20.904	**.053**	**.061**	**.959**	1758.575
DLL Sample Separate Subscales[b]	19.511	**.052**	**.067**	**.963**	1759.182
Non-DLL Sample Single Scale[c]	19.555	**.036**	**.038**	**.988**	3722.903
Non-DLL Sample Separate Subscales[c]	17.531	**.032**	**.038**	**.991**	3722.880

Note. Boldfaced coefficients meet established criteria for acceptable model fit; smaller chi-square and AIC index values indicate better model fit (e.g., Little, 2013). RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. CFI = comparative fit index.
[a]*N = 251.*
[b]*N = 81.*
[c]*N = 170.*

Table 9

Fit Statistics for Confirmatory Factor Analyses for All Moderators

	Model Fit Statistics				
	χ^2	*RMSEA*	*SRMR*	*CFI*	AIC Index
Total Sample[a]	96.757	**.037**	**.051**	**.961**	9287.610
DLL Subsample[b]	78.577	**.041**	.084	**.955**	3034.170
Non-DLL Subsample[c]	89.264	**.036**	**.059**	**.964**	6223.141

Note. Boldfaced coefficients meet established criteria for acceptable model fit; smaller chi-square and AIC index values indicate better model fit (e.g., Little, 2013). RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. CFI = comparative fit index.

[a]*N = 251.*

[b]*N = 81.*

[c]*N = 170.*

Table 10

Unstandardized and Standardized Estimates for Model 2

	Total Sample			**DLL**			**Non-DLL**		
Parameter Estimate	***Unstandardized***	***Standardized***	***p-value***	***Unstandardized***	***Standardized***	***p-value***	***Unstandardized***	***Standardized***	***p-value***
Model 2 Estimates with TOSREC as Outcome									
Perceived Stress	1.20(1.41)	.46(.54)	*n.s.*	4.39(1.74)	1.88(.76)	*n.s.*	.14 (2.31)	.05 (.83)	*n.s.*
Grit	7.51(8.64)	.28(.32)	*n.s.*	21.74(19.25)	.81(.72)	*n.s.*	2.31 (8.57)	.09 (.32)	*n.s.*
Growth Mindset	8.89(8.33)	.36(.34)	*n.s.*	20.67(11.69)	.78(.45)	*n.s.*	5.37 (10.65)	.23 (.45)	*n.s.*
Anger Regulation	-3.85(4.63)	-.21(.25)	*n.s.*	-6.36(6.58)	-.33(.34)	*n.s.*	-4.78 (4.93)	-.26 (.27)	*n.s.*
Grit x PSS	-.17(.33)	-.25(.49)	*n.s.*	-.58(.72)	.23(.39)	*n.s.*	-.10 (.32)	-.14 (.46)	*n.s.*
Growth Mindset x PSS	-.23(.29)	-.40(.52)	*n.s.*	-.55(.44)	-.98(.80)	*n.s.*	-.15 (.39)	-.26 (.70)	*n.s.*

Anger Regulation x PSS	.15(.20)	.22(.30)	*n.s.*	.16(.27)	-.94(1.16)	*n.s.*	.24 (.20)	.37 (.30)	*n.s.*
Model 2 Estimates with MAP - R as Outcome									
Perceived Stress	-0.53 (1.84)	-.16 (.55)	*n.s.*	.79 (3.21)	.22(.89)	*n.s.*	-.39 (2.19)	-.12 (.70)	*n.s.*
Grit	-8.74 (10.58)	-.25 (.29)	*n.s.*	-54.34 (28.08)	-1.24(.58)	*n.s.*	10.07 (10.94)	.33 (.36)	*n.s.*
Growth Mindset	17.47 (10.25)	.56 (.32)	*n.s.*	54.34 (22.73)	1.31(.48)	.02	6.32 (8.20)	.24 (.31)	*n.s.*
Anger Regulation	-2.97 (7.39)	-.12 (.31)	*n.s.*	9.78 (10.57)	.32(.35)	*n.s.*	-10.52 (4.89)	-.51 (.25)	*n.s.*
Grit PE x PSS	.62 (.43)	.71 (.48)	*n.s.*	**2.25 (.98)**	**2.29(.94)**	**.021**	-.15 (.41)	-.19 (.51)	*n.s.*
Growth Mindset x PSS	-.47 (.36)	-.65 (.50)	*n.s.*	**-1.63 (.66)**	**-1.89(.69)**	**.014**	-.16 (.30)	-.25 (.46)	*n.s.*
Anger Regulation x PSS	.06 (.32)	.07 (.37)	*n.s.*	-.66(.42)	-.57(.37)	*n.s.*	**.56 (.20)**	**.73 (.27)**	**.005**

Table 11

Correlation Matrix of Interaction and Covariates for DLLs

Measure	1	2	3	4	5	6	7	8
1. Grit Interaction	--	.78	.40	.08	.12	.05	-.08	.16
2. Growth Mindset Interaction		--	.43	-.03	.03	.04	.00	.17
3. Anger Regulation Interaction			--	-.02	-.08	-.09	-.21	-.17
4. Age				--	-.13	.15	-.07	-.01
5. Sex					--	.04	.00	.03
6. Highly Gifted Status						--	.41	.09
7. School							--	.25
8. Ethnicity								--

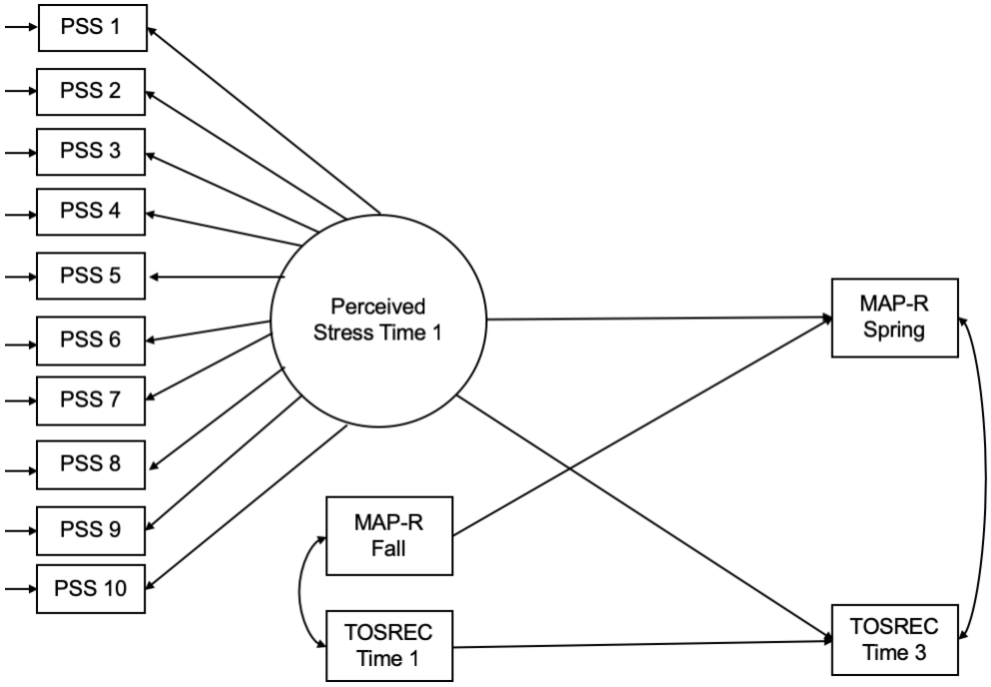

Figure 1. Proposed latent path analysis of the relationship between stress and achievement.

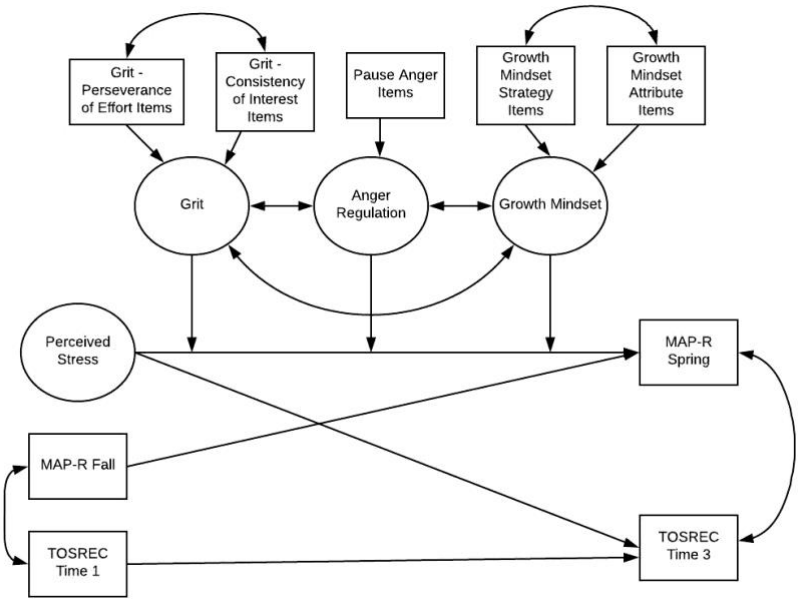

Figure 2. Proposed moderation with latent factors model. Note: it is assumed that there are errors variances associated with each subscale item, though arrows are not shown in the diagram for simplicity.

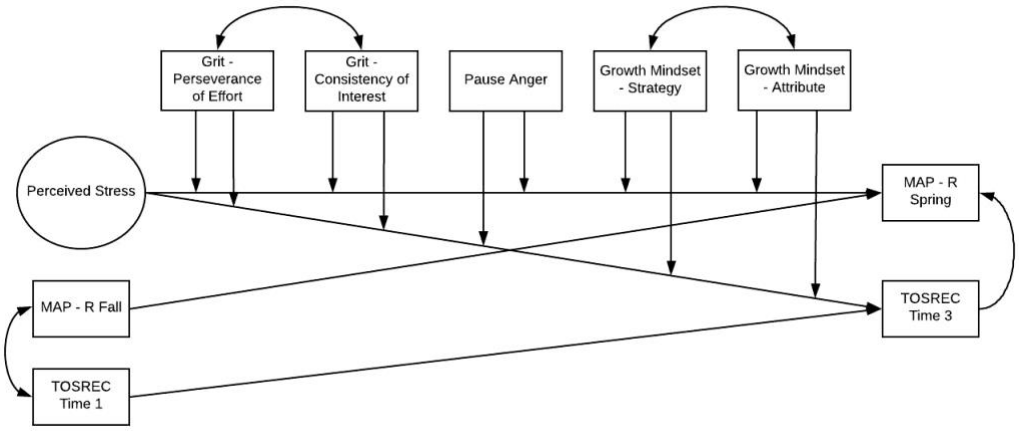

Figure 3. Proposed moderation with subscales model. Note: it is assumed that there are errors variances associated with each subscale item, though arrows are not shown in the diagram for simplicity.

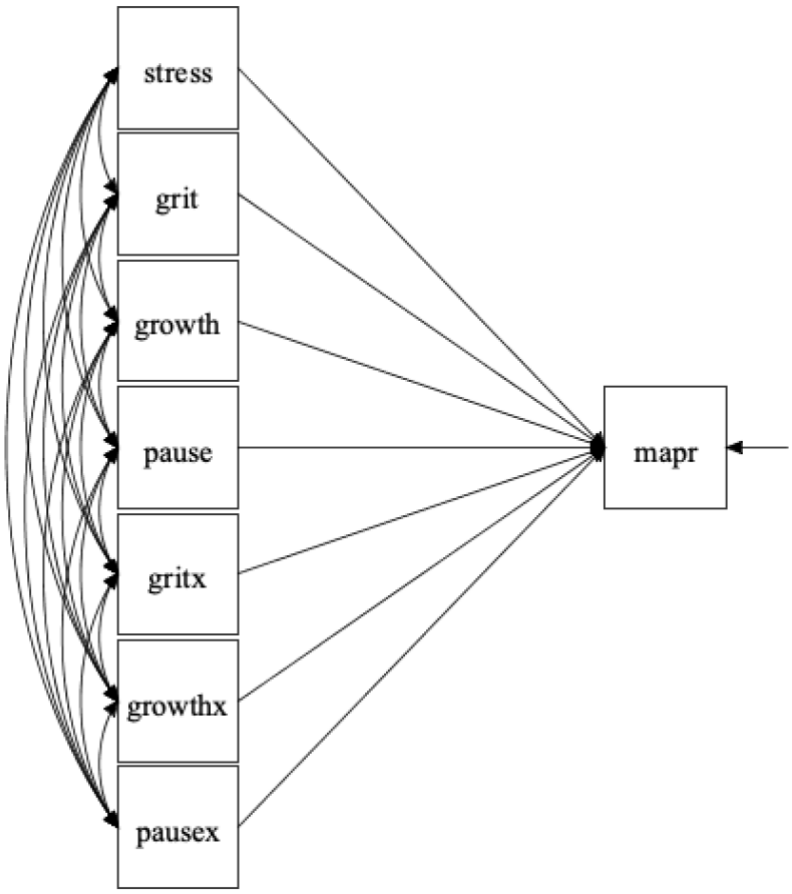

Figure 4. Simplified figure of Model 2 with MAP – R as an outcome

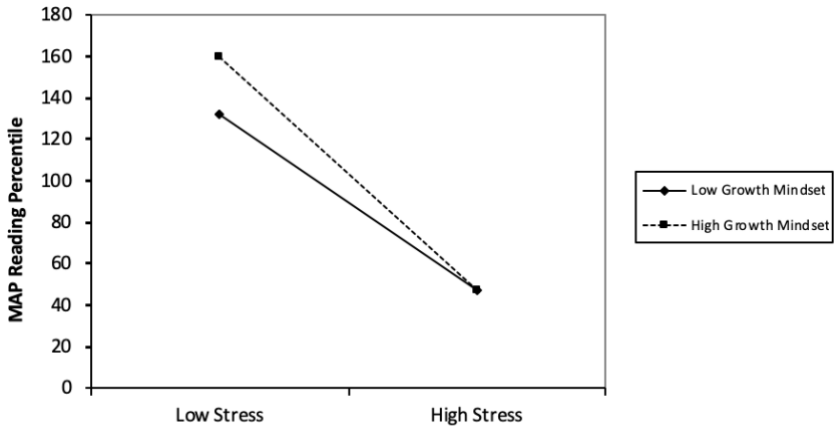

Figure 5. Interaction of stress and growth mindset in the DLL subsample, controlling for other moderators. Note: high and low stress represent +/- 1 Standard Deviation from the mean, respectively.

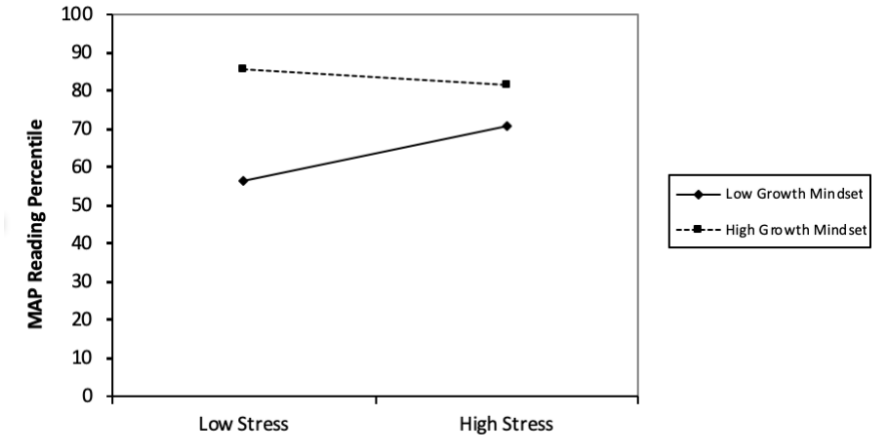

Figure 6. Interaction of stress and growth mindset in the DLL subsample, without controlling for other moderators

Figure 7. Interaction of stress and grit in the DLL subsample

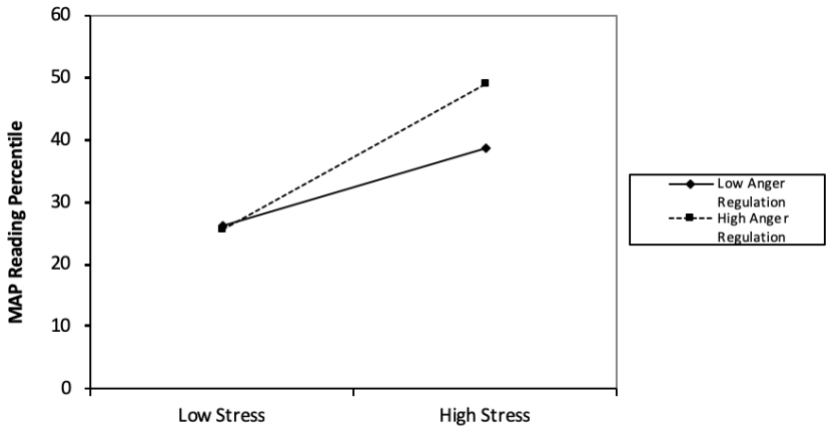

Figure 8. Interaction of stress and anger regulation in the non-DLL subsample

Appendix B

Questionnaire Items

Perceived Stress: Modified version of the Perceived Stress Scale – 10 item version (Cohen & Williamson, 1988).

These next questions are about how you felt and what you thought during the last week: In the last week…*Think about a time when something unexpected happened.*

1. How often did you get upset because something you did NOT expect happened?

Think of a time when you did NOT like something that was happening.

2. How often did you feel like you could NOT do anything to change the way things were going?
3. How often did you feel nervous and "stressed"? [*in general, when you're in school*]

Think about a problem you have had.

4. How often did you feel like you could make your problems better?
5. How often did you feel like things were going right for you?
6. How often were you too upset to do all the things you had to do?

Think about a time when you were frustrated

7. How often did you feel like you could deal with the things that frustrated you? [*or do something to feel better or fix the frustrating problem?*]
8. How often did you think about your schoolwork and think, "I can do all of this!"?
9. Think about a time there were things you could NOT change. How often did you get mad about that?
10. How often did you feel like there were so many hard things to do that you just could NOT do them all?

Growth Mindset: Orientations to Failure Subscale (Blackwell et al., 2007)

Instructions: When you read this story, pretend that it really happened to you and try to picture how you would feel and what you would do if it happened:

You start a new class at the beginning of the year and you really like the subject and the teacher. You think you know the subject pretty well. When you take the quiz, you think you did a good job. Then the class gets their quizzes back and you find out your grade: you got an F, a failing grade.

How do you think you would feel?

1. I would feel stupid.
2. I would feel sad or depressed.
3. I would feel angry at the teacher.
4. I would feel mad at myself that I didn't study more.
5. I would feel motivated, like I wanted to work harder at it.

What would you think was the main reason that you failed the quiz?

6. I wasn't smart enough.
7. The quiz was unfair, too hard for the class.
8. I'm just not good at this subject
9. I didn't really like the subject that much.
10. I didn't study enough.

What would you do next?

11. I would try not to take this subject ever again.
12. If I could, I would try to cheat on the next test.
13. I would spend less time on this subject and just work on the subjects I'm good at.
14. I would complain to the teacher or my parents.
15. I would work harder in the subject from now on.
16. I would ask someone for help with the subject.

Grit-S: a modified version of The Grit Short Scale (Duckworth & Quinn, 2007)

1. My school work is difficult and makes me want to give up.
2. I get very interested in a new topic in school, but then I quickly get bored with it.
3. I am a hard worker in school.
4. I often set a goal in school but later give up and choose a different goal. [Do you complete that first goal?]
5. It's hard to focus on schoolwork that takes a long time to complete.
6. I finish whatever I begin in school.
7. Other things sometimes distract me from what I am already working on in school.
8. I work steadily in school without giving up. [Like, when you are working, you just keep doing it and are persistent.]

Anger Regulation (O'Neal & Magai, unpublished manuscript)

Think of a few times when you felt ANGRY or FRUSTRATED during the past month. When you felt ANGRY or FRUSTRATED over the past month, how often would you respond in these ways?

1. When I was angry, I would take a few deep breaths before reacting.
2. When I was angry, I would calm myself down.
3. When I was angry, I wait before acting on my anger.

Note:

The Perceived Stress Scale, Grit Short Scale and anger regulation items were rated on a five-point Likert-style scale, with 1=Not at all and 5=Very much for grit, and 1 = Never, 5 = Very Often for anger regulation and perceived stress.

Growth mindset was rated on a six-point scale, with 1=Disagree a lot, and 6=Agree a lot.

References

Ahmad, F. Z., & Hamm, K. (2013). *The school-readiness gap and preschool benefits for children of color*. Washington, D.C.: Center for American Progress.

Akgun, S., & Ciarrochi, J. (2010). Learned resourcefulness moderates the relationship between academic stress and academic performance. *An International Journal of Experimental Educational Psychology, 23,* 287-294.

Albeg, L. J., & Castro-Olivo, S. M. (2014). The relationship between mental health, acculturative stress, and academic performance in a Latino middle school sample. *Contemporary School Psychology, 18,* 178–186. doi:10.1007/s40688-014-0010-1.

Alva, S. A., & de Los Reyes, R. (1999). Psychosocial stress, internalized symptoms, and the academic achievement of Hispanic adolescents. *Journal of Adolescent Research, 14*, 343–358. doi:10.1177/0743558499143004.

Arbona, C., Olvera, N., Rodriguez, N., Hagan, J., Linares, A., & Wiesner, M. (2010). Acculturative stress among documented and undocumented Latino immigrants in the United States. *Hispanic Journal of Behavioral Sciences, 32,* 362-384. doi: https://doi.org/10.1177/0739986310373210

Aronson, J., Fried, C., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*, 113-125.

Arnsten, A. F. T. (2009). Stress signaling pathways that impair prefrontal cortex structure and function. *Nature Reviews Neuroscience, 10,* 410-422.

Bailey, C. S., Denham, S. A., Curby, T. W., & Bassett, H. H. (2016). Emotional and organizational supports for preschoolers' emotion regulation: Relations with school adjustment. *Emotion, 16*, 263-279.

Becker, B. E., & Luthar, S. S. (2002). Social-emotional factors affecting achievement outcomes among disadvantaged students: Closing the achievement gap. *Educational Psychologist, 37*, 197-214.

Bitsko, R. H., Holbrook, J. R., Ghandour, R. M., Blumberg, S. J., Visser, S. N., Perou, R., & Walkup, J. T. (2018). Epidemiology and impact of health care provider-diagnosed anxiety and depression among US children. *Journal of Developmental & Behavioral Pediatrics, 39*, 395-403.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78*, 246-263.

Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *American Psychologist, 57*, 111-127.

Borkowski, J. G., & Thorpe, P. K. (1994). Self-regulation and motivation: A life-span perspective on underachievement. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: Issues and educational applications* (pp. 45-73). Hillsdale, NJ: Erlbaum Associates.

Bowman, N. A., Hill, P. L., Denson, N., & Bronkema, R. (2015). Keep on truckin' or stay the course? Exploring grit dimensions as differential predictors of

educational achievement, satisfaction, and intentions. *Social Psychological and Personality Science, 6,* 639-645.

Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008). The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools. *Journal of Policy Analysis and Management, 27,* 793-818.

Brabeck, K. M., Sibley, E., Taubin, P., & Murcia, A. (2015). The influence of immigrant parent legal status on US-born children's academic abilities: The moderating effects of social service use. *Applied Developmental Science, 20*, 237–249. doi:10.1080/10888691.2015.1114420.

Brock, L. L., Rimm-Kaufman, S. E., Nathanson, L., & Grimm, K. J. (2009). The contributions of "hot"and "cool" executive function to children's academic achievement, learning-related behaviors, and engagement in kindergarten. *Early Childhood Research Quarterly, 24*, 337–349.

Broman, C. L., Mavaddat, R., & Hsu, S. (2000). The experience and consequences of perceived racial discrimination: A study of African Americans. *Journal of Black Psychology, 26*, 165-180. doi:10.1177/0095798400026002003

Brunyé, T. T., Mahoney, C. R., Giles, G. E., Rapp, D. N., Taylor, H. A., & Kanarek, R. B. (2013). Learning to relax: Evaluating four brief interventions for overcoming the negative emotions accompanying math anxiety. *Learning and Individual Differences, 27*, 1–7.

Burchinal, M., McCartney, K., Steinberg, L., Crosnoe, R., Friedman, S. L., McLoyd, V.,. NICHD Early Child Care Research Network. (2011). Examining the Black-White

achievement gap among low-income children using the NICHD study of early child care and youth development. *Child Development, 82,* 1404–1420. http://dx.doi.org/10.1111/j.1467-8624.2011.01620.

Burkley, M., Parker, J., Stermer, S. P., & Burkley, E. (2010). Trait beliefs that make women vulnerable to math disengagement. *Personality and Individual Differences, 48*, 234–238.

Burnette, J. L., O'Boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin, 139,* 655-701.

Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming.* New York: Routledge.

Caplan, N., Choy, M., & Whitmore, J. (1991). *Children of the boat people: A study of educational success.* Ann Arbor: University of Michigan Press.

Carter, R. T. (2007). Racism and psychological and emotional injury recognizing and assessing race-based traumatic stress. *The Counseling Psychologist, 35*, 13-105. DOI: 10.1177/0011000006292033

Chang, W. (2014). *Grit and academic performance: Is being grittier better?* Miami, FL: University of Miami: Open Access Dissertation. Retrieved from http://scholarlyrepository.miami.edu/oa_dissertations.

Child Trends Data Bank (2014). *Dual language learners: Indicators of child and youth well-being.* Washington, D.C.: Child Trends.

Choudhuri, D. D., Santiago-Rivera, A., & Garrett, M. T. (2012). *Counseling and diversity*. CA: Brooks/Cole.

Clark, R., Anderson, N. B., Clark, V. R., & Williams, D. R. (1999). Racism as a stressor for African Americans. A biopsychosocial model. *American Psychologist, 54*, 805–816. http://dx.doi.org/10.1037/0003-066X.54.10.805

Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the effects of poverty on academic achievement. *PNAS: Proceedings of the National Academiy of Sciences of the United States of America, 113,* 8664-8668.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the U.S. In Spacapam S. & Oskamp S. (Eds.), *The social psychology of health: Claremont Symposium on Applied Social Psychology* (pp. 31–67). Newbury Park, CA: Sage.

Contreras, F. (2009). Sin papeles y rompiendo barreras: Latino students and the challenges of persisting in college. *Harvard Educational Review, 79,* 610-632.

Costa, K. (2016, August 9). Stress and student success. *Inside Higher Ed.* Retrieved from https://www.insidehighered.com/advice/2016/08/09/stress-management-can-help-more-students-succeed-college-essay

Credé, M., Tynan, M. C., & Harms, P. D. (2016). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*. Advance online publication. http://dx.doi.org/10.1037/pspp0000102

Cummins, J. (2011). Literacy engagement: Fueling academic growth for English learners. *The Reading Teacher, 65,* 142-146.

Cury, F., Elliot, A. J., Da Fonseca, D., & Moller, A. C. (2006). The social-cognitive model of achievement motivation and the 2 x 2 achievement goal framework. *Journal of Personality and Social Psychology, 90,* 666-679.

Darwin, C., & Prodger, P. (1998). *The expression of the emotions in man and animals*. Oxford University Press, USA.

Datu, J. A. D., Valdez, J. P. M., & King, R. B. (2016). Perseverance counts but consistency does not! Validating the Short Grit Scale in a collectivist setting. *Current Psychology, 35*, 121-130.

De Castella, K., & Byrne, D. (2015). My intelligence may be more malleable than yours: The revised implicit theories of intelligence (self-theory) scale is a better predictor of achievement, motivation, and student disengagement. *European Journal of Psychology of Education, 30,* 245-267.

De los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131,* 483-509.

Denby, D. (2016 June 21). The limits of "grit." *The New Yorker.* Retrieved from https://www.newyorker.com/culture/culture-desk/the-limits-of-grit

Denham, S. A. (2006). Social-emotional competence as support for school readiness: What is it and how do we assess it? *Early Education and Development, 17*, 57–89. http://dx.doi.org/10.1207/s15566935eed1701_4

Department of Education. (2014). Local education agency universe survey (v.1a). 'Common core of data]. Washington, D.C.: National Center for Education Statistics.

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Devos, T., Huynh, Q., & Banaji, M. R. (2012). Implicit self and identity. In M. R. Leary & J. Tangney (Eds.), *Handbook of self and identity* (2nd ed., pp. 155–179). New York, NY: Guilford Press.

Diseth, A., Meland, E., & Breidablik, H. J. (2014). Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence. *Learning and Individual Differences, 35*, 1-8.

Duckworth, A. L. (2016). *Grit: The power of passion and perseverance.* New York: Scribner.

Duckworth, A. L., & Carlson, S. M. (2013). Self-regulation and school success. In B. W. Sokol, F. M. E. Grouzet, & U. Müllen (Eds.), *Self-regulation and autonomy: Social and developmental dimensions of human conduct* (pp. 208-230). New York, NY: Cambridge University Press.

Duckworth, A. L., & Eskreis-Winkler, L. (2013). True grit. *Association for Psychological Science.* Retrieved from https://www.psychologicalscience.org/observer/true-grit?utm_co

Duckworth, A. L., & Gross, J. J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science, 23*, 319-325.

Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2010). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social Psychological and Personality Science, 2*, 174-181.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*, 1087-1101.

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment, 91*, 166-174.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*, 405-432.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development.* Philadelphia, PA: Psychology Press.

Dweck, C. S. (2002). The development of ability conceptions. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 57-88). San Diego, CA: Academic Press.

Dweck, C. S. (2015). Carol Dweck revisits the 'growth mindset.' *Education Week (online)*. Retrieved from http://www.edweek.org/ew/articles/2015/09/23/carol-dweck-revisits-the-growth-mindset.html?cmp=eml-eb-mindset-recur.v2

Dweck, C. S., Chiu, C. Y., & Hong, Y. Y. (1995). Implicit theories and their role in judgments and reactions: A word from two perspectives. *Psychological Inquiry, 6*, 267-285.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256-273.

Eaton, M. J., & Dembo, M. H. (1997). Differences in the motivational beliefs of Asian American and non-Asian students. *Journal of Educational Psychology, 89,* 433-440.

Eisenberg, N., Fabes, R. A., Shepard, S. A., Murphy, B. C., Guthrie, I. K., Jones, S., …, & Maszk, P. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development, 68,* 642-664.

Elias, M. J., & Haynes, N. M. (2008). Social competence, social support, and academic achievement in minority, low-income, urban elementary school children. *School Psychology Quarterly, 23,* 474-495.

Ellis, B. H., MacDonald, H. Z., Klunk-Gillis, J., Lincoln, A., Strunin, L., & Cabral, H. J. (2001). Discrimination and mental health among Somali refugee adolescents: The role of acculturation and gender. *American Journal of Orthopsychiatry, 80,* 564-575.

Eskreis-Winkler, L., Shulman, E. P., Beal, S. A., & Duckworth, A. L. (2014). The grit effect: Predicting retention in the military, the workplace, school and marriage. *Frontiers in Psychology, 5,* 1-12.

Evans, G. W., Brooks-Gunn, J., & Kato Klebanov, P. (2011). Stressing out the poor: Chronic physiological stress and the income-achievement gap. *Community Investments, 23,* 22-27.

Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition and Emotion, 6,* 409–434, doi: 10.1080/02699939208409696.

Farrington, C., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T., Johnson, D., & Beechum, N. (2012). *Teaching adolescents to become learners: The role of noncognitive factors in shaping school performance–A critical literature review.* Chicago, IL: Consortium on Chicago School Research.

Fite, P. J., Rubens, S. L., & Cooley, J. L. (2014). Influence of contextual factors on academic performance in a sample of Latino adolescents: The moderating role of school attachment. *Journal of Community Psychology, 42*, 924-936.

Flook, L., & Fuligni, A. J. (2008). Family and school spillover in adolescents' daily lives. *Child Development, 79,* 776-787.

Ford, D. Y., Grantham, T. C., & Whiting, G. W. (2008). Culturally and linguistically diverse students in gifted education: Recruitment and retention issues. *Exceptional Children, 74,* 289-306.

Franiuk, R., Pomerantz, E., M., & Cohen, D. (2004). The causal role of theories of relationships: Consequences for satisfaction and cognitive strategies. *Personality and Social Psychology Bulletin, 30,* 1494-1507.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74,* 54-109.

Garmezy, N., Masten, A. S., & Tellegen, A. (1984). The study of stress and competence in children: A building block for developmental psychopathology. *Child Development, 55,* 97-111.

Gillock, K. L., & Reyes, O. (1999). Stress, support, and academic performance of urban, low-income, Mexican American adolescents. *Journal of Youth and Adolescence, 28,* 259-282.

Gonida, E., Kiosseoglou, G., & Leondari, A. (2006). Implicit theories of intelligence, perceived academic competence, and school achievement: Testing alternative models. *The American Journal of Psychology, 119,* 223-238.

Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Applied Developmental Psychology, 24,* 645-662.

Graziano, P. A., Reavis, R. D., Keane, S. P., & Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *Journal of School Psychology, 45,* 3-19.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. Review of *General Psychology, 2*, 271 – 299

Gross, J. J. (2013). Emotion regulation: taking stock and moving forward. *Emotion, 13,* 359-365.

Gumora, G., & Arsenio, W. F. (2002). Emotionality, emotion regulation, and school performance in middle school children. *Journal of School Psychology, 40,* 395–413.

Guthrie, J. T. (2004). Teaching for literacy engagement. *Journal of Literacy Resarch, 36,* 1-30.

Hancock, G. R. (2018). *Structural equation modeling: A first course.* Presented at the University of Maryland, College Park.

Hancock, G. R., & Mueller, R. O. *Structural equation modeling: A second course* (2nd ed.). Charlotte, NC: Information Age Publishing, Inc.

Hashemi, M. (2011). Language stress and anxiety among the English language learners. *Procedia – Social and Behavioral Sciences, 30,* 1811-1816.

Heckman, J. J. (2013). *Giving kids a fair chance.* Boston, MA: The MIT Press.

Hemphill, F. C., and Vanneman, A. (2010). *Achievement gaps: How Hispanic and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress* (NCES 2011-459). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Hernandez, D. J. (2011). *Double jeopardy: How third-grade reading skills and poverty influence high school graduation*. The Annie E. Casey Foundation: Washington, DC.

Hong, Y., Chiu, C., Dweck, C. S., Lin, D. M., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology, 77,* 588-599.

Howell, A. J., & Buro, K. (2009). Implicit beliefs, achievement goals and procrastination: a meditational analysis. *Learning and Individual Differences, 19*, 151–154.

Howse, R. B., Calkins, S. D., Anastopoulos, A. D., Keane, S. P., & Shelton, T. L. (2003). Regulatory contributors to children's kindergarten achievement. *Early Education and Development, 14*, 101-120.

Ivcevic, Z., & Brackett, M. (2014). Predicting school success: Comparing conscientiousness, grit, and emotion regulation ability. *Journal of Research in Personality, 52*, 29-36.

Izard, C. E., Libero, D. Z., Putnam, P., & Haynes, O. M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Perosnality and Social Psychology, 64,* 847-860.

Jasinskaja-Lahti, I., & Liebkind, K. (2001). Perceived discrimination and psychological adjustment among Russian-speaking immigrant adolescents in Finland. *International Journal of Psychology, 36,* 174-185.

Joëls, M., Pu, Z., Wiegert, O., Oitzl, M. S., & Krugers, H. J. (2006). Learning under stress: How does it work? *Trends in Cognitive Sciences, 10,* 152-158.

Johnson, E. S., Pool, J. L., & Carter, D. R. (2011). Validity evidence for the test of silent reading efficiency and comprehension (TOSREC). *Assessment for Effective Intervention, 37,* 50-57.

Jones, E. E., & Berglas, S. (1978). Control of attributions about the self through self-handicapping strategies: the appeal of alcohol and the role of underachievement. *Personality and Social Psychology Bulletin, 4*, 200–206.

Jones, B. D., Wilkins, J. L. M., Long, M. H., & Wang, F. (2012). Testing a motivational model of achievement: How students' mathematical beliefs and interests are related to their achievement. *European Journal of Psychology of Education, 27,* 1-20.

Kaplan, D. S., Liu, R. X., & Kaplan, H. B. (2005). School related stress in early adolescence and academic performance three years later: The conditional influence of self expectations. *Social Psychology of Education, 8,* 3-17.

Keane, S. P., & Calkins, S. D. (2004). Predicting kindergarten peer social status from toddler and preschool problem behavior. *Journal of Abnormal Child Psychology, 32*, 409-423.

Keller, A., Litzelman, K., Wisk, L. E., Maddox, T., Cheng, E. R., Creswell, P. D., & Witt, W. P. (2012). Does the perception that stress affects health matter? The association with health and morality. *Health Psychology, 31,* 677-684.

Keys-Adair, J. (2015). *The impact of discrimination on the early schooling experiences of children from immigrant families.* Washington, DC: Migration Policy Institute.

Kim, N. M., Grant, H., & Dweck, C. S. (2000). Views of intelligence: A comparative study of effort and ability beliefs in Korean and American students. *Unpublished manuscript.* Columbia University: New York.

King, R. B., McInerney, D. M., & Watkins, D. A. (2012). How you think about your intelligence determines how you feel in school: The role of theories of intelligence on academic emotions. *Learning and Individual Differences, 22,* 814-819.

Lee, V. E., Smith, J. B., Perry, T. E., & Smylie, M. A. (1999*). Social support, academic press, and student achievement: A view from the middle grades in Chicago.* Retrieved from http://eric.ed.gov/?id=ED439213

LePine, J. A., LePine, M. A., & Jackson, C. L. (2004). Challenge and hindrance stress: Relationships with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology, 89,* 883-891.

Levy, D. J., Heissel, J. A., Richeson, J. A., & Adam, E. K. (2016). Psychological and biological responses to race-based social stress as pathways to disparities in educational outcomes. *American Psychologist, 71,* 455-473.

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.

Longhi, D. (2015, February). *Higher resilience and school performance among students with disproportionately high adverse childhood experiences (ACEs) at Lincoln High, in Walla Walla, Washington, 2009 to 2013*. Olympia, WA: Participatory Research Consulting, LLC.

Lucas, G. M., Gratch, J., Cheng, L., & Marsella, S. (2015). When the going gets tough: Grit predicts costly perseverance. *Journal of Research in Personality, 59,* 15-22.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71,* 543-562.

Magai, C., & O'Neal, C. R. (1997). *Emotions as a child (child version).* Unpublished manuscript, Long Island University, Brooklyn.

Major, B., & O'Brien, L. T. (2005). The social psychology of stigma. *Annual Review of Psychology, 56,* 393–421. http://dx.doi.org/10.1146/annurev.psych.56.091103.070137

Marcella, J., Howes, C., & Fuligni, A. S. (2014). Exploring cumulative risk and family literacy practices in low-income Latino families. *Early Education & Development, 25,* 36-55.

Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *America Educational Research Journal, 37,* 153-184.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56,* 227-238.

McCombs, B. L., & Pope, J. E. (1994). Motivating hard to reach students. *American Psychological Association.* Retrieved from http://psycnet.apa.org/psycinfo/1994-97872-000/.

McKinsey and Company. (2009). *The economic impact of the achievement gap in America's schools.* Retrieved from http://dropoutprevention.org/wp-content/uploads/2015/07/ACHIEVEMENT_GAP_REPORT_20090512.pdf

Mercer, S., & Ryan, S. (2009). A mindset for EFL: Learners' beliefs about the role of natural talent. *ELT Journal, 64,* 436-444.

Migration Policy Institute. (2017). *Top languages spoken by English language learners nationally and by state: ELL information center fact sheet series*. Retrieved from http://www.migrationpolicy.org/research/top-languages-spoken-english-language-learners-nationally-and-state

Mischel, W. (2014). *The marshmallow test: Why self-control is the engine of success.* New York, NY: Back Bay Books.

Mischel, W., & Ayduk, O. (2002). Self-regulation in a cognitive-affective personality system: Attentional control in the service of the self. *Self and Identity, 1,* 113-120. DOI: 10.1080/152988602317319285

Mischel, W., Ayduk, O., Berman, M. G., Casey, B. J., Gotlib, I. H., Jonides, J., …, & Shoda, Y. (2011). 'Willpower' over the life span: Decomposing self-regulation. *Social Cognitive & Affective Neuroscience, 6*, 252-256.

Moll, L., Estrada, E., Diaz, E., & Lopes, L. (1980). The construction of learning environments in two languages. *The Quarterly Newsletter for the Laboratory of Comparative Human Cognition*, *2*, 53-58.

Moore, J. L., Ford, D. Y., & Milner, H. R. (2005). Underachievement among gifted students of color: Implications for educators. *Theory into Practice, 44*, 167-177. DOI: 10.1207/s15430421tip4402_11

Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology*, *75*, 33-52.

Muenks, K., Wigfield, A., Yang, J. S., & O'Neal, C. R. (2016). How true is grit? Assessing its relations to high school and college students' personality characteristics, self-regulation, engagement, and achievement. *Journal of Educational Psychology, 109*, 599–620. doi:10.1037/edu0000153.

Murphey, D. (2014, December). The academic achievement of English language learners: Data for the U.S. and each of the states (Issue Brief No. 2014-62). Retrieved from https://www.childtrends.org/wp-content/uploads/2015/07/2014-62AcademicAchievementEnglish.pdf

Murray, D. W., Rosanbalm, K., & Christopoulos, C. (2016). *Self-regulation and toxic stress report 3: A comprehensive review of self-regulation interventions from*

birth to young adulthood OPRE Report #2016-34. Office of Planning, Research, and Evaluation: Washington, DC.

Múthen, L. K. (2011, September 26). Re: MLR acronym? [Online discussion group]. Retrieved from http://statmodel2.com/discussion/.

Napora, L. (2013). *The impact of classroom-based meditation practice on cognitive engagement, mindfulness and academic performance of undergraduate college students*. State University of New York at Buffalo. Retrieved from http://gradworks.umi.com/35/98/3598720.html

Nastasi, B.K., Varjas, K., Bernstein, R., & Jayasena, A. (2000). Conducting participatory culture-specific consultation: A global perspective on multicultural consultation. *School Psychology Review, 29*, 401-413.

National Academies of Science, Engineering, and Math (2017). *Promoting the educational success of children and youth learning English: Promising futures.* Washington, DC: The National Academies Press. https://doi.org/10.17226/24677

National Association of School Psychologists (2015). *Creating trauma-sensitive schools: Supportive policies and practices for learning*. Retrieved from https://www.nasponline.org/Documents/Research%20and%20Policy/Research%20Center/Trauma_Sensitive_Schools_2015.pdf

National Center for Education Statistics (2015). *The nation's report card: Reading 2015.* National Center for Education Statistics. Retrieved from https://www.nationsreportcard.gov/reading_math_2015/#reading/acl?grade 1⁄4 4.

National Center for Education Statistics. (2017). *The condition of education 2017* (2017-144). Retrieved from https://nces.ed.gov/fastfacts/display.asp?id=96

Nota, L., Soresi, S., & Zimmerman, B. J. (2004). Self-regulation and academic achievement and resilience: A longitudinal study. *International Journal of Educational Research, 41*, 198-215.

Nurmi, J., Aunola, K., Salmela-Aro, K., & Lindroos, M. (2003). The role of success expectation and task avoidance in academic performance and satisfaction: three studies on antecedents, consequences and correlates. *Contemporary Educational Psychology, 28*, 59–90.

O'Neal, C. R. (2017). Individual versus peer grit: Influence on later individual literacy achievement of dual language learners. *School Psychology Quarterly.* Advance online publication

O'Neal, C. R. (2018). The impact of stress on later literacy achievement via grit and engagement among dual language elementary school students. *School Psychology International,*

O'Neal, C. R., Espino, M. M., Goldthrite, A., Morin, M. F., Weston, L., Hernandez, P., & Fuhrmann, A. (2016). Grit under duress: Stress, strengths, and academic success among non-citizen and citizen Latina/o first-generation college students. *Hispanic Journal of Behavioral Sciences, 38,* 446-466.

Owens, M., Stevenson, J., Norgate, R., & Hadwin, J. A. (2008). Processing efficiency theory in children: Working memory as a mediator between trait anxiety and academic performance. *Anxiety, Stress, and Coping, 21*, 417-430.

Park, M., O'Toole, A., & Katsiaficas, C. (2017*). Dual language learners: A national demographic and policy profile.* Washington, D.C.: Migration Policy Institute.

Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science, 26*, 784-793.

Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. *Journal of Educational Psychology, 101*, 115-135.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37*, 91-105.

Piña-Watson, B., López, B., Ojeda, L., & Rodriguez, K. M. (2015). Cultural and cognitive predictors of academic motivation among Mexican American adolescents: Caution against discounting the impact of cultural processes. *Journal of Multicultural Counseling and Development, 43,* 109-121.

Pines, M. (1975, December). In praise of "invulnerables." *APA Monitor,* p. 7.

Pintrich, P. R. (2000). An achievement goal theory perspective on issues in motivation terminology, theory, and research. *Contemporary Educational Psychology, 25,* 92-104.

Porter, A. (2007). Rethinking the achievement gap. *PennGSE: A Review of Research, 5,* 1-17. Philadelphia, PA: University of Pennsylvania.

Potegal, M., Stemmler, G., & Spielberger, C. (2010). *International handbook of anger.* New York: Springer.

Putwain, D. W. (2009). Situated and contextual features of test anxiety in UK adolsecent students. *School Psychology International, 30*, 56–74, doi: 10.1177/0143034308101850.

Qin, S., Hermans, E. J., van Marle, H. J. F., Luo, J., & Fernández, G. (2009). Acute psychological stress reduces working memory-related activity in the dorsolateral prefrontal cortex. *Biological Psychiatry, 66,* 25-32.

Reardon, S. F., & Galindo, C. (2009). The Hispanic-White achievement gap in math and reading in the elementary grades. *American Educational Research Journal, 46*, 853–891. http://dx.doi.org/10.3102/0002831209333184

Renaud-Dubé, A., Guay, F., Talbot, D., Taylor, G., & Koestner, R. (2015). The relations between implicit intelligence beliefs, autonomous academic motivation, and school persistence intentions: A mediation model. *Social Psychology of Education, 18*, 255-272.

Renck Jalongo, M., & Hirsh, R. A. (2010). Understanding reading anxiety: New insights from neuroscience. *Early Childhood Education Journal, 37,* 431-435.

Rhodewalt, F. (1994). Conceptions of ability, achievement goals, and individual differences in self-handicapping behavior: on the application of implicit theories. *Journal of Personality, 62*, 67–85.

Rivera, F., Lopez, I., Gurnaccia, P., Ramirez, R., Canino, G., & Bird, H. (2011). Perceived discrimination and adolescent behaviors in Puerto Rican children. *Journal of Immigrant and Minority Health, 13,* 453-461.

Roberti, J. W., Harrington, L. N., & Storch, E. A. (2006). Further psychometric support for the 10-item version of the perceived stress scale. *Journal of College Counseling, 9,* 135-147.

Robertson-Kraft, C., & Duckworth, A. L. (2013). True grit: Trait-level perseverance and passion for long-term goals predicts effectiveness and retention among novice teachers. *Teachers College Record, 116*, 1-27.

Robins, R. W., & Pals, J. L. (2002). Implicit self-theories in the academic domain: Implications for goal orientation, attributions, affect, and self-esteem change. *Self and Identity, 1,* 313-336.

Roche, C., & Kuperminc, G. P. (2012). Acculturative stress and school belonging among Latino youth. *Hispanic Journal of Behavioral Sciences, 34*, 61-76.

Romero, C., Master, A., Paunesku, D., Dweck, C. S., & Gross, J. J. (2014). Academic and emotional functioning in middle school: the role of implicit theories. *Emotion, 14*, 227-234.

Romero, A. J., & Roberts, R. E. (2003). Stress within a bicultural context for adolescents of Mexican descent. *Cultural Diversity and Ethnic Minority Psychology*, *9*, 171–184. doi:10.1037/1099-9809.9.2.171

Rose, M. (2014). Character education: A cautionary note. In *Essays on Character and Opportunity.* Center on Children and Families at Brookings. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/characterandopportunityessays-17.pdf

Ross, M. (1989). Relation of implicit theories to the construct of personal histories. *Psychological Review, 96,* 341–357. doi:10.1037/0033-295X.96.2.341

Shechtman, N., DeBarger, A. H., Dornsife, C., Rosier, S., & Yarnall, L. (2013). *Promoting grit, tenacity, and perseverance: Critical factors for success in the 21st century*. Washington, DC: Office of Educational Technology.

Shields, A., & Cicchetti, D. (1998). Reactive aggression among maltreated children: The contributions of attention and emotion dysregulation. *Journal of Clinical Child Psychology, 27*, 381-395.

Siegel, L. S. (1004). Working memory and reading: A life-span perspective. *International Journal of Behavioral Development, 17,* 109-124.

Sirin, S. R., Rogers-Sirin, L., Cressen, J., Gupta, T., Ahmed, S. F., & Novoa, A. D. (2015). Discrimination-related stress effects on the development of internalizing symptoms among Latino adolescents. *Child Development, 86,* 709-725.

Snyder, T. D., & Dillow, S. A. (2012). *Digest of Education Statistics 2011.* (NCES 2012-001). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://nces.ed.gov/pubs2012/2012001.pdf

Steele, C. M. (2010). *Whistling Vivaldi: How stereotypes affect us and what we can do*. New York, NY: W. W. Norton.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*, 797-811.

Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. In M. P. Zanna (Ed.),

Advances in experimental social psychology (Vol. 34, pp.379–440). San Diego, CA: Academic Press.

Stipek, D., & Gralinski, J. H. (1996). Children's beliefs about intelligence and school performance. *Journal of Educational Psychology, 88,* 397-407.

Strayhorn, T. L. (2014). What role does grit play in the academic success of black male collegians at predominantly white institutions? *Journal of African American Studies, 18,* 1-10.

Suárez-Orozco, C., Pimentel, A., & Martin, M. (2009). The significance of relationships: Academic engagement and achievement among newcomer immigrant youth. *Teachers College Record, 111,* 712-749.

Taboada, A., & Rutherford, V. (2011). Developing reading comprehension and academic vocabulary for English language learners through science content: A formative experiment. *Reading Psychology, 32,* 113-157.

Taylor, J. M. (2015). Psychometric analysis of the ten-item perceived stress scale. *Psychological assessment, 27,* 90-101.

Thompson, R. A. (1994). Emotion regulation: In search of definition. In N. A. Fox (Ed.), The development of emotion regulation: Biological and behavioral considerations. *Monographs of the Society for Research in Child Development, 59,* 25 – 52.

Thompson, R., & Whimper, L. A. (2010). Exposure to family violence and reading level of early adolescents. *Journal of Aggression, Maltreatment & Trauma, 19,* 721-733.

Thompson Jr., T., & Rippey Massat, C. (2005). Experiences of violence, post-traumatic stress, academic achievement and behavior problems of urban African American children. *Child and Adolescent Social Work Journal, 22,* 367-393.

Toppelberg, C. O., & Collins, B. A. (2010). Language, culture, and adaption in immigrant children. *Child and Adolescent Psychiatric Clinics of North America, 19,* 697-717.

Trentacosta, C. J., & Izard, C. E. (2007). Kindergarten children's emotion competence as a predictor of their academic competence in first grade. *Emotion, 7,* 77-88.

Troy, A. S., & Mauss, I. B. (2011). Resilience in the face of stress: Emotion regulation as a protective factor. In S. M. Southwick, B. T. Litz, D. Charney, & M. J. Friedman (Eds.), *Resilience and mental health: Challenges across the lifespan* (pp. 30–44). Cambridge, England: Cambridge University Press.

Valiente, C., Lemery-Chalfant, K., & Swanson, J. (2010). Prediction of kindergartners' academic achievement from their effortful control and emotionality: Evidence for direct and moderated relations. *Journal of Educational Psychology, 102,* 550-560.

Valiente, C., Swanson, J., & Eisenberg, N. (2012). Linking students' emotions and academic achievement: When and why emotions matter. *Child Development Perspectives, 6,* 129-1365.

Vanderbilt-Adriance, E., & Shaw, D. S. (2008). Protective factors and the development of resilience in the context of neighborhood disadvantage. *Journal of Abnormal Child Psychology, 36,* 887-901.

Vanneman, A., Hamilton, L., Anderson, J. B., & Rahman, T. (2011). *Achievement gaps: How black and white students in public schools perform in mathematics and*

reading on the National Assessment of Educational Progress. Washington, D. C.: National Assessment of Educational Progress.

Wagner, R. K., Torgesen, J., Rashotte, C. A., & Pearson, N. (2010). *Test of silent reading efficiency and comprehension.* Austin, TX: Pro-Ed.

West-Olatunji, C. A., & Conwill, W. (2011). *Counseling & diversity: Counseling African Americans.* CA: Brooks/Cole.

Weston, L. (2017). Can grit fix the achievement gap? An investigation of grit's conceptual uniqueness and predictive value in diverse student achievement (Unpublished doctoral dissertation). University of Maryland, College Park, College Park, MD.

Wheldall, K., & Merrett, F. (2006). Which classroom behaviours do primary school teachers say they find most troublesome? *Educational Review, 40,* 13-27.

Williams, D. R. (1999). Race, socioeconomic status, and health. The added effects of racism and discrimination. *Annals of the New York Academy of Sciences, 896,* 173–188. http://dx.doi.org/10.1111/j.1749-6632.1999.tb08114.x

Willoughby, M., Kupersmidt, J., Voegler-Lee, M., & Bryant, D. (2011). Contributions of hot and cool self-regulation to preschool disruptive behavior and academic achievement. *Developmental Neuropsychology, 36,* 162–180.

Witherington, D. C., & Crichton, J. A. (2007). Frameworks for understanding emotions and their development: functionalist and dynamic systems approaches. *Emotion, 7,* 628-637.

Yeager, D. S., Lee, H. Y., & Jamieson, J. P. (2016). How to improve adolescent stress responses: Insights from integrating implicit theories of personality and biopsychosocial models. *Psychological Science, 27,* 1078-1091.

Zeng, G., Hou, H., & Peng, K. (2016). Effect of growth mindset on school engagement and psychological well-being of Chinese primary and middle school students: The mediating role of resilience. *Frontiers in Psychology, 7,* 1-8.

Zhou, Q., Main, A., & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment: A longitudinal study. *Journal of Educational Psychology, 102,* 180–196.

Zong, J., & Batalova, J. (2015). *The limited English proficient population in the United States.* Washington, DC: Migration Policy Institute.