The Relationship Between Student Social Emotional Learning Constructs of Grit, Self-Efficacy, and Emotional-Regulation and Student Measure of Academic Progress Mathematics Score Growth

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Abstract

The purpose of this study was to explore the relationship between social and emotional learning and student academic growth. The first purpose of this study was to determine whether there was a correlation between students' grit, self-efficacy, or emotional regulation scores and their Measure of Academic Progress (MAP) mathematics growth. The second purpose of this study was to determine if the correlation between a students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth is affected by their ELL status, SES, gender, grade level, race, and special education status. Data collected from District O, a large suburban district located in the Kansas City metropolitan area, was used in this study. The samples were collected from students enrolled in Grades 3-5 during the 2017-2018 school year in 35 elementary schools. Data analyses showed there were weak positive relationships between students' grit scores and students' MAP mathematics growth, between students' self-efficacy scores and students' MAP mathematics growth, and between students' emotional regulation scores and students' MAP mathematics growth. Data analyses also showed the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) was stronger in Grade 5 than in Grade 4 or Grade 3; the relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) was stronger for students in Grade 5 than in Grade 4 or Grade 3, and stronger in Grade 4 than in Grade 3; and the relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) was stronger for students in Grade 5 than in Grade 4 or Grade 3. Based on the findings from this study, additional research is recommended, including replicating this study in other districts, using a

different measurement of student achievement such as state assessment results, and expanding the focus to include reading achievement.

Dedication

To say that writing this dissertation was one of the most difficult challenges in the past few years would be a lie. I found that working toward this degree was the most in-depth form of self-discovery that I could have found to keep focus on life. With the beginning of this endeavor, my grandfather encouraged nothing but the best. I was determined to work up to his expectations. Following his passing, I continued to work and strive to complete what I had begun. My family was not only supportive but also extremely persistent on the importance of completing what I had set out to achieve. I had yet another setback. My husband, my best friend in life, lost his lifelong battle with Type 1 diabetes. I want to thank Mike for helping me to become the person I am and continuing to push me to be my very best. My two amazing children, Michael and Alexandrea, learned how to have patience and understanding far beyond the time they should have. They continue to push me and motivate me to be the best mom, teacher, and person I can be. In this, I wanted them to see that regardless of life's speedbumps, we take those moments to slow down, and then step on the gas and go again.

To my friends and family who have supported the idea, watched kids, read papers, offered opinions, and never ceased to believe in me-- thank you. To my students who have been there each year to hear me say that I am going to complete this degree and show how important it is to reach for the stars and to set big goals. Thank you for encouraging me and believing that I would do it. To my past teachers, colleagues, mentors, and the many role models that have helped to guide and encourage me to continue to work in the field of teaching the young minds of our future, thank you.

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Chapter 1

Introduction

Social emotional learning (SEL) is "the process through which children and adults learn and apply skills necessary to understand and manage emotions, set goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2018, p. 1). Today's students face an abundance of social and emotional challenges that impact their academic abilities and physical wellbeing (Antioch University Center for Behavior Health Innovation, 2017).

Public education is on a continuous search to find ways to meet the needs of all students at an individual level, both academically and emotionally. Between 14% and 20% of children and adolescents aged 8-15 experience a mental, emotional, or behavioral conflict each year. Only half of those receive some type of counseling to learn how to manage their emotions (Antioch University Center for Behavior Health Innovation, 2017). "Students who receive higher test scores do not always translate as mentally healthy learners" (Karten, 2018, p. 2). Research has shown that students who participate in SEL have improved their behavior, attendance, and academic performance (Panorama Education, 2017). Many schools have found that this was true (Panorama Education, 2017). The focus on SEL skills is intertwined with academic success. There is a growing consensus among educators, researchers, and policymakers that emotional intelligence is essential for students to develop, both for their future wellbeing as well as their future workplace success (MacCann et al., 2019).

Background

SEL is considered critical to becoming a highly functioning adult (Beakey, Bishop-Josef, & Watson, 2017). The concept is introduced to us as toddlers, when our parents encouraged us to be a sharing friend or to take turns and play nice. As kids, we play sports and watch television, which provided the image or idea of how we should act: what was socially acceptable and what was not. In some homes, children are raised with morals and life lessons on which to live. The youth are guided by what respect is and how to show respect. However, at the age of 5 or 6, we spend more time in school each day than we do in our homes. For some, school is the one place that provides lessons on managing emotions, learning life lessons on how to succeed, and making and maintaining friendships. According to Baghian, Sari, Shati, Fallahzadeh, & Ahmadi (2019), "The successful acquisition of the psychological and social competences in childhood is the foundation of healthy growth and successful adulthood" (p. 1). When emotional needs are supported, confidence and academic abilities tend to improve. Children spend almost half of their lives in the school environment; hence, their experiences and relationships in school can have a good impact on their health and affect their academic behavior and performance. Because of the constant need to find the best teaching strategies and the importance of meeting all student's needs, updated research is needed.

District O is a large suburban district in the Kansas City metropolitan area. During the 2017-2018 school year, the district's 30,055 students were enrolled in 35 elementary schools, 10 middle schools, five high schools, and seven other educational facilities. In 2018 the district employed 2,605 certified staff as well as 1,854 classified staff (District O, 2018). Of the 30,055 students who were enrolled in District O, shown

in Table 1, the demographics reflect the population to be diverse in the areas of ethnicity, socioeconomic status, English language learner (ELL) status, and special education status.

Table 1

2017-2018 District O Demographic Information

Subgroup	Percentage
Race/Ethnicity	
Minority	35.8
Non-Minority	64.2
Gender	
Male	51.4
Female	48.6
Socioeconomic status	
Free/Reduced Lunch	48.1
Full Pay Lunch	51.9
ELL status	
ELL	10.6
Non-ELL	89.4
Special Education Status	
Students with Disabilities	14.0
Students without Disabilities	86.0
Gifted (Included in Students without Disabilities)	2.7

Note. Adapted from *District Overview* (director of assessment and research, personal communication, June 8, 2020).

In a 2018 interview with the executive director of general administration of elementary education of District O, she shared recent statistics and a conversation with then Kansas Governor Brownback in regards to data collected statewide on student suicides. In 2018, Governor Colyer shared that Kansas would participate in the Kansas Can initiative developed by Education Commissioner Watson in hopes of improving the low graduation rate, the ever-changing workforce needs, and as a way to improve the social-emotional skills of students in the state. According to the executive director of general administration of elementary education (personal communication, 2018), District O leaders decided to implement the Second Step program into its classrooms as well as use the Panorama survey tools to help gauge student's perceptions of their grit, self-efficacy, and emotional regulation. The district initially implemented the program into its Title 1 schools during the 2017-2018 school year.

According to the assistant superintendent of support services and middle school education (personal communication, March 14, 2018), the state of Kansas and the school district were focusing on and trends that are seen within the district. The executive director executive director of general administration of elementary education emphasized that the district is expected to observe, review, and "teach" students what is missing. However, District O found that a baseline of data was needed to begin the planning process. District O was using the scores from the beginning of the year Measure of Academic Progress (MAP) and the student responses on Panorama surveys from the first year of implementation to plan instruction (assistant superintendent of support services and middle school education, personal communication, March 14, 2018).

District O focuses on preparing students for their future. To be prepared for their future, not only is it necessary for students to learn and acquire a high school diploma, but also to acquire social skills. During an interview with the assistant superintendent of support services and middle school education (personal communication, May 14, 2018), she mentioned that the focus of District O schools would be on Kansas Can. This new "vision for education calls for a more student-focused system that provides support and resources for individual [student] success and will require everyone to work together to make it a reality" (Kansas State Department Education, 2018, p. 1). In District O, between 2015 and 2018, eight students and one teacher had taken their own lives. The losses were devastating, and administrators and staff knew strategies were needed to support students' and staffs' social and emotional wellbeing. The leaders from District O decided in addition to having academics a continued priority, they would focus on SEL. District O's educators began by collecting SEL data and teaching SEL skills through Panorama (survey) in every classroom in the fall of 2017. District leaders researched programs that allowed students to present their understanding of social emotional learning, and they found that Panorama and Second Step were the best resources (assistant superintendent of support services and middle school education, personal communication, May 14, 2018).

According to the assistant superintendent of support services and middle school education (personal communication, May 14, 2018), the Panorama survey sheds light on "silent data," which allows the district to implement the necessary SEL skills needed into daily lessons for intervention. Panorama is an educational program developed to understand and support students' SEL – the "skills and mindsets that are key for success

in school, careers, and life" (Panorama Education, 2018, p. 1). This program is designed to track students' self-reflection on social-emotional learning, progress across academics, attendance, and behavior. While researching this program and putting it to use in the district, District O began implementation of another resource, Second Step that focuses on social emotional learning (assistant superintendent of support services and middle school education, personal communication, May 14, 2018).

According to the assistant superintendent of support services and middle school education (personal communication, May 14, 2018), the tools in identifying areas of need with Panorama, as well as the implementation of Second Step has had a positive effect. Based on the 2017 data, District O has noticed that students of certain ethnicities scored 20% lower in their sense of belonging. District O is looking to include culturally responsive pedagogy, inclusivity, and diversity into the daily instruction. Based on the data, District O has taken steps to improve not only the social emotional learning being taught in its classrooms but is also supporting students' mental wellbeing by including mental health clinics in 12 of its 56 schools (assistant superintendent of support services and middle school education, personal communication, May 14, 2018).

Research has shown that meeting students' social, emotional, and health needs can lead to improved student outcomes leading schools to change their approach to discipline and learning by implementing positive behavioral interventions and evidence-based, multi-tiered prevention, and social emotional learning (Antioch University Center for Behavior Health Innovation, 2017). To give students tools and resources to manage and develop social skills, District O implemented Second Step, which is a standalone program that gives students another tool to excel in and out of the classroom. This

program focuses on emotion management, situational awareness, and academic achievement (assistant superintendent of support services and middle school education, personal communication, May 14, 2018).

According to the assistant superintendent of support services and middle school education (personal communication, May 14, 2018), District O is using the Measures of Academic Progress (MAP) test to identify student academic growth during the school year. The district administers the MAP assessment three times a year, fall, winter, and spring. The student's Rausch Unit (RIT) score, which measures the level of question difficulty value to estimate student achievement, is independent of age or grade and reflects the instructional level at which the student is performing at the time the test is administered (Northwest Evaluation Association [NWEA], 2018).

Statement of the Problem

"Rather than diverting schools from their primary academic mission, improving students social and emotional competence advances the academic mission while ensuring they meet their broader mission by producing caring, responsible, and emotional competent students" (Ragozzino, Resnik, Utne-O'Brien, & Weissberg, 2003, p. 170). Educators are trying to find ways to promote and implement positive social emotional health and address academic concerns as they arise. Determining whether there is a connection between a student's grit, self-efficacy, and emotional regulation and student academic achievement is a common goal amongst researchers. The assistant superintendent of support services and middle school education in District O had similar opinions as CASEL that promoting students' social-emotional skills and positive attitudes should lead to improved academic performance. As a result of determining if there is a

relationship between SEL and academic achievement, educators could have a better idea of the specific focus needed to improve and guide students' learning to meet the needs of each student.

Purpose of the Study

The purpose of this study was to explore the relationship between SEL and student achievement. More specifically, the first purpose of this study was to determine whether there was a correlation between students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth. The second purpose of this study was to determine if the correlation between a students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth is affected by their ELL status, SES, gender, grade level, race, and special education status.

Significance of the Study

The significance of this study is that students' social-emotional learning might have an impact on their academic growth. It is increasingly important for educators to identify how to best support students both academically and emotionally. The results of this study can be used to extend the research already conducted to inform the decision-making process and generate further actions by leaders. Past studies conducted by a variety of researchers such as Comer (as cited in Smith 2005); Smith (2005), Weissberg (2016), and Durlak, Weissberg, Dymnicki., Taylor, & Schellinger (2011a), reflect the importance of SEL to academic success. According to Weissberg (2016), "SEL-related programs show a significant impact on academic achievement test scores" (p. 1).

Delimitations

According to Lunenburg and Irby (2008), "delimitations are self-imposed boundaries set by the researcher on the purpose and scope of the study" (p.134). The delimitations set for this study were:

1. Students enrolled in Grades 3-5 in one large suburban Kansas district were selected as participants in this study.
2. The data collection took place from August 2017 to May 2018.
3. The data collection was limited to accessing archived data from survey instruments measuring students' grit, self-efficacy, and emotional regulation and archival data for student fall to spring growth on the NWEA MAP mathematics assessments.

Assumptions

According to Lunenburg and Irby (2008), "Assumptions are positions, premises, and propositions that are accepted as operational for purposes of the research" (p. 135). This study includes the following assumptions:

1. Students were instructed on how to complete the survey and assessment.
2. Students who completed the survey and assessment understood the items, and their responses were honest.
3. Surveys and assessments were administered in the same way at all schools and grade levels.
4. The interpretation of the surveyed results accurately reflected perceptions of the students who participated.

Research Questions

The following research questions were addressed to determine which, if any, relationships exist between students' grit, self-efficacy, and emotional regulation scores and their MAP mathematics growth score from fall to spring. Also, research questions were addressed to determine if the relationships were affected by student ELL status, SES, gender, grade level, race, and special education status. Per Lunenburg and Irby (2008), research questions are the guiding force for a study. The following six research questions guided this study:

RQ1. To what extent is there a relationship between students' grit scores and students' MAP mathematics growth (fall to spring)?

RQ2. To what extent is the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

RQ3. To what extent is there a relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring)?

RQ.4. To what extent is the relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

RQ5. To what extent is there a relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring)?

RQ6. To what extent is the relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

Definition of Terms

Key terms are words that can have different meanings and that appear throughout the research study. The following terms were used throughout this study.

Emotional regulation. Lustbader (2019) defined emotional regulation as a process of recognizing and controlling feelings. It is the management of emotions and associated actions.

Grit. According to Baruch-Feldman (2017), grit is the ability to persist in something that you feel passionate about, and you persevere even when you face challenges.

Measures of Academic Progress (MAP). According to the NWEA (2018), the MAP is a "collection of purpose-built measures from the NWEA that illuminates every student's learning needs" (p. 1). MAP testing provides a deeper look at students' understanding of content. In District O, students in Grades 3-5 are tested three times a year in mathematics, and their score data is used to inform teaching.

Self-Efficacy. Zimmerman, Bandura, & Martinez-Pons (1992) defined self-efficacy as an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments.

Social emotional learning (SEL). CASEL (2018) defined SEL as **"**the process through which children and adults understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (para. 1).

Organization of the Study

This study is organized into five chapters. The first chapter included the background information on District O, as well as the statement of the problem. The purpose statement, the significance, delimitations, and assumptions of the study were provided. The research questions and definitions of terms were identified. Chapter 2 is the review of the literature, which includes a history of social emotional learning, the role of the educator, SEL supports, and Second Step, and SEL and academic achievement. Chapter 3 contains the research design, selection of participants, measurement, the data collection procedures, data analysis and hypothesis testing, and limitations of the study. Presented in Chapter 4 are the descriptive statistics and the results of the hypothesis testing. Chapter 5 includes a study summary, the findings related to the literature, and the conclusions.

Chapter 2

Review of the Literature

The purpose of this study was to identify a relationship, if any, between student grit, self-efficacy, and emotional regulation scores and MAP mathematics growth score from fall to spring. An additional purpose of the study was to determine whether the relationship was affected by the student demographic variables of ELL status, SES, gender, grade level, race, and special education status. In this chapter, the following topics are covered: history of SEL, role of the educator, SEL supports and Second Step, and SEL and academic achievement.

History of SEL

Elias et al. (1997) defined SEL as the process of acquiring core competencies to recognize and manage emotions, set and achieve positive goals, appreciate the perspectives of others, establish and maintain positive relationships, make responsible decisions, and handle interpersonal situations constructively. SEL instruction is about teaching "soft" skills or social skills that help build character and identify strategies to manage conflict better. The overall goal of SEL instruction is to help children learn to be an empathetic, caring person and to create a supportive, trusting school environment where they can feel safe and thrive. Others aimed to prevent violence and drug use in schools and to promote healthy choices, school-community connections, and generally responsible behavior. According to educational policy statements, there has been an emphasis on both social responsibility and academic skills for the past 150 years (Darling-Hammond, Flook, Cook-Harvey, Baron, & Osher, 2020; Wentzel, 1991).

Even before CASEL was formed and the term "social and emotional learning" emerged from a meeting in 1994 from the Fetzer Institute, the idea of the importance of positive motivation and waiting for a better outcome was not new (CASEL, 2018, p. 1). CASEL aspired to establish a unifying preschool to high school program that involves implementing and practicing skills and policies that build personal development and establish interpersonal relationships (Weissberg, Durlak, Domitrovich, and Gullotta, 2015). Piaget studied children's cognitive development and found that at ages 12 and up, children begin to think abstractly, reason problems, and think about ethical, social, and political issues (Cherry, 2018). Plato wrote about a "holistic curriculum" that requires a balance of training in physical education, arts, math, science, character, and moral judgment. He explained, "By maintain a sound system of education and upbringing, you produce good citizens of good character" (as cited in Cherry, 2018, p. 3).

In 1960, Comer developed the School Development Program (SDP) (Yale School of Medicine, 2018). The program began in two of the lowest income and lowest achieving elementary schools in New Haven, CT, in 1968. Comer and a team of child-focused colleagues collaborated with the schools and led them to become the best-attended schools with no serious behaviors problem. Comer (as cited in Smith, 2005) stated, "The purpose of the school is not just to raise test scores, or to give children academic learning, but to give children an experience that will help them grow and develop in ways that they can be successful, in school and as successful adults" (p. 1). Comer believed in a process for success. The process used included three teams: the school planning and management team, the student and staff support team, and the parent team (Yale School of Medicine, 2018). The teams are guided by three principles:

decision making by consensus, no-fault problem solving, and collaboration (Yale School of Medicine, 2018)

Elias et al. (2007), in their meta-analysis of 270 studies of school-based SEL preventive interventions, found a significant impact on students' social-emotional skill performance, positive self-perceptions, school bonding, and adherence to social norms, with effect sizes ranging from .22 to .61. Findings related to reduced negative behavior, school violence, and substance use were sustained through a follow-up period of at least six months. Perhaps most salient in the current education climate is that SEL-related programs showed a significant impact on academic achievement test scores (mean effect size = .37) and grades (mean effect size = .25).

In support of having a strong connection between SEL and academic achievement, Durlak et al. (2011b) reviewed a group of 213 controlled published and unpublished outcome studies that involved over 270,000 students. They wanted to identify SEL that could be implemented within the grade-level curriculum and classroom that would show a positive increase in SEL and academics. Their research focused on outcomes that could be achieved via SEL programs, academics, and the change students displayed because of their participation, and which operational program features were associated with better results. Based on their research, Durlak et al. (2011b) were able to determine that school based SEL programs produced multiple positive outcomes such as significant improvement in students' social and emotional skills, their attitudes about themselves and their school, their social and classroom behavior, and their academic success. The SEL programs reflect that incorporating the knowledge of social and

emotional skills was one of the best strategies for fostering students' development in multiple areas.

"Students who appraise themselves and their abilities realistically, regulate their feelings and behavior appropriately, interpret social cues accurately, and resolve interpersonal conflicts effectively, which in turn would lead to improved adjustment and academic performance" (Payton et al., 2008). To further their understanding and show a connection between SEL and academics, Payton et al. (2008) reviewed three research projects that included 317 studies involving 324,303 participants. Payton et al. (2008) wanted to identify the primary findings and implications of the projects by determining the impact on Grades kindergarten through Grade 8. Based on their findings, Payton et al. (2008), using a meta-analytical approach, determined that "SEL programming improved students' achievement performance by 11 to 17 percentile points" (p. 3). These gains provide evidence that SEL programs "appear to be among the most successful interventions offered to K-8 students" (Payton et al., 2008, p. 11).

Ashdown and Bernard (2012) learned SEL and its impact on intermediate students. They developed a program, You Can Do It (YCDI), and tested it on primary grades to assess their theories. "One preschool and one grade 1 class were randomly chosen to receive structured lessons in YCDI, delivered by their classroom teachers over a period of 10 weeks. While the remaining preparatory and grade 1 class served as the control group" (Ashdown & Bernard, 2012, p. 1). The designed lessons over organization, emotions, and confidence were to be taught three times a week and supported with a variety of services and resources. Findings not only included a decrease in negative behavior, but an increase in reading scores and less hyperactivity.

Role of the Educator

Teachers have long recognized that facilitating student achievement means addressing barriers to learning, of which many are social and emotional (Ragozzino et al., 2003). Teachers educate students about self-awareness and the acceptance of others. Teachers can naturally foster skills, such as providing students with emotional support, creating an opportunity for students to speak, autonomy, and practice experiences through engagement. Teachers can foster nurturing skills through interpersonal students centered instructional interactions (Weissberg, 2016). SEL skills that impact academic achievement include the ability to manage one's emotions that interfere with learning and focus, developing motivation and being able to persevere even when faced with academic setbacks, working cooperatively and effectively in the classroom and amongst peers, and setting and working toward academic goals (Ragozzino et al., 2003). Teachers have found that SEL skills can be implemented into the daily curriculum as well. Teachers can encourage active listening by having students create specific academic goals for themselves. Teachers can use this skill to teach success upon reaching goals and how to overcome personal setbacks. SEL skills can be taught during reading instruction by identifying situations in stories and with characters. Real-life events from history can be used to identify success and failure. The implementation of such activities into the curriculum promotes deeper thinking and personal connection with the academic material. By implementing SEL skills, educators can achieve a common goal to create knowledgeable, responsible, and caring students. Studies on teacher effectiveness and delivery have shown that teachers can make a significant impact on their students' lives and learning (Ragozzino et al., 2003).

Ee and Cheng (2013) conducted a qualitative study to identify teachers' perceptions of SEL, teacher's view on SEL implementation in their curriculum, and positive and negative factors that may affect the implementation of SEL. This study included 19 teachers, seven males and 12 females, from two primary and two secondary schools in Singapore. Purposive sampling was used to ensure teachers from all four subject areas were included in the study. Nine of the teachers had implemented SEL in English, eight in Math, and four in Science. In addition to implementing SEL into the academic subject area, seven of them also taught character education. The researchers found that 56% of teachers agreed that SEL helped in giving students a holistic education. "Teachers cited better self-management (44%) and social awareness (32%) as advantages of having SEL in the curriculum. Also, 38% of teachers felt that SEL helped to provide a framework for teaching social emotional competencies" (Ee & Cheng, 2013, p. 63). Teachers did perceive the importance of SEL in character building and modeling the expected values to develop student's knowledge holistically.

Sung (2015) conducted a qualitative study, in order to require and motivate educators to implement social emotional learning programs, such as the Reading, Writing, Respect, and Resolution (4Rs) program, into their already packed curriculum, and busy schedule. The 4Rs SEL program is a literacy-based curriculum for students in grades kindergarten to eighth grade that includes lessons on conflict resolution, cultural differences, and cooperation. Teachers used literacy to introduce and instruct in the areas of handling anger, listening, assertiveness, cooperation, negotiation, and building community. Hearing personal success stories from their own colleagues who have used these programs and been successful in their school communities may help encourage

teacher educators and administrators about the benefits of incorporating SEL into their school curriculum. During the qualitative study, the researcher focused on two teachers and the principal with interviews, observations, documents, and field notes to provide insight on the implementation of the 4Rs program in a public elementary school in New York City. Findings indicated a decrease in antisocial behavior among students. Students reading test scores went from a mean score baseline of 62.35 to a 63.59 following two consecutive years of the program. Teachers were not only able to receive support with implementation of the 4Rs program, but also improved their relationships with students, staff, and parents, and SEL was an essential component in the core curriculum (Sung, 2015).

Tilley (2018) conducted a qualitative study to understand teachers' perceptions of the academic and behavioral impact of social and emotional learning supports and interventions. This study was conducted in an urban public charter elementary school in Texas. The school had a student body population of approximately 300 students. The school served students from kindergarten through sixth grade during the 2017-2018 school year. Tilley sought to understand how a teacher's sense of self-efficacy regarding the implementation of social and emotional learning supports and interventions was impacted when he or she was a part of a school-based collaborative team using the continuous improvement model. Finally, Tilley sought to determine the areas of strength and the areas of growth that can be ascertained by using the continuous improvement model in a collaborative approach to identify and implement SEL supports and interventions. During this study, data was collected while the researcher conducted fieldwork and observations of four teachers. This case study took place over the course

of one year. Three key findings emerged from a thematic analysis of the interview and focus group responses: (1) the participants reported a firm belief in the significance of social and emotional supports and interventions, but they also cited a need for professional development, training, and support in order to meet student needs effectively and efficaciously; 2) the educators expressed a strong desire to address students´ social and emotional needs through a more proactive approach, rather than a reactive approach; and (3) the teachers reported a desire to be more involved in a structured, continuous approach to addressing students´ social and emotional needs, especially in the process of identification and implementation of social and emotional learning supports and interventions (Tilley, 2018).

SEL Supports and Second Step

Second Step (2019) is a program focused on "SEL that helps transform schools into supportive, successful learning environments uniquely equipped to help children thrive" (para. 1). Second Step provides a holistic approach for staff to teach, encourage, and model empathy. The classroom-based program includes a curriculum filled with ideas, structured lessons, scenarios, and role-playing for every grade level to explore social emotional growth over a period of three to four months. The content is developed around broad social and emotional skills, including perspective talking, social problem solving, and anger management.

Edwards, Hunt, Meyers, Grogg, and Jarrett (2005) evaluated the efficacy of the Second Step violence prevention curriculum designed to prevent early risk behaviors and to achieve higher academic success rates. Researchers focused on a small urban school district located in the Southeastern United States. Because all students were involved in

the intervention, a pre-post design was used. In addition, a qualitative analysis of open-ended interviews was used to obtain student and teacher perceptions of the treatment acceptability and efficacy of the violence prevention curriculum. Edwards et al. randomly selected 120 participants from the population of 455 students to participate in individual interviews. All 24 teachers participating in this research were interviewed to determine their views of the strengths, weaknesses, and outcomes of the Second Step. After 17 weeks, results showed a significant interaction between academic grades and pre/post outcomes. The fifth-grade students made a significant gain in knowledge compared to the fourth-grade students in the area of anger management. An analysis of means indicated that negative coping decreased, and positive coping increased from pre- to post-testing for both fourth- and fifth-grade students. Results also indicated that significant gains for the social growth and development on both fourth-and fifth-grade student report cards were found between the first and fourth quarter grading periods (Edwards et al. 2005).

To address a constant concern for students' social emotional learning needs, officials at one North Texas public charter elementary school chose to implement the Second Step program. McNeeley and Timmerman (2016) selected a group consisting of 409 students enrolled in kindergarten through fifth grade. The teachers were asked to implement the Second Step program to help improve four key competency areas at the school: empathy, learning, emotion management, and problem-solving. After a year, students were given a Devereux Student Strengths Assessment. The researchers used the context, input, process, product (CIPP) model to identify which parts of the program were a success and which parts might need more focus. The teachers were then administered

an end of the year survey to identify what their perceptions were of the program and the implementation process. The survey was also used to identify suggestions on how to improve the implementation. McNeeley and Timmerman (2016) found that when teachers implemented the Second Step program, students made noticeable gains in their social emotional awareness. Teachers also felt that the program was positive for students and was successful (McNeeley & Timmerman, 2016).

The Second Step program was implemented in Tacoma, Washington schools. The program was implemented in the district in the specific areas that were seen as needs in their schools. The district began to see an immediate increase in scores, absent rates decreased, and graduation rates rose (Second Step, 2018). Teachers from early learning through Grade 8 communicated invaluable skills that helped students navigate their way through school and community and promote a path of lifelong success (Second Step, 2018).

Wenz-Gross, Yoo, Upshure, & Gambino (2018) were researching the social emotional skills of our youth as key elements linked to school readiness and academic success. In a randomized cluster trial, 972 children were attending 63 preschool classrooms within 13 low-income schools. Head Start or community preschools were individually tested to examine the effects of the Second Step Early Learning (SSEL) curriculum on low-income preschool children's kindergarten school readiness through measuring executive functioning and social emotional skills in improving pre-academic skills and task behavior in preschool (Wenz-Gross et al., 2018). Findings showed that SSEL significantly increased executive functioning and gains in both pre-academics and

on-task behavior. Additionally, the findings indicated that social emotional skills had a direct and indirect effect on kindergarten readiness (Wenz-Gross et al., 2018).

According to Melnick, Cook-Harvey, & Darling-Hammond (2017), programs such as Second Step help teachers' model and instruct students on how to manage emotions. Educators model and demonstrate strategies to use when students are feeling specific reactions to certain situations. To be successful academically means that students need to feel that they have control and experience success as well as have a sense of security in their surroundings. "When classrooms are safe and engaging and learning is both supported and rewarded, students feel connected and efficacious. This allows them to develop the social and emotional, as well as academic, skills, habits, and mindsets needed to succeed in life" (Melnick et al., 2017, p. v).

SEL and Academic Achievement

With so much national and international attention on the use of measuring academic performance, schools, districts, states, and countries are focusing on academic achievement. A consequence of this specific focus has classroom teachers facing increasing challenges to their workload, including adapting the curriculum to individual students' needs, the mainstreaming of students with special educational requirements, and adapting to rapidly changing curriculum and policy (Skaalvik & Skaalvik, 2007). From one perspective, resources for teaching children emotional intelligence (EI) skills can be seen as taking teacher resources and classroom time away from more academic achievement activities that will increase test scores; however, results of the meta-analysis show that EI skills are associated with higher academic performance (Skaalvik & Skaalvik, 2007). Findings indicated that time spent teaching emotional learning skills

might not necessarily detract from student achievement, given that higher EI students also show higher achievement (Skaalvik & Skaalvik, 2007)

Durlak, Weissberg, and Pachan (2010) collected and analyzed the results of research from a few other studies in efforts to improve SEL. An after-school research program was designed to enhance and promote the personal and social skills of students. The study motivated the implementation of programs that were managed and supervised by local adult volunteers and consisted of one or more organized activities outside of school hours, during, and part of the school year. Results from 75 reports evaluating 69 different after school programs were reviewed. Of the total studies, 46% involved elementary schools and 25% of the elementary from low economic areas. Findings yielded a significant improvement in participants' standardized test scores. Overall, study levels showed a .22 increase in academic growth. Attendance was positively related to elementary school outcomes. Not all after-school programs reflect positive student growth. The data was collected since 2000 and showed that programs are improving on their focus and areas of need. Social skills are crucial to the development of a successful community in both school and home. It is important to model these skills through leadership and guidance and to support, rather than punish, schools and students in need by avoiding labeling those who experience adversity as deficient (Melnick et al., 2017, p. 2).

Goffner (2011) conducted a quantitative study to examine principals', teachers', and students' perceptions of the impact of the Community, Autonomy, Relationships, and Empowerment (CARE) for Kids program, which was adopted by Jefferson County Public Schools in Kentucky. The program was designed to educate and encourage educators

and administrators about the benefits of incorporating SEL into their school curriculum. The CARE for Kids vision promotes social, emotional, and intellectual development in students for becoming lifelong learners in their school and the larger community. The researcher found no differences existed in how students in CARE for Kids schools rated factors associated with school climate. No differences existed in how students rated school climate and social-emotional development. No differences existed between the personal demographics of students such as age, ethnicity, gender, grade, and lunch status and how the students rated the factors perceived to be impacted by the CARE for Kids program. "Correlations existed between ethnicity, gender, and social-emotional learning" (Goffner, 2011, pp. 120-121). At the 54 CARE for Kids schools, before the program and after two consecutive years of the program, there were no differences in student achievement on the KCCT Reading proficient and distinguished scores (Goffner, 2011).

In 2012, through quasi-experimental research, Reyes, Brackett, Rivers, White, and Salovey joined efforts to promote SEL in schools, traditionally referred to as "soft" skills, to test the impact of the recognizing, understanding, labeling, expressing, and regulating emotions (RULER) approach on the academic performance and social and emotional wellbeing of fifth- and sixth-grade students in fifteen classrooms. RULER is a multi-year program designed to last 30 weeks per year and focuses on five key emotional skills: recognizing emotions in the self and others, understanding the causes and consequences of emotions, labeling emotional experiences social emotional learning. Students' academic performance would be reflected through end of year numbers and percentages, and SEL would be taught by the classroom teacher. The end of the year

student grades from teachers who used the RULER program were higher than students in the comparison group (Reyes et al., 2012).

Blahus (2013) conducted a study to determine whether there was a connection between SEL and academics. To find a connection between SEL and academic achievement, Blahus surveyed a sample of Grades K-3 classroom teachers in south-**c**entral Pennsylvania who were currently using and had used Responsive Classroom strategies for eight or more years. Blahus wanted to identify how the teacher organized time in the classroom, what areas were given priority, the place emotional instruction and learning had in the schedule, and how teachers were experiencing the use of Responsive Classroom® strategies (SEL) in the era of No Child Left Behind. Blahus (2013) found that the degree of implementation of the Responsive Classroom approach was connected to the level of training that the participants received. The depth of training can be specifically related to research on professional development. Other findings helped support research on academic achievement being limited in key areas and necessary to meet adequate yearly progress, which is causing more districts to increase instructional time in areas such as literacy and mathematics (Blahus, 2013). Nevertheless, schools are charged with more global outcomes, as well as helping children to develop appropriate social skills. Neuroscience research illustrates that the areas of the brain that control emotional response and cognitive learning are interwoven (Elias, Parker, Kash, Weissberg, Utne, & O'Brien, 2004).

McCormick, O'Conner, Cappella, and McClowery (2015) aimed to address the impacts of one SEL program on low-income urban children's reading and math achievement during kindergarten and first grade. This study took place in 22 public

elementary schools in a large city. In all, 120 teachers and 435 parent/children were randomly chosen as participants. Principals at 23 elementary schools made a 2-year commitment to participate in the study. Recruitment of the kindergarten teachers began in September. First-grade teachers were recruited from the same schools. In all, 96% of the kindergarten and first-grade teachers consented to participate, with no attrition. Teachers reported on student behaviors and academic competencies. Parents reported on demographic characteristics, child temperament, and family involvement. Teachers and parents attended ten 2-hour weekly facilitated sessions based on a structured curriculum that included didactic content and professionally produced vignettes as well as handouts and group activities. Curriculum fidelity was high: 95% to 100% of topics were covered across the 10-week program. The researcher found linking the mediators with achievement reflected nonsignificant for both classroom emotional support and organization. Thus, there was no correlational evidence for the hypothesized mediators in kindergarten. In first grade, emotional support measured posttest was associated with math achievement, and that classroom support was lessened yet still shows significant growth McCormick et al. (2015).

According to Margo and Coates (2019), programs designed to promote a growth mindset, delivered directly to students, can benefit the academic achievement of students, especially those with initially low grades or at higher risk of failing. Claro, Paunesku, and Dweck (2016) focused on whether growth mindset varies across grade levels and student characteristics, whether growth mindset predicts academic achievement gains, and how this relationship varies across student groups. Researchers used archived data for students in Grades K-7 from a district in California and found a student with a growth

mindset in the spring has ELA and Math test scores in the following year that are approximately 0.07 and 0.05 standard deviation higher respectively than a similar classmate (i.e., a classmate with same previous achievement and demographic characteristics in the same school) with a fixed mindset. This magnitude is equivalent to 48 and 35 additional days of learning.

Duginske (2017) conducted a study in response to a school that had students who have already had tier one support resources, now in need of Tier II resources at School X whose academic performance did not reach district or state standards. The identified students needed an effective system to support their Tier II social emotional learning to increase academic achievement. School X identified students in grade K-5 that tested with an overall social emotional composite score of less than 164 on the Devereux Student Strengths Assessment. Action research was used to compare the academic achievement of students receiving Tier II social emotional interventions to same-age peers receiving Tier I social emotional support. The Tier II students from the study demonstrated significant social emotional growth in the areas of empathy and emotional management by four to five points and slightly over seven for skills for learning and problem solving. For reading, findings indicated that students with an SEL intervention had an average growth lower than the compare group in all levels except fifth. In mathematics, students in Grades 2, 4, and 5 had a higher average gain than students in the comparison group. The decline of inappropriate behavior actions at the control school from 2015 to 2016 was not significant. However, the overall SEL growth for students in the intervention group was almost eight points and was statistically significant (Duginske, 2017).

White (2018) examined the association between school climate, social emotional development, and academic achievement of kindergarten through third-grade students. The researcher used a sample of 364 students between the ages of 5 and 9, regardless of race, religion, gender, language, disability, or socioeconomic status. The parents of the students completed the Devereux Student Strengths Assessment (DESSA), which is a strength-based behavior rating scale completed in 5 to 8 minutes and used by educators and parents to measure the social-emotional competence for children in grades K-8. Teachers completed the School Climate Inventory Assessment. Kindergarteners were administered the Standardized Test for Assessment (STAR) Early Literacy Assessment, and students in Grades 1-3 were administered the STAR reading and STAR math assessments. The findings indicated that the teachers rated the school climate very low on every possible dimension. Over time, improvements in student academic achievement were due to the impact of their social emotional development, which compensated for the low school climate. Of 10 DESSA subscales, four did not correlate with student achievement: positive thinking, social awareness, goal directed behavior, and personal responsibility. Six DESSA subscales significantly correlated with achievement, with two of these six DESSA subscales, self-management, and relationship skills, significantly correlated with four achievement measures. The DESSA social-emotional composite score significantly correlated with three academic outcomes, underscoring the value of social-emotional development in general. Most of the predictive power of the DESSA subscales involved improvements in math scores. Overall, social-emotional development may have a greater impact on math than reading achievement in elementary school (White, 2018).

Moulton, Chiatovich, and Gehlbach (2018) used Panorama data from 2017-2018 with a group of 112,670 students, 192 schools, 26 districts, and 16 states. The data showed that the higher the student's SEL, the better their grades, assessment scores, behavior, and attendance. Findings showed that the highly engaged students were 57% less likely to be chronically absent in school than students who report low engagement. It was also found that students who report low Social Awareness are 2.5x more likely to have one or more behavior incidents than students who report high Social Awareness (Moulton et al., 2019). According to a 2017 meta-analysis from CASEL, students participating in SEL programs performed 13 percentage points higher than their non-SEL peers when it comes to academics.

Francis and Rivera (2007) posited that the amount of time spent on SEL instruction with a focus on ELL development rather than the pressure of testing and scores might help to focus education in the right direction. Soland (2019) found that ELLs not only face the challenges of being in a new school, a new country, and around new people, but they must learn a new language as well. In addition to finding comfort in their surroundings and adapting to the social skills and new culture that surrounds them, they must learn how to become academically successful as well. Findings show that, on average, ELL students perform below grade level in every subject in national guidelines and are twice as likely to drop out as their English-speaking peers (Soland, 2019). In a large urban area, where 90% of the students were Latino, a modeling approach was used to examine how ELL status, achievement, growth, and self-efficacy were related. In this study, multivariate models that jointly estimate growth in achievement and self-efficacy during middle school were used to see how underlying

developmental processes related for ELLs. Results indicate that self-efficacy tends to decline for all students despite growth in math and reading, and that achievement and self-efficacy are much lower for ELLs. Furthermore, there is evidence that slower growth in math and reading for ELLs is associated with their low self-efficacy at the beginning of middle school (self-efficacy mediates the association between ELL status and achievement growth) (Soland, 2019). Not only are ELL students having to learn a second language and fully understand conversational as well as academic language, but they must acclimate to daily living as well. Nevertheless, we begin to assess our ELLs immediately upon arriving in our classrooms and include their scores in our data (Soland, 2019).

Yeager et al. (2019) conducted a study with a randomized controlled trial with 6,320 ninth graders from a sample of 65 nationally representative public high schools. This study produced the first evidence showing the impact of a growth mindset on GPA that can be generalizable to ninth graders in the U.S. As the authors expected, they found random results in data due to diversity. They reported that students with GPAs below the school median who participated earned higher GPAs in core classes at the end of the ninth grade when assigned to the growth mindset intervention which is a significant increase of 0.1 points in the end of year GPA compared to the control group. Growth mindset is especially valuable when working on SEL and students. By applying a growth mindset to their SEL curriculum, students can focus on steps they need to take to achieve their goal rather than thinking of themselves as a failure (Margo & Coates, 2019).

Usher, Li, Butz, and Rojas (2019) conducted a study to examine elementary and middle school students' grit and self-efficacy and their relationship with achievement in

reading and math. The participants included 2,430 students enrolled in Grades 4-8 in an urban district in the Southeastern United States. The researchers used the Values in Action Strength Survey for Children to measure grit. Usher et al. (2019) developed self-efficacy items based on "Bandura's recommendations for the construction of self-efficacy scales" (p. 881). NWEA MAP scores and state assessment scores were used to measure student achievement. The results of the study indicated that grit modestly correlated with reading achievement and with only one math achievement measures. The results also indicated that self-efficacy was positively correlated with all achievement scores. Findings imply that, to improve student performance, teachers should target students' self-efficacy rather than grit (Usher et al., 2019, p. 877).

Summary

This chapter began with the history of SEL. Second, research on the role of the teacher and their impact on SEL and academic achievement was presented. Next, information about the Second Step program, the implementation of SEL into the classroom, and the effects on students were included. Finally, the literature related to SEL and its impact on achievement scores were discussed. In Chapter 3, the details related to the methodology used to conduct this research study are presented.

Chapter 3

Methods

The first purpose of this study was to determine if there was a correlation between student's grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth. The second purpose of this study was to determine if the correlation between students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth was affected by their ELL status, SES, gender, grade level, race, and special education status. This chapter contains detailed information about the methodology used in conducting this study. This chapter includes a description of the research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations.

Research Design

A correlational research design using archived survey and assessment data was selected to identify if there was a correlation between student grit, self-efficacy, or emotional regulation scores and student MAP mathematics growth. According to Lunenburg and Irby (2008), correlational research is based on the relationships between numerical variables. The extent to which the variables are related is important, as well as the direction of the relationship. The independent variables included in the study were the students' perceptions of their grit, self-efficacy, and emotional regulation and student ELL status, SES, gender, grade level, race, and special education status. The dependent variable was student growth (fall to spring) on the MAP mathematics assessment during the 2017-2018 school year.

Selection of Participants

Purposive sampling is based on the researcher's experience of a group (Lunenburg & Irby, 2008). Purposive sampling was utilized based on the researcher's knowledge of the implementation of the SEL initiative in District O. The participants in this study were students enrolled in Grades 3-5 from District O during the 2017-2018 school year. The participants completed grit, self-efficacy, and emotional regulation surveys. Finally, the participants completed both the fall and spring MAP mathematics assessments. If data related to a research question was not available for a student, then the student was not included in that analysis.

Measurement

Two types of instruments were used to measure the variables in this study: the NWEA MAP Mathematics assessment and the Panorama survey students' perceptions of their grit, self-efficacy, and emotional regulation. Additionally, student ELL status, SES, gender, grade level, race, and special education status were used as student demographic variables. This section includes details about the measurements used in this research.

NWEA MAP. The NWEA MAP mathematics assessment is a computer adaptive test (NWEA, 2018). Every student gets a unique set of test questions based on responses to previous questions. As the student answers correctly, questions get harder. If the student answers incorrectly, the questions get easier. By the end of the test, most students are expected to have answered about half the questions correctly. The MAP is an up-to-date test that aligns with the state standards to assess the grade level content for each student (NWEA, 2018). District O is using the MAP to identify the academic objectives that have been mastered by students. The RIT score is used to measure the level of

question difficulty value to estimate student achievement. This score is independent of age or grade and reflects the instructional level at which the student is currently performing (NWEA, 2018). The district administers the MAP assessment three times a year: fall, winter, and spring. However, for this study, only the fall and spring scores were used to determine the growth for each student by subtracting the fall RIT score from the spring RIT score. To continue to meet updated standards, the NWEA performs studies collected from over 10 million students every three years to refine its norms (NWEA, 2018).

The MAP mathematics assessment should take less than an hour; however, it is not timed, and students are given as much time as they need to complete the test. The test includes multiple choice, drag-and-drop, and a few other technical match options to complete the assessment (NWEA, 2018). In this study, only the mathematics scores for students enrolled in Grades 3-5 were utilized.

According to NWEA (2018), the validity and reliability of the MAP is based on years of extensive research. The analysts have had the opportunity to collect abundant evidence that has established the reliability of the tests. According to the NWEA, the reliability of the MAP has been tested in three ways. NWEA test and retest, which evaluates scores from the same students after a lapse of several months, has produced reliability indices that have consistently been above what is considered statistically significant (NWEA, 2018). One way to express this form of reliability is to frame it in the context of correlations between two tests that are composed of items from two different item pools. Students took the test in the spring 2008 and fall 2008, or they took it in the spring 2008 and then in the spring 2009. Their scores were correlated to see if

they did about as well both times. The test is more reliable the closer the correlation is to 1.000. In Kansas, the first correlation (r = .867, n = 7,699) provides strong evidence for a reliable test (see Table 2). The correlations provide similar strong evidence from the Kansas sample for the reliability of the test – regardless of the test was composed of items from the same item pool or from two different item pools (NWEA, 2018).

Table 2

Test-Retest Correlations for Kansas Students

	Spring 2008-Fall 2008		Spring 2008-Spring 2009	
Item Pool Structure	*r*	*n*	*r*	*n*
Different	.867	7,699	.839	14,340
Common	.880	17,436	.851	15,941

Note. Adapted from *Technical Manual for Measures of Academic Progress & Measures of Academic Progress for Primary Grades* by NWEA 011, pp. 67-74.

"Validity is the degree to which an instrument measures what it purports to measure" (Lunenburg & Irby, 2008, p. 181). Concurrent validity is how well a test correlates with a previously validated measure. Concurrent validity of the MAP is based on the calculation of correlations that index the relationships between MAP test scores and state content-aligned accountability test scores. Much of the documented validity evidence for the NWEA tests come in the form of concurrent validity. "This is expressed in the form of a Pearson correlation coefficient between the total domain area RIT score and the total scale score of another test designed to assess the same domain area" (NWEA, 2011, p.190).

The vast preponderance of this evidence comes from the relationships of MAP test scores to state content-aligned accountability test scores. Forms including:

> test content; the concurrent performance of students on MAP tests with their performance on state tests given for accountability purposes; the predictive relationships between student performance on MAP tests with their performance, two testing terms later, on state accountability tests; and the relationship between students' performance on MAP tests and their nominal status relative to criteria defined by their state's achievement standards. (NWEA, 2011, p. 188)

Panorama Surveys. According to the assistant superintendent of support services and middle school education (personal communication, March 14, 2018), District O combined three Panorama surveys (grit, self-efficacy, and emotional regulation) into one survey. The panorama survey is administered in the fall, winter, and spring; for this study, the results of the spring 2018 survey administration were utilized. The survey provides students' perceptions of their grit, self-efficacy, and emotional regulation (Panorama Education, 2018).

The grit items were used to determine "how well students are able to persevere through setbacks to achieve important long-term goals" (Panorama Education, 2015, p. 8). As seen in Table 3, the survey contains four items, each with a different scale. "To calculate topic scores, the 5-level item responses to a 1-5 integer scale (with 5 always reflecting a more positive score) and average across item scores" (K. Hayden, Panorama Outreach, personal communication, October 30, 2018).

Table 3

Grit Survey Items and Scales

Question	Scale
How often do you stay focused on the same goal for more than 3 months at a time?	1 (*Not at all likely*),2 (*Slightly likely*), 3 (*Somewhat likely*), 4 (*Quite likely*), 5 (*Extremely likely*)
If you fail to reach an important goal, how likely are you to try again?	1 (*Not at all likely*),2 (*Slightly likely*), 3 (*Somewhat likely*), 4 (*Quite likely*), 5 (*Extremely likely*)
When you are working on a project that matters a lot to you, how focused can you stay when there are lots of distractions?	1 (*Not at all focused*), 2 (*Slightly focused*), 3 (*Somewhat focused*), 4 (*Quite focused*), 5 (*Extremely focused*)
If you have a problem while working towards an important goal, how well can you keep working?	1 (*Not well at all*), 2 (*Slightly well*), 3 (*Somewhat well*), 4 (*Quite well*), 5 (*Extremely well*)

Note. Adapted from *User Guide: Social Emotional Learning*, by Panorama Education, 2018. Retrieved from https://www.panoramaed.com/

Self-efficacy items were used to determine "how much students believe they can succeed in achieving academic outcomes" (Panorama Education, 2015, p. 8). The survey contains five items, each with a different scale. The text labels for each of the items were recoded from 1 to 5 (see Table 4). As noted above, according to Hayden (personal communication, October 30, 2018), the responses were averaged to determine a student score that ranges between 1 and 5.

Table 4

Self-Efficacy Survey Items and Scales

Question	Scale
How sure are you that you can complete all the work that is assigned in your class?	1 (*Not at all sure*), 2 (*Slightly sure*), 3 (*Somewhat sure*), 4 (*Quite sure*), 5 (*Extremely sure*)
When complicated ideas are discussed in class, how sure are you that you can understand them?	1 (*Not at all sure*), 2 (*Slightly sure*), 3 (*Somewhat sure*), 4 (*Quite sure*), 5 (*Extremely sure*)
How sure are you that you can learn all the topics taught in your class?	1 (*Not at all sure*), 2 (*Slightly sure*), 3 (*Somewhat sure*), 4 (*Quite sure*), 5 (*Extremely sure*)
How sure are you that you can do the hardest work that is assigned in your class?	1 (*Not at all sure*), 2 (*Slightly sure*), 3 (*Somewhat sure*), 4 (*Quite sure*), 5 (*Extremely sure*)
How sure are you that you will remember what you learned in your current class, next year?	1 (*Not at all sure*), 2 (*Slightly sure*), 3 (*Somewhat sure*), 4 (*Quite sure*), 5 (*Extremely sure*)

Note. Adapted from "User Guide: Social Emotional Learning," by Panorama Education, 2015. Retrieved from https://www.panoramaed.com/

The emotional regulation items were used to determine "how well students regulate their emotions." (Panorama Education, 2015, p. 19). The survey contains five items, each with a different scale. The text labels for each of the items were recoded from 1 to 5 (see Table 5). As noted above, according to Hayden (personal communication, October 30, 2018), the responses were averaged to determine a student score that ranges between 1 and 5.

Table 5

Emotional Regulation Survey Items and Scales

Question	Scale
How often are you able to pull yourself out of a bad mood?	1 (*Almost never*), 2 (*Once in a while*), 3 (*Sometimes*), 4 (*Frequently*), 5 (*Almost Always)*
When everybody around you gets angry, how relaxed can you stay?	1 (*Almost never*), 2 (*Once in a while*), 3 (*Sometimes*), 4 (*Frequently*), 5 (*Almost Always)*
How often are you able to control your emotions when you need to?	1 (*Almost never*), 2 (*Once in a while*), 3 (*Sometimes*), 4 (*Frequently*), 5 (*Almost Always)*
Once you get upset, how often can you get yourself to relax?	1 (*Almost never*), 2 (*Once in a while*), 3 (*Sometimes*), 4 (*Frequently*), 5 (*Almost Always*)
When things go wrong for you, how calm are you able to stay?	1 (*Not calm at all*),2 (*Slightly calm*), 3 (*Somewhat calm*), 4 (*Quite calm*), 5 (*Extremely calm*)

Note. Adapted from *User Guide: Social Emotional Learning*, by Panorama Education, 2015. Retrieved from https://www.panoramaed.com/

In August 2014, data from three school districts were analyzed to provide the initial evidence of the reliability and validity of the SEL measures (Panorama Education, 2016). The samples of student SEL data from the three districts from diverse public and charter school contexts were used. Data were gathered from middle and high schools with enrollments ranging from 310 to 1350 students, free and reduced-price lunch percentages ranging from 5% to 81%, and non-white student percentages ranging from 7% to 79% (Panorama, 2016).

SEL measures are reliable, with an average Cronbach alpha coefficient of .78 and a minimum of .68 (Panorama, 2016, p. 3). Across samples, the difference between SEL

intercorrelations (e.g., the growth-mindset and social awareness correlation for sample A versus sample B) varied on the average by .09, with a maximum difference of .23 (Panorama, 2016, p. 4). "The intercorrelations also showed stability with respect to student demographics—for both gender and free reduced lunch, the average difference (between men and women, and FRPL and non-FPRL) was .05" (Panorama, 2016, p. 4).

Other variables. The following variables of ELL status, SES, gender, grade level, race, and special education status, were used in the research based on the specific groupings established by District O (Director of assessment, personal communication, April 8, 2020). In the original groups, students were classified as active ELL, monitor transitional year consultation, decline with limited consultation, decline, and non-ELL. For the data analysis, the recoded groups were active ELL, non-active ELL (monitor transitional year consultation, decline with limited consultation, decline), and non-ELL. The original data include three groups: students receiving free lunch, reduced lunch, and full pay lunch. For the data analysis, the groups were recoded into two groups: students receiving free and reduced lunch and students paying the full price for lunch. Gender included males and females. The fourth demographic variable was student grade level (Grade 3, Grade 4, and Grade 5). The original data include seven groups: American Indian or Alaska Native, Asian, Black or African-American, Hispanic, Native Hawaiian or Other Pacific Islander, two or more races, and White. Students who were American Indian or Alaska Native, Asian, Black or African American, Hispanic, Native Hawaiian or Other Pacific Islander, and two or more races were recoded as minority, and White students were recoded as non-minority. The original student groups for the special education categories were classified as autism, developmental delay, emotional

disturbance, giftedness, hearing impairment, intellectual disability, orthopedic impairment, other health impairment, specific learning disability, speech and language disability, traumatic brain injury, and general education. For the data analysis, the recoded groups were high incidence (specific learning disability and emotional disturbance), low incidence (developmental delay, autism, and intellectual disability), sensory or speech disability (hearing impairment, speech/language disability, and vision), other (traumatic brain, orthopedic impairment, and other health), giftedness, and general education.

Data Collection Procedures

An Institutional Review Board (IRB) form was prepared for District O, which informed the district about the data that was requested and necessary for the research to be conducted. District O granted the researcher permission to conduct the study on November 4, 2019 (see Appendix A). Baker University was presented with an IRB request for approval and was granted permission to conduct the study on December 19, 2019 (see Appendix B).

Scores were archived into a database and stored on the district's network server. The researcher prepared a sample Excel spreadsheet. The district assessment department approved the request and provided the details in an Excel spreadsheet. After the data was received, it was imported into IBM SPSS Statistics Faculty Pack 25 for Windows for analysis.

Data Analysis and Hypothesis Testing

In this section, the statistical tests used to test the hypotheses are described. The 10 research questions, corresponding hypotheses, and methods for the statistical analysis are provided below.

RQ1. To what extent is there a relationship between students' grit scores and students' MAP mathematics growth (fall to spring)?

H1. There is a relationship between students' grit scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth. The statistical significance of the correlation coefficient was tested to evaluate H1. The level of significance was set at .05. The effect size, as indexed by r^2, is reported when appropriate.

RQ2. To what extent is the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H2. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the

relationship between students' grit scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H2 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H3. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H3 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H4. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for female students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for male students. The sample correlations for female and male students were compared using Fisher's *z* test for two correlations. A Fisher's z test was conducted to test H4 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H5. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for fifth-grade students. The correlations for third

grade, fourth-grade, and fifth-grade students were compared using the Fisher's *z* test for two correlations. Three Fisher's z tests were conducted to test H5 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H6. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for non-minority students. The correlations between minority and non-minority students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H6 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H7. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student special education status.

Prior to conducting the hypothesis tests, the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was

calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with speech and sensory disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' grit scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H7 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

RQ3. To what extent is there a relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring)?

H8. There is a relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth. The statistical significance of the correlation coefficient was tested to evaluate H8. The level of significance was set at .05. The effect size, as indexed by r^2, is reported when appropriate.

RQ4. To what extent is the relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H9. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using the Fisher's *z* tests for two correlations. Three Fisher's *z* tests were

conducted to test H9 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H10. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H10 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H11. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for female students. A Pearson product moment

correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for male students. The sample correlations for female and male students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H11 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H12. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for fifth-grade students. The correlations for third-grade, fourth-grade, and fifth-grade students were compared. Three Fisher's z tests were conducted to test H12 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H13. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for non-minority students. The sample correlations for minority ad non-minority students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H13 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H14. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by special education status.

Prior to conducting the hypothesis tests, the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment

correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with speech and sensory disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H14 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

RQ5. To what extent is there a relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring)?

H15. There is a relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores

and students' MAP mathematics growth. The statistical significance of the coefficient was tested to evaluate H15. The level of significance was set at .05. The effect size, as indexed by r2, is reported when appropriate.

RQ6. To what extent is the relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H16. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using the Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H16 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H17. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H17 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H18. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for female students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for male students. The two sample correlations were compared

using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H18 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H19. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for fifth-grade students. The correlations for third-grade, fourth-grade, and fifth-grade students were compared using Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H19 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05 The effect size, Cohen's *q*, is reported where appropriate.

H20. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for non-minority students. The two sample correlations were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H20 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

H21. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student special education status.

Prior to conducting the hypothesis tests, the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and

students' MAP mathematics growth, for students with speech and sensory disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H21 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

Limitations

The limitations of this study are factors that may affect the outcome of the study that could not be controlled by the researcher (Lunenburg & Irby, 2008, p.133). The study has the following limitations:

1. Although District O provided all teachers with the same professional development on set procedures for administrating the NWEA MAP

assessment and the Panorama surveys, administration of each assessment and survey may have varied depending on the teacher.

2. Students with an identified need to receive read-aloud accommodations on the mathematics section may not have received this during all assessment windows.
3. The NWEA MAP data reports available offer access to a continuum of learning skills that align with the RIT score of each student.
4. Students with both fall and spring assessment data were included in the sample; this may impact transient populations being represented accurately in the study.
5. Panorama could not provide evidence for the reliability or validity of the surveys using data for third through fifth graders. However, they did provide evidence for middle school students.

Summary

Provided in Chapter 3 was an overview of the correlational research study. The research design was explained, the selection of the participants was introduced, and the measurement tools were explained in detail. The chapter also included the data collection, data analysis, and hypothesis testing, as well as the limitations of the study. Chapter 4 includes the descriptive statistics and the results of the hypothesis testing.

Chapter 4

Results

The first purpose of this study was to determine if there were any correlations between student's grit, self-efficacy, emotional regulation scores and their MAP mathematics growth. The second purpose of this study was to determine if the correlations between a student's grit, self-efficacy, and emotional regulation scores and their MAP mathematics growth was affected by their ELL status, SES, gender, grade level, race, and special education status. Descriptive statistics were used to describe the sample, while the archived data and descriptive statistics from District O database were used to test the hypotheses.

Descriptive Statistics

According to Lunenburg and Irby (2008), descriptive statistics are the "mathematical procedures for organizing and summarizing numerical data" (p. 63). The sample in this study was comprised of students enrolled in Grades 3-5 during the 2017-2018 school year in District O. In Table 6, the frequency and percentages for the original and recoded ELL categories are found.

Table 6

Frequency and Percentages for Original and Recoded ELL Categories

ELL Status	*N*	%
Original		
Active ELL	165	3.4
Monitor	467	9.7
Transitional year	80	1.7
Consultation	50	1.0
Decline with limited consult	4	0.1
Declined	12	0.2
Non-ELL	4,056	83.9
Recoded		
Active ELL	165	3.4
Non-Active ELL	597	12.4
Non-ELL	4,056	84.2

In Table 7, the frequency and percentages for original and recoded SES categories are found. The original data include three groups: students receiving free lunch, reduced lunch, and full pay lunch. For the data analysis, the groups were recoded into two groups: students receiving free and reduced lunch and students paying the full price for lunch. No groups were eliminated from the analysis.

Table 7

Frequency and Percentages for Original and Recoded SES Categories

Socioeconomic Status	*N*	%
Original		
Free lunch	763	15.8
Reduced lunch	259	5.4
Full pay lunch	3,812	78.9
Recoded		
Free and reduced lunch	1,022	21.2
Full pay lunch	3,812	78.9

The third demographic variable was student gender. Gender included males (*N* = 2,408, % = 51.5) and females (*N* = 2,363, % = 49.5). The fourth demographic variable was student grade level. Students were classified as Grade 3 (*N* = 1,411, % = 29.2. Grade 4 (*N* = 1,331, % = 27.5), or Grade 5 (*N* = 2,092, % = 43.3). No recoding was necessary for student gender or grade level.

In Table 8, the frequency and percentages for original and recoded student race categories are found. The original data include seven groups: American Indian or Alaska Native, Asian, Black or African-American, Hispanic, Native Hawaiian or Other Pacific Islander, two or more races, and White. Students who were American Indian or Alaska Native, Asian, Black or African-American, Hispanic, Native Hawaiian or Other Pacific Islander, and two or more races were recoded as minority, and White students were recoded as non-minority.

Table 8

Frequency and Percentages for Original and Recoded Race Categories

Race	*N*	%
Original		
American Indian or Alaska Native	12	0.3
Asian	207	4.3
Black or African-American	330	6.8
Hispanic	798	16.5
Native Hawaiian or Other Pacific Islander	2	0.0
Two or more races	220	4.6
White	3,265	67.5
Recoded		
Minority	1,569	32.5
Non-Minority	3,265	67.5

In Table 9, the original student groups for the special education categories were classified as autism, developmental delay, emotional disturbance, giftedness, hearing impairment, intellectual disability, orthopedic impairment, other health impairment, specific learning disability, speech and language disability, traumatic brain injury, and general education. For the data analysis, the recoded groups were high incidence (specific learning disability and emotional disturbance), low incidence (developmental delay, autism, and intellectual disability), sensory or speech disability (hearing impairment, speech/language disability, and vision), other (traumatic brain, orthopedic impairment, and other health), giftedness, and general education.

Table 9

Frequency and Percentages for Original and Recoded Special Education Categories

Special Education Status	*N*	%
Original		
Autism	31	0.6
Developmental Delay	12	0.3
Emotional Disturbance	26	0.5
Giftedness	165	3.4
Hearing Impairment	7	0.1
Intellectual Disability	3	0.1
Orthopedic Impairment	1	0.0
Other Health Impairment	124	2.6
Specific Learning Disability	221	4.6
Speech-Language Disability	177	3.7
Traumatic Brain Injury	1	0.0
General Education	4,066	84.1
Recoded		
High Incidence Disabilities	247	5.1
Low Incidence Disabilities	46	1.0
Sensory or Speech Disability	184	3.8
Other	126	2.6
Giftedness	165	3.4
General Education	4,066	84.1

Hypothesis Testing

The results of the hypothesis testing to address the six research questions presented in the study are discussed in this section. Each research question is followed by one or more hypotheses. The method in which the hypotheses were tested is described as well as the results following each hypothesis.

RQ1. To what extent is there a relationship between students' grit scores and students' MAP mathematics growth (fall to spring)?

H1. There is a relationship between students' grit scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth. A one sample *t* test was conducted to test for the statistical significance of the correlation coefficient. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The correlation coefficient (r = .039) provided evidence for a weak positive relationship between the variables. The hypothesis test for the correlation indicated a statistically significant relationship between students' grit scores and students' MAP mathematics growth (fall to spring), df = 4766, p = .007, r^2 = .002. H1 was supported. Students with higher grit scores tend to have a higher mathematics growth score. The effect size indicated a small effect.

RQ2. To what extent is the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H2. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using the Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H2 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the three comparisons (see Table 10 for the test statistics). The correlation for active ELL students (r = .040, n = 159) was not different from the correlation for non-active ELL students (r = .047, n = 591). The correlation for active ELL students (r = .040, n = 159) was not different from the correlation for non-ELL students (r = .038, n = 4,003). The correlation for non-active

ELL students (r = .047, n = 591) was not different from the correlation for non-ELL students (r = .038, n = 4,003). H2 was not supported.

Table 10

Fisher's z Test Statistics for H2

	Subgroup Correlations			Fisher's *z* Statistics	
ELL Status	*r*	*p*	*n*	*z*	*p*
Active ELL	.040	.621	159		
Non-Active ELL	.047	.257	591	-0.08	.936
Non-ELL	.038	.017	4,003	0.02	.984
Non-active ELL	.047	.257	591		
Non-ELL	.038	.017	4,003	0.20	.842

H3. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H3 because

the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 0.00$, $p = 1.000$. The correlation for students receiving free and reduced lunch ($r = .037$, $n = 999$) was not different from the correlation for students paying full price for lunch ($r = .037$, $n = 3{,}769$). H3 was not supported.

H4. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for female students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for male students. The sample correlations for female and male students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H4 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 1.96$, $p = .050$. The correlation for female students ($r = .070$, $n = 2{,}334$) was not different from the correlation for male students ($r = .013$, $n = 2{,}371$). H4 was not supported.

H5. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for fifth-grade students. The correlations for third-grade, fourth-grade, and fifth-grade students were compared using the Fisher's *z* test for two correlations. Three Fisher's z tests were conducted to test H5 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients for third-grade and fourth-grade students, $z = -0.70$, $p = .484$ (see Table 11 for the test statistics). The correlation for third-grade students ($r = -.029$, $n = 1{,}392$) was not different from the correlation for fourth-grade students ($r = -.002$, $n = 1{,}310$). The results of the Fisher's *z* test for two correlations indicated a significant difference between the two correlation coefficients for third-grade and fifth-grade students, $z = -4.88$, $p = .000$, $q = .139$. The correlation for third-grade students ($r = -.029$, $n = 1{,}392$) was different from the correlation for fifth-grade students

(r = .106, n = 2,066). The results of the Fisher's z test for two correlations indicated a significant difference between the two correlation coefficients for fourth-grade and fifth-grade students, z = -3.06, p = .002, q = .108. The correlation for fourth-grade students (r = -.002, n = 1,310) was different from the correlation for fifth-grade students (r = .106, n = 2,066). H5 was partially supported. The Cohen's q values indicated small effects for both significant findings.

Table 11

Fisher's z Test Statistics for H5

	Subgroup Correlations			Fisher's z Statistics	
Grade Level	*r*	*p*	*n*	*z*	*p*
Grade 3	-.029	.278	1,392		
Grade 4	-.002	.949	1,310	-0.70	.484
Grade 5	.106	.000	2,066	-4.88	.000
Grade 4	-.002	.949	1,310		
Grade 5	.106	.000	2,066	-3.06	.002

H6. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' grit scores and students' MAP mathematics growth for non-minority students.

The correlations between minority and non-minority students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H6 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = -0.61$, $p = .542$. The correlation for minority students ($r = .027$, $n = 1{,}539$) was not different from the correlation for non-minority students ($r = .046$, $n = 3{,}229$). H6 was not supported.

H7. The relationship between students' grit scores and students' MAP mathematics growth (fall to spring) is affected by student special education status.

Prior to conducting the hypothesis tests the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with speech and sensory disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with

students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' grit scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' grit scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H7 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the 15 comparisons. Table 12 contains the correlations and the test statistics for all the comparisons. The correlation between students' grit scores and students' MAP mathematics growth was not different based on special education status. H7 was not supported.

Table 12

Fisher's z Test Statistics for H7

	Subgroup Correlations			Fisher's *z* Statistics	
Special Education Status	*r*	*p*	*n*	*z*	*p*
High Incidence	-.039	.552	237		
Low Incidence	.067	.664	44	-0.63	.529
Sensory and Speech	.035	.638	180	-0.74	.459
Other	.081	.371	124	-1.07	.285
Giftedness	.040	.612	165	-0.77	.441
General Education	.037	.017	4,018	-1.13	.259
Low Incidence	.067	.664	44		
Sensory and Speech	.035	.638	180	0.19	.849
Other	.081	.371	124	-0.08	.936
Giftedness	.040	.612	165	0.15	.881
General Education	.037	.017	4,018	0.19	.849
Sensory and Speech	.035	.638	180		
Other	.081	.371	124	-0.39	.697
Giftedness	.040	.612	165	-0.05	.960
General Education	.037	.017	4,018	-0.03	.976
Other	.081	.371	124		
Giftedness	.040	.612	165	0.34	.734
General Education	.037	.017	4,018	0.48	.631
Giftedness	.040	.612	165		
General Education	.037	.017	4,018	0.04	.968

RQ3. To what extent is there a relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring)?

H8. There is a relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth. The statistical significance of the correlation coefficient was examined to test H8. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The correlation coefficient (r = .120) provided evidence for a weak positive relationship between the variables. The hypothesis test for the correlation indicated a statistically significant relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring), df = 4717, p = .000, r^2 = .014. H8 was supported. Students with higher self-efficacy scores tend to have a higher mathematics growth score. The effect size indicated a small effect.

RQ4. To what extent is the relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H9. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and

students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using the Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H9 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the three comparisons (see Table 13 for the test statistics). The correlation for active ELL students ($r = .132$, $n = 156$) was not different from the correlation for non-active ELL students ($r = .129$, $n = 583$). The correlation for active ELL students ($r = .132$, $n = 156$) was not different from the correlation for non-ELL students ($r = .121$, $n = 3{,}966$). The correlation for non-active ELL students ($r = .129$, $n = 583$) was not different from the correlation for non-ELL students ($r = .121$, $n = 3{,}966$). H9 was not supported.

Table 13

Fisher's z Test Statistics for H9

	Subgroup Correlations			Fisher's *z* Statistics	
ELL Status	*r*	*p*	*n*	*z*	*p*
Active ELL	.132	.100	156		
Non-Active ELL	.129	.002	583	0.03	.976
Non-ELL	.121	.000	3,966	0.14	.889
Non-active ELL	.129	.002	583		
Non-ELL	.121	.000	3,966	0.18	.857

H10. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H10 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = -1.89$, $p = .059$. The correlation for students receiving free and reduced lunch ($r = .061$, $n = 987$) was not different from the correlation for students paying full price for lunch ($r = .128$, $n = 3{,}732$). H10 was not supported.

H11. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for female students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for male students. The sample correlations for female and male students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H11 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 1.63$, $p = .103$. The correlation for female students ($r = .145$, $n = 2{,}314$) was not different from the correlation for male students ($r = .098$, $n = 2{,}342$). H11 was not supported.

H12. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for fifth-grade students. The correlations for third-grade, fourth-grade, and fifth-grade students were compared. Three Fisher's z tests were conducted to test H12 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated a significant difference between the two correlation coefficients for third-grade and fourth-grade students, $z = -2.74$, $p = .006$ (see Table 14 for test statistics). The correlation for third-grade students ($r = -.004$, $n = 1{,}359$) was different from the correlation for fourth-grade students ($r = .102$, $n = 1{,}308$). The results of the Fisher's *z* test for two correlations indicated a significant difference between the two correlation coefficients for third-grade and fifth-grade students, $z = -6.83$, $p = .000$, $q = .239$. The correlation for third-grade students ($r = -.004$, $n = 1{,}359$) was different from the correlation for fifth-grade students

(r = .231, n = 2,052). The results of the Fisher's z test for two correlations indicated a significant difference between the two correlation coefficients for fourth-grade and fifth-grade students, z = -3.75, p = .000, q = .131. The correlation for fourth-grade students (r = .102, n = 1,308) was different from the correlation for fifth-grade students (r = .231, n = 2,052). H12 was supported. The Cohen's q values indicated small effects for all significant findings.

Table 14

Fisher's z Test Statistics for H12

	Subgroup Correlations			Fisher's z Statistics	
Grade Level	*r*	*p*	*n*	*z*	*p*
Grade 3	-.004	.873	1,359		
Grade 4	.102	.000	1,308	-2.74	.006
Grade 5	.231	.000	2,052	-6.83	.000
Grade 4	.102	.000	1,308		
Grade 5	.231	.000	2,052	-3.75	.000

H13. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics growth for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' self-efficacy scores and students' MAP mathematics

growth for non-minority students. The sample correlations for minority ad non-minority students were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H13 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = -1.49$, $p = .136$. The correlation for minority students ($r = .088$, $n = 1{,}518$) was not different from the correlation for non-minority students ($r = .134$, $n = 3{,}201$). H13 was not supported.

H14. The relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) is affected by special education status.

Prior to conducting the hypothesis tests the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with speech and sensory disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction

of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' self-efficacy scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H14 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the 15 comparisons. Table 15 contains the correlations and the test statistics for all the comparisons. The correlation between students' self-efficacy scores and students' MAP mathematics growth was not different based on special education status. H14 was not supported.

Table 15

Fisher's z Test Statistics for H14

	Subgroup Correlations			Fisher's *z* Statistics	
Special Education Status	*r*	*p*	*n*	*z*	*p*
High Incidence	.018	.782	240		
Low Incidence	.243	.120	42	-1.33	.184
Sensory and Speech	.023	.759	178	-0.05	.960
Other	-.021	.822	122	0.35	.726
Giftedness	-.009	.913	165	0.26	.795
General Education	.120	.000	3,972	-1.53	.126
Low Incidence	.243	.120	42		
Sensory and Speech	.023	.759	178	1.27	.204
Other	-.021	.822	122	1.46	.144
Giftedness	-.009	.913	165	1.44	.150
General Education	.120	.000	3,972	0.79	.430
Sensory and Speech	.023	.759	178		
Other	-.021	.822	122	0.37	.711
Giftedness	-.009	.913	165	0.29	.772
General Education	.120	.000	3,972	-1.26	.208
Other	-.021	.822	122		
Giftedness	-.009	.913	165	-0.01	.920
General Education	.120	.000	3,972	-1.52	.129
Giftedness	-.009	.913	165		
General Education	.120	.000	3,972	-1.62	.105

RQ5. To what extent is there a relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring)?

H15. There is a relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring).

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth. A one sample *t* test was conducted to test for the statistical significance of the correlation coefficient. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The correlation coefficient ($r = .029$) provided evidence for a weak positive relationship between the variables. The hypothesis test for the correlation indicated a statistically significant relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring), $df = 4763$, $p = .043$, $r^2 = .001$. H15 was supported. Students with higher emotional regulation scores tend to have a higher mathematics growth score. The effect size indicated a small effect.

RQ6. To what extent is the relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) affected by student ELL status, SES, gender, grade level, race, and special education status?

H16. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student ELL status.

Prior to conducting the hypothesis test, the sample was disaggregated by student ELL status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation

scores and students' MAP mathematics growth for active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for non-active ELL students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for non-ELL students. The sample correlations for active ELL, non-active ELL, and non-ELL students were compared using the Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H16 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the three comparisons (see Table 16 for the test statistics). The correlation for active ELL students (r = .073, n = 163) was not different from the correlation for non-active ELL students (r = .072, n = 589). The correlation for active ELL students (r = .073, n = 163) was not different from the correlation for non-ELL students (r = .022, n = 3,998). The correlation for non-active ELL students (r = .072, n = 589) was not different from the correlation for non-ELL students (r = .022, n = 3,998). H16 was not supported.

Table 16

Fisher's z Test Statistics for H16

	Subgroup Correlations			Fisher's *z* Statistics	
ELL Status	*r*	*p*	*n*	*z*	*p*
Active ELL	.073	.356	163		
Non-Active ELL	.072	.082	589	0.01	.992
Non-ELL	.022	.173	3,998	0.63	.529
Non-active ELL	.072	.082	589		
Non-ELL	.022	.173	3,998	1.13	.259

H17. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student SES.

Prior to conducting the hypothesis test, the sample was disaggregated by student SES. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth students receiving free and reduced lunch. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for students paying full price for lunch. The sample correlations for students receiving free and reduced lunch and students paying full price for lunch were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H17 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 0.39$, $p = .697$. The correlation for students receiving free and reduced lunch ($r = .036$, $n = 1{,}006$) was not different from the correlation for students paying full price for lunch ($r = .022$, $n = 3{,}759$). H17 was not supported.

H18. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student gender.

Prior to conducting the hypothesis test, the sample was disaggregated by student gender. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for female students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for male students. The two sample correlations were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H18 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 1.96$, $p = .050$. The correlation for female students ($r = .059$, $n = 2{,}333$) was not different from the correlation for male students ($r = .002$, $n = 2{,}371$). H18 was not supported.

H19. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student grade level.

Prior to conducting the hypothesis tests, the sample was disaggregated by student grade level. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for third-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for fourth-grade students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores and students' MAP mathematics growth for fifth-grade students. The correlations for third-grade, fourth-grade, and fifth-grade students were compared using Fisher's *z* tests for two correlations. Three Fisher's *z* tests were conducted to test H19 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05 The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients for third-grade and fourth-grade students, $z = -1.37$, $p = .171$ (see Table 17 for test statistics). The correlation for third-grade students ($r = -.034$, $n = 1{,}383$) was not different from the correlation for fourth-grade students ($r = .019$, $n = 1{,}315$). The results of the Fisher's *z* test for two correlations indicated a significant difference between the two correlation coefficients for third-grade and fifth-grade students, $z = -4.91$, $p = .000$, $q = .116$. The correlation for third-grade

students (r = -.034, n = 1,383) was different from the correlation for fifth-grade students (r = .082, n = 2,067). The results of the Fisher's z test for two correlations indicated a significant difference between the two correlation coefficients for fourth-grade and fifth-grade students, z = -2.13, p = .033, q = .063. The correlation for fourth-grade students (r = .019, n = 1,315) was different from the correlation for fifth-grade students (r = .082, n = 2,067). H12 was partially supported. The Cohen's q values indicated small effects for both significant findings.

Table 17

Fisher's z Test Statistics for H19

	Subgroup Correlations			Fisher's *z* Statistics	
Grade Level	*r*	*p*	*n*	*z*	*p*
Grade 3	-.034	.203	1,383		
Grade 4	.019	.481	1,315	-1.37	.171
Grade 5	.082	.000	2,067	-4.91	.000
Grade 4	.019	.481	1,315		
Grade 5	.082	.000	2,067	-2.13	.033

H20. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student race.

Prior to conducting the hypothesis test, the sample was disaggregated by student race. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables for minority students. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between students' emotional regulation scores

and students' MAP mathematics growth for non-minority students. The two sample correlations were compared using the Fisher's *z* test for two correlations. A Fisher's *z* test was conducted to test H20 because the difference between the Pearson correlation coefficients was examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* test for two correlations indicated no difference between the two correlation coefficients, $z = 0.13$, $p = .896$. The correlation for minority students ($r = .031$, $n = 1542$) was not different from the correlation for non-minority students ($r = .027$, $n = 3{,}223$). H20 was not supported.

H21. The relationship between students' emotional regulation scores and students' MAP mathematics growth (fall to spring) is affected by student special education status.

Prior to conducting the hypothesis tests the numerical data were disaggregated by student special education status. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with high incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with low incidence disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with speech and sensory disabilities. A

Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with students with other disabilities. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for students with giftedness. A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between numerical variables, students' emotional regulation scores and students' MAP mathematics growth, for general education students. The correlations for students with high incidence, low incidence, sensory and speech, and other disabilities, and giftedness, and general education students were compared using Fisher's *z* tests for two correlations. Fifteen Fisher's *z* tests were conducted to test H21 because the differences between the Pearson correlation coefficients were examined. The level of significance was set at .05. The effect size, Cohen's *q*, is reported where appropriate.

The results of the Fisher's *z* tests for two correlations indicated no difference between the two correlation coefficients for any of the 15 comparisons. Table 18 contains the correlations and the test statistics for all the comparisons. The correlation between students' emotional regulation scores and students' MAP mathematics growth was not different based on special education status. H14 was not supported.

Table 18

Fisher's z Test Statistics for H21

	Subgroup Correlations			Fisher's *z* Statistics	
Special Education Status	*r*	*p*	*n*	*z*	*p*
High Incidence	-.020	.757	240		
Low Incidence	.175	.255	44	-1.16	.246
Sensory and Speech	-.088	.237	182	0.69	.490
Other	.014	.878	119	-0.30	.764
Giftedness	.000	.999	165	-0.20	.842
General Education	.035	.026	4,015	-0.82	.412
Low Incidence	.175	.255	44		
Sensory and Speech	-.088	.237	182	1.53	.126
Other	.014	.878	119	0.90	.368
Giftedness	.000	.999	165	1.01	.312
General Education	.035	.026	4,015	0.90	.368
Sensory and Speech	-.088	.237	182		
Other	.014	.878	119	-0.86	.390
Giftedness	.000	.999	165	-0.81	.418
General Education	.035	.026	4,015	-1.61	.107
Other	.014	.878	119		
Giftedness	.000	.999	165	0.12	.900
General Education	.035	.026	4,015	-0.22	.826
Giftedness	.000	.999	165		
General Education	.035	.026	4,015	-0.44	.660

Summary

The results of the data analysis were presented in Chapter 4. Following the summarization of the descriptive statistics for the study sample, a thorough explanation of the hypothesis testing results related to the six research questions was provided. Chapter 5 includes the study summary, findings related to the literature, and the conclusions.

Chapter 5

Interpretation and Recommendations

The field of SEL has been linked to improving student academic success (Weissberg, 2016). Mathematical practices have shown that students can solve real-world and mathematical problems by working effectively with peers; formulating, communicating, and critiquing arguments; and persevering through difficulty (Dana, 2020). As students internalize these mathematical practices, they too can engage interpersonal and intrapersonal skills, also known as SEL competencies. Chapter 5 includes the study summary, findings related to the literature, and the conclusions.

Study Summary

This section provides a summary of the research conducted for this study. This summary contains an overview of the problem. The next subsections include the purpose of the study and the research questions. The summary ends with a review of the methodology and the study's major findings.

Overview of the problem. Educators are trying to find ways to promote and implement positive social emotional health and address academic concerns as they arise. Determining whether there is a connection between a student's grit, self-efficacy, and emotional regulation and academic achievement has not been thoroughly investigated (Usher et al., 2019). Weissberg et al. (2015) have also emphasized the need to coordinate SEL with similar approaches that promote positive school climates and cultures and enhance students' intrapersonal, interpersonal, and cognitive competence. District O set its mission to prepare students for their future. In doing this, the district has focused its goals toward promoting positive social-emotional skills and positive attitudes, which, in

turn, should lead to improved adjustment and academic performance as more positive behaviors and better grades and achievement test scores (Dain, 2019). The district needs to know whether there is a link between the SEL constructs of grit, self-efficacy, and emotional regulation and mathematics growth to help students reach their academic goals.

Purpose statement and research questions. The purpose of this study was to explore the relationship between SEL and academic success. The first purpose of this study was to determine if there was a correlation between students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth. The second purpose of this study was to determine if the correlation between students' grit, self-efficacy, or emotional regulation scores and their MAP mathematics growth was affected by their ELL status, SES, gender, grade level, race, and special education status. To achieve the purposes of this study, six research questions were addressed, and 21 hypotheses were tested.

Review of the methodology. A correlational research design using archived survey and assessment data was selected to identify if there was a relationship between student grit, self-efficacy, and emotional regulation scores and student MAP mathematics growth. The independent variables included in the study were the students' perceptions of their grit, self-efficacy, and emotional regulation and student ELL status, SES, gender, grade level, race, and special education status. The dependent variable was student growth (fall to spring) on the MAP mathematics assessment during the 2017-2018 school year. The population for the study included third- through fifth- grade students in attendance during the 2017-2018 school year in District O. The sample included students

who had valid fall and spring MAP mathematics scores and had completed the Panorama survey. Correlations were calculated to index the strength and direction of the relationships between the SEL measures and MAP growth. Pearson product moment correlation coefficients were calculated to index the strength and direction of the relationship between students' grit, self-efficacy, or self-regulation scores and students' MAP mathematics growth. A Fisher's *z* test was conducted to test hypotheses when the differences between the Pearson correlation coefficients were examined. The effect size, Cohen's *q*, was reported where appropriate.

Major findings. The analyses that addressed the relationships between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics growth, and between emotional regulation scores and students' MAP mathematics growth indicated that there were weak positive relationships. The analyses that addressed whether the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) was affected by student ELL status, SES, gender, grade level, race, and special education status determined that the relationship between students' grit scores and students' MAP mathematics growth (fall to spring) was affected by student grade level. The relationship between grit and the MAP mathematics growth was stronger for students in Grade 5 than in Grade 4 or Grade 3. The analyses that addressed whether the relationship between students' self-efficacy scores and students' MAP mathematics growth (fall to spring) was affected by student ELL status, SES, gender, grade level, race, and special education status determined that the relationship between student' self-efficacy and students' MAP mathematics growth (fall to spring) was affected by student grade-level. The relationship between self-

efficacy and the MAP mathematics growth was stronger for students in Grade 5 than in Grade 4 or Grade 3. The relationship was also stronger in Grade 4 than in Grade 3. The analyses that addressed whether the relationship between students' self-regulation scores and students' MAP mathematics growth (fall to spring) was affected by student ELL status, SES, gender, grade level, race, and special education status determined that the relationship between students' self-regulation scores and students' MAP mathematics growth (fall to spring) was affected by student grade level. The relationship between self-regulation and the MAP mathematics growth was stronger for students in Grade 5 than in Grade 4 or Grade 3.

Findings Related to the Literature

In this section, findings of the current study are related to findings from previous studies that have been conducted. There was limited research that had been conducted to make comparisons to this study. There were studies found on SEL and studies focused on academic success. The few studies found were detailed and discussed in the review of the literature. Most of the current research is over the correlation, if any, between students' grit, self-efficacy, or self-regulation scores and students' growth on the MAP mathematics assessment. The findings in this section are organized in the order of the research questions.

The findings of the current study indicated a weak positive relationship between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics growth, and between emotional regulation scores and students' MAP mathematics growth. These results supported the findings of Durlak et al. (2010), who collected data from an after-school program that was designed to

enhance and promote the personal and social skills of students. Findings yielded a significant improvement in participants' standardized test scores. Overall, study levels showed a .22 increase in academic growth.

Based on their research, Durlak et al. (2011b) were able to study 270,000 students to determine that school based SEL programs produced multiple positive outcomes such as significant improvement in students' social and emotional skills, their attitudes about themselves and their school, their social and classroom behavior, and their academic success. The current study supports Durlak et al.'s (2011b) findings with a weak positive relationship between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics growth, and between emotional regulation scores and students' MAP mathematics growth.

Payton et al. (2008) wanted to identify the primary findings and implications of the programs by determining the impact on Grades kindergarten through Grade 8. Based on their findings, Payton et al. (2008), using a meta-analytical approach on 317 studies, determined that "SEL programming improved students' achievement performance by 11 to 17 percentile points" (p. 3). These gains provide evidence that SEL programs "appear to be among the most successful interventions offered to K-8 students" (Payton et al., 2008, p. 11). The results of the current study support Payton et al.

In a meta-analysis of 270 studies, Elias et al. (2007) found that SEL-related programs showed a significant impact on academic achievement test scores. The findings of the current study supported Elias et al. because the relationship between SEL and MAP mathematics growth showed the higher the grade level, the stronger the relationship.

White (2018) examined the association between school climate, social emotional development, and academic achievement of kindergarten through third-grade students. Over time, improvements in student academic achievement were due to the impact of their social emotional development, which compensated for the low school climate. Of 10 DESSA subscales, four did not correlate with student achievement: positive thinking, social awareness, goal directed behavior, and personal responsibility. DESSA social-emotional composite score significantly correlated with three academic outcomes, underscoring the value of social-emotional development in general. Most of the predictive power of the DESSA subscales involved improvements in math scores. Overall, social-emotional development may have a greater impact on math than reading achievement in elementary school (White, 2018). The current study supports White as the results showed a weak positive relationship between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics growth, and between emotional regulation scores and students' MAP mathematics growth.

The current study supports Yeager et al. (2019), who conducted randomized control studies related to growth mindset, which is seen as a foundation for SEL (Margo & Coates, 2019). The results of these studies showed that students with GPAs below the school median who were assigned to the growth mindset intervention group earned higher GPAs in core classes at the end of the ninth grade, which is a significant increase of 0.1 points in the end of year GPA compared to the control group. The current studies results showed a weak positive relationship between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics

growth, and between emotional regulation scores and students' MAP mathematics growth.

Usher et al. (2019) found grit was correlated positively with self-efficacy and weakly with achievement. Self-efficacy was positively related to all outcomes. Self-efficacy measures indicated that subject-specific self-efficacy was positively related, and grit weakly to reading and math achievement. In contrast, the current study results showed a weak positive relationship between students' grit scores and students' MAP mathematics growth, between self-efficacy scores and students' MAP mathematics growth, and between emotional regulation scores and students' MAP mathematics growth. Usher et al. (2019) also found older students and students from lower SES reported significantly lower grit and self-efficacy. In contrast, the current study results showed the relationship between SEL and MAP mathematics growth showed the higher the grade level, the stronger the relationship. The current study results showed no relationship between self-efficacy scores and students' MAP mathematics growth and between SEL and MAP mathematics growth.

Conclusions

This section provides conclusions drawn from the current study on the relationship between student SEL and student achievement on the MAP. Included in this section are the implications for action and recommendations for further research. The final section ends with the concluding remarks.

Implications for action. Based on the results of this study, District O, as well as other districts, could make considerations in several areas. The relationship between students' grit scores, self-efficacy, and self- regulation and students' MAP mathematics

growth (fall to spring) was affected by student grade level. The relationship between grit, self-efficacy, and self-regulation and the MAP mathematics growth was stronger in Grade 5 than in Grade 4 or Grade 3. In self-efficacy, the relationship was stronger for Grade 5 than was stronger than Grade 4 and Grade 3, and the relationship for Grade 4 is stronger than Grade 3. District O might attempt to strengthen the instruction for Grades K-4 in the areas of grit, self-efficacy, and self-regulation. They could choose to group grade levels vertically for the benefit of an older role model. Based on the findings, ELL status, SES, gender, race, or special education status show no correlation to assessment scores. Regardless of subgroup, MAP math growth is positively related to SEL. Kids with higher SEL do better on the test. District O could use professional development to clarify and ensure consistency of administering the survey as well as to make sure third- and fourth-grade students understand the Panorama items on the survey. During these professional development sessions, District O could use the opportunity to train teachers for more consistency in the instruction of SEL skills. According to Usher et al. (2019), "to improve student performance, teachers should target students' self-efficacy rather than grit" (p. 877).

Recommendations for future research. The purpose of this study was to explore the relationship between SEL and student achievement. Future research could focus on other social emotional learning constructs and student achievement at other grade levels. Based on the findings of this study, there are a few recommendations for future research.

One recommendation for future research would be to consider analyzing the relationship between individual items in a specific SEL construct area and students' growth in reading and math. Data on question response, grade level, and school could be

studied more in-depth. In this way, the data might prove to be more valuable to those instructing students related to the SEL construct.

Another recommendation for future research would be to conduct a longitudinal study that would follow the current study's participants through their middle school years. In the longitudinal study, the correlation between students' grit, self-efficacy, and emotional regulation scores and their growth on MAP mathematics assessment could be compared over time. In doing this, you could determine whether the correlation between the two variables increases as the student gets older.

A third recommendation for future research would be to use students from more than one district to analyze data. Using multiple districts would give a larger population as well as a more diverse community of students allowing for a more varied range of backgrounds. Instead of only using students from District O, the research could compare District O to other similar or different districts as well as districts that incorporate SEL and those that do not.

If the researcher were going to conduct this study again, the researcher could focus on a longer range of data versus just the one year. The researcher could provide some modifications to support the given measurement tools to make them more consistent and comprehensive at all grade levels. In addition, the researcher could consider using reading growth instead of math growth. The researcher could focus on a change in grade level for the participants from Grades 3-5 to Grades 6-8. The researcher could change the measurement tool to state assessments in ELA or reading.

Concluding remarks., In a new time of continuous learning, and college readiness, we look back to what educational leaders knew always made us stronger

learners – social emotional skills (Weissberg, 2016). As students grow and gain more insight into what is right and wrong, and increase their self-awareness, confidence, and comfort, and as they begin to gain more knowledge of the academic world around them, they will be able to perform at a higher and stronger level. Educators must reflect on stressful situations when their students are asked to perform academic tasks at any level. Strategies must be learned and practiced ensuring the relationships between teachers and students are established to support students' academic growth and SEL.

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Appendices

Appendix A: District O IRB Approval

From: [redacted]
Date: November 4, 2019 at 2:11:33 PM CST
To: Andrea Haun <alhaun@[redacted]>, [redacted]
[redacted]>
Subject: RE: Data

Hi Andrea,

I have approved your proposal, but as I am reviewing your research proposal, it is not exactly clear what specific data you need. It appears that you would like district-wide MAP data from 2017-18. But there are also parts of your proposal referring to demographic data (SEL, ELL, SPED, race etc). Also, concerning the Panorama Data, how would you like that data. I just need you to help me with the specifics.

I will be back in the office on Thursday, and we can begin to collect your data for you, if you can help me with the specifics. Also, if I have forgotten to send your approval letter, I will send it at that time as well.

[redacted]

[redacted]
Director of Assessment and Research
[redacted]

Appendix B: Baker IRB Approval

Baker University Institutional Review Board

December 9th, 2019

Dear Andrea Haun and Susan Rogers,

The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.
6. If this project is not completed within a year, you must renew IRB approval.

If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,

Nathan Poell, MLS
Chair, Baker University IRB

Baker University IRB Committee
Scott Crenshaw
Sara Crump, PhD
Jamin Perry, PhD
Susan Rogers, PhD