

THE ROLE OF TEACHER EMOTIONAL INTELLIGENCE AND CULTURAL
INTELLIGENCE IN ESTABLISHING POSITIVE SOCIAL-EMOTIONAL
DYNAMICS WITH DIVERSE STUDENT GROUPS

by

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A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Education

Committee:

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Date: _____ Spring Semester 2020
George Mason University
Fairfax, VA

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Dedication

To my parents who taught me the constructive and sustaining value of care for others.

Acknowledgements

I would like to thank the many friends, advisers, and family members who supported me in my quest to understand "the in-between." In particular a great thanks to Drs. Kitsantas and Powell for their guidance and patience with my work and to Dr. DeMulder for the research opportunities she shared. Thank you, too, to my friends, Linda Mann, Mickey Bensen, and Kim Fair for their sustained interest in my thinking. You all continue to inspire me. Finally, thank you to my family for their patience and support through the years it took me to put it all together.

Table of Contents

List of Tables.....	vii
List of Figures.....	ix
List of Abbreviations	x
Abstract	xi
Chapter One.....	1
Conceptual Framework.....	3
Rationale for Study.....	9
Teacher Capacities and the Social-Emotional Dynamic.....	11
Definitions of Key Terms.....	15
Chapter Two.....	17
Models of Emotion.....	17
Teacher-Student Social-Emotional Dynamics.....	30
Culture and the Social-Emotional Dynamic.....	47
Summary of Teacher-Student Social- Emotional Dynamic.....	50
Teacher Emotional Intelligence, Cultural Intelligence, & Self-efficacy.....	53
Proposed Models.....	80
Chapter Three.....	87
Participants.....	87
Sample Size.....	91
Measures.....	95
Procedures.....	104
Structural Equation Models.....	116
Data Analytic Approach.....	122
Chapter Four.....	124
Data Cleaning.....	124
Structural Equation Modelling.....	142
Chapter Five.....	157

Model Insights.....	158
Limitations.....	166
Theoretical Implications.....	169
Practical Implications.....	170
Directions for Future Study.....	171
Conclusions.....	172
Appendix A <i>Demographic Survey</i>	174
Appendix B <i>Teacher Efficacy Scale for Classroom Diversity (TESCD)</i>	176
Appendix C <i>Questionnaire on Teacher Interaction Self-Efficacy (QTI-SE)</i>	179
Appendix D <i>Wong and Law Emotional Intelligence Scale (WLEIS)</i>	180
Appendix E <i>Cultural Intelligence Scale (CQS)</i>	181
Appendix F <i>My Classroom Inventory (TMCI)</i>	183
Appendix G <i>Student Teacher Relationship Scale (STRS)</i>	185
Appendix H <i>IRB Approval</i>	187
Appendix I <i>Education Administrators Recruitment Letter</i>	188
Appendix J <i>Elementary Teacher Recruitment Letter</i>	189
References.....	190

List of Tables

Table	Page
Table 1. CASEL Definition of Social-emotional Core Competencies.....	55
Table 2. Jones, Bouffard, & Weissbourd Definition of Social-emotional Competence.....	56
Table 3. Generic Emotional Competence Framework.....	60
Table 4. Comparison: Sample & Population Elementary Teacher Demographics.....	90
Table 5. Summary of School District Recruitment.....	106
Table 6. Latent Variables and Associated Observed Variables.....	120
Table 7. Collinearity Statistics.....	129
Table 8. Skewness and Kurtosis Values.....	130
Table 9. Class Climate: Means, Standard Deviations & Correlation Matrix.....	134
Table 10. Teacher-student relationships: Means, Standard Deviations & Correlation Matix.....	135
Table 11. Full Model Measures Loadings, Reliabilities, AVE, & Discriminant Validity.....	136
Table 12. TMCI Loadings, Reliabilities, AVE, & Discriminant Validity Without COMP.....	139
Table 13. Simple Models Measure Loadings, Reliabilities, AVE & Discriminant Validity.....	140
Table 14. EI With CQ Measure: Loadings, Reliabilities, AVE & Discriminant Validity.....	142
Table 15. Measurement Model Results.....	145
Table 16. First Full Model Results.....	146
Table 17. Model Modifications, Goodness-of-fit & Structural Model Regression Slope Changes.....	147
Table 18. Modification Justifications.....	148
Table 19. Final Full Model Results.....	148
Table 20. First Simplified Model Results.....	152

Table 21. <i>Simplified Model Modifications and Goodness-of-fit &</i> <i>Structural Model Regression Slope Changes</i>	153
Table 22. <i>Modification Justifications</i>	154
Table 23. <i>Final Simplified Full Model Results</i>	155

List of Figures

Figure	Page
<i>Figure 1. Proposed SEM Model Exploring Influence of teacher EI, Teacher CQ, Teacher Diversity Self-efficacy and Teacher Interaction Self-efficacy on Diverse Class Climates.....</i>	83
<i>Figure 2. Proposed SEM Model Exploring Influence of teacher EI, Teacher CQ, Teacher Diversity Self-efficacy and Teacher Interaction Self-efficacy on Teacher-Student Relationships.....</i>	84
<i>Figure 3. Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ Direct Effects on Diverse Class Climates.....</i>	85
<i>Figure 4. Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ Direct Effects on Teacher-Student Relationships.....</i>	86
<i>Figure 5. Normality Histogram for Class Climate Model.....</i>	126
<i>Figure 6. Normal Q-Q Plot for Class Climate Model.....</i>	126
<i>Figure 7. Normality Histogram for Teacher-Student Relationship Model.....</i>	127
<i>Figure 8. Normal Q-Q Plot for Teacher-Student Relationship Model.....</i>	127
<i>Figure 9. Class Climate Homoscedasticity Scatterplot.....</i>	128
<i>Figure 10. Teacher-Student Relationship Homoscedasticity Scatterplot.....</i>	128
<i>Figure 11. Significant Relationships of Full Teacher-Student Relationships SEM model (n=205).....</i>	150
<i>Figure 12. Significant Relationships of Simplified Teacher-Student Relationships SEM model (n=205).....</i>	156

List of Abbreviations

Average Variance Extracted.....	AVE
Cultural Intelligence.....	CQ
Diversity Self-efficacy.....	DSE
Emotional Intelligence.....	EI
Interaction Self-efficacy	ISE
Questionnaire on Teacher Interaction Self-Efficacy.....	QTI-SE
Student Teacher Relationship Scale	STRS
Teacher Efficacy Scale for Classroom Diversity.....	TESCD
Teacher-Student Relationship	TSR
Teachers Version - My Classroom Inventory	TMCI
Wong and Law Emotional Intelligence Scale.....	WLEIS

Abstract

THE ROLE OF TEACHER EMOTIONAL INTELLIGENCE AND CULTURAL INTELLIGENCE IN ESTABLISHING POSITIVE SOCIAL-EMOTIONAL DYNAMICS WITH DIVERSE STUDENT GROUPS

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George Mason University, 2022

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The purpose of this exploratory study was to examine factors that may influence diverse class climates and teacher-student relationships (TSRs) with two hundred and five ($N=205$) elementary school teachers. Participants were asked to respond to surveys regarding their beliefs and perceptions of their emotional and cultural capacities in working with diverse student groups. It was hypothesized that teacher factors such as teacher emotional intelligence (EI), cultural intelligence (CQ), diversity self-efficacy (DSE), and interaction self-efficacy (ISE) would all directly influence diverse class climates and TSRs. Second, it was hypothesized that DSE would partially mediate the effects of CQ, and ISE would partially mediate the effects of EI on the outcomes. Finally, it was hypothesized that EI and CQ would covary. SEM analysis indicated that teacher EI, but not CQ, DSE or ISE, influenced TSRs in diverse student groups. As expected EI positively influenced ISE, CQ positively influenced DSE, and EI and CQ covaried. No

support was found for the second hypothesis due to the lack of discriminant validity among the measures. Although the CQ construct, as a whole, did not influence TSRs, its relevance was indicated by the influence of its subscales on EI and TSR conflict. Cultural knowledge, a CQ subcomponent, had an independent, inverse effect on TSR conflict and an inverse relationship to DSE. These findings may imply that teachers who exhibited higher levels of cultural knowledge experienced less conflict in their TSRs and were less confident in working with diverse student groups. Interestingly, results also indicated effects of CQ subcomponents on teacher EI and EI subcomponents. The results highlight the importance of teacher EI and cultural knowledge in working with diverse student groups. It also provides initial insight into the relationships between and among EI and CQ subcomponents. Limitations and educational implications are discussed.

Chapter One

Given the increasing cultural diversity of our student population (National Center for Education Statistics, 2020), it is imperative that we understand what makes a teacher effective at working with all students – regardless of their cultural background. Hattie (2009) has established that a key to teacher effectiveness is the ability to establish a positive social-emotional dynamic with students. Although such a dynamic results in many positive outcomes for students (Furrer & Skinner, 2003; Williford et al., 2013), research indicates that teachers are often unable to form these helpful relationships with students from cultures other than their own (Bruch et al., 2017; McGrath & Van Bergen, 2015). Research further indicates that teachers lack awareness of how their cultures affect their instruction and classroom climate (Aragona-Young & Sawyer, 2018). Combining a constructionist understanding of emotion (Siegel, 2015) with social cognitive theory (Bandura, 1986) and self-determination theory (Ryan & Deci, 2000), this study investigated influential teacher social-emotional variables. Specifically, two structural equation models were evaluated to explore the relationships between and among teacher cultural intelligence (CQ), emotional intelligence (EI), diversity self-efficacy, interaction self-efficacy, and diverse class climates and teacher-student relationships (TSRs).

The social-emotional dynamics of a classroom are vital to effective teaching and learning, for teaching is fundamentally social (Kyriakides et al., 2013), and learning is as emotional as it is cognitive (Immordino-Yang, 2016; Pekrun & Linnenbrink-Garcia, 2014). This dynamic – more than teacher or school characteristics – undergirds student

achievement and development (Creemers & Kyriakides, 2006; Hamre et al., 2013; Rutledge et al., 2015). Without it, the benefits of well-designed curricula, teacher content, and pedagogical knowledge can be muted (Cohen et al., 2003; Fullan, 2001) and learning does not occur (Kyriakides et al., 2013).

The social aspects of teaching and learning are readily apparent. Teachers and students must interact to effect learning. Less considered, however, is the emotional component of the social-emotional dynamic (Pekrun & Linnenbrink-Garcia, 2014). This is unfortunate, for emotion has an initiating, albeit unconscious, role in behavior and learning. Emotion is a student's first response to any educational experience and determines whether cognitive or behavioral resources are activated (Siegel, 2015). Emotion also plays a pivotal role in engagement and motivation (Skinner et al., 2014) as well as subsequent self-understanding (Howes, 2000; Howes & Ritchie, 1999; Siegel, 2015).

Because emotion is the first response to any stimuli, social behavior and emotional response are inextricably linked. Teachers provide myriad emotional stimuli through their social interactions: Feedback may be encouraging or discouraging. Directions may be intimidating or welcoming. Instruction may be engaging or boring. These teacher behaviors necessarily elicit a student emotional response, which, in turn, shapes student learning, behavior and development (Pekrun & Linnenbrink-Garcia, 2014).

The primacy of this dynamic makes teacher ability to influence it paramount to effective teaching (Becker et al., 2014; Jennings & Greenberg, 2009; Jennings &

Jennings, 2013). Educators and educational leaders recognize the essential influence of social-emotional behaviors on learning and healthy development. In their survey of 263 elementary and middle school teachers, Buchanan et al. (2009) found 98.9% of teachers think social-emotional learning is important for their students' lives and 96.2 % think that it helps with academic achievement. Similarly, in establishing standards to define good teaching, the Interstate Teacher Assessment and Support Consortium (InTASC) of the Council of Chief State School Officers (CCSSO) devoted an entire standard to teacher social-emotional behaviors, encouraging teachers to create learning environments that support positive social interaction and collaboration.

Conceptual Framework

Explaining how the social-emotional dynamic operates, and is effective in producing positive student outcomes, requires three theoretical frameworks. First, Siegel's (2012) theory of interaction neurobiology provides an understanding of emotion and its effect in the dynamic. Second, Bandura's (1986) social cognitive learning theory more thoroughly explains the social aspect of behavior and the reciprocal nature of the dynamic. Third, Ryan and Deci's (2000) self-determination theory explains the role of motivation in the interaction.

Neurobiologist, Siegel (2012) has a dynamic understanding of emotion, defining it as a neurological disequilibrium created by interaction with one's real or imagined environment. According to Siegel (2012), the emotional process is as follows: First, there is an external stimulus – real or imagined – that is non-consciously perceived by the person. Based on natural drives and past experience, one non-consciously ascribes a

value and valence to the stimulus. This non-conscious value and valence then determines whether cognitive abilities are activated and/or whether a behavioral response is required.

There are two points worth highlighting here for our understanding of the foundational role of the classroom social-emotional dynamic in learning. First, although Siegel's (2012) model of emotion includes cognition and behavior, he contends that emotion precedes cognition and behavior. It is this initial, non-conscious response to the disequilibrium, created by an environmental stimulus, that determines how and if cognition and behavior are activated. Emotion is the initial and initiating response to stimuli. This sequence is important for the classroom setting. According to Siegel's (2012) model, it is a student's initial emotional response to a teacher and material that determines whether he engages cognitively or behaviorally. As a result, Meyer (2014) explains that a teacher's sensitive awareness of each student's unique emotional need and behavior becomes a crucial first step of effective teaching.

The second particularly relevant aspect of Siegel's (2012) framework is that it is inherently social. As people interact, they create an emotional disequilibrium in each other that activates a series of neural responses in each person. The more often an interaction pattern is experienced, the more firmly the neural wiring is established, eventually becoming the basis for future valuing of emotional experience, memory, and identity development.

Consistent with Siegel's framework of interaction neurobiology, Bandura's (1986) social cognitive theory also posits that learning is social. People learn through active engagement with their environment and subsequent reflection upon that

engagement. According to Bandura (1986), an individual, his behavior, and his environment form a reciprocally interactive triad. Each vertex of the triad affects and is affected by the others and, through this interaction, people learn knowledge, skills, attitudes, rules, beliefs, and strategies.

Important for our consideration of cultural differences is the reciprocal nature of Bandura's triad. According to social cognitive theory, not only do teachers influence students so students learn and grow, but students also influence teachers. Each forms part of the environmental vertex for the other. Student and teacher will modify their behavior in response to each other in order to satisfy their own implicit emotional needs (Holzberger et al., 2014).

Thirdly, Ryan and Deci's (2000) Self Determination Theory (SDT), explains the purpose of Bandura's reciprocal interaction. SDT contends that all people are motivated by the drive to satisfy three inherent needs: relatedness, competence, and autonomy. Combining SDT with relational reciprocity means that, while teachers are satisfying student need for relatedness through positive relationships, and student need for competence by designing "just right" academic challenges, they are also seeking to have their own needs for competence and relatedness satisfied through the interaction. In this way, the teacher-student dynamic is reciprocal. Both teachers and students are trying to satisfy essential needs.

Classroom Environment

Creating a warm and supportive classroom environment is one way that teachers can influence their students' emotional, educational experiences (Allodi, 2010; Andersen

et al., 2012; Brackett et al., 2011; Jennings & Greenberg, 2009). Although, classroom environment is widely considered to have three dimensions - instructional, organizational, and emotional (Evans et al., 2009; Hamre et al., 2007) - the emotional aspect permeates the entire construct (Andersen et al., 2012). A teacher's pedagogical prowess and management skills are important aspects of her effectiveness (Hamre et al., 2007), but these skills are supported by her social-emotional ability to sensitively respond to students through class organization and instruction.

The classroom emotional climate arises from the interactions between a teacher and students both individually and collectively, as well as from peer interactions among students (Meirovich, 2012). Although student peer relations play a role, Evans et al. (2009) attribute the quality of the classroom emotional climate primarily to the teacher. Not only does she create the emotional milieu through her direct relationships with students, but she also builds it through the class rules she promulgates (Matsumura et al., 2008), providing structure and guidance for all social interactions. She also has a direct influence on peer relations through her intervention in and monitoring of student social groups (Evans et al., 2009; Farmer et al., 2011; Garner, 2017; Gest et al., 2014; Gest & Rodkin, 2011; Hendrickx et al., 2016, 2017).

Cultural Diversity and the Social-Emotional Dynamic

The challenge of cultural diversity in this reciprocally interactive dynamic is that teachers may misunderstand the social-emotional expressions of their students from differing backgrounds (Thijs et al., 2012). Then, based on those misperceptions, and in an effort to preserve their own self-understandings of relatability and competence, the

teacher and student may resist the connection and label the other as unlikeable or incompetent. In turn, this may result in relationships and learning that are less positive for the teacher and student.

Teacher lack of awareness regarding cultural differences between her students and herself can have detrimental effects for students (Duckworth et al., 2005).

Misunderstanding students' emotional expressions can result in misinterpretation of behaviors such that students are inaccurately labeled as having behavior problems (Wubbels, 2015) or learning disabilities (Rogoff, 2003; Sirin et al., 2009). It can also affect how teachers treat their ethnically diverse students (den Brok & Levy, 2005; Garner & Mahatmya, 2015). Garner and Mahatmya (2015) found, for example, that teachers give less positive attention to their Black students than their White students. Louie et al. (2015) also found differential treatment of students based on ethnicity. They found that teachers rated the social competence of their Asian American students lower than that of European American students. Similarly, Hughes et al. (2005) found that teachers felt they had better relationships with their Hispanic and White students than with their Black students.

Some of these differences are alleviated when the ethnicities of teacher and student match. Research regarding teacher-student ethnic matching is consistent with the emotional awareness challenges posed by differing cultural expression backgrounds and suggests that teachers are better able to understand students who share their cultural background. For example, teachers differentially rated their students' social competence (Graves & Howes, 2011), academic ability, and behavior (Downer et al., 2016) based on

their ethnic match: Teachers rated students more positively if their ethnicities matched than if they did not. Similarly, Bates and Glick (2013) found that Black teachers rated the behavior of their Black students more positively than White teachers rated the Black students' behavior.

Students who have teachers with a matching ethnicity even have better academic outcomes than students with mismatched teachers (Egalite & Kisida, 2018). In contrast, however, Howes et al. (2011) and Ewing and Taylor (2009) found that the ethnic match between teacher and student did not moderate the effects of the teacher-student relationship on Hispanic children's social competence.

The current demographic reality of our schools further presses the issue of cultural misunderstanding. The mismatch between our student population and teacher workforce is increasing (Maxwell & Shah, 2012; Orrenius, & Zavodny, 2012). In 1970, the American population had 9.6 million foreign-born members, or 4.7% of the total population. In 2016, that percentage increased to 13.5% with 44 million people from other cultures (Edwards & Liu, 2018). Immigrant children, however, represent an even larger percentage of the American population making our classrooms more diverse than the general population. Nearly a quarter of American children live with at least one foreign-born parent (Perreira & Pedroza, 2019), making children under the age of 18 the most diverse age group in America (Passel, 2011). Moreover, this ratio is expected to increase to a third by 2050 (Passel, 2011).

While our classrooms are becoming more international and diverse, most American teachers are Caucasian, middle-class women (Aud et al., 2012). Teacher

backgrounds are, thus, quite different from this growing segment of their student population. Not only are teachers culturally different from their students, but they also lack awareness of how their students' cultures pertain to instruction and classroom climate (Aragona-Young & Sawyer, 2018). Garcia et al. (2010) point out that teachers and schools are unprepared to teach this increasingly diverse student body.

Nevertheless, all students, regardless of cultural background, must learn; all students have the same inherent needs for relatedness, competence, and autonomy; and all students rely on teachers to satisfy their learning and developmental needs through growth-enhancing relationships. Given these demographic developments, however, it is likely that more teachers and students will be culturally mismatched, increasing the possibility of misunderstanding and suboptimal social-emotional dynamics.

Rationale for Study

The fundamental influence of social-emotional interactions in classrooms, combined with the increased diversity in American classrooms, makes teacher ability to manage the social-emotional dynamic with all students essential to effective teaching. Determining what factors contribute to this ability is important so that we can provide education and training to develop these teacher capacities. Such education and training could help avoid the negative consequences of cultural misunderstanding and pursuant misinformed relationships.

Understanding the factors that contribute to a teacher's ability to positively influence the social-emotional dynamic with his or her students will allow for the development of this capacity in our teaching force. The proposed variables, emotional

intelligence (EI) and cultural intelligence (CQ), are malleable (Crowne, 2008; Sit et al., 2017) and, as such, can be developed through pre-service teacher education programs and in-service teacher professional development (Jennings et al., 2017; Nelis et al., 2009; Sit et al., 2017). Studies show that EI training and intervention programs can increase teacher emotional competence (Dolev & Leshem, 2017), leading to improved social relations (Jennings et al., 2017; Nelis et al., 2009). Not only could these improved social relations lead to greater student achievement, but it has positive benefits for teachers too. Teachers with greater social-emotional competence also have greater professional commitment (Collie et al., 2011) and job satisfaction (Collie et al., 2012).

Although there is a dearth of research regarding CQ training generally (Lie et al., 2012), and very little research regarding teacher CQ, studies of other professional groups indicate some effectiveness of cultural training. A systematic review of cultural competence training in the health field, found evidence that such programs translate into better patient care (Lie et al., 2011). This research suggests changes in cultural behavior in addition to changes in cultural knowledge and metacognition. Similarly, in their study of 110 government employees, Rehg et al. (2012) found that cultural training increased the cognitive and behavioral aspects of participants' cultural intelligence. Regarding cross-cultural training and teachers specifically, Keengwe (2010) found that pre-service teachers believed they were more culturally aware and competent after a cross-cultural education program. Tasan (2000) found that teachers' efficacy beliefs improved after teaching in diverse settings.

Teacher Capacities and the Social-Emotional Dynamic

This study proposed that emotional intelligence (EI), cultural intelligence (CQ) and related efficacy beliefs are influential in teachers' ability to form supportive social-emotional dynamics with their students from diverse cultural backgrounds. Specifically, this study examined the influence of EI, CQ, diversity self-efficacy (DSE), and interaction efficacy beliefs (ISE) on the development of a positive climate in diverse classrooms.

Additionally, if teacher education and training are the practical goals of this research, it is imperative to understand how these constructs relate to each other for the sake of developing these abilities in our teaching force. Consequently, this study also examined the relationships between and among teacher EI, CQ, DSE, and ISE. Although Crown, 2009 has found an overlap between EI and CQ more research is needed to understand the specific nature of that overlap.

Emotional Intelligence

Tendering the first definition of emotional intelligence, Salovey and Mayer (1990) define EI as “involving the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions” (p.189). When measuring EI, they divide it into four branches: perceiving emotions, understanding emotions, managing emotions, and using emotions. It is important to note that although Salovey and Mayer (1990) define this ability as “emotional,” they consider it a form of social intelligence. Their definition incorporates this consideration as it includes both interaction as well as intrapersonal skills. To be

emotionally intelligent, a teacher must be able to perceive, understand, manage, and use her emotions at the same time that she perceives, understands, manages, and uses the emotions of her students to accomplish social goals.

EI, however, may be insufficient in establishing growth-enhancing dynamics with students from differing cultures (Zeidner et al., 2012). Even a teacher who is emotionally intelligent in her own culture may be confounded by the differences in emotional expressions of other cultures (Constantine & Gainor, 2001). Because she is generally emotionally competent, she may assume that her perceptions of others' emotional expressions are accurate when, due to cultural differences, they are not. Then, unaware that she lacks an accurate understanding, she may relate to students on the basis of misperceptions and cultural assumptions (Aragona-Young & Sawyer, 2018; Kumar & Hamer, 2013). This, in turn, could muddle the fundamental social-emotional interactions and the benefits associated with them.

Cultural Intelligence

Because cultural differences in emotional expression underlie the proposed inadequacy of EI, this study explored whether CQ enhances a teacher's ability to work with diverse groups of students. Defined as the ability to "function effectively in intercultural environments" (Ang et al., 2015, p. 278), CQ has four essential interacting facets: knowledge, metacognitive, behavioral, and motivational. People who are culturally intelligent can adapt to new cultural environments as well as influence cultural aspects of their own environment, including the ability to form meaningful relationships with people from differing cultural backgrounds (Ott & Michailova, 2018).

Self-Efficacy

Because self-efficacy belief is an essential mediator between ability and behavioral outcomes (Bandura, 1977; Ramdass & Zimmerman, 2008), teacher interaction and diversity efficacy beliefs have been added to the proposed exploration as potentially mediating variables. Defined within social cognitive theory as the self-belief that one can do something, self-efficacy is an internal, personal construct that plays a pivotal, mediating role in motivation, behavior, feeling, and thought (Bandura, 1986, 1997). The socially, interactive, triadic process described previously, results in a particular behavior only when one has sufficient self-efficacy belief to perform that behavior and reasonable expectations to accomplish a goal (Bandura, 1997).

Although some research regarding self-efficacy focuses on a global sense of teaching efficacy (Alrajhi et al., 2017), Bandura (1997) insists that efficacy beliefs be understood in terms of a specific behavior. A teacher must believe that she is good at something in particular, not simply that she is good. Abiding by Bandura's admonition, this study focused specifically on interaction self-efficacy (ISE) as a mediating variable between EI and diverse class climate and TSRs, and diversity self-efficacy (DSE) as a mediating variable between CQ and diverse class climate and TSRs.

Diversity Self-Efficacy. Examples of diversity self-efficacy include confidence in one's ability to handle sensitive interactions and topics with diverse student groups. It also includes confidence in one's ability to meet the needs of all students regardless of cultural background (Kitsantas, 2012). Believing that one is able to effectively manage the educational experience of students from differing backgrounds is expected to mediate

the effect of teacher CQ on the teacher-student, social-emotional dynamic.

Interaction Self-Efficacy. Interaction self-efficacy is two pronged. A teacher must believe that she can establish communion with her students (Wubbles, 1985, 2015) and that she has agency in influencing student behavior (Wubbles, 1985, 2015). Teacher interaction self-efficacy is expected to mediate the effect of teacher EI on the teacher-student social-emotional dynamic.

Putting all of these variables together, this study proposed structural equation models to explore how and if teacher EI, teacher CQ, teacher diversity self-efficacy (DSE) and, teacher interaction self-efficacy (ISE) influenced social-emotional outcomes with diverse student groups, The purpose of the models - and this study - was to address three exploratory research questions. First, how do teacher EI, teacher CQ, teacher diversity self-efficacy and teacher interaction self-efficacy influence the creation of classroom climate and teacher-student relationships with diverse groups of students? Second, does teacher EI influence teacher interaction self-efficacy and does teacher CQ influence teacher diversity self-efficacy? Finally, how do teacher EI and teacher CQ relate to each other?

Anticipating the results to each question, it was first hypothesized that teacher EI, CQ, DSE and ISE would all directly influence social-emotional outcomes. It was further hypothesized that EI would indirectly affect social-emotional outcomes via interaction self-efficacy and that teacher CQ would indirectly affect the outcomes via diversity self-efficacy. Each teacher self-efficacy belief would partially mediate the effects of their related intelligence.

Concomitant to these mediation effects and in response to the second research question, it was expected that teacher EI would positively influence teacher interaction self-efficacy. Similarly, it was conjectured that teacher CQ would positively influence teacher diversity self-efficacy. In anticipation of the final research question results, it was hypothesized that EI and CQ would maintain their construct distinctiveness, but would overlap and influence each other.

Definitions of Key Terms

Emotional intelligence is defined as the ability to perceive, understand, manage and use one's own and others' emotion (Salovey & Mayer, 1990). A teacher who is emotionally intelligent recognizes, understands, manages and uses her own emotion as she recognizes, understands, manages and uses the emotions of her students.

Cultural intelligence is the ability to operate in intercultural settings using cultural knowledge, metacognition, behavior and motivation (Ang et al., 2015). A teacher who is culturally intelligent is aware of the cultural differences between herself and her students and would be motivated to explore these differences. She would reflect on those differences, and then effectively modify her behavior in attempt to accomplish her goals.

Interaction self-efficacy is defined as teacher belief in her ability to form positive relationships with her students (Veldman et al., 2017).

Diversity self-efficacy is defined as teacher belief in her ability to manage interactions with diverse groups of students (Kitsantas, 2012).

Classroom climate is defined as the degree to which students are satisfied with

their class, enjoy positive peer relations but are not competitive with peers and find the class to be challenging but not overwhelming (Evans et al., 2009).

Elementary teachers are teachers who are currently teaching in grades K-6.

Chapter Two

In this chapter, I reviewed the literature regarding the social-emotional dynamic of classrooms, how is it influential in student learning, and how both may be affected by cultural differences. Although the object of this study is the social-emotional dynamic between teachers and students, I want to first establish the central importance of emotion in learning. I considered the nature of emotion generally and then its role in educational settings. Next, I elaborated on the social-emotional dynamic as proposed by my conceptual framework and discussed the influence of culture on the dynamic. I followed this with a review of teacher social-emotional behaviors that can influence student emotion and learning outcomes. Finally, I proposed and defined teacher variables that may be influential in teacher ability to affect the social-emotional dynamic with her culturally diverse students.

Models of Emotion

Although philosophers and theologians have discussed for centuries, what we have come to understand as emotion, it wasn't until the development of Psychology in the late 19th century that the term "emotion" became central in the scientific lexicon (Dixon, 2012). Theoretical debate about the nature and processes of emotion has abounded since that time as early psychologists considered how or whether to integrate emotion's physiological processes (arousal) with cognition (Dixon, 2012). This debate continues and has received renewed interest with the development of neuroscience (Barrett, 2017).

Generally, emotions are considered a response to real, imagined or neurophysiological stimuli (Shuman & Sherer, 2014). Neuroscientist, Damasio (1999) defines emotion as changes in an organism's homeostatic state. Similarly, Siegel (2012) describes emotion as socially influenced, neural changes caused by the integration of new experiences. Both describe emotion as a neurological disequilibrium created by interaction with the environment. Neither include cognition in their definitions. Instead, they limit their definitions to arousal.

According to Siegel (2012), the emotional process is thus: First, there is an external stimulus that is non-consciously perceived by the person. Based on natural drives and past experience, one non-consciously ascribes a value and valence to the stimulus. This non-conscious value and valence - or emotion - then determines whether one's cognitive abilities are activated and/or a behavioral response is required. As the initiating response, emotion then determines how and if cognition and behavior are activated.

There are other theoretical understandings of emotion, including basic emotion theories, appraisal theories, constructionist theories, and nonlinear dynamic theories. All of these theoretical perspectives, with the exception of constructionist theories, include cognition as part of emotion, and propose that emotion has the following components: subjective feeling, action tendency, appraisal, motor expression, and physiological activity (Shuman & Scherer, 2014). Like Siegel (2012), constructionist theorists assert that emotion provides feelings of intensity and valence that inform and interact with cognition and behavior in response to experience (Shuman & Scherer, 2014).

Whether cognition is included in one's understanding of emotion, all of the theories begin their definition of emotion as a response to stimuli: an arousal. It is the strength of this arousal that determines if and how other capacities are activated. The primacy of this arousal as the determinant of thought and action makes attention to student emotional experiences paramount for learning and development

Emotions in Education

The role of emotion in learning and development is complex but vital to consider. How students emotionally experience a lesson, an interaction, or an academic challenge determines what they do and how they think about the curricular content and themselves (Pekrun & Linnenbrink-Garcia, 2014). It also establishes neural pathways that become the basis for future learning and development (Pekrun, 2006; Siegel, 2015).

In their review of emotion in education, Fiedler and Beier (2014) summarized the influence of specific emotion on memory, learning, and achievement. Although one might expect only positive emotional states to have positive learning effects, both positive and negative moods can be beneficial to learning. Fiedler and Beier (2014) explain that negative moods enhance learning that requires accuracy and careful analysis, and positive moods enhance memory. Rowe et al. (2007) found that positive emotional states broaden attention capacity allowing a more creative, widely associative process. Not surprisingly, given the attentional breadth afforded by positive emotion, positive affective states hindered processing that required a narrow focus (Rowe et al., 2007).

In their *International Handbook of Educational Emotions*, Pekrun and Linnenbrink-Garcia (2014) identify five foci of education emotions: achievement,

epistemic, topic, social, and incidental. Students experience achievement emotions (e.g., enjoyment, boredom) that relate to academic activities, or outcomes (e.g., pride, shame, hope, anxiety; Pekrun, 2006). They might also experience epistemic emotions (e.g., surprise, curiosity, anxiety, enjoyment, frustration), which are caused by thinking about information and problems (Pekrun & Stephens, 2011).

Although the following emotional foci are not directly related to the work and outcome of learning, they do influence motivation. The third focus of emotions is the topic itself that is being studied (e.g., history, science, a compelling poem; Ainley, 2007). Fourth, because classrooms are social settings, Pekrun and Linnenbrink-Garcia (2014) also propose social emotions. These may be achievement oriented (e.g., admiration, envy, empathy) or relationally oriented (e.g., love, hate). Like topic emotions, social emotions do not directly affect the learning process, but they can profoundly affect motivation (Weiner, 2007) and engagement (Linnenbrink-Garcia et al., 2011). Finally, students bring their emotions caused by outside events to the classroom with them. These types of emotions are labeled as incidental, and can also strongly affect motivation and engagement.

These five schooling foci simultaneously and continuously arouse emotional responses. Their omnipresence requires that we consider emotion's role in educational settings. Following, I outlined several theories of emotion that help explain emotion's role in educational behavior. Some of the models describe how emotions form and others describe its role in learning behavior. The virtuous-circle model of motive driven learning, the goal pursuit model, the control-value theory of achievement emotions,

attributional theory, and emotion and motivation, are briefly described.

Virtuous-circle Model of Motive Driven Learning. The first theory of emotion in education to be discussed, is that of Schultheiss and Kollner (2014). They propose the virtuous-circle model of motive driven learning in which emotion provides motivation for behavior. In this model, emotion serves as a learning (dis)incentive which is activated by the satisfaction or aggravation of universal, implicit needs for affiliation, power, and achievement (Schultheiss, 2008). The affective experience of satisfying or thwarting these needs influences behavior and learning by acting as an affective reward or disincentive. These affective outcomes orient students to specific behaviors (Schultheiss & Brunstein, 2010). If actions are emotionally rewarded with implicit need satisfaction, then those behaviors are more likely to occur and explicit learning and memory are more likely to ensue.

The emotional experience of satisfying or failing to satisfy these implicit needs also acts as an “affect amplifier” (Schultheiss & Kollner, 2014, p. 77) that serves to make stimuli more salient and learning more likely. This emotional amplification is dependent on the relative strength of each person’s implicit needs for power, achievement, and affiliation.

Although Schultheiss and Kollner (2014) contend that everyone’s behavior is motivated by implicit need satisfaction, the driving strength of each need varies among individuals. Some may have a potent need for achievement but low needs for affiliation and power, while others have differing combinations of need strength. It is this relative need strength that determines how individuals affectively respond to stimuli. The stronger

the motive, the greater the affective response, and the more likely the explicit learning and memory.

Implicit motive strength however, is insufficient in enhancing learning by itself. All three implicit needs are inherently social, and their satisfaction necessarily requires engagement with others. Power and affiliation are obviously social as power is the desire to impact others (Schultheiss & Brunstein, 2010) and affiliation is the desire to relate to others (Schultheiss & Kollner, 2014). Achievement is less obviously social, but achievement standards are socially established and developed through interactions with others (Schultheiss & Brunstein, 2010).

Because implicit needs are aroused through social interaction and because students are motivated by unique combinations of implicit need, teachers must be aware of students' motive strengths in order to provide appropriate individual, emotional arousals. Not everyone responds to teaching behaviors in the same way. Consequently, it is incumbent on the teacher to understand how to wrangle emotional incentives to influence student behavior and learning.

Goal Pursuit Model. A second emotion in education theory places emotion within a goal pursuit model of behavior and learning. In this model, emotions provide a feedback mechanism informing students how they are doing in reaching a goal (Carver & Scheier, 2014). Carver and Scheirer (2014) contend that behavior is a series of actions that move one closer or further from one's goals based on the feedback one gets from effort toward that goal (i.e., one is closer or farther from the goal).

Emotion provides a simultaneous feedback loop that provides information as to

how well one is doing on reaching a goal. It does not provide information that one is closer or farther from the goal as the behavioral loop does, but it provides an evaluative assessment of the rate of goal attainment (i.e., is one reaching the goal as expected)? One has positive feelings such as satisfaction, pride, or joy when one is reaching goals better than expected. Conversely, one has negative feelings such as disappointment, anger, or anxiety when one is not reaching goals as expected. It is presumed that behavior changes to adjust the rate of progress toward the goal on the basis of the emotional feedback and in keeping with attainment expectations.

It is also presumed that emotional feedback helps learners juggle multiple goals that compete for time and attention. For example, a student may not focus on a history lecture because he did not prepare for the next class' math test. The two goals: focus in history and success in math, compete for his attention. The math test generates a greater emotional response, however, so he prioritizes his attention onto the math test and he's distracted in history.

Carver and Scheier (2014) explain that this goal pursuit model of affect is relevant to school achievement goals. Understanding students' intrapsychic emotional experience of working toward their aims may help explain behavior and inform teaching practice. As Pekrun and Linnenbrink-Garcia (2014) outlined, there are five emotional arenas competing for student attention in the classroom. Teacher awareness of these arenas combined with sensitive goal pursuit feedback could enhance student achievement.

Unlike the virtuous-circle model of motive driven learning, the goal pursuit model does not address implicit motivation. The object of behavior in the goal pursuit model is

to reach goals at a satisfactory rate, but the model does not address the choosing of goals.

What motivates the choice?

The goal pursuit model also cannot explain why a specific emotion can have differing effects. For example, why does the rapid attainment of a goal result in joy and persistence for one student, but boredom and avoidance for another? Including implicit motives to the model could explain the difference. Students with differing levels of need for power, affiliation, and achievement, as in the implicit motive theory, respond differently to various experiences.

Attributional Theory. A third perspective, the attributional approach, combines the initiating emotional arousal, with reflection on the causes of that arousal, and consequent action tendency. This theory adds a cognitive dimension to the model, as its emphasis is on the way a student appraises the cause of academic outcomes (Weiner, 2010). To whom or what is the emotion attributed? Differing appraisals for the same event result in different emotions and consequent differing action tendencies (Graham & Taylor, 2016).

First, it is important to note that not all experiences receive consideration. Cognitive engagement depends on the strength and valence of the academic outcome. For many academic activities, one is simply happy or sad about the outcome (Graham & Taylor, 2016). These would be activities of little consequence or activities where the result was not a surprise. Unexpected results, however, and success or failure at important activities prompt students to search for an explanation (Weiner, 2010).

There are several attribution questions that people consider in explaining the

unexpected and maybe negative outcome. Was the cause internal or external? Was the cause within one's control? Is the cause a one-time event or is it expected to endure? The answers to these questions result in different emotions and consequent behavior. For example, a poor test score could be the result of the teacher writing a poor test. This would constitute an external attribution, over which the student has no control and thus may result in anger or frustration. As a result of this emotion, the student may skip the class. Alternately, a poor test score might be attributed to a lack of ability (i.e., I'm just not math-minded). This would constitute an internal attribution over which a student had no control and one that would be expected to continue over time. Such an attribution might lead to despair and hopelessness, and an unwillingness to try. If the student instead attributed his poor score to a lack of effort, an internal but modifiable appraisal, he may feel guilty, but may also be motivated to work harder in the future.

Teachers can influence student attributional emotion in a couple of ways. First, they can help students adopt adaptive attributional thinking by talking about the causes of success and failure and emphasizing variables that are within student control (Dweck, 2008). They can also guard against their own attributional assumptions about their students (Weiner, 2010).

Like students, teacher emotion and behavior are influenced by their own causal appraisals. Because causal attributions are based on individual perception and not on objective fact (Weiner, 2010), they may include bias. This teacher bias may be indirectly communicated to students via teacher behavior and emotional expression (Graham & Taylor, 2016). For example, teachers may communicate pity for poor academic

performance based on the (mistaken) perception that students lack ability and that there is no way that they can change their circumstances. Alternately, a teacher might be annoyed with her students' poor performance and work to motivate them to greater success if she believed that they didn't study hard enough and that if they studied more, they would be successful. Although generally considered a negative emotion, this annoyance would subtly communicate confidence in student ability and opportunity to achieve.

Control-value Theory of Achievement Emotions. Achievement emotions are the subject of another theory of school-based emotion. The control-value theory of achievement emotions posits that student emotion is determined by how much one values academic experience combined with how much control one has over that experience (Pekrun, 2006). It is more expansive than the attributional approach in that it adds student value appraisal to the model.

In addition to asking about causality, students also consider the value of academic endeavors. This valuing can be "intrinsic" or "extrinsic" (Pekrun & Perry, 2014, p. 125). Intrinsic valuing is an intrapsychic valuing. A student values the learning in and of itself. For example, it may give him a sense of pleasure or satisfaction. Extrinsic valuing is a social value in that one values the outcome. In this case, perhaps the high grade on a test moves one to the top of the class.

In addition to adding valuing consideration, control value theory further expands on attribution theory in two ways. First, whereas attribution theory addressed only academic outcomes, control-value theory posits that both academic activity and academic results stimulate affective responses (Pekrun, 2006). Students can be bored by or excited

about a class project (academic activity) and satisfied or disappointed by a grade received on a test (academic outcome).

Control-value theory also adds a prospective element to the causal questioning. Not only do students reflect on past academic experience, but they also ask themselves whether they are able to do the activity required for success, and whether they have control over the hoped-for outcome. Pekrun and Perry (2014) call these considerations, "action-control expectancies" and "action-outcome expectancies" (p. 125).

Like attribution theory, not all experience reaches the level of cognition in control-value theory. Cognition is engaged only when students have an unexpected or particularly negative academic experience. Once the experience reaches the cognitive level, students ask the same causal questions in both theories: Was it me? Could I have done something about it? Is this enduring? Also, like attribution theory, differing emotions result from how those questions are answered.

Control value theory further describes academic experience as either positive or negative and activating or deactivating. The combination of these two dimensions results in four emotional response categories: positive/activating, positive/deactivating, negative/activating, and negative/deactivating (Pekrun & Linnenbrink-Garcia, 2012). Examples of positive/activating emotions include excitement and enthusiasm. Positive/deactivating emotions include relief and relaxed. Negative/activating include tension and anger. Finally, negative/deactivating affect includes such emotions as tired and discouraged.

Like attribution theory, control-value theory contends that emotions that result

from such causal and value appraisals subsequently influence learning. Because control-value theory includes both prospective and retrospective reflection, the relationship between emotion and outcome is reciprocal with remembered affective experience informing future expectations. The emotion generated by a student's attributions and valuing leads to varying performance behaviors which, in turn, lead to different achievement outcomes. These appraised outcomes then inform future antecedent appraisals and valuing. An example of affected learning behavior is the effect emotion can have on engagement. Positive, activating emotion leads to greater engagement which in turn can lead to greater achievement (Pekrun & Linnenbrink-Garcia, 2012).

Pekrun and Perry (2014) also cite more specific effects of emotion on learning. Both positive and negative emotion affect memory and learning. Positive emotion enhances creative, open-ended learning, and may help with memory. Negative emotion is beneficial for analytical tasks. Pekrun and Perry (2014) also explain that positive emotions are beneficial to student self-regulation and that negative emotions coincide with external modes of regulation. Additionally, Pekrun (2006) points out that processing one's emotional mood can occupy cognitive resources thus making fewer available for learning.

Emotion's depletion of cognitive resources is supported by the research of Curci et al. (2013). They tested the hypothesis that negative emotion induced by a memory test would cause undergraduate students to ruminate and thereby decrease the amount of working memory available for a subsequent memory exercise. Their two between-subjects ANOVAs revealed a positive association between reading a negative emotion

excerpt and working memory, and between reading the excerpt and increased rumination. Although their conclusions are only associative, they suggest that negative emotion leads to rumination that then leads to a decrease in working memory capacity.

Emotion and Motivation. Linnenbrink-Garcia and Barger (2014) combine emotion, motivation and goal pursuit in their explanation of the role of emotion in education. Like the virtuous-circle model, they consider emotion as motivating. Like the goal pursuit model, they see emotion as motivating students in goal-directed behavior. Goals are defined as either performance goals or mastery goals. Mastery goals are about growing ability and performance goals are about meeting external standards (Dweck, 2008).

Building on the work of Pintrich (2000) and Pekrun (2006) they propose four relationships among emotion, goals and motivations. The four relationships are: mastery approach in which students work to develop ability for sake of learning and having the ability, mastery avoidance in which students avoid learning, performance approach in which students strive to achieve standards of success, and performance avoidance in which students shrink from achievement standards. In their research summary, they found that a mastery approach is positively associated with hope enjoyment and pride and negatively associated with anger, hopelessness, boredom, shame, depression and sadness. Mastery avoidance is positively associated with anxiety/fear and anger and sadness. Like the mastery approach, the performance approach is positively tied to enjoyment, hope and pride, but is also positively associated with anger and hopelessness. It is negatively related to shame, boredom, depression. Finally, performance avoidance is positively

associated with anxiety/fear, anger, depression, shame, boredom, hopelessness and sadness. It is negatively associated with hope and pride.

Conclusion. At the very least, the work of these emotion researchers and theorists tells us that emotion plays a role in learning and achievement and that this role is complex and variable. All of these theories are what Weiner (2007) calls intrapsychic. They explain how emotion functions within a student's mind to affect learning and behavior. As presented, the theories build upon each other. The virtuous-circle model describes emotion's motivational influence in driving behavior and learning. Although none of the other models include implicit motives, they use feedback from goal pursuit. This feedback ranges from a basic consideration of progress toward the goal (goal pursuit model) to prospective and retrospective thought about the cause and value of the goal's outcome (control-value theory). Finally, Linnenbrink-Garcia and Barger's (2014) culminating theory presents action tendencies that are associated with various emotions.

Having established the importance of emotion, I next consider how emotions are socially influenced through interaction with others. To do this, I use Siegel's (2012) theory of interaction neurobiology. His work not only defines emotion and how it functions in behavior, but it also explains the how emotions are socially formed and influenced.

Teacher-Student Social-Emotional Dynamics

As a reminder, Siegel (2012) describes emotions as socially influenced, neural changes caused by the integration of new experiences. His definition of emotion is more of a constructionist approach to emotion as he does not include cognition in his

definition. Instead, emotion is limited to arousal that may or may not activate cognitive and behavioral resources. This is not inconsistent with attribution and control value theories in that they too acknowledge that some stimuli never reach the cognitive level because they do not have a strong enough impact to require awareness and thought. What differs however, is that Siegel (2012) does not include cognition and action tendency in his definition of emotion.

Instead, Siegel's framework focuses on how this initial, and potentially initiating arousal becomes the basis for learning and development through interaction with the social world. Although Siegel's (2012) framework of interaction neurobiology is based on emotional experiences, it is inherently social, as shared experience and interaction are at the core of his understanding of development. How one ascribes the value and valence to an emotion-inducing stimulus is based on the perceiver's socially induced neurological experience. When a person experiences an emotion, a neurological memory is created. The more often one has a specific experience, the more salient the memory.

Emotions become social when people interact with each other. At least from birth, people have social experiences that create disequilibrium; their mother holds them tenderly, a sibling screams, their father feeds them, etc. The child's neurons fire in response to these stimuli creating neurochemical linkages that are reinforced with repeated experience. These experience-neurochemical links become established neurological pathways that eventually become memories, expectations, and understandings of self and the world.

Not only is a person's mind wired by direct, one-on-one interactions, but a

neurological pattern is also established when one experiences some disequilibrium that is then ameliorated or aggravated by someone else. For example, a student may be frustrated by a learning challenge. The teacher might gently explain, redirect, and reassure the student or she may scold the child for being off task or not trying harder. The student experiences both the initially disturbing stimulus (a learning challenge) and the calming or aggravating stimulus (teacher's gentle redirection or scolding) together. Because the child experiences both the initially disturbing and then calming or aggravating stimuli together, the two experiences are neurochemically linked. Thus, the child, learns how to manage disturbances, and the neural sequential pattern of need and need-satisfaction or -intensification is established.

The neurological effect of others is most profound during the first two years of life, when infants are new to the world and are developing their first neurological patterns. Consistent with Bowlby's (1958) and Ainsworth's (1979) theories of attachment, this makes early caregivers the primary wirer of children's brains, and formative in children's development of internal working models of self and the world. If early caregivers are sensitively responsive to the needs of a child, the child's brain wires in more adaptive ways, including more confident self-perceptions and relationship styles. Such attachments and interactions are the basis for Seigel's (2012) understanding of the mind as interactionally developed.

Teachers, too, can be influential in this manner (Denham et al., 2012; Meyer, 2014). Although early caregivers have the first and most intense effect, brains can develop new neural pathways at any time, thus making later relationships also influential

in a person's neurological and consequential development. This is a profound teacher responsibility given the amount of time teachers spend with students, and is especially true for the formative interactions they have with elementary school aged children who have not yet fully developed their identities as learners.

An elementary school teacher's impact is magnified for two reasons: First, these teachers interact with children early in their education. This is an especially sensitive time for children, because they are only beginning to form understandings of themselves as learners and of how they fit in the world outside of their family. Their brains have not yet been wired for understanding these experiences. Second, elementary school teachers spend at least 5 hours a day interacting with students. Every moment of that day is an emotional experience for their students (i.e., a disequilibrium created by the stimuli of the classroom, teacher, and peers). The length of time in school provides ample and continuous opportunity for teachers to stimulate and then reinforce emotional experiences in students. If the teacher is sensitive or attuned to her students' needs, she can help the child develop adaptive neural patterns that become the basis for future responses, expectations, and understandings.

Sharpening the importance of the social-emotional classroom dynamic is the fact that emotional experiences are unavoidable. Just being in school is a stimulus – good or bad – that creates a personal disequilibrium to be processed and integrated into a student's understanding of self and the world. Emotions are constantly aroused and feelings such as boredom, enthusiasm, frustration, or pride can shift at any time (Becker et al., 2014). The gatekeeping nature of emotion is occurring whether or not a teacher

attends to it.

Relationship Reciprocity

This social-emotional dynamic is a two-way dynamic. Recall that in social cognitive theory, Bandura's triad was reciprocal. Not only does the environment influence the individual, but the individual also influences the environment (Bandura, 1986). Both teacher and student influence each other and modify their behavior in response to each other in order to satisfy their own emotional needs as outlined by the virtuous-circle model of motive-driven learning (Schultheiss & Kollner, 2014). In support of the reciprocal effects of student emotion and teacher behavior, Becker et al. (2014) found that teachers change their instruction in response to student emotion.

As already outlined, positive teacher-student relationships can be beneficial for both teacher and student (Skinner et al., 2014). If the dynamic works well, the student's sense of efficacy and pursuant competence grows and he feels connected. Likewise, the teacher's need for relatedness is supported by positive interactions, and the student's achievement can make the teacher feel competent as an educator (Skinner et al., 2014).

Conversely, it can be threatening to a teacher if she fails to connect with her students or if her students underachieve. This can rile negative emotions and defensive behaviors. In an attempt to preserve her own sense of competence and relatability, the teacher may attribute such outcomes to "bad" student behavior or "bad" students. This can have a perpetuating effect (Houser & Waldbuesser, 2017; Jennings & Greenberg, 2009) such that a teacher and student become locked in a cycle of misperception, misunderstanding, and consequent misinformed behavior (Skinner et al., 2014). As a

result, the student's emotional experience is negative and the student's teacher-induced neurological wiring is that of a "bad" student and "bad" behavior. The cycle's perpetuation creates and reinforces these eventual negative, student self-perceptions.

The research of Collie et al. (2012) illustrates the effects of relationship reciprocity. They found that a teacher's perceptions of student motivation and behavior had a significant effect on her perception of stress, teaching efficacy and job satisfaction. They highlight the emotional dynamic between teacher and student and how this dynamic has emotional repercussions for the teacher as well as the student.

Teacher Social-Emotional Conduct

What does this mean for the teacher? The models and research previously outlined, demonstrate the importance of emotion to memory, learning, and achievement. Siegel's (2012) model highlights the importance of the social-emotional dynamic and the potential for teacher influence. The combination of these two aspects makes teacher ability to influence student emotion paramount to effective teaching.

How to influence student emotion is not straightforward. Emotion researchers indicate specific behaviors teachers can do to influence student cognition regarding emotion. For example, they could help with adaptive causal and valuing attributions. However, they do not address the initial arousal of emotion that determines if and how cognition and/or behavior is activated.

Intuitively, we know that how someone says something can be as influential as what they say. This may get at the initial arousal aspect. Underscoring this intuition, Frenzel et al. (2009) found that teacher enthusiastic behavior transmitted their enjoyment

to students. In their multi-level analysis of 1,542 middle school students with 71 teachers, they found that student perception of teacher enthusiastic behavior was positively correlated with teacher reported enjoyment which was then associated with student enjoyment. Teacher enthusiastic behavior mediated the influence of her enjoyment on student enjoyment. This study not only indicates that teacher emotion influences student emotion, but also indicates that it was the “how” of teacher behavior that transmitted her enjoyment to her students.

To positively influence a student’s emotional experience, a teacher must layer emotional awareness with sensitive behavior and caring relationships, culminating in a warm and supportive classroom environment. Not only that, but she must also have an awareness of how to employ her own emotion effectively. As the complexity of emotion in education illustrates, being sensitive and responsive to student emotional need does not mean maintaining a perpetually happy state in a classroom or contented student emotional status. Both positive and negative emotion have their purpose in a sensitive classroom environment.

Teacher Awareness. As discussed, a teacher must be aware of and sensitive to the unique emotional make-up and needs of each student (Meyer, 2014). Siegel (2012) defines such sensitive awareness as attunement:

[...] full emotional communication, in which one person allows his state of mind to be influenced by that of the other. This alignment of states of mind permits a nonverbal form of collaborative communication such that the [recipient] feels ‘understood’ in the deepest sense. [...] Affective

attunement depends on one's sensitivity and attention to nonverbal signals that permit emotional communication and a sense of connection [...]

Attuned communication involves the resonance of energy and information between two people (p. 93).

Gallese et al. (2007) explain how neurobiology makes attunement possible. Everyone has a system of mirror neurons that automatically and unconsciously experiences the emotion of others. Teachers actually feel student emotion before they think about it. In this way, attunement remains at the arousal, precognitive level of emotion. Gallese et al. (2007) contend that it is this shared emotional experience that leads to understanding rather than the thought that arises from it. This mirror neuron system also explains emotion as contagious, which will be discussed later in the paper.

Teacher Behavior. Such attunement becomes the basis for sensitive teacher behavior that can enhance student learning and perceptions of self. Differentiation and attribution are two examples of attuned teacher behavior. This affective knowledge of a student allows a teacher to effectively differentiate instruction, setting academic tasks at just the right level of difficulty (Meyer, 2014). Correctly differentiating lessons can enhance self-efficacy and save students from shame (Oades et al., 2014) and boredom (Pekrun et al., 2014). However, differentiation must be based on emotional awareness. It must be done in such a way that it does not appear to be preferential or show unfair treatment (Schutz et al., 2014).

If sensitively attuned, teachers can also help students accurately attribute success or failure, thus assisting them to take ownership for mistakes or averting an undeserved sense of helplessness (Oades-Sese et al., 2014). If objective attribution proves to be frustrating, teachers can also model and advise individual students how to cope with setbacks (Goetz & Hall, 2013). When pointing out the value of mistakes, it is important to reframe the understanding in terms of student behavior instead of student identity (Meyer, 2014).

Teacher-Student Relationships. In turn, this sensitive teacher behavior becomes the basis for a positive teacher-student relationship (Meyer, 2014; Skinner et al., 2014). Researchers define a positive teacher-student relationship as a relationship with high levels of closeness and low levels of conflict (Hamre & Pianta, 2001; Pianta & Stuhlman, 2004) in which the student perceives the teacher to be warm, caring, and sensitive to student needs (Cornelius-White, 2007). Healthy teacher-student relationships are associated with multiple positive student outcomes.

One such outcome is student social-emotional adjustment. In their study of 129 preschool children, examining the interplay of shyness, social-emotional adjustment, and teacher-student relationships, Sette et al. (2014) found that close teacher-student relationships can help students avoid social maladjustment. Students who were shy but close to their teachers were judged by their teachers to have greater social competence. Shy students who were not close to their teachers were reported to have less social competence and to suffer more peer rejection.

Positive teacher-student relationships also influence student engagement. In a study analyzing the effects of 641 elementary school student relationships to parents, teachers, and peers, Furrer and Skinner (2003) found that these relationships were positively associated with engagement in school and achievement. When they looked specifically at the teacher-student relationship, they found that students with a low sense of teacher relatedness were less behaviorally and emotionally engaged in their learning. Conversely, students who felt connected to their teachers – even if they reported low relatedness to parents and peers – self-reported greater behavioral and emotional engagement.

Hughes and Kwok (2007) extended the research of Furrer and Skinner (2003) by testing a model of the effects of teacher student relatedness on engagement and subsequently on achievement. Using multilevel modeling with a sample of 607 academically struggling first graders, they found that teacher-student and teacher-parent relationships were related to student engagement and subsequent achievement the following year.

Close teacher-student relationships can also positively influence peer relationships. Using multilevel modelling, Hughes and Im (2016) examined the effects of warm or conflicted teacher relationships on student liking or disliking of their peers. They followed 746 students for four years from first through fourth grade. They found that students who had warm, supportive relationships with teachers experienced less peer rejection and that these positive effects lasted over time. Similarly, in their multi-level analysis of forty seventh grade classrooms,

Civitillo et al. (2021) found that positive teacher-student relationships ameliorated the effects of ethnic discrimination on global self-esteem and school engagement.

Student identity development is another outcome that is influenced by the teacher-student relationship (Siegel, 2015). In his meta-analysis, Cornelius-White (2007) found that positive, secure teacher-student relationships formed the basis for the development of healthy self-concepts. Teachers are the key to this process as their relationships with students are key to student learning, social-emotional development, and identity development (den Brok & van Tartwijk, 2015; Institution of Medicine and National Research Council, 2000).

Not only does such emotional work facilitate learning and self-understanding, but it also helps students learn to regulate their own emotions (Schutz et al., 2014). Consistent with his understanding of the interaction nature of the mind's development, Siegel (2012) explains that a child's ability to regulate emotion is built upon the regulatory capacities of those with whom the child has a sensitively attuned relationship.

Research supporting the effect of positive teacher-student relationships on emotional regulation and engagement includes that of Archambault et al. (2017). They studied 385 third- and fourth-grade students and their 28 experienced teachers in regular and special education classrooms. First, they found that students with high levels of oppositional behavior were less engaged in learning activity than students who were not identified as having oppositional behavior. They further found, however, that a close relationship with a teacher improved

behavioral engagement for students with difficult conduct and lessened their oppositional behavior.

Just as a warm teacher-student relationship is correlated with positive outcomes, conversely, a negative teacher-student relationship has detrimental effects on student achievement and behavior. Students who perceive their teachers as cold and uncaring are more likely to be disaffected (Klem & Connell, 2004), have lower intrinsic motivation (Ryan & Grolnick, 1986), be less engaged (Furrer & Skinner, 2003), and are more likely to fail at school (Spilt et al., 2012). Roorda et al. (2011) found that conflicted teacher-student relationships had stronger negative effects for elementary school students than for secondary school students. Though Pitzer and Skinner (2017) found that a relationship with a supportive teacher could bolster the resilience of motivationally at-risk students, low risk students with unsupportive teachers became at risk after a year in class.

The teacher-student and teacher-parent research of Hughes et al. (2005) provides some evidence for the possible influence of the social-emotional dynamic on the attribution bias proposed by Weiner (2010). With a sample of 671 academically at risk first graders, they measured teacher perception of student academic ability and teacher perceptions of their relationships with those students and the students' parents. What they found was that teachers who had a less favorable impression of their student and parent relationships, judged that student to be less academically able.

Classroom Emotional Climate. The creation of a warm and supportive

classroom environment is a culminating way that teachers can influence their students' emotional experience (Hamre et al., 2007). Like the positive teacher-student relationships upon which a classroom environment is partially built, students who learn in warm and supportive classrooms enjoy multiple benefits.

One such benefit is that students have higher self-efficacy. Fast et al. (2010), analyzed 1,163 fourth, fifth and sixth graders' perceptions of teacher caring, classroom challenge and classroom mastery orientation as they related to math self-efficacy and achievement. They found that student perceptions of teacher caring, challenge and mastery orientation had a significant, positive effect on math self-efficacy. They also found that higher levels of math self-efficacy positively affected student math performance on standardized, end-of-year math tests. Their results suggest that student perceptions of the classroom environment impact math performance through the mediating effects of math self-efficacy. Fast et al. (2010) specifically noted that student perceptions of teacher caring affected math self-efficacy as strongly as a challenging classroom environment and a mastery goal structure.

With regard to self-efficacy, Martin and Rimm-Kaufman (2015) found an emotionally supportive classroom environment compensated for fifth graders low math self-efficacy. They found that the low efficacy students in emotionally supportive classes were more socially and academically engaged than low self-efficacy students in less supportive classrooms.

Classroom emotional climate is also associated with better student

behavior. Using conduct report card grades as a measure of student behavior, Brackett et al. (2011) examined the relationship between the emotional climates of 90 fifth- and sixth-grade classrooms and the conduct of the 2000 students in those classrooms. They found that students behaved better in classrooms that were objectively rated as emotionally supportive. Their model also included student perception of their relationship to their teacher as a mediator between classroom emotional climate and student conduct. They found that a positive relationship mediated the effects of the supportive emotional climate on student behavior.

Supportive emotional classroom climates are also associated with greater academic achievement. Reyes et al. (2012) investigated the relationship among 1,399 fifth and sixth graders' classroom emotional climate, engagement, and achievement. Using a multilevel approach, they found a positive connection between emotional climate and student achievement which was mediated by student engagement.

Positive classroom emotional climates also promote adaptive, student social-emotional development. Buyse et al. (2009) conducted a three-year longitudinal study examining the effect of supportive teacher relationships and positive classroom climates in kindergarten, on student psychosocial adjustment in first and second grade. They found a positive association between teacher closeness and subsequent student adjustment and class climate and student adjustment. They also found a small positive effect of teacher closeness on student achievement. Additionally, Buyse et al. (2008) found that a warm and

supportive classroom environment provides beneficial protection for kindergarten students at risk of internalizing or externalizing behaviors.

A warm and supportive classroom environment also positively influences student social experience. Students in such settings are less likely to suffer peer rejection. In their study of 376 kindergarten students with reading disabilities, Kiuru et al. (2012) found that a teacher-reported positive classroom environment helped protect students from peer rejection. Similarly, Avant et al. (2011) found that classroom climate helped students who experience high levels of anxious solitude. In their three-year longitudinal study of 688 third, fourth and fifth graders, they found that, from the fall to the spring semester, the peer rejection of highly anxious students in supportive classrooms evened out to the same levels of students with lower anxiety. In comparison, however, they did not find that unsupportive classrooms resulted in greater peer exclusion over time. This is contraindicated by Gazelle (2006) who found that first graders with a history of anxious solitude who were in an observed, unsupportive classroom suffered more peer rejection, victimization and depression than anxious students in supportive classrooms.

Students are also less likely to come under the influence of disruptive classmates when they are part of a warm, supportive class. Shin and Ryan (2017) examined how classroom climate affected the influence of student disruptive behavior on other students. They took fifth- and sixth-grade student, self and peer reports of disruptive behavior in the fall and spring of an academic year. In the

fall, classes with emotionally supportive environments had the same level of disruptive behavior as classes that were unsupportive. By spring, however, the unsupportive classes had more disruptive behavior than emotionally supportive classes. They found that students in emotionally unsupportive classes who had not been disruptive were more likely to become disruptive than their peers in supportive classes.

Emotionally Supportive Teacher Practices and Affect. Meyer (2014) outlines five general teacher practices that help create an emotionally supportive classroom environment: “encouraging effort and persistence, alleviating frustration, promoting enjoyment, encouraging peer cooperation, and acknowledging student displays of emotion” (p. 463). Although these practices are not direct emotional behaviors such as laughing, crying, smiling, or frowning, they are, arguably, emotionally informed behaviors: They are behaviors chosen – consciously or unconsciously – on the basis of their effect on student emotion or on the classroom emotional environment.

Research supports the efficacy of these teacher behaviors in creating positive classroom climates. Students report greater enjoyment when their teachers express enthusiasm for a subject or learning task (Frenzel et al., 2009) or use encouraging humor (Meyer, 2014). Such humor can also lessen anxiety (Meyer, 2014). Emphasizing the relevance of material (Goetz & Hall, 2013) or making learning “fun” and “surprising” can also increase curiosity and interest (Skinner et al., 2014) or at least avert boredom (Goetz & Hall, 2013). Adopting a

student-centered teaching style that focuses on mastery-goals rather than performance goals also encourages curiosity and inquiry (Markey & Loewenstein, 2014) and helps avert student feelings of shame and bolsters student self-efficacy (Oades-Sese et al., 2014).

Beyond specific behaviors, teacher affect also influences the emotional atmosphere of the class. Consistent with Siegel's (2012) interaction understanding of neurobiology, students mirror the emotion of their teachers using the same neurobiological processes outlined by Gallese et al., 2007. The research of Becker et al. (2014) supports the importance of this emotional transmission.

Becker and her colleagues (2014) analyzed the relationship between teacher emotion, teacher instructional behavior, and student emotion through a real-time experience sampling method. Students simultaneously indicated their perception of their own emotion, teacher emotion, and teaching behavior. Becker et al. (2014) found that student perception of teacher emotion and teaching predicted student emotion. In a comparison of the relative importance of teacher emotion and teaching behavior, they found that teacher emotion was as important as instructional behavior.

Teacher emotion as a contagion can have differential effects (Visser et al., 2013). When teachers expressed happiness, students were more creative and expansive, but when teachers expressed sadness, her students performed better analytically (Visser et al., 2013). Unfortunately, negative emotions, including teacher anxiety, also transfer, affecting student motivation and learning. For

example, Beilock et al. (2010) found that the math anxiety of female elementary teachers transferred to their students.

To summarize this section, the teacher-student social-emotional dynamic is the reciprocal interplay among teacher behavior and emotion and student behavior and emotion. To have a positive effect on student emotion and subsequent behaviors, teachers must layer deep emotional awareness with sensitive behavior, supportive relationships and classroom environments. Students in classes with teachers who display such behaviors experience numerous academic and social-emotional learning benefits.

Culture and the Social-Emotional Dynamic

Although basic emotions – such as happiness, sadness, anger, fear, disgust, and surprise – are considered universal, (Fritz et al., 2009), their expression (Russell, 1994) and the interpretation of that expression (Lutz & White, 1986; Matsumoto, 1992; Russell, 1991) are not. Instead, nonverbal emotional cues, such as facial expressions and hand gestures, are culturally developed (Elfenbein & Ambady, 2003), making it difficult to interpret the emotional expression of people from cultures other than one's own (Russell, 1994). People are better at recognizing emotions of those with the same background (Elfenbein & Ambady, 2002) but often misperceive the emotions of people from different cultures (Johnson & Fredrickson, 2005; Zebrowitz et al., 2010). Not only is emotional expression and recognition variable among cultures, but so are expectations about emotional expression (den Brok & Levy, 2005).

Eastern cultures typically display fewer emotions than Western cultures and Western cultures also express more positive emotions (Tsai et al., 2006).

Such differences can influence the social-emotional dynamic between teacher and student. First, it can make meaningful emotional awareness and understanding difficult. Even if a teacher is generally aware of student emotion, she may misinterpret the emotional signals sent by her student. Informed by her own cultural background, the teacher may interpret student emotional expression consistent with her own experience and social-emotional development. With the best of intentions, she may still interact with the student, but without accurate, growth enhancing understanding and awareness of student emotional need and expression.

Not only may these cultural differences make sensitive awareness more challenging for the teacher, but it can also be difficult for students to interpret teacher emotional behavior (DeCuir-Gunby & Williams-Johnson, 2014; den Brok & Levy, 2005). Students' social-emotional expectations, as influenced by their own cultural backgrounds, can make teacher behavior seem confusing or threatening, and potentially result in maladaptive behavior (DeCuir-Gunby & Williams-Johnson, 2014).

Inaccurate attunement can then have implications for the social-emotional dynamic. Even if a teacher is particularly aware of student emotion, she may not understand the emotional signals sent. Informed by her own cultural background, the teacher may interpret student emotional expression consistent with her own

experience and social-emotional development. Applying the social-emotional dynamic model, she still interacts with the student but does so without accurate, growth enhancing understanding and attunement. The emotional messages she sends may not accurately align with student need.

Consider a teacher who believes that she is competent at establishing warm relationships. Her needs for relatedness and competence are generally satisfied by her ability to connect with her students. Add a student with different cultural, emotional expectations and expressions. If the teacher misunderstands the student's emotional communication, she may not be able to form as close a relationship to this student. Instead of concluding that she may be misinterpreting something, and in order to preserve her own self-understanding as a competent and relatable teacher, she may attribute the lack of connection to the student's lack of interest in connecting to her: "It isn't my fault. He just doesn't care."

This emotional message from the teacher is then communicated to the student who may believe that his teacher doesn't care about him and that he is not worthy of attention. The student's need for relatedness and competence go unmet or he comes to believe that he is un-relatable or incompetent, thus fulfilling the teacher's original, erroneous interpretation of the student.

Taking it a step further, Arnold and Lindner-Müller (2012) claim that even definitions of social-emotional competence may be culturally determined. They point to the different valuing of emotional expression between Eastern and Western cultures. What is considered competent in the West could be considered

insensitive in Eastern cultures and vice versa, thus resulting in different definitions of what it means to be socially-emotionally competent.

Summary of Teacher-Student Social-Emotional Dynamics

Being carefully attuned to student emotional experience and responding sensitively to that experience requires social-emotional skill and cultural sensitivity. Siegel's (2012) attunement and Meyer's (2014) sensitivity requires acute awareness of all of her students' emotional histories and present-time reactions to their social and curricular environments (emotional awareness). She must be able to appreciate their perspective as learners encountering new material, and as individuals with unique, perspective-altering histories (social awareness). She must respect her students and be empathetic with their ever-changing emotional experience (Becker et al., 2014), all while moderating her own response to ensure that she helps them meet societal learning and developmental standards. To do this, she must also be able to clearly communicate her sensitivity—both verbally and nonverbally—to create optimal emotional experiences (Mazer et al., 2014).

Creating warm and supportive learning environments also requires robust social-emotional skills. In addition to attunement skills, teachers must also be effective relationship builders through sensitive social engagement and communication (relationship skills). Not only must she be able to establish one-on-one relationships with students, but she must also create relationships with the class as a whole and facilitate peer relationships.

To avoid the potential adverse effects of relationship reciprocity, the teacher must deepen her emotional effort by suppressing her own threatened response and making the effort to understand the underlying emotional needs of the student. She must not only be aware of and control her own emotional response (self-awareness and self-management) but must also be aware of the student's emotional need (social awareness) and work to attune her response to it (Roeser et al., 2012).

Emotional Labor

Doing all of this is a lot of work – so much so that there is a name for it: emotional labor (Grandey, 2000). Emotional labor is the suppression of one's own emotional impulse for the sake of another's emotional experience (Grandey, 2000). Because teacher emotions set the stage for learning, teachers are expected to be pleasant and to subdue unpleasant emotions in order to create an optimal learning environment (Schutz et al., 2007). Doing this much work without satisfying their own emotional needs can be exhausting and lead to teacher burnout (Collie et al., 2012; Fiorilli et al., 2015).

This is a direction taken by Jennings and Greenberg (2009) in their article describing the “Prosocial Classroom” (p. 491). They propose a class model that depends on teacher social-emotional competence to form meaningful teacher-student relationships and warm, supportive classroom environments citing all of the consequent benefits that such sensitive relationships engender. However, Jennings and Greenberg (2009) also link teacher social-emotional competence to

teacher stress and well-being. They describe the “cascading” effect of a teacher’s inability to manage her students’ behavior. The students of socially-emotionally ineffective teachers are more likely to misbehave since the students are not receiving the support they need. In response, the unsuccessful teacher exhausts herself in trying to manage the increasingly unruly student behavior. Her emotional exhaustion can lead to further climate erosion resulting in worsening student behavior. Such a frustrating cycle is stressful and has a negative impact on a teacher’s well-being as well as on students.

Culturally Relevant Pedagogy

Culturally relevant pedagogy (CRP) is a prevalent pedagogy and perspective that teachers can adopt to ameliorate the disadvantages caused by the socio-cultural differences between students of color and the prevailing white, middle class culture (Harmon, 2012). Because CRP has been a much-discussed topic in recent American educational and cultural discourse (Berti, 2021; Cherney et al., 2021), it is important to situate the current study in relation to this teaching approach. Both share concern for diverse student groups but differ in the scope of considered influential variables.

The current study and CRP both recognize the influence of cultural differences on teaching and learning. Both also view the teacher-student relationship as a fundamental aspect of the learning process (Harmon, 2012). They diverge however, on the range of intervention.

Although CRP’s effectiveness is based on sensitive personal relationships

between teachers and students (Harmon, 2012), CRP expands beyond the personal, and requires consideration of the larger cultural-social-political contexts and structures (Ladson-Billings, 1995, 2014). This study, as an educational psychological analysis, however, remained at the microlevel of students' educational experience and does not address the larger restraining cultural-socio-political challenges described by Ladson-Billings (1995, 2014).

Teacher Emotional Intelligence (EI), Cultural Intelligence (CQ), and Self-Efficacy

Having highlighted the centrality of the social-emotional dynamic to student learning and development and the influence of culture on that dynamic, this review will next explore teacher capacities that may influence her ability to positively influence the dynamic. First, I will outline definitions of teacher social-emotional competence and emotional intelligence (EI) in an effort to understand her ability to influence the social-emotional experience of students generally. Then, I will discuss two models of cultural intelligence (CQ) with the goal of proposing the influence of both EI and CQ on a teacher's ability to establish meaningful connections to students from differing cultural backgrounds.

Defining and measuring the constructs that address teacher ability to effectively influence the teacher-student social-emotional dynamic is challenging. There are generally two strands of scholarship: First, there are comprehensive definitions of social-emotional competence that either implicitly or explicitly, include both emotional and social competencies. Second, there is a contentious,

but more researched body of scholarship around the theory of emotional intelligence (EI).

Comprehensive Social - Emotional Definitions

To start, it is worth noting that, as its name implies, social-emotional competence (SEC) is a comprehensive construct including both emotional competence and social competence. It is also comprehensive in that it requires the integration of thought, feeling and behavior. There are two definitions that explicitly include both competencies: one purported by the Collaborative for Academic and Social Emotional Learning (CASEL) and the other outlined by Jones et al. (2013).

The Collaborative for Academic and Social Emotional Learning (CASEL) has developed an integrated social-emotional framework comprised of five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. They have further defined each core competence and listed discrete skills and characteristics that fall within each core category (see Table 1). Emotional competence is manifested within the self-awareness and self-management categories, and social competence is comprised of social awareness, relationship skills and responsible decision-making.

In keeping with SEC's comprehensive nature, CASEL also outlines SEC in terms of thought, emotion, and social behavior, as it summarizes the construct as "self-perceptions, attitudes and behaviors" leading to "intrapersonal, interaction and cognitive competencies" (CASEL, 2017). The CASEL definition has been

used by researchers inquiring into student social-emotional learning (Jennings & Greenberg, 2009) and social-emotional development (Denham et al., 2012).

Table 1
CASEL Definition of Social Emotional Core Competencies

<u>Emotional competence</u>		<u>Social competence</u>		
Self-awareness	Self-management	Social awareness	Relationship skills	Responsible decision making
The ability to accurately recognize one's own emotions, thoughts, and values and how they influence behavior. The ability to accurately assess one's strengths and limitations, with a well-grounded sense of confidence, optimism, and a "growth mindset"	The ability to successfully regulate one's emotions, thoughts, and behaviors in different situations — effectively managing stress, controlling impulses, and motivating oneself. The ability to set and work toward personal and academic goals.	The ability to take the perspective of and empathize with others, including those from diverse backgrounds and cultures. The ability to understand social and ethical norms for behavior and to recognize family, school, and community resources and supports.	The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. The ability to communicate clearly, listen well, cooperate with others, resist inappropriate social pressure, negotiate conflict constructively, and seek and offer help when needed.	The ability to make constructive choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms. The realistic evaluation of consequences of various actions, and a consideration of the well-being of oneself and others.
-Identifying emotions -Accurate self-perception -Recognizing Strengths -Self-Confidence -Self-Efficacy	-Impulse control -Stress management -Self-discipline -Self-motivation -Goal setting -Organizational skills	-Perspective-taking -Empathy -Appreciating Diversity -Respect for Others	-Communication -Social Engagement -Relationship Building -Teamwork	-Identifying problems - Analyzing situations -Solving problems -Evaluating -Reflecting -Ethical Responsibility

Note: Table modified from CASEL <http://www.casel.org/wp-content/uploads/2017/01/Competencies.pdf>

Jones et al. (2013) outline a similar SEC definition, but they explicitly bundle discrete skills within the categories of emotional processes, social skills, and cognitive regulation (see Table 2). This definition is similar to CASEL's

definition in that it too includes emotional, social, and cognitive components, but the Jones et al. (2013) definition is more parsimonious. First, Jones et al. (2013) do not include the self-perceptions of the CASEL definition and instead focuses on abilities and behaviors. Second, their definition does not include larger contextual variables such as CASEL’s responsible decision-making skills or stress management, and finally, it does not include complex skills such as “communication” that CASEL lists within relationship skills.

The Jones et al. (2013) definition of SEC is similar to the Topping et al’s. (2000) definition of social competence, defined as “the possession and use of the ability to integrate thinking, feeling and behavior to achieve social tasks and outcomes valued in the host context and culture” (p. 32). Like Jones et al. (2013), Topping et al. (2000) includes cognition in its understanding, and, like CASEL, it acknowledges the importance of culture in determining socially acceptable ways of behaving and outcomes.

Table 2

Jones, Bouffard, and Weissbourd (2013) Definition of Social Emotional Competence

Emotional Processes	Social/interaction Skills	Cognitive Regulation
-Understanding and labeling emotions accurately	-Understanding social cues	-Maintaining attention & focus
-Regulating emotions and behaviors for the situation	-Correctly attributing the intent of others’ behaviors	-Engaging working memory
-Taking another’s perspective	-Interacting positively others	-Inhibiting impulses that are not appropriate to the situation
-Displaying empathy	-Acting in prosocial ways	-Flexibly shifting gears

Emotional Intelligence (EI)

EI theories are another way to consider teacher's ability to influence the social-emotional dynamic with her students. Like social-emotional competence, there are numerous definitions of EI with varying degrees of comprehensiveness. Despite the variety, all of the EI definitions at least include emotional awareness and emotional management, both essential to emotional competence. Like social-emotional competence, social competence is sometimes explicitly named in EI definitions, but only implied in other definitions.

Although EI is more thoroughly researched than general social-emotional competence, there is considerable debate about the nature of the constructs. Tendering the first definition of emotional intelligence, Salovey and Mayer (1990) define EI as “involving the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions” (p.189). When measuring EI they divide it into four branches: perceiving emotions, understanding emotions, managing emotions, and using emotions.

Later, Goleman (1995) wrote a book titled *Emotional Intelligence*, which popularized the EI concept but lead to its definitional diffusion (Mayer et al., 2004). Since then, the EI community has been challenged to consistently define EI (Mayer et al., 2004). For example, some models plainly include social aspects of EI, but others do not. As already noted, Salovey and Mayer (1990), who tendered the first definition of emotional intelligence, consider EI to be “parallel”

to social intelligence (Mayer et al., 2012, p. 502). As a result, they did not explicitly consider the social aspects of emotion and placed their primary emphasis on the interplay of emotion and cognition. They also differentiated EI from personal intelligence which differs from EI in that one considers one's own and others' personalities to make decisions (Mayer et al., 2012).

However, Bar-On (2006) later included the social dimension of EI in his model when he defined “emotional-social intelligence [as] a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands” (p. 14). Others also explicitly added social aspects to their models and measures. Petrides and Furnham's (2003) Trait Emotional Intelligence Questionnaire (TEIQue) includes measures of relationships and social awareness, defined as networking and excellent social skills. Similarly, Boyzatis and Goleman (2000) included social awareness and relationship management in their Emotional and Social Competence Inventory (ESCI).

There is also considerable discussion among EI researchers as to whether EI is a trait or ability (Mayer et al., 2008; Petrides, Pérez-González, & Furnham, 2007; Petrides, Furnham, & Mavroveli, 2007). EI is variously defined as one, or the other, or both (Perez et al., 2005). In his summary of trait and ability EI, Petrides (2011) cites his previous work and the work of others in describing the differences between trait and ability. He defines “trait EI ... as a constellation of

self-perceptions located at the lower levels of personality hierarchies" (Petrides, Pita, & Kokkinaki, 2007, p. 657). He continues by describing ability EI as "the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others" (Mayer & Salovey, 1997, p. 657). As just a trait, some researchers are concerned that EI does not provide any unique information about individuals because it has too much overlap with dimensions of personality (Allen et al., 2014). Arguing for trait EI, Petrides et al. (2007) concede that emotional traits are part of the personality hierarchy. They contend, however, that EI describes a distinct, albeit less influential, aspect of personality. As such, it has incremental validity apart from larger personality constructs. A proponent of the trait EI model, Petrides et al. (2007) further argue that ability versions of EI cannot be measured by self-report measures, but must be measured by performance-based measures. They further claim that such measures are biased because there is no agreed upon definition of maximal emotional ability upon which to base a performance score (Petrides et al., 2007).

Similarly, the research of Corcoran and Tormey (2012, 2013) addresses the uniqueness of emotional competence (EC) as separate from emotional intelligence. Arguing for a distinction between the two, Corcoran and Tormey (2013) define emotional competence as "the ability and disposition to use" emotional capabilities. Their earlier research illustrates the distinctiveness of EC from EI. Participants in Corcoran and Tormey's study (2012) reported an increase

in emotional understanding, awareness, and decision-making after an emotional skills intervention even though their emotional intelligence scores did not significantly increase. The increase in emotional competence apart from any change in emotional intelligence suggests distinct constructs.

The Consortium for Research on Emotional Intelligence in Organizations (EI Consortium) offers its own comprehensive “generic emotional competence framework” (see Table 3). It categorizes self-awareness, self-regulation, and self-motivation within personal competence, and social awareness and social skills within social competence. Although the EI Consortium definition does not break out emotional competence as its own core construct, like CASEL, emotional awareness is included within self-awareness and emotional regulation is included within self-control under self-regulation.

Table 3
Generic Emotional Competence Framework

Personal Competence			Social Competence	
Self-Awareness	Self-Regulation	Self-Motivation	Social Awareness	Social Skills
-Emotional awareness	-Self-control	-Achievement drive	-Empathy	-Influence
-Accurate self-assessment	-Trustworthiness	-Commitment	-Service Orientation	-Communication
-Self-Confidence	Conscientiousness	-Initiative	-Developing Others	-Leadership
	-Adaptability	-Optimism	-Leveraging diversity	-Change catalyst
	-Innovativeness		-Political awareness	-Conflict management
				-Building bonds
				-Collaboration & cooperation
				-Team capabilities

Note: Adapted from EI Consortium website

Perhaps because it compiled the model from various government and business personnel documents (Consortium for Research on Emotional Intelligence in Organizations, n.d.), the EI Consortium's definition differs from CASEL's in a number of ways. First, it includes items that, as expressed, may reflect more of a business environment: "leveraging diversity" vs. CASEL's "appreciating diversity," "political awareness" vs. CASEL's "ethical responsibility." It also includes "influence," "change catalyst," and "leadership" as social skills, whereas CASEL's learning-based definition does not. The EI consortium's definition also expands motivation as a separate personal competence including achievement drive, commitment, initiative and optimism. CASEL includes self-motivation, but as a subcomponent of self-regulation. CASEL does not further delineate self-motivation into component skills, as does the EI consortium.

This review uses the definition of emotional intelligence as originally conceived by Salovey and Mayer (1990). This definition is chosen because it is more parsimonious than the comprehensive definitions, yet still includes the necessary components for effective social-emotional interaction: awareness, understanding, regulation and use of emotions in self and others. Salovey and Mayer's inclusion of self and others in their understanding of emotional competence ensures that teachers are not just internally emotionally competent, but are also able to socially apply this competence. In addition, while the Salovey and Mayer definition is considered an intelligence, its inclusion of "use" of

emotion makes its inclusive of emotional skill.

The combination of both the social and emotional dimensions is essential in a teacher's ability to create supportive social-emotional dynamics in the classroom. The social dimension of emotional competence is necessary, for just having knowledge of a student's emotional need does not satisfy that need nor further the child's development. Conversely, emotionally misguided social effort would also be insufficient. A teacher may be well-liked by her students, but the relationship may not be growth enhancing if she is only satisfying her own need for relatedness and is not aware of her students' individual emotional needs. Emotional and social dimensions are both essential.

Although the comprehensiveness of the CASEL and EI Consortium's definitions makes them attractive, its breadth is a disadvantage. As Garner (2010) points out, this social-emotional construct is in need of further conceptual development. The CASEL definition includes five subcomponents encompassing 26 skills, some of which are so large and complex that they have their own discipline (communication) or body of research (stress management, motivation, goal-setting etc.). This all-inclusive expansiveness is helpful in understanding the complexity of social-emotional competence, but it makes it difficult to measure and runs the risk of saying very little in trying to say too much. Although the Jones et al. (2013) definition has the advantage of parsimony when compared to CASEL's definition, it does not have any associated scales or measures, making further research more difficult.

Teacher EI. Supporting the influence of teacher EI on students and the social-emotional dynamic, researchers have found that students of teachers with greater EI have better academic achievement. Naqvi et al. (2016) found a positive association between Pakistani secondary school teacher EI and their students' performance on a regional, culminating exam for 10th grade. Similarly, in their study of 224 public school teachers in Pakistan, Alam and Ahmad (2018) found that teacher EI was positively related to student achievement and was mediated by classroom culture.

Curci et al. (2014) also examined factors that mediate the relationship between EI and student achievement. They collected data from 338 Italian junior high school students and their 12 math teachers and found that teacher EI moderated the effects of student self-esteem and student self-efficacy belief on student achievement. Students of teachers with greater EI had greater self-esteem and efficacy and also performed better academically. In contrast, Alvandi et al. (2015) regression analysis of teacher EI and student achievement in Iran did not indicate a significant relationship between the two variables.

Students of teachers with greater EI also exhibit fewer behavior problems. Nizielski et al. (2012) evaluated the relationship between 300 Syrian teachers' EI and their students' behavior. They found that teacher perception of their EI was negatively related to student misconduct and was mediated by teacher care and attention.

Teacher EI also influences the classroom environment (Brown et al.,

2010). In their comparison of groups of teachers with high, medium and low EI, Dewaele et al. (2018) found that teachers with higher EI had greater pedagogical skills, were more creative, and were also better classroom managers than their teaching peers with lower EI. Hamidi and Khatib (2016) and Marashi and Zaferanchi (2010) also found that teachers with greater EI are more effective classroom managers.

Greater teacher EI is not only associated with greater student achievement, but teachers with greater emotional intelligence also have greater professional commitment (Collie et al., 2011) and job satisfaction (Collie et al., 2012). Highlighting the inter-relationship between social and emotional, Kotsou et al. (2011) found that emotional intelligence influenced participants' social relationships and affected their work.

Additional research offers an explanation of EI's effect on student outcomes. In Fer's (2004) qualitative study, interviewed teachers reported that increased emotional competence helped them to better understand their students and form relationships. Brackett and Katulak (2007) and Chan (2008) offer another explanation of EI's effect on teaching behavior: A teacher's intrapersonal emotional ability helped her manage her own emotion so she could respond positively to challenging student behavior and stressful classroom situations.

Teacher EI and Diverse Classrooms. Let us assume that every teacher regardless of ethnicity wants the best for every one of her students regardless of their ethnicity – hopefully an assumption that is not too difficult to imagine. Let

us also assume that the teacher has a high degree of emotional intelligence.

Shouldn't she be able to connect to all of her students and provide them with all of the benefits of positive relationships and warm and supportive environments?

Perhaps not. If the definition of EI is culturally determined (Arnold & Lindner-Müller, 2012), then a teacher who is considered to be highly socially and emotionally competent in her own culture may be lacking the skills necessary to be socially-emotionally competent in other cultural systems. Though she may be attentive to student emotional expression and earnest in her desire to meet student need, she may misinterpret the emotional signals sent by students from cultures different from her own. She may be unable to "attune" to student need and, as described, this misunderstanding could become the basis for teacher behavior, teacher-student relationships, and the creation of classroom environments. In the worst-case scenario, this misunderstanding could result in Jennings and Greenberg's (2009) "cascading" effect in which teachers and students become locked in a descending cycle of teacher frustration and worsening student behavior.

Cultural Diversity and Classroom Environment

Not only can such a dynamic be detrimental to a teacher's ability to attune to her students, it can also blunt the positive effects of a warm and supportive classroom atmosphere. As described earlier, attunement is the basis for emotionally sensitive teacher behavior that, in turn, becomes the foundation for growth enhancing relationships and classroom settings. Because differences in

cultural expression and expectations can make sensitive attunement difficult, it can thus potentially cause conflicted teacher-student relationships and less than optimal classroom climates.

Research indicates that teachers treat their students differently based on the student's ethnicity (den Brok & Levy, 2005; den Brok et al., 2010). Garner and Mahatmya (2015) explain, for example, that teachers give less positive attention to their Black students than their White students. Similarly, Louie et al. (2015) found that teachers rated the social competence of their Asian American students lower than that of European American students.

This differential treatment and perception have implications for the teacher-student relationship (Garner & Mahatmya, 2015). Hughes et al. (2005) found that teachers felt they had better relationships with their Hispanic and White students than with their Black students. Thijs et al. (2012) attribute these differing perceptions of teacher-student relationships to "cultural misunderstandings and intergroup bias" (p. 257).

Some of these differences are alleviated when the ethnicities of teacher and student match, suggesting that teachers are better able to attune to students who share their cultural background. Graves and Howes (2011) found that the ethnic match between teachers and students was correlated with their rating of students' social competence. Similarly, Bates and Glick (2013) found that Black teachers rated the behavior of their Black students more positively than non-Hispanic White teachers rated them.

The work of Downer et al. (2016) further supports the significance of ethnic congruence. They found differential perceptions of student academic skills, progress and behavior based on the ethnic match of teachers and students. The assessments were more positive when there was an ethnic match and less favorable when the teacher and student ethnicities differed. In contrast, Graves and Howes (2011) and Ewing and Taylor (2009) found that the ethnic match between teacher and student did not moderate the effects of the teacher-student relationship on Hispanic children's social competence.

Although it appears that emotional awareness and attunement may be confounded by differences in emotional expression at the dyadic level, there is some hope for its relevance at the classroom level. Some teachers are able to create class environments that help bridge cultural differences. Such teachers build a strong sense of belonging (DeCuir-Gunby & Williams-Johnson, 2014).

Georgiades et al. (2013) describe belongingness as the sense of being a valued member of a class or school community. With a sample of 128 schools and 77,150 adolescents, Georgiades et al. (2013) investigated the interplay among school racial/ethnic composition, racial/ethnic congruence between student and school, and mental and behavioral outcomes. They found that students who feel a strong sense of belonging are better adjusted emotionally and behaviorally. Similarly, in their review, DeCuir-Gunby and Williams-Johnson (2014) report that students who feel that they belong are also more motivated and less anxious, and have greater academic achievement. Student belongingness arises from a

complex interplay of contextual variables including school and class demographics, teacher and peer interactions and the overall climate of the school or class (DeCuir-Gunby & Williams-Johnson, 2014).

As Decuir-Gunby and Williams-Johnson (2014) indicate school and classroom ethnic demographics play a role in a student's sense of belonging. Using data from the Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K), Benner and Crosnoe (2011) examined the relationship between school diversity and student socioemotional and academic development of kindergartners. They found that students were better adjusted socially and emotionally, the more peers they had who shared their ethnic background. Kindergartners in diverse schools had stronger academic outcomes. Results from Georgiades et al. (2013) confirm Benner and Crosnoe's (2011) findings and indicate that students have a greater sense of belonging the more peers they have who share their racial/ethnic background. This research is consistent with the teacher-student cultural congruence already described. The more people are culturally alike, the better the relationships and the greater the sense of belonging.

Teachers are also influential in developing a student's sense of belonging. Anderman (2003) emphasized the role of teachers in helping develop a sense of belonging in her growth curve analysis of 618 sixth and seventh graders. Although, she found that student sense of belonging declined over these middle school years, she also found that teacher behavior could improve the decline. Anderman's (2003) results indicate several things a teacher can do to foster

belongingness. First, teachers can foster a class social climate that emphasizes respect for all. In Anderman's (2003) research, students whose sixth-grade teacher created such a climate experienced less loss of belonging. Teachers can also work to make instruction more interesting and relevant as this too was associated with student belongingness.

Cholewa et al. (2012) also emphasize teacher behavior, and, in this case, emotional behavior. In their qualitative study, they found that a White female teacher who built a class atmosphere of trust and respect managed to create a close, mutual, emotional connection to their Black male students. They attribute this emotional connectedness to the same behavioral variables that create class climate: teacher-student interactions, teacher-class interaction and teacher openness. They also add, though, an emotional element to the behaviors. It is not that the teachers connect but it is *how* they connect that made the difference.

These research findings indicate that although teacher EI may be confounded by cultural differences, it is still an essential aspect of working with culturally diverse students. In her review of the Education Value-Added Assessment System and its impact on low-income minority students, Mangiante (2011) found four general characteristics of teachers who are highly effective at working with low-income minority students. Of these four, three rely on teacher EI: instructional ability, interaction skills, and self-reflection.

Other researchers also highlight the role of social-emotional behaviors in working with multi-cultural students and classes. Warren (2018) specifically describes the utility of teacher empathy in forming these emotional connections.

Similarly, Sanders and Downer (2012) point to the necessity of sensitive caregiving in promoting cultural diversity acceptance in pre-kindergartners.

The challenge of using one's EI effectively in diverse classrooms is in being able to correctly interpret student emotional need. It is as if teachers and students from differing backgrounds speak different nonverbal languages. To effectively use her EI capacities, teachers must be able to bridge the differences in cultural expression.

Cultural Intelligence (CQ)

Cultural intelligence (CQ) is another potentially influential factor in a teacher's ability to develop sensitive social-emotional connections with her students – especially for establishing connections with students from differing cultural backgrounds (Earley & Mosakowski, 2004; Kennedy 2016). There are two predominate models of CQ: that of Earley and Ang (2003) and that of Thomas et al. (2008). Earley and Ang (2003) were the first to define CQ and described it as the ability to adapt to new cultural environments. Although their original model included three components, cognitive, motivational, and behavioral, Ang et al. (2007) added metacognition as a fourth component to connect cultural knowledge (cognition) to cultural awareness and cultural ability (behavioral; Ott & Michailova, 2018). Cultural motivation is considered essential as the desire to behave appropriately when in differing cultural settings (Early & Ang, 2003).

Thomas et al. (2008) define CQ as “a system of interacting knowledge and

skills, linked by cultural metacognition that allows people to adapt to, select, and shape the cultural aspects of their environment” (p. 126). Thomas et al. (2008) and Leung et al. (2014) further highlight the advantage of defining cultural ability as intelligence because it puts the concept within well-established cognitive psychology constructs and lifts it from the realm of similar but loosely defined terms such as “global mindset,” “intercultural competence” or “multicultural awareness.”

Similar to the Ang et al. (2003) model, the CQ model developed by Thomas et al. (2008) is comprised of three components: cultural knowledge, cultural skills and cultural metacognition. Also, like Ang et al. (2003), Thomas et al. (2008) argue that cultural metacognition links cultural knowledge to cultural skills. Thomas et al. (2008), however, additionally explain that cultural metacognition functions through cognitive self-regulation and the transfer of cultural knowledge from one experience to another. They also attribute a “compensatory” (p. 134) function to cultural metacognition that exalts it beyond just a linking function, but through reflection, allows for generalizations to be made between dissimilar cultural settings and experiences. Finally, Thomas et al. (2008) do not include cultural motivation as a CQ facet because they do not see motivation as a distinctly cultural prompt. They do, however, include motivational aspects within the cultural metacognitive domain.

This study used the CQ definition developed by Ang et al. (2007) because it is more widely used. Moreover, the measures developed by Ang et al. (2007)

have also been more widely used. Early and Ang (2003) maintain that one must use all four facets of CQ to be culturally effective, but they do not delineate how the four facets relate to each other (Ott & Michailova, 2018).

Research that combines inquiry into teacher CQ and their work in diverse cultural settings is scarce. Two recent dissertations have broached the subject however. Having categorized teachers as having high, medium, or low CQ, Kennedy (2016) found that teachers with high CQ demonstrated more cultural knowledge and greater cultural skills through their inter-culturally sensitive teaching methods than teachers with low CQ. She further found that higher CQ teachers incorporated culturally relevant lessons more frequently than lower CQ teachers. In the second dissertation, a qualitative exploration of how teacher CQ may influence teacher ability to form supportive relationships with urban students, Dahdah (2017) interviewed several teacher artists who she believed could serve as “exemplars” for sensitive intercultural relationship building.

Although not a research article, Goh argues that teachers should help develop CQ in their students. Supporting the influence of CQ in the classroom, Kennedy (2016) found that teachers with greater CQ understood the role of culture in teaching better than lower CQ teachers. The research of Constantine and Gainor (2001) considered the role of CQ and EI in the work of school counselors. They found that school counselors with strong EI were better able to attune to culturally diverse students. However, they cautioned that understanding and connection may be confused by culturally developed, social-emotional

differences between counselors and students.

Although the research of Constantine and Gainor (2001) does not consider teacher CQ, it does stay within the realm of education and examines the role of CQ in the work of school counselors. Through their study of school counselors, they implicate the need to combine CQ with EC. Although they found that school counselors with strong EC were better able to attune to culturally diverse students, they caution that there may be culturally developed, social-emotional differences between counselors and students that may confound understanding.

Relationship of EI and CQ. The ubiquity of emotion and social-emotional interactions in classrooms – diverse or homogenous – makes teacher EI essential. All students, regardless of cultural background, have the same inherent needs for relatedness, competence, and autonomy, and all students rely on teachers to satisfy those needs through growth enhancing relationships. However, EI may be insufficient in forming these relationships with students from culturally diverse backgrounds. Teachers may also need to have sensitive CQ to sharpen their emotional awareness, regulation, and use with cultural knowledge and skill to bridge the differences between themselves and their students from differing backgrounds.

Although the relationship between EI and CQ has not been fully explored, the general consensus is that the two constructs are distinct from each other (Crowne, 2013; Moon, 2010; Thomas et al., 2008), but they also overlap (Crowne, 2009). In her principal component and structural equation analyses of

EI, CQ, and social intelligence, Crowne (2013) found that EI and CQ were distinct from each other and from social intelligence. Ang et al. (2007) also provides evidence for the distinctiveness of CQ from EI. In performing a usefulness analysis, they demonstrated that CQ explains unique variance in intercultural effectiveness beyond that explained by EI and general mental ability.

Earley and Mosakowski (2004) posit that the relationship between EI and CQ may be hierarchical in nature with CQ "pick[ing] up where EI leaves off" (p.1). Supporting Earley and Mosakowski's claim (2004), Moon (2010), Thomas et al. (2008), and Clark and Polesello (2017) reviewed EI and CQ definitions in current literature. They concluded that, although being emotionally competent means one is able to recognize, understand, and manage emotions generally, it does not address an individual's ability to function in differing cultural settings (Moon, 2010; Thomas et al, 2008). "It [CQ] is a unique construction of interacting abilities that exists outside the cultural boundaries in which these abilities were developed" (Thomas et al., 2008, p. 125). Suggesting both the overlap and distinctiveness of the two constructs, Clark and Polesello (2017) explain that EI helps develop positive, multi-cultural attitudes and CQ helps employees work in increasingly culturally diverse settings.

This potentially hierarchical overlap between CQ and EI is also confirmed by Dallman's (2019) regression analysis. Dallman (2019) collected self-report measures of 133 experienced teachers' EI, CQ and diversity self-efficacy. She found that the addition of CQ to the regression model masked the small but

significant effects of EI. She theorized that the overlap between CQ and EI may have subsumed the unique effects of EI on teacher diversity efficacy belief once CQ was considered. Her subsequent canonical correlation analysis results also suggest that being emotionally intelligent is a basis for being culturally adept as nearly 50% of the variance in EI and CQ was shared (Dallman, 2019).

Because both EI and CQ are malleable (Crowne, 2008; Sit et al., 2017), understanding how they relate to each other can inform how best to develop them in the teaching population. In an attempt to explore how CQ and EI overlap, Dallman (2019) conducted a canonical correlation analysis of EI and CQ subcomponents. Her analysis yielded two canonical functions. The first function indicated that more than a third of the variance in cultural skill can be accounted for by the emotional ability to regulate and use one's own and others' emotion and to understand others' emotions. This is reflective of the overlap in the two constructs purported by Crowne (2009) and is consistent with Earley and Mosakowski's (2004) contention that "CQ picks up where EI leaves off" (p.1). Being emotionally intelligent is a necessary part of being culturally adept, and cultural skill may be characterized as the sharpening of EI in unique cultural contexts.

The second canonical function was less easily interpreted and accounted for less variance between the sets of variables than the first function. This second function appeared to link cultural knowledge with the use of others' emotion and to negatively link it to the identification of one's own emotion. This suggested

that people with greater cultural knowledge perceive themselves to be better able to use others' emotions and less able to identify their own. This relationship needs further exploration.

Self-Efficacy

Self-efficacy beliefs are central to reaching goals and manifesting capacity. Not only must teachers have competencies but they must also believe in their competence in order to reach their maximal ability. As a result, teacher self-efficacy beliefs are essential mediators between capacity and action. This examination, proposed that teacher diversity and interaction efficacy beliefs mediate the proposed effects of EI and CQ on classroom climate.

Bandura (1986) defined self-efficacy as one's belief about one's ability to perform. Within social-cognitive learning theory, self-efficacy is an internal, personal construct that plays a pivotal, mediating role in motivation, behavior, feeling, and thought (Bandura, 1986, 1997). Self-efficacy beliefs are formed through experience with the environment and reflective thought on those experiences. They develop as one's sense of agency develops across the lifespan, and are most malleable in the formative years and when acquiring a new skill (Bandura, 1986, 1997).

There are four sources of efficacy: (a) enactive experience, in which teachers reflect on their role in a successful or failed performance; (b) vicarious experience, in which teachers imagine and compare themselves to models' performances (Bandura 1986, 1997); (c) verbal persuasion, in which important

others express realistic faith in the teacher's abilities; and (d) physiological and affective states such as anxiety and enthusiasm. While enactive experience is the most influential source of self-efficacy, all four sources can have varying effects on the individual (Bandura, 1997).

The critical importance of the mediating relationship between teacher efficacy beliefs and behavior is explicated by Zee and Koomen (2016). In their synthesis of 40 years of teacher self-efficacy research, Zee and Koomen (2016) explain the effects of self-efficacy. Although teacher self-efficacy does not directly influence student outcomes, it does influence teacher behavior which may, in turn, influence student outcomes. They highlight the research of Gibson and Dembo (1984) who found that teachers who feel highly efficacious are more likely to persist in working with students than teachers who feel less efficacious. They also use more innovative teaching methods and are better classroom managers. This enhanced behavior could then be responsible for differing student results.

Zee and Koomen (2016) further explain that teachers with greater self-efficacy also enjoy greater well-being, which, in accordance with social-cognitive theory (Bandura, 1986), reciprocally raises the collective sense of efficacy in the classroom and student achievement (Goddard et al., 2004). Again, teacher self-efficacy does not directly influence student outcomes, but through its influence on collective efficacy, it indirectly results in student gains.

Bandura (1986, 1997) further argues that self-efficacy must be specific.

One does not have general self-efficacy but instead believes that he can do a specific something. Because this study considers the social-emotional dynamic between teachers and diverse students, it assessed teacher interaction efficacy beliefs and teacher diversity efficacy. It is proposed that interaction self-efficacy mediates the effects of EI on class climate and diversity self-efficacy mediates the effects of CQ on class climate.

EI and Self-Efficacy. Researchers have found a significant relationship between teacher emotional intelligence and teaching efficacy beliefs (Abdolvahabi et al., 2012; Amirian & Behshad, 2016; Aremu & Moyosola, 2001; Mahasneh, 2016; Wossenie, 2014). In particular, Goroshit and Hen (2014) found a relationship between emotional self-efficacy, empathy, and teaching self-efficacy. Indicating the invariability of the relationship between teacher EI and teacher-self-efficacy, the regression analysis of Penrose et al. (2007) demonstrated that neither teaching experience nor gender and age moderated the relationship between the two variables.

Some researchers have considered the relationship between specific EI subcomponents and teacher self-efficacy. In her correlational analysis of 90 English, preservice teachers in Turkey, Koçoğlu (2011) found a positive relationship between the interaction dimensions of emotional intelligence and their engagement self-efficacy. Similarly, Chan's (2004) correlation matrix of 273 Chinese preservice and in-service teachers indicated a strong positive relationship between emotional regulation and teachers' general self-efficacy. The research of

Aremu and Moyosola (2001) further supports the link between teacher EI and efficacy beliefs. Their quasi-experimental study of 60 “career frustrated secondary school teachers” in Nigeria (p.18), indicates that social-emotional training for discouraged teachers increased their teaching efficacy beliefs.

The research of Alrajhi et al. (2017) offered further explanation of the connection between EI and self-efficacy. In their study of 1240 math teachers in Oman, they examined the relationships between and among five EI dimensions and three kinds of self-efficacy. For self-efficacy, they measured general teaching efficacy, efficacy in teaching math content, and efficacy in understanding math content. The EI dimensions were expression and appraisal of one’s own emotion, appraisal of others emotion, regulation of one’s own emotions, regulation of others’ emotions, and use of emotion.

They found that three subcomponents of emotional intelligence – emotional regulation in self, emotional regulation of others, and the ability to understand and express one’s own emotions – predicted general teaching self-efficacy. They posited that a teacher who is able to manage her own emotions as well as those of her students is better able to create a positive classroom environment and a positive emotional experience for her students. This positivity, in turn, enhances her sense of teaching efficacy.

With the exception of Koçoğlu (2011), who studied student engagement efficacy and Alrajhi et al. (2017), who considered teachers’ efficacy beliefs to teach and understand math, the other studies considered only general teaching

efficacy. Insofar as the author is aware, no one has considered EI with diversity efficacy beliefs, nor analyzed the relationship among EI, CQ, and efficacy beliefs.

In the preceding section, I have tried to establish the importance of the social-emotional dynamic for learning and how it may be subverted by cultural differences. I have also tried to elucidate the possible benefits of teacher EI and CQ in ameliorating these problems and have further tried to describe the mediating role played by self-efficacy between these capacities and effective social-emotional interaction. In the following section, I put these variables together and propose two model sets. The first set proposed how EI and CQ interaction self-efficacy and diversity self-efficacy affect classroom climate and TSRs. The second set proposed direct relationships between EI and CQ and TSRs. Self-efficacy beliefs were not included in the second set.

Proposed Models

Given the increasing cultural diversity in our schools and the fundamental nature of the social-emotional dynamic in student learning and development, it is important to understand teacher capacities that contribute to the creation of a positive social-emotional dynamic in the diverse classroom. It is proposed that both EI and CQ influence a teacher's ability to develop positive relationships and classroom environment with diverse student groups. It is further proposed that teacher interaction self-efficacy mediates the effect of EI on class climate and that diversity self-efficacy mediates the effects of CQ. Finally, EI and CQ are expected to covary reflecting the overlap between the two constructs.

Because EI and CQ are malleable (Crowne, 2008; Sala, 2002; Sit et al., 2017), understanding how they relate to each other and to teacher interaction and diversity self-efficacy allows for the development of these capacities in our teaching force. Sala (2002) researched the effects of an EI development program on 20 Brazilian business managers and 19 American accountants. He found that participants increased their EI and maintained this improvement for a year. Regarding the development of CQ, Sit et al. (2017) reviewed 35 cross-cultural training programs for post-secondary students. They found that cross-cultural training programs increased cultural knowledge and aided cross-cultural adjustment, but these programs had less influence over cultural cognition and emotional adjustment. Expanding such understandings can inform pre-service teacher education programs and in-service teacher professional development (Jennings et al., 2017; Nelis et al., 2009; Sit et al., 2017).

Even though EI and CQ can be developed, there is still debate as to the best way to do so (McAllister & Irvine, 2000). Sit et al. (2017) investigated which cultural program features were best at developing participant cultural adaptation. They found that programs that targeted participant affect, behavior and cognition were most effective. Short of having all three aspects, Sit et al. (2017) found that programs that included a behavioral component were most effective. Putting the two intelligences together, Crowne (2008) examined the effect of cultural exposure on both CQ and EI and found that such experiences affected CQ but not EI. Suggesting the need for both EI and CQ, intercultural training has proven

effective in helping teachers broaden their perspective on cultural differences (Rothstein-Fisch et al., 2009).

Because our student population is becoming more diverse while our teaching population remains homogeneous, because teachers have difficulty establishing positive social-emotional dynamics with students from cultures other than their own, because teacher EI is associated with positive student outcomes, because CQ influences intercultural sensitivity, because self-efficacy mediates the relationship between capacity and behavior, and because teacher-student relationships and classroom emotional climate are culminating dimensions of the social-emotional dynamic between teachers and students, this study endeavors to answer the following research questions: First, how do teacher EI, teacher CQ, teacher diversity self-efficacy and teacher interaction self-efficacy influence the creation of classroom climate and teacher-student relationships with diverse groups of students? Second, does teacher EI influence teacher interaction self-efficacy and does teacher CQ influence teacher diversity self-efficacy? Finally how do teacher EI and teacher CQ relate to each other?

It is hypothesized that EI, CQ, DSE, and ISE will positively affect both diverse class climate and teacher-student relationships. It is further hypothesized that diversity self-efficacy will mediate the effect of teacher CQ, and ISE will mediate the effect of teacher EI on class climates and teacher-student relationships with diverse student groups. Finally, it is hypothesized teacher EI and teacher CQ will covary as they affect the outcomes.

Two structural equation models were proposed to explore these

relationships. The first model was expected to provide insight into the roles of teacher CQ, EI, and related self-efficacy beliefs in the establishment of positive classroom environments (see Figure 1).

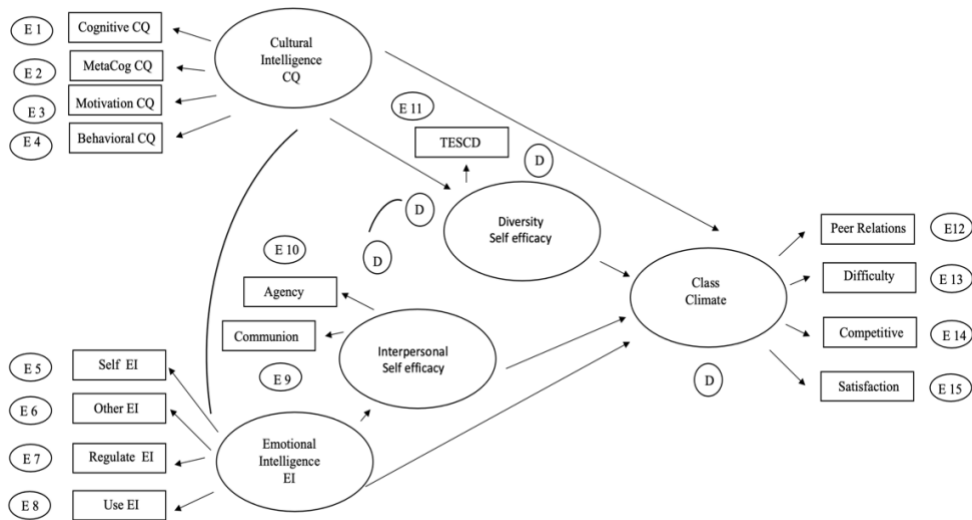


Figure 1

Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ, Teacher diversity Self-efficacy and Teacher Interaction Self-efficacy on Diverse Class Climates

The second model was expected to provide insight into the roles of teacher CQ, EI and related self-efficacy beliefs in the establishment of positive teacher-student relationships (see Figure 2).

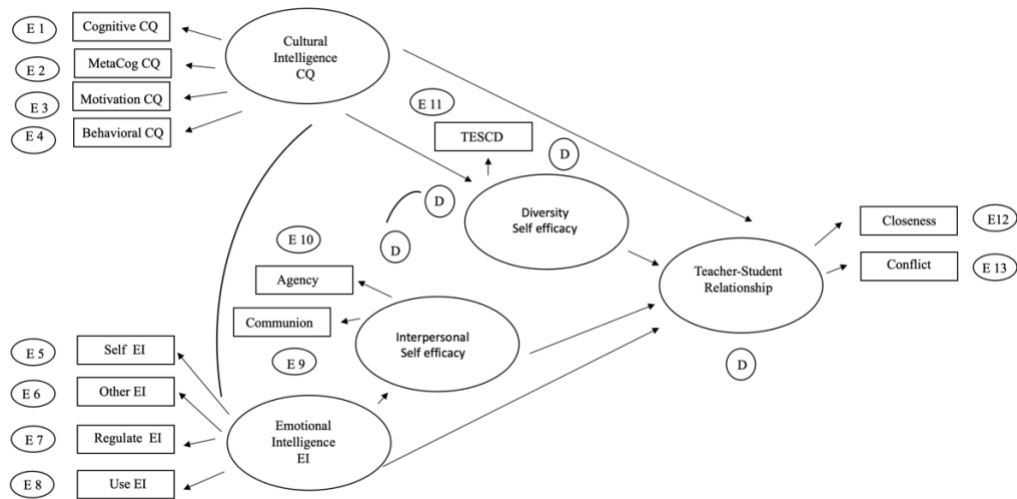


Figure 2

Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ, Teacher Diversity Self-efficacy and Teacher Interaction Self-efficacy on Teacher-Student Relationships

An alternate set of structural equation models were also proposed to explore the direct relationships among teacher CQ, EI, and the outcomes. Self-efficacy measures were not included. The first model was expected to provide insight into the direct effect of teacher CQ on the establishment of positive, diverse classroom environments (see Figure 3). The second model was expected to provide insight into the direct effect of teacher EI in the establishment of positive teacher-student relationships (see Figure 4).

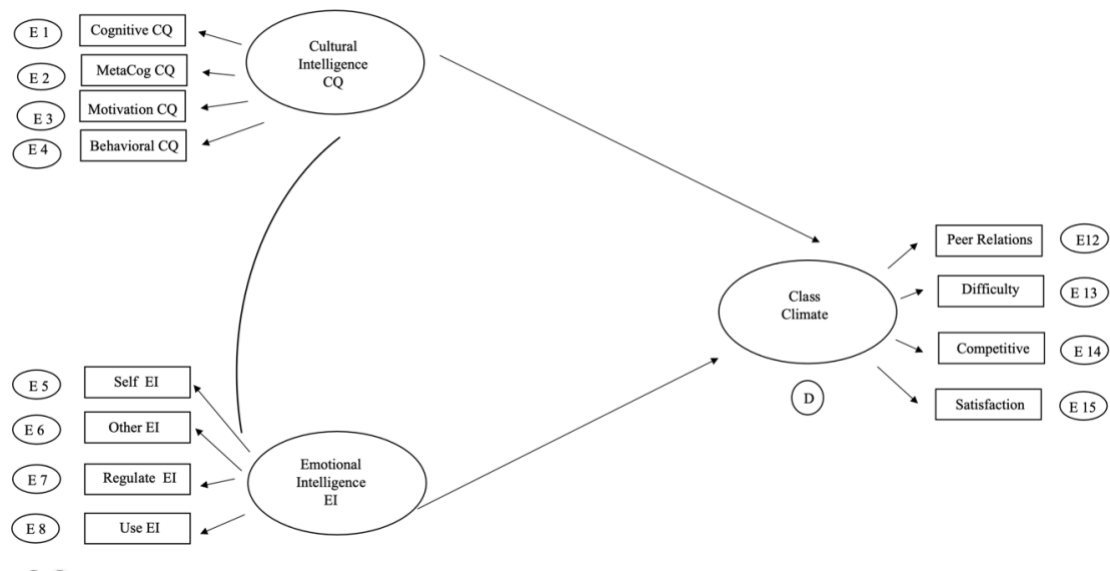


Figure 3

Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ Direct Effects on Diverse Class Climates

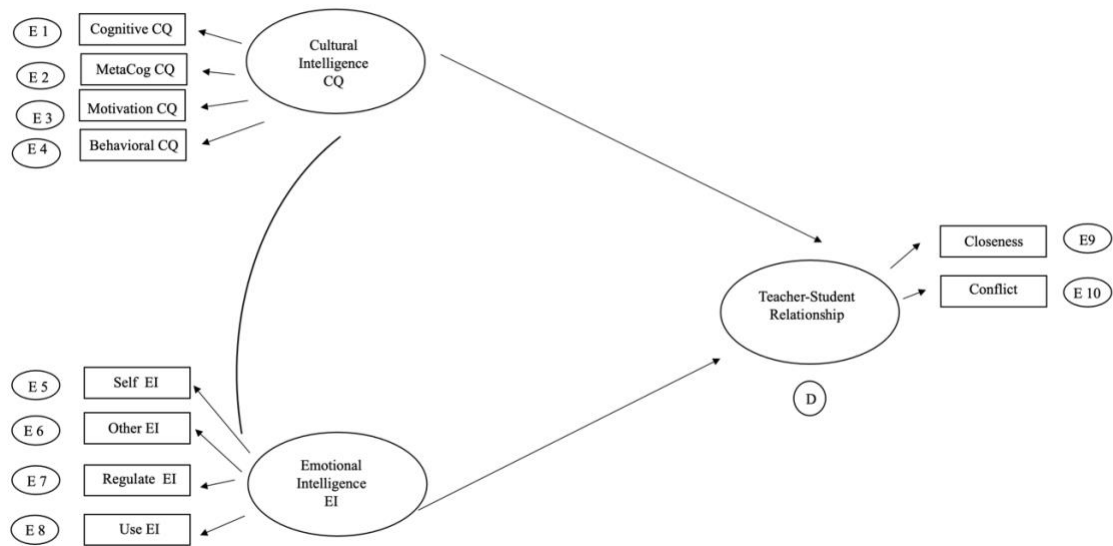


Figure 4

Proposed SEM Model Exploring Influence of Teacher EI, Teacher CQ Direct Effects on Teacher-Student Relationships with Diverse Student Groups

Chapter Three

This study proposed two sets of structural equation models that hypothesized relationships between and among teacher cultural intelligence (CQ), emotional intelligence (EI), diversity self-efficacy (DSE), interaction self-efficacy (ISE), teacher-student relationships (TSR), and classroom environment. The first set contained two models that were the same with the exception of the outcome variables. The first model proposed influence of teacher EI, teacher CQ, diversity self-efficacy, and interaction self-efficacy influence on creation of positive teacher-student relationships with diverse groups of students. The second model proposed that teacher EI, teacher CQ, diversity self-efficacy, and interaction self-efficacy influenced the creation of positive diverse class climates. This first set of models will be referred to as the full models.

A second set of SEM models was also tested as an alternative to the proposed full models. This second model set will be referred to as the simplified models. This simplified set did not include any self-efficacy variables as the original set of models did. This set proposed that EI and CQ directly influence teacher-student relationships and class climates with diverse student groups. Like the original set of models, each of the simplified set had a different outcome. One set considered the influence of EI and CQ on teacher-student relationships and the other considered their influence on class climates.

Participants

Participants were currently practicing K-6 teachers ($n=205$) with an average age of 37.98 years ($SD=10.30$) and an average of 11.52 years teaching experience ($SD=8.2$).

Eighty-one and half percent of the sample identified as female, 17.6 % identified as male and 1% identified as other. In terms of ethnicity, 79.5% of the sample was Caucasian, 16.6% was Hispanic, 6.3% was African American, 4.4% was American Indian or Alaska Native, 5.9% was Asian, and 2.4% was multi-ethnic. These demographics differ from the overall elementary teacher demographics in the United States. The sample had fewer females as a percentage of the total sample and relative overrepresentations of males, Hispanics, Asians, Blacks, and Native Americans. Sample teachers were also younger and less experienced than elementary teachers in the general American population (see Table 4).

The relative overrepresentation of Hispanics may be due to the demographic composition of two particular school districts. Every elementary teacher in these two districts received the recruitment letter with embedded survey. All other recruitment efforts were not targeted to a specific district or locality and did not blanket a specific area. Census data from 2019 for the two districts reveal that 47.8% residents identify as Hispanic in one community and 17.7% of residents identify as Hispanic. (US Census Bureau, 2019). The first school district also reports that 9.7% of its teachers identify as Hispanic (Katsin, 2020), which is greater than the national average of teachers who identify as Hispanic.

An examination of the gift-card incentive survey results may yield a clue to the relative overrepresentation of Native Americans in the present sample when compared to the national averages. When looking for international submission locations in the incentive survey analytics, the researcher noticed a cluster of responses that originated in

American Indian national lands within the state of Oklahoma. State maps indicated that these lands are part of the Choctaw or Chickasaw nations (Hughes, 2019). Moreover, according to Oklahoma census data, 9.4 % of residents overall identify as Native American (US Census Bureau, 2019). Reasonably then, the percentage of survey respondents who identify as Native American may be greater than the national average as the responses originated in Native American land. As promised in the recruitment letter and survey, requests for gift cards were deleted once the cards were sent so an exact number of respondents from this region is unavailable.

Sample participants were also younger than the general population of elementary teachers and had less teaching experience. Again, this discrepancy between the sample and general population may, in part, be explained by the participation of elementary teachers from a suburban midwestern community. In their report to their state, the School District reported that their teachers have 12.8 years of teaching experience (Katsin, 2020), compared to the national average of 14.4 years (National Center for Education Statistics, 2020).

Table 4*Comparison of Sample and U.S. Population Elementary Teacher Demographics*

<u>Characteristics</u>	<u>Sample</u>	<u>United States *</u>
Average age	38.1 years	44.3 years
Average teaching experience	11.57 years	14.4 years
Percentage female	81.5%	88.7%
Percentage male	17.6%	11.3%
Percentage other	1%	Data unavailable
Percentage Asian	5.9%	2.7%
Percentage Black/African American	6.3%	6.6%
Percentage Caucasian	79.5%	78.8%
Percentage Hispanic	16.6%	10.2%
Percentage Multi-ethnic	2.4%	1.46%
Percentage Native American/ Alaskan Native	4.4%	0.56%

Notes. Sample ethnic percentages exceed 100% because Multi-ethnic respondents were asked to indicate their comprising ethnicities in addition to their multi-ethnic designation.

* US data retrieved from Digest of Education Statistics (retrieved, October 2020) National Center for Education Statistics, Institute of Education Services, Department of Education.
https://nces.ed.gov/programs/digest/d20/tables/dt20_209.22.asp.

More than half (57.1%) of respondents indicated they taught in a suburban

community/near a large city, 26.8% taught in urban communities, 9.3% taught in a small city/town, and 6.3% said they taught in a rural community. Forty percent of survey respondents indicated that they taught first-second grade, 18.5% indicated teaching kindergarten, 44.4% indicated teaching third-fourth grade, and 26.3% indicated teaching fifth-sixth grade. Special education teachers and specialist teachers may teach multiple grade levels which is why the percentages exceed 100%. Special education teachers comprised 22.4% of the sample and 10.7% of respondents reported being specialist teachers. General education teachers were 66.8% of the total sample.

Regarding diversity in the classroom and the ethnic/cultural match between teachers and their students, most teachers reported that some of their students share their ethnic/cultural background, 26.3% reported that most of their students have a different cultural/ethnic background from theirs and 25.9% of teachers reported that most of their students share their cultural background. Teachers characterized the diversity in their classes as mostly homogenous: 81.2% indicated that 2 cultures/ethnicities or fewer predominate, and 18.7% characterized their class as heterogeneous with no culture predominating.

Sample Size

There appears to be no definitive rule-of-thumb for SEM sample sizes. Jackson (2003) advises that sample size be considered as a ratio of sample size to the number of model parameters to be estimated. Kline (2016) recommends a ratio of 20:1 as the most assured but concedes that a ratio of 10:1 is acceptable. Anything below that ratio is considered questionable. However, Bentler and Chou (1987) advise that a ratio of 5:1 is

acceptable, and still others contend that smaller ratios can be acceptable and that larger ratios can even be less accurate depending on the complexity of the model (Wolf et al., 2013).

There are indeed studies that fall below the acceptable 10:1 ratio as outlined by Kline (2016). In a study exploring the relationships among CQ, EI and social intelligence, Crowne (2013) had 118 parameters and 467 participants resulting in a parameter to participant ratio of 3.95 – 1. Similarly, in a study considering the relationships among EI, dispositional optimism/pessimism and well-being Augusto-Landa et al. (2011) had a ratio of 6.38:1. In their study of gender differences and EI, Petrides and Furnham (2006) had a ratio of 4.2:1 for their male sample.

The necessary sample sizes were evaluated for both model sets (i.e., the class climate outcome model and the teacher-student relationship model). Using participant to parameter ratios of 5:1 and 10:1, the proposed SEM model with class climate as the outcome would require sample sizes 210 or 420 participants. This requirement was determined by adding the model's parameters and multiplying by 5 and then by 10. The full class climate outcome model has 42 parameters. These parameters are 15 observation error terms, 15 loadings of observed variables onto latent variables, 6 additional pathways among the latent variables, 1 covariance between EI and CQ, and 5 latent variables.

The SEM model with teacher-student relationships as the outcome would require a smaller sample because the measure of teacher-student relationships has only two observed items. Thus, this model has only 38 parameters: 13 observation error terms, 13 loadings of observed variables onto latent variables, 6 additional pathways among the

latent variables, 1 covariance between EI and CQ, and 5 latent variables. Using the 5:1 ratio, this model would require 190 participants. Using the 10:1 ratio, this model would require 380 participants.

The sample size requirement for the diverse data set, $n = 209$, was evaluated for both models. Recall that the class climate model required a sample of 210 participants. This exceeds the size of the sample of the diverse data set, $209 < 210$. To gain enough power for a viable SEM model, the variable, diversity self-efficacy (DSE), was changed from a latent variable to an observed variable. This change did not alter the proposed theoretical models because the latent variable, DSE, was identified by only one measure, the Teachers' Diversity Self-Efficacy Scale. The observed variable already equaled the latent variable.

Although it did not change the theoretical structure of the model, this change did alter the number of parameters from 42 to 40: 15 observation error terms, 14 loadings of observed variables onto latent variables, 6 additional pathways among the latent variables and DSE, 1 covariance between EI and CQ, and 4 latent variables. Using the same participant to parameter ratios of 5:1 and 10:1, the revised model required 200 or 400 participants to achieve adequate power.

This change of diversity self-efficacy from a latent variable to an observed variable was maintained for the teacher-student relationship model despite meeting the minimum cutoff. This change was made to increase the viability of the model. Without the change of diversity self-efficacy to an observed variable, the teacher-student relationship model required only 190 participants and $209 > 190$, making the model

viable using the 5:1 ratio. Despite this possible viability, the change was made to increase the power of the analysis. Having an adequate sample size is important to ensure the models' statistical power which is the probability of rejecting the null hypothesis when it is false. Wolf et al., (2013) explain that having an adequate sample is necessary so that the model can converge without "improper solutions of impossible parameter estimates." (p. 914).

Again, this change from a latent to an observed variable did not change the theoretical structure of the model but did alter the number of parameters from 38 to 36: 12 observation error terms, 12 loadings of observed variables onto latent variables, 6 additional pathways among the latent variables and DSE, 1 covariance between EI and CQ, and 4 latent variables. Using the same participant to parameter ratios of 5:1 and 10:1, the revised model required 180 or 360 participants to achieve adequate power.

In addition to evaluating the direct effects, having fewer parameters and paths to estimate can require a smaller sample size and may have improved the models' power (Kline, 2016; Wolf et al., 2013). The simplified class climate model has 30 parameters: 12 loadings of observed variables onto latent variables, 12 observation error terms, only 2 additional pathways among the latent variables, 1 covariance between EI and CQ, and 3 latent variables. Using the same participant to parameter ratios of 5:1 and 10:1, the simplified class climate model required 150 or 300 participants to achieve adequate power.

Likewise, the simplified TSR model has only 26 parameters: 10 observations error terms, 10 loadings, 2 latent pathways, 3 latent variables and the EI CQ covariance.

As such, it requires a sample size of 130 - 260 using the lesser rule-of-thumb ratios.

Measures

Demographic Survey

Participants completed a demographic survey describing their personal and classroom characteristics. The demographic survey asked for their gender, age, ethnicity, grade level taught, primary role in the classroom, community designation, and teaching experience. To assess the cultural diversity of their teaching context, teachers were asked to indicate the ethnic composition of their class and whether their ethnicity matches that of their students. The survey offered three possible responses regarding class composition: (a) largely homogenous, (b) heterogeneous - 2 cultures/ethnicities predominate, and (c) heterogenous - no culture/ethnicity has a large predominance. There were also three choices to describe the ethnic/cultural match between the teacher and her students: (a) most students share my ethnic/cultural background, (b) some students share my cultural background, and (c) most students have an ethnic/cultural background that is different from my own (see Appendix A).

Teacher Efficacy Scale for Classroom Diversity (TESCD)

To measure participant self-efficacy beliefs regarding teacher ability to teach culturally diverse classes of students, participants completed a reduced Teacher Efficacy Scale for Classroom Diversity (TESCD; Kitsantas, 2012; see Appendix B). Initially, comprised of 10 vignettes, the measure asks participants to respond on a sliding scale of 0-100 as to their certainty that they could handle the described scenario. Zero indicates that they could “not do it all” and 100 would mean that they are “highly certain they

could do it.” TESCD has a Cronbach’s alpha of .91 indicating satisfactory reliability (Kitsantas, 2012). In their adaptation of the TESCD to a Turkish population, Ilhan and Gezer (2016) confirmed TESCD’s single scale structure and the composite reliability with a Cronbach’s alpha of .85. (see Appendix B)

A vignette regarding gender diversity was dropped from consideration because, while an important component of cultural diversity, this paper primarily addresses ethnic diversity. A second vignette regarding English language learners also was eliminated because it emphasizes verbal communication ability, whereas this study does not emphasize language ability. Previous research using this abbreviated TESCD had a Cronbach’s alpha of .90 indicating satisfactory reliability (Dallman, 2019).

TESCD vignette examples include managing a culturally diverse classroom in which some students are having difficulty tolerating others, promoting social interaction among students of differing socio-economic backgrounds, and creating a learning environment that can discuss racial issues without friction in a racially diverse class. The use of survey vignettes enabled the measurement of complex attitudes and beliefs that would be difficult to contextualize without specific scenarios (Vargas, 2008).

Questionnaire on Teacher Interaction Self-Efficacy (QTI-SE)

Participants indicated their social-emotional interaction self-efficacy using the Questionnaire on Teacher Interaction Self-Efficacy (QTI-SE; Veldman et al., 2017). This measure directly focuses on the quality of the social-emotional dynamic between teachers and students (Veldman et al., 2017).

The QTI-SE is an addition to the diversity self-efficacy measure used in Dallman

(2019). It has been added because, in the previous study, the effect of teacher EI on diversity self-efficacy was masked by CQ. This time the goal is to explore how EI is effective in building teacher efficacy beliefs and how interaction self-efficacy may covary with diversity self-efficacy.

Comprised of eight items, the QTI-SE provides two subscales based on Wubbels (1985, 2015) understanding that agency and communion underlie personal interactions. Four items, such as “I’m capable of determining what students can and cannot say in class,” address agency, and four items, such as “I’m capable of tolerating a lot from my students,” address communion. Using a 5-point Likert scale, participants indicated their agreement with the characterizations of their interaction ability with 1 indicating *never* and 5 indicating *always*. (see Appendix C)

During their development of QTI-SE, Veldman et al. (2017) found Cronbach alphas of .80 for the agency dimension and .78 for the communion dimension. Subsequent use of the measure has yielded internal consistency reliability values of .72 for agency and .81 for communion (Admiraal et al., 2019). Access and permission to use the QTI-SE has been granted by the authors.

Wong and Law Emotional Intelligence Scale (WLEIS)

Participant emotional intelligence was measured using the Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002). Consistent with Salovey and Mayer’s (1990) definition of emotional intelligence, the WLEIS measures a participant’s ability to appraise one’s own and others’ emotions, as well as regulate and use one’s emotions. Comprised of 16 items, the WLEIS yields four subscales and one global EI

score. Subscales are the self-emotion appraisal (SEA), others' emotion appraisal (OEA), regulation of emotions (ROE), and use of emotions (UOE).

Using a 7-point Likert scale with one indicating *strongly disagree* and seven indicating *strongly agree*, participants responded to statements characterizing their emotional competence. Sample items include *I have a good sense of why I have certain feelings most of the time* and *I am able to control my temper and handle difficulties rationally* (see Appendix D). In their development of the WLEIS, Wong and Law (2002) found the following Cronbach alphas: SEA .89, OEA .85, ROE .76, and UOE .88. These reliabilities are consistent with those found by Wong and Law (2002) when they subsequently used the measure to compare the effects of emotional intelligence on performance and attitude between supervisors and subordinates. In this analysis, Wong and Law (2002) found coefficient alphas of .86 for both supervisor and followers SEA, .82 for both OEA, .79 for both ROE, and .85 for both UOE.

The use of WLEIS is a departure from the researcher's most recent study (Dallman, 2019) in which she used the Profile of Emotional Competence (PEC). Although there is a shorter version of the PEC, shortening it from 50 items to 20 items (S-PEC), and although the items on the S-PEC are still preferable over those on the WLEIS, both the PEC and the S-PEC suffer from questionable reliability.

When originally developed, PEC had an overall consistency score of .88 and subscale reliability values ranged from .60 to .83. The two factors score was .84 (Brasseur et al., 2013). Although these consistency scores indicate acceptable reliability, .60 is already a questionable alpha value. In Dallman (2019), despite the elimination of

items to enhance subscale reliabilities, the subscale reliability values still only ranged from .53 to .82. The identification of one's own emotion (.59) and expression of one's own emotion (.53) both had poor reliabilities.

When Mikolajczak et al. (2014), developed the shortened PEC, (S-PEC), they, again found poor and questionable subscale alphas ranging from .57 - .77. In this study, however, they included Dillon-Goldstein Rhos as additional consistency measures. The DG Rho values for the subscales ranged from .82-.90. Citing Chin (1998), Mikolajczak et al. (2014) explained that DG Rho can be a better consistency predictor than Cronbach alpha especially when there are few items per scale. All of the scales were deemed adequate as they all had DG Rho values that exceeded the .70 cutoff for acceptability.

Additional studies confirm concerns. Lundberg and Janze (2016) encountered similar reliability problems, finding an overall alpha of .55. Two subscales even had negative alphas. Fantini and Mikolajczak (2014) also used the S-PEC in their analysis of the elderly's emotional competence. Although they found that the measure was valid across age groups, they did not report any reliability values for the S-PEC. Instead, they noted alphas for the global and factor scores of the longer PEC. They did not mention any subscale reliabilities for either the PEC or the S-PEC.

The questionable to poor reliability coefficients of the S-PEC was not the only reason the WLEIS was chosen. The WLEIS has a 7-point Likert scale vs. the 5-point Likert scale of the S-PEC. This matched the 7-point Likert scale of the cultural intelligence report that was used to measure teacher CQ. Although a 5-point Likert scale can be converted to a 7-point scale, starting with a 7-point scale ensures greater precision.

Additionally, Dallman (2019) found a restricted range when using the PEC (i.e., all or most of the participants rated themselves above average on the ten PEC subscales).

Having a wider response range can minimize the close clustering of scores. However, Karim (2010) found WLEIS subscales to be less precise at higher levels of EI than at low-to-moderate EI levels of EI in Pakistan.

Although originally developed with students in Hong Kong, WLEIS has been validated across cultures (Fukuda et al., 2012; Iliceto & Fino, 2017) and used with American samples (Crowne, 2013; Whitman et al., 2009). Researchers warn of using the WLEIS to compare samples from differing cultures despite its validation across cultures because Asian and Western cultures differ in cultural expectations and rules (LaPalme et al., 2016; Libbrecht et al., 2014).

Other researchers have successfully used the WLEIS (Law et al., 2008; Wong & Law, 2002). Similar to the research currently proposed, Crowne (2013) used the WLEIS in her structural equation models exploring the relationships between and among EI, CQ and social intelligence. Whitman et al. (2009), found the WLEIS to be invariant among American ethnic groups, and Kong (2017) found it to be invariant across ages and gender. Finally, examining the match between self- and others' WLEIS responses, Libbrecht et al. (2010) found that participants self-reported emotional ability similar to that reported by others. Wong has granted permission to use the WLEIS for this study.

Cultural Intelligence Scale (CQS)

To measure teachers' cultural intelligence, participants completed the Cultural Intelligence Scale Self-Report (CQS-SR). First introduced at the 2004 Academy of

Management Meeting (Van Dyne et al., 2008), the CQS-SR was published by Ang et al. in 2007. The scale consists of 20 items representing the four distinct CQ factors: cognitive cultural intelligence (CCQ), metacognitive cultural intelligence (MCCQ), behavioral cultural intelligence (BCQ), and motivational cultural intelligence (MCQ; Early & Ang, 2003). Sample items include *I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me* and *I change my non-verbal behavior when a cross-cultural situation requires it*. Participants responded using a 7-point Likert scale with one indicating that they *strongly disagree* to seven indicating that they *strongly agree* with the characterization. (see Appendix E)

Ng et al. (2009, 2012) conducted numerous studies to validate the CQS and ensure its reliability to include demonstrating the invariance of the four-factor structure across cultures – including that of the United States. Like the WLEIS, Ng et al. (2009) also demonstrated the invariance of the measure through time and across self- and others' ratings. Van dyne et al. (2012) have also developed an expanded version of the CQS to include eleven second-order factors (E-CQS).

The E-CQS was not chosen as a measure for this proposed study for two reasons. First, it comprises 39 items instead of 20 items, potentially making its administration unwieldy. Second, although the second-order factors are more refined and specific, the use of eleven factors instead of four would make the proposed SEM model unnecessarily unwieldy for the questions posed. The Cultural Intelligence Center has granted permission and access to the CQS-SR for this study.

Teachers Version - My Classroom Inventory – Short Form (TMCI-SF)

Teachers completed the teacher version of My Classroom Inventory – Short Form (TMCI-SF; Sink & Spencer, 2007) to characterize their perception of their classroom climate. TMCI-SF characterizes the class climate along four teacher perceptions: student satisfaction, peer relations, difficulty level, and student competitiveness. Developed to assess the effectiveness of school counseling programs, the teachers' version of TMCI-SF also includes a fifth factor, "school counselor impact on the learning environment." The five items relating to school counseling were not included in the current study because they are irrelevant to the study's purpose.

Of the remaining 19 items, 6 assess teacher perceptions of student satisfaction, 5 address teacher perception of peer relations, 3 characterize teacher perception of class competitiveness, and 5 address teacher perception of class difficulty. Sample items include *the students enjoy their schoolwork in this class.* (satisfaction), *students do not fight with each other* (peer relations), *students often race to see who can finish their work first* (competitiveness), and *most students cannot complete their assignments without a lot of help* (difficulty). Teachers responded using a 5-point Likert scale, with 1 indicating *strongly disagree* and 5 indicating *strongly agree* (see Appendix F).

Reliability coefficients for the TMCI-SF subscales ranged from .66 -.84: specifically, satisfaction = .84, competitiveness = .66, difficulty = .75, and peer relations = .80. The Cronbach's alphas for satisfaction, difficulty, and peer relations all fall within the acceptable to good range, and the coefficient for competitiveness approaches the acceptable range.

Student Teacher Relationship Scale (STRS)

Teachers also reported on the quality of their teacher-student relationships by completing a modified version of Student-Teacher Relationship Scale (Pianta, 2001). The 15-item scale measures teacher perceptions of their relationships with their students on two factors (see Appendix G). Seven items address conflict in the relationship with items such as *this child easily becomes angry with me*. Eight items address the second factor, closeness, with statements such as *when I praise this child, he/she beams with pride*. Teachers used a 5-point Likert scale with 1 indicating *definitely does not apply* and 5 indicating *definitely applies*. Each item of the STRS was modified to ask teachers to report on the overall teacher-student relationships they had with the students of their class. The items were changed from asking about a specific child to asking about the children in their class overall. For example, the item, *this child easily becomes angry with me*, was changed to *the children in my class easily become angry with me*. Similarly, *when I praise this child, he/she beams with pride*, was changed to *when I praise the children in my class, they beam with pride*. These changes were made because the proposed models evaluate teacher relationships in the aggregate. The changes from singular student to class of students was made also for time economy so that each survey respondent could comment once on their overall teacher-student relationships instead of on each individual teacher-student relationship. In her study of teacher-student relationships and student behavior, Poulou (2017) found Cronbach alphas of .76 for closeness and .90 for conflict. Similarly, in their study of preschoolers' development and teacher relationships, Hamre et al. (2014) found alphas of .88 for the closeness scale and

.82 for conflict.

Measure Reliabilities, Average Variance Extracted, Discriminant Validity

Each scale's composite reliability, average variance extracted (AVE), and discriminant validity were calculated using MPlus 8.6. Similar to Cronbach's alpha; composite reliability reflects a measures internal consistency (Netemeyer et al., 2003). The threshold for composite reliability is .70 (Hair et al., 2017).

The AVE threshold is .50 (Fornell & Larcker, 1981). AVE is the ratio of a measure's captured variance to its measurement error (Fornell & Larcker, 1981). Meeting the threshold of .50 would indicate that the measure is capturing more than half the variables' variance (i.e., it is measuring more than it is not).

Fornell and Larcker (1981) also advise about discriminate validity. Discriminate validity is the degree to which a measure differs from other measures in the model (Fornell & Larcker, 1981). For a scale to have discriminate validity, the square root of each scale's AVE should be greater than or equal to its correlation with the other factors in the model.

Procedures

After receiving IRB authorization (see Appendix H), the researcher made several recruitment solicitations. First, recruitment emails (see Appendix I) were sent to the superintendents of public-school districts in the Midwest and MidAtlantic regions of the United States. The researcher also emailed recruitment letters to heads of a MidAtlantic Independent Schools organization and a private school in Florida. Additionally, she emailed education graduate students of a MidAtlantic university master's program and a

private teacher professional development organization.

Once school district authorities granted permission, the researcher sent the participant recruitment letter (see Appendix J) with the embedded survey link to the school district or education program. Staff within each system forwarded the survey and links to teachers within their system. The surveys were embedded in the recruitment emails for the convenience of participants so they did not have to make additional effort to join the study.

Only currently teaching elementary school teachers were recruited to participate in the study. This group of participants were targeted for several reasons. First, a limited grade level range (K-sixth grades) was chosen over analyzing all grade level teachers, because elementary, middle, and high school classes differ from each other. Not only do students in each grade level range have differing developmental needs, but the amount of teacher-student time together each day is also widely different. Elementary school teachers and students spend 28.9 hours together each school week whereas middle and high school teachers and students spend as little as 3 hours together each school week (NCES, 2004).

The developmental stage of elementary students was another reason that elementary school teachers were chosen for recruitment and participation. Elementary students are younger than middle and high school students and are newly developing their sense of self, their sense of school, and their sense of self in school (Siegel, 2015). This makes the influence of the class social-emotional dynamic more pronounced (Siegel, 2015).

Because the goal of this study is to understand the variables that facilitate teachers' social-emotional interactions with diverse groups of students, it was essential that the teachers were teaching diverse groups of students or that they did not culturally/ethnically match their students. Consequently, teachers must have been teaching a diverse group of students and/or not culturally match the preponderance of students in their class. Additionally, participants must have been teaching at the time they completed the surveys because that they had to reflect on the quality of their classrooms' climate. They needed a class climate upon which to reflect.

Recruitment was negatively impacted by the breakout of COVID (see Table 5). An assistant superintendent had agreed to promote the project and distribute recruitment emails to elementary teachers within his region. However, once COVID struck, he was unable "to ask more of the teachers" (email, 5/7/2020). Similarly, the superintendent of another Midwestern public school district agreed to distribute the recruitment email to elementary teachers throughout his school system. Again, staff apologetically dropped the project once COVID demanded all of everyone's attention (email, 5/20/2020).

Table 5

Summary of School District Recruitment

School District or Program	Permission Granted	Permission Denied	Permission granted then COVID dropped	No Response
MidAtlantic 1	x		x	
MidAtlantic 2		x		

Southern Urban		x	
Midwestern - small town	x		
Midwestern - urban	x		
Midwestern suburban	x	x	
Private School	x		x
MidAtlantic 2			x
Midwestern, rural			x
Independent Schools			x
Educational psychology graduate program	x		
Curriculum and instruction MA graduates	x		
Private teacher professional development organization			x

The researcher also emailed and/or private messaged the personal accounts of friends who were teaching in elementary school settings. The emails and messages included the invitation letter with embedded surveys along with a request to share the invitation and surveys with their teacher friends. The researcher also posted the invitation letter with embedded surveys on her Facebook timeline requesting all of her Facebook friends share the surveys with their teacher friends.

Baltar and Brunet (2012) point out that using Facebook to recruit participants

results in a higher yield because the researcher is knowable via the personal information disclosed on her Facebook page. These friends were encouraged to invite their teacher colleagues to participate to encourage a snowball effect. This use of a convenience, snowball sampling method has advantages and disadvantages. It has the advantage of making data collection easier, more efficient, less time consuming, and more affordable, but it is also a nonrandomized sampling method (Etikan et al., 2016; Sadler et al., 2010). The disadvantage of nonrandomized samples is that they may result in biased conclusions because they may not adequately represent the entire teacher population (Etikan et al., 2016; Sadler et al., 2010). The researcher decided to use convenience, snowball sampling despite the risk of non-generalizability so that she could collect enough data to run her analysis.

As a participation incentive, a \$15 Amazon gift card was offered to the first 250 elementary school teachers to complete the survey. Coopersmith et al. (2016) found that such early response incentives are effective. A description of the incentive was included in recruitment materials. To ensure anonymity, two surveys were developed. In the first survey, teachers had to indicate their interest in receiving the gift card at the end of the survey. If they indicated that they wanted a gift card, they were directed to the second survey where they left their email addresses to receive the card electronically.

Participants completed an online demographic questionnaire and six surveys: the Teacher Efficacy Scale for Classroom Diversity (TESCD; Kitsantas, 2012), Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002), the Cultural Intelligence Scale – Self-Report (CQS; Van Dyne et al., 2008), My Class Inventory –

Short Form (MCI-SF; Sink & Spencer, 2007), the Questionnaire on Teacher Interaction-Self-Efficacy (QTI-SE), and the Student-Teacher Relationship Scale (STRS; Pianta, 2001).

The surveys were purposefully sequenced. A brief demographic survey was first to introduce participants to the platform with unambiguous inquiries. My Classroom Inventory and Student-Teacher Relationships Scale preceded the Teacher Efficacy Scale for Classroom Diversity (TESCD), the Questionnaire on Teacher Interaction-Self-Efficacy (QTI-SE), and the measures of EI and CQ. The surveys were organized in this manner so that participant responses were not biased by reflection on their emotional and cultural abilities. Participants were not able to return to the previous survey questions once they completed it and moved onto the next question.

All participant responses were submitted anonymously and electronically via the Qualtrics platform. Qualtrics is a web-based subscription software program that facilitates the development and dissemination of surveys and provides reports regarding the data collected (<https://www.qualtrics.com>). Using an online platform makes data collection easier, offers a greater sense of participant anonymity, and avoids duplicate cases (Baltar & Brunet, 2012).

Responses to the survey were recorded February 25, 2020–May 18, 2020. On March 29, 2020 the researcher's husband posted the solicitation letter with embedded surveys to his Facebook page. He made the post public meaning that anyone, whether Facebook users or not, could access the post. The researcher soon realized that the survey had been attacked by bot(s) when participation soared from $n = 102$ prebot to over $n =$

896 in a matter of hours. A hack was apparent also because participation in the incentive survey began to climb beyond participation in the general survey despite access to the incentive survey being dependent on the general survey.

The researcher closed the general and incentive surveys on March 30, 2020, and reopened the surveys on April 2, 2020, with new links. The public-facing recruitment letter was taken down and subsequently reposted privately. Data was collected through May 25, 2020.

Bot Data Set Evaluation

Launching and closing and relaunching the survey resulted in three separate groups of data: prebot (February 25–March 28, 2020), bot (March 29–30, 2020), and postbot (April 2–May 25, 2020). Although later combined as one data set, having the three data sets allowed for a careful review of responses from the bot data set.

All responses from the bot period (March 29–30, 2020), were examined for deletion due to possible contamination. Cases were deleted based on the following criteria: First, any case that completed only the incentive survey was eliminated. Second, all cases that originated from outside the United States were deleted. The intended sample was limited to teachers in the United States. All of the international responses occurred during the bot period. It was possible to see where a response originated due to the participation gift cards that could be emailed to the first 250 participants. Finally, the researcher deleted bot period respondents who took too little time to complete the survey. Initially she deleted all respondents that took less than 2 minutes to complete the survey because she was unable to complete the survey in that amount of time. Consequently, she

judged it to be physically impossible to complete the surveys in less than 2 minutes. Then, after the surveys were finally closed, an examination of the prebot data indicated that no one had completed the surveys in less than 362 seconds (6 minutes, and 2 seconds). Consequently, all bot period respondents that completed the surveys in 361 seconds or less were deleted.

Not all bot period survey responses were eliminated because some responses could have been valid. The surveys had already been distributed via other means and there was no way to determine which participant was responding to which solicitation. Moreover, some of the responses from the public Facebook posting may also have been legitimate. There is no way to determine which respondents were opportunists and which were sincere teacher participants.

Sample sizes for each bot data set are as follows: prebot ($n = 102$), bot ($n = 104$), postbot ($n = 126$). In consultation with advisors, the researcher combined the three data sets and named the resulting data set Combined Data set ($n = 332$). We decided not to do a t-test to compare the bot and pre/post bot data for the sake of maintaining an adequate sample size to perform an SEM analysis.

Evaluation of Sample Diversity

Collected data needed further evaluation to ensure that the examined sample was diverse. Cultural diversity and difference are the basis for potential misunderstanding between students and teachers and the proposed SEM models explore the variable relationships with diverse groups of students. Consequently, the sample must be diverse. The initial Combined Data set ($n=332$), however, was based on the general population of

elementary teachers including people working in homogenous settings. Accordingly, the initial Combined Data set was further divided to ensure that the analyzed data included only diverse groups of students or ethnically mismatched students and teachers.

Diverse Data Sets. The survey asked two questions to delineate diverse groups. There were two discriminating questions because each more appropriately reflected the outcome variables of each proposed model. Corresponding to the classroom climate outcome variable, the first question asked teachers to indicate how diverse their class was. Both the outcome variable and the discriminating question characterize the class as a whole. This discriminating question is referred to as class diversity. The class diversity question asked respondents to characterize their classes as either: 1, largely homogeneous, ($n=123$); 2, heterogeneous - 2 cultures/ethnicities predominate, ($n=147$); or 3, heterogenous - no culture/ethnicity has a large predominance ($n=62$). The largely homogeneous responses were considered the least diverse. The heterogeneous responses were considered mildly diverse and the heterogenous responses were considered the most diverse.

Corresponding to the teacher-student relationship, the second discriminating question asked teachers to characterize the cultural/ethnic match between themselves and their students. In this case, both the outcome variable and the discriminating question characterize the individual matching of teacher and student. This discriminating question is referred to as cultural/ethnic match.

The cultural/ethnic match question asked respondents to indicate the cultural match between themselves and their students. Response choices were: 1, most students

share my cultural/ethnic background, ($n=125$); 2, some students share my cultural/ethnic background, ($n=128$); and 3, most students have a cultural/ethnic background that is different from my own ($n=79$). Similar to the class diversity question, The "most students share my cultural/ethnic background" responses were considered the least diverse. The "some students share my cultural/ethnic background" responses were considered mildly diverse and the "most students have a cultural/ethnic background that is different from my own" responses were considered the most diverse.

The ideal data set for this study would be comprised of only the most diverse responses. However, the sample sizes for each of the most diverse responses are small. The uncleaned sample size would be only $n=79$ if the data set were divided by the diverse class question and only $n=62$ if divided by the cultural/ethnic match question.

Because these sample sizes would be too small to use structural equation modelling as proposed, the researcher explored how and if the mildly diverse respondents could be combined with the most diverse to yield a more robust sample size. Theoretically, both of these groups are diverse; one is just more diverse than the other. Combining the mild and most diverse responses yielded initial data sets of $n=209$ for the class diversity question and $n=207$ for the cultural/ethnic matching question.

To evaluate the appropriateness of making this combination, the researcher compared the means of the three response categories: least, mildly, and most diverse. Two ANOVAs were conducted for each of the discriminating questions (diverse class and cultural/ethnic match), with each of the two outputs (class climate and teacher-student relationship) to evaluate the differences among the three responses.

Evaluating Diversity with Class Climate Outcome. Even though it was preferable to use the diverse class discriminating question only for the class climate outcome, two ANOVAs were evaluated for the three subgroups on the basis of each discriminating question: class diversity and teacher-student cultural/ethnic match. For the class diversity discriminator, there was a difference among the three subgroups $F(2, 326) = 3.117, p = .046$. The Tukey post hoc indicated that the mean score for "largely homogeneous" ($M = 63.07, SD = 7.80$) was significantly different from the mean of "no culture predominates" ($M = 66.18, SD = 7.83$). However, the mean of "2 cultures predominate" ($M = 64.22, SD = 8.03$) did not significantly differ from "largely homogeneous" nor "no culture predominates."

The results indicate that mild and most diverse classes can be combined to form a sample as the mild response means are not significantly different from the most response mean. Because respondents indicated some diversity, theoretically and statistically the mildly diverse can be combined with the most diverse.

For the cultural/ethnic match discriminator, there were also differences among the subgroups $F(2, 326) = 5.89, p = .003$. The Tukey post hoc indicated that the mean score for "most are different" ($M = 60.05, SD = 9.93$) was significantly different from both the means of "most are like me" ($M = 55.45, SD = 11.32$) and "some are like me" ($M = 56.03, SD = 11$). "Most are like me" and "some are like me" did not significantly differ from each other. Although mild and most can be combined theoretically, these ANOVA results indicate that they are significantly different groups from each other. Moreover, the mild group did not significantly differ from the least diverse group. These results indicate that

mildly diverse and most diverse should not be combined.

The results for the teacher-student relationship outcome were similar to that of the class climate outcome. Again, the class composition discriminator was analyzed first and again there was a difference among the means of the three groups, $F(2, 326) = 3.123, p = .045$. Like the class climate outcome, the Tukey post hoc indicated that the mean score for "largely homogeneous" ($M = 55.84, SD = 11.43$) was significantly different from the mean of "no culture predominates" ($M = 59.92, SD = 10.41$). However, the mean of "2 cultures predominate" ($M = 56.2, SD = 10.73$) did not significantly differ from "largely homogeneous" and "no culture predominates." Again, the mild and most diverse subgroups could be combined.

For the cultural/ethnic match discriminator, Levene's test of homogeneity was violated so the Welch Robust Test of Equality of Means was used. Results indicated there was a difference among them $F(2, 326) = 5.21, p = .006$. The Tukey post hoc indicated that the mean score for "most students differ from me" ($M = 60.05, SD = 9.93$) was significantly different from the means of "most match" ($M = 55.46, SD = 11.32$) and "some match" ($M = 55.46, SD = 11.32$). However, the means of "most match" and "some match" did not significantly differ from each other. Again, these results indicate that mildly diverse should not be grouped with most diverse because mildly diverse is more like the least diverse group.

Following the implications of these analyses, the diverse data set became a combination of the most and mildly diverse subgroups using the class composition discriminating question ($n=209$). The most and mildly diverse subgroups could not be

combined using the cultural/ethnic match discriminating question despite the theoretical possibility. Consequently, only the most diverse subgroup could be used yielding a sample size of only $n = 79$ for the cultural/ethnic match data set. This inadequate sample size rendered this data set unusable for the proposed analysis.

Due to the elimination of the cultural/ethnic match data set, the class composition data set became the exclusive data set. It was used to evaluate the class climate and teacher-student relationship outcomes. The theoretical purity of using the cultural/ethnic match data set to evaluate the teacher-student relationship outcome was foregone due to the insufficient cultural/ethnic match data set size. Nevertheless, teacher-student relationship model results remained meaningful as the class composition discriminator ensured that the student groups are diverse.

Structural Equation Models

Two sets of structural equation models hypothesized relationships between and among teacher cultural intelligence, emotional intelligence, diversity self-efficacy, interaction self-efficacy, teacher-student relationships, and classroom environment. The first model set contained two models which are the same with the exception of the outcome variables. The first model proposed influence of teacher EI, teacher CQ, diversity self-efficacy and interaction self-efficacy influence on creation of positive teacher-student relationships with diverse groups of students. The second model proposed that teacher EI, teacher CQ, diversity self-efficacy, and interaction self-efficacy influenced the creation of positive diverse class climates. They also proposed a covariance between EI and CQ. This first set of models was referred to as the full model

set.

A second set of SEM models were also tested as an alternative to proposed models. This second model set was referred to as the simplified models. This simplified set did not include any self-efficacy variables as the full set of models did. This set proposed that EI and CQ both directly influence teacher-student relationships and class climates with diverse student groups. Like the full set of models, each of the simplified set had a different outcome. One set considered the influence of EI and CQ on teacher-student relationships and the other considers their influence on class climates. Both models in this set also proposed a covariance between EI and CQ.

The first model of the full model set explored variables that may influence diverse class climates (see Figure 1). It expressed the first and second hypothesis that EI, CQ, DSE, and ISE would all positively and directly influence diverse class climates and that DSE would partially mediate the effects of CQ, and ISE would partially mediate the effects of EI on the outcome. The model also expressed the third hypothesis that CQ and EI would covary.

The second model of the full model set explored the same indicator and intermediate variables as the first with the exception that it explored how the variables influence diverse teacher-student relationships. The second model hypothesized that CQ positively influences teacher-student relationships and is partially mediated by diversity self-efficacy. It was further hypothesized that EI positively influences teacher-student relationships and is partially mediated by teacher interaction self-efficacy. Like the first model, the second model also proposed covariance between CQ and EI residual variances

(see Figure 2).

To further explore the relationships among these variables, an alternate pair of models was also evaluated. This second set is a simplified version of the first set and explored the direct effects of teacher EI, teacher CQ, on diverse class climate (see Figure 3) and teacher-student relationships (see Figure 4). Both teacher diversity self-efficacy and teacher interaction self-efficacy were removed from consideration. The first model of this simplified set proposed that CQ and EI will positively influence diverse classroom climates. The second model proposed that CQ and EI will positively influence teacher-student relationships with diverse groups of students. Both models propose EI and CQ covariance.

Model Variables

The models contain both observed and latent variables. The observed variables indicate the latent variables. The latent variables are teacher EI; teacher CQ; teacher interaction self-efficacy (ISE); and, the outcome variables, class climate (TMCI) and teacher-student relationships (STRS). Teacher EI and CQ are exogenous model variables. ISE and DSE are intermediate, endogenous variables, and TMCI and STRS are endogenous outcome variables. Teacher diversity self-efficacy (DSE) is an observed variable which functions as an intermediate, endogenous variable. All variables are outlined in Table 6.

For the observed variables, all four models parceled the items of each measurement tool into either a total scale score as with the TESCD or into validated subscale scores. The use of subscale scores instead of items has become widely used

(Bandalos & Finney, 2001). This was done so that the models could be overidentified. To be specific, responses to all eight items of the TESC D were combined to yield the one TESC D score to reflect the variable teacher diversity self-efficacy (DSE). Consequently, DSE was an observed variable instead of a latent variable.

The eight items of the QTI-SE were grouped into its two subscales: four items for the communion subscale (CSE) and four for the agency subscale (ASE). These two subscales represent the latent variable, teacher interaction self-efficacy (ISE). The latent variable, EI, is reflected by the four subscales of the WLEIS: self-awareness of emotion (SAE), other awareness of emotion (OAE), regulation of emotion (ROE), and use of emotion (UOE). Similarly, latent variable CQ was measured using the four CQS-SR subscales: cognitive CQ, (CogCQ), meta-cognitive CQ (MetaCQ), motivational CQ (MotCQ), and behavioral CQ (BehCQ).

For both class climate models, the outcome variable, class climate, was measured with the four TMCI-SF subscales of satisfaction (Satis), peer relations (Peer), and difficulty (Dif) and competition (Comp). Comp and Dif items were reversed coded to reflect a positive condition for class climate. Comp was later removed from the model due to poor loading onto the TMCI latent outcome variable.

For both teacher-student models, the outcome variable, teacher-student relationships was measured with the two STRS subscales of conflict (TSRCon) and closeness (TSRClose). Again, the conflict items were reversed coded to reflect a positive condition for teacher-student relationships.

Table 6*Latent Variables and Associated Observed Variables*

Latent Variable	Observed Variables
EI	Self-awareness of emotion (SAE) Other awareness of emotion (OAE) Regulation of emotion (ROE) Use of emotion (UOE)
CQ	Cognitive (CogCQ) Meta-cognitive (MetaCQ) Motivational (MotCQ) Behavioral (BehCQ)
ISE	Agency Self-Efficacy (ASE) Communion Self-Efficacy (CSE)
TMCI	Satisfaction (CCSatis) Peer relations (CCPeer) Difficulty (CCDif)
TSR	Closeness (TSRClose) Conflict (TSRCon)

Model Identification

All of the models in both sets are overidentified meaning that they have more observations than free parameters (Kline, 2016). Another way to express identification is that each model's degrees of freedom are greater than zero (Kline, 2016). A model's degrees of freedom are the difference between the number of observations and the number of parameters.

First, evaluating the full class climate model; it has 120 observations. This was calculated using the equation outlined by Kline (2016), $v(v+1)/2$ in which v = number of

observed variables. The full class climate model has 15 observed variables hence: $15(15 + 1)/2 = 120$. The full class climate model has only 40 parameters: 15 observation error terms, 14 loadings of observed variables onto latent variables, 6 additional pathways among the latent variables and DSE, 1 covariance between EI and CQ, and 4 latent variables. The resulting inequality between observations and parameters, $120 > 40$, indicates that the model is overidentified. The difference between parameters and observations for the full class climate model is 80, indicating that the model has 80 degrees of freedom: $df_M = 120 - 40 = 80$. That the class climate model's $df_M = 80$ is another way to express the model's overidentification since $80 > 0$.

The second full model with teacher-student relationships (TSR) as an outcome variable has 91 observations. This value was calculated using the same equation $v(v+1)/2$. The full TSR model has 13 observed variables so $13(13 + 1)/2 = 91$. The full TSR model has only 36 parameters: 13 observation error terms, 12 loadings of observed variables onto latent variables, 6 additional pathways among the latent variables and DSE, 1 covariance between EI and CQ, and 4 latent variables. The resulting inequality between observations and parameters, $91 > 36$, indicates that the model is overidentified. The difference between parameters and observations for the full TSR model is 55 indicating that the model has 55 degrees of freedom: $df_M = 91 - 36 = 55$. The full TSR model's $df_M = 55$ is another way to express the model's overidentification since $55 > 0$.

The simplified models were also overidentified. The simplified class climate model has 66 observations. With 11 observed variables, $v(v+1)/2 = 11(11+1)/2 = 66$. The simplified class climate model has 27 parameters: 11 loadings of observed variables onto

latent variables, 11 observation error terms, 3 latent variables, and 2 additional pathways among the latent variables. Again, the inequality between observations and parameters, $66 > 27$, indicates that the simplified class climate model is overidentified and that it has 39 degrees of freedom.

Likewise, the simplified TSR model has only 25 parameters: 10 observations error terms, 10 loadings, 2 latent pathways, and 3 latent variables. It has 55 observations, $v(v+1)/2 = 10(10+1)/2 = 55$. The inequality between observations and parameters, $55 > 25$ indicates that the model is overidentified and that the simplified TSR model has 30 degrees of freedom.

Data Analytic Approach

Having cleaned and evaluated the diverse data set, raw data were entered into MPLUS 8.6 for analysis using maximum likelihood estimation to evaluate the fit of the measurement and structural models for all four models: the two full models and the two simplified models. The measurement portion of the models were evaluated first (Anderson & Gerbing, 1988). Next, structural equation modeling (SEM) was used to explore the research questions. All reported output values were standardized values.

To test the fit of the model, Kline (2016) recommends using the following set of fit statistics including “a model test statistic and three approximate fit indexes:

1. Model chi-square with its degrees of freedom and p value.
2. Steiger-Lind Root Mean Square Error of Approximation (RMSEA: Steiger, 1990) and its 90% confidence interval.
3. Bentler Comparative Fit Index (CFI: Bentler, 1990)

4. Standardized Root Mean Square Residual (SRMR).” (p.269)

Hooper et al. (2008) recommend the following cutoffs for the mentioned indices. For the model chi-square they explain that the good model fit “provide[s] an insignificant result at a 0.05 threshold” (p. 53). They caution, however, that this fit index is especially sensitive to non-normally distributed data and often rejects the model if it has a large sample size. On the other hand, the model lacks power if using a small sample.

For RMSEA, Hooper et al. (2008) recommend a cut-off value of .06 - .07, and for CFI they recommend a CFI value greater than 0.95. Finally, for SRMR, Hooper et al. (2008) explain that an SRMR value of zero represents a perfectly fitting model, but that 0.05 is the recommended threshold. They also note, though, that SRMR values up to .08 have been considered acceptable.

After confirming a satisfactory fit for the measurement model, the structural models were added to the measurement model (Bollen, 1989) and fit was again evaluated. The models were then modified based on the previous model's result. Modifications were made only if they were consistent with supporting theory. Once reconfigured, the revised models were rerun and reevaluated. Theoretically supported modifications were made until fit indices were no longer improving or until there were no more modifications to be made.

Chapter Four

Although this study proposed two sets of structural equation models - one for the class climate outcome and one for TSRs – only the teacher-student relationship models were evaluated. Inadequate reliability for the class climate measure made the class climate models uninterpretable. Consequently, only teacher-student relationship model results are presented.

This results chapter begins with a description of data cleaning decisions. Next, measure reliabilities, AVE, and discriminant validity are presented along with the decisions that were made in consequence of those results. Finally, the teacher-student relationship SEM model results are presented.

Descriptive statistics were calculated to describe the sample characteristics and to eliminate any participants who did not meet the inclusion criteria. Next, the data were checked for univariate normality, outliers, and homoscedasticity. Zero-order correlations among the variables were then analyzed to preliminarily, assess the proposed relationships among the variables. Finally, composite reliability, average variance extracted (AVE), loadings, and discriminant validity coefficients were calculated for each of the six measures.

Data Cleaning

Data were initially cleaned with a check for missing data and recoding of items. There were no missing data because participants were unable to move onto the following item without responding to the present item. Variables that needed recoding were recoded

to include one STRS closeness item – "the students in my class are uncomfortable with physical affection or touch from me" – and two items from TMCI Peer relations scale – "students in the class do not argue with each other" and "students do not fight with each other." Additionally, class climate indicators, Comp and Dif, were both completely recoded because they measure negative aspects of class climate. All the subscales of the class climate composite should be expressed with the same valence. Finally, because diversity self-efficacy (DSE) used a 1-100 scale and the other measures used Likert scales of either 1-5 or 1- 7, DSE values were divided by ten to be closer in value to the other scale ranges.

Next, the data were checked for outliers, normality, homoscedasticity, collinearity, skewness, and kurtosis using SPSS. Cases were judged to be outliers if both Mahalanobis distance and Cook's values indicated such. The initial diverse data set was $n = 209$. At first, two cases (6 and 9) were eliminated. Then Mahalanobis distance and Cook's values were recalculated, leading to the elimination of cases 15 and 48 and resulting in a final sample size, $n = 205$. A visual evaluation of the normality curves supported these decisions.

For the class climate outcome model, a visual evaluation of a histogram with TMCI as the dependent variable and the regression standardized residual on the x axis indicated a normal distribution (see Figure 5). A visual inspection of the normal Q-Q plot of standardized residuals also indicated a normal distribution (see Figure 6). Likewise, a visual inspection of a STRS histogram (see Figure 7) and normal Q-Q plot (see Figure 8) of standardized residuals showed a normal distribution of data for the teacher-student

relationship model.

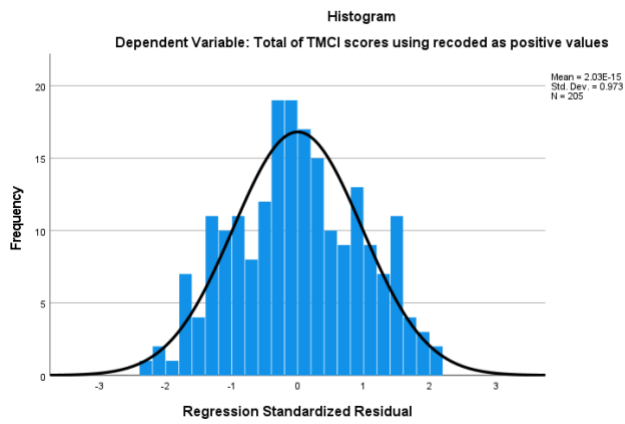


Figure 5

Normality Histogram for class climate model

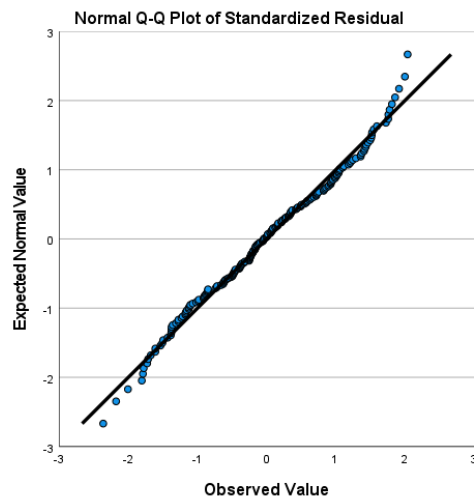


Figure 6

Normal Q-Q Plot for class climate model

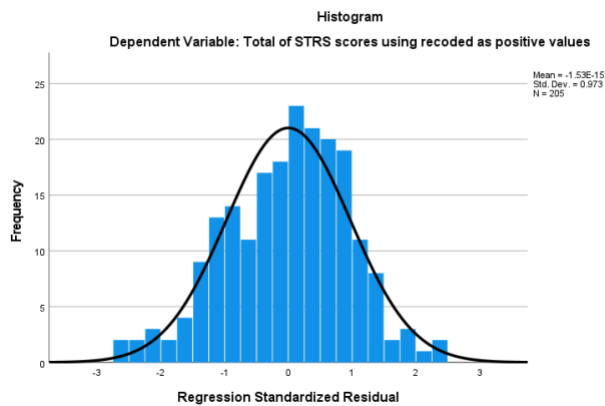


Figure 7

Normality Histogram for teacher-student relationship model

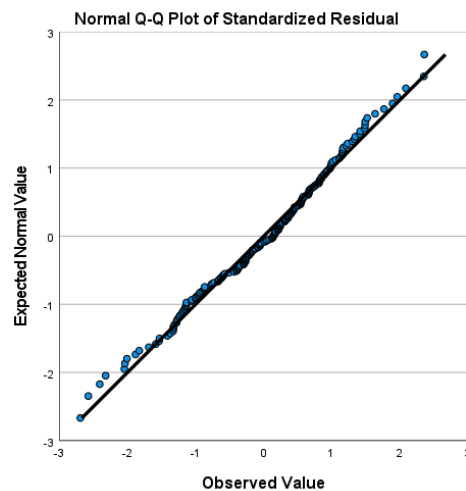


Figure 8

Normal Q-Q plot for teacher-student relationship model

Finally, visual inspections of scatterplots were conducted to evaluate homoscedasticity. Both models, class climate (see Figure 9) and teacher-student relationships (see Figure 10), exhibit homoscedasticity.

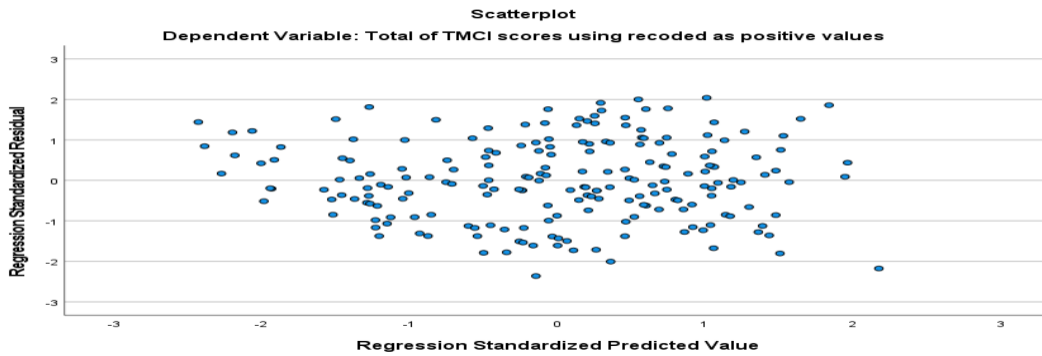


Figure 9

Class climate homoscedasticity scatterplot

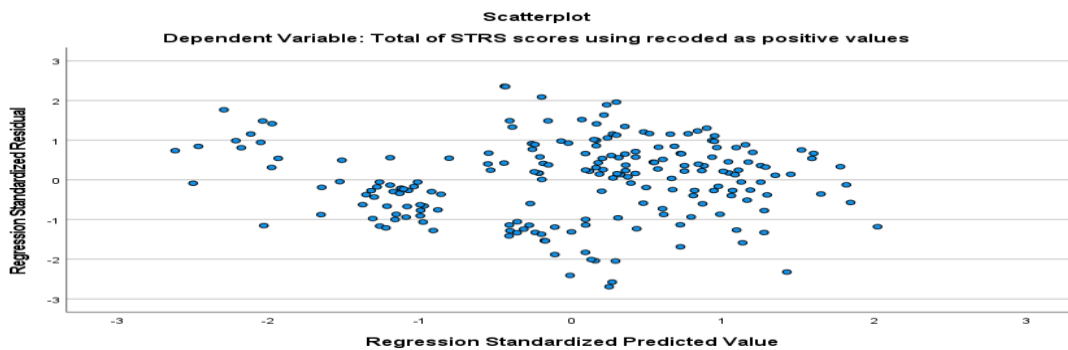


Figure 10

Teacher-Student Relationship Homoscedasticity Scatterplot

Tabachnick and Fidell (2007) advise that minimum tolerance values of .10 indicate and absence of collinearity. Similarly, Vittinghoff et al. (2012) found that VIF values less than ten indicates noncollinearity. All variables were greater than the minimum Tolerance and VIF values (see Table 7), demonstrating the absence of a collinearity problem.

Table 7*Collinearity Statistics*

Variable	Tolerance	VIF
DSE	.38	2.64
CSE	.46	1.18
ASE	.53	1.90
SEA	.38	2.63
OEA	.50	2.01
ROE	.45	2.22
UOE	.50	2.00
MetaCQ	.38	2.66
CogCQ	.55	2.81
MotCQ	.47	2.14
BehCQ	.61	1.65

Variable skew and kurtosis were evaluated (see Table 8). All variables' data were negatively skewed with the exception of the TMCI Comp scale, indicating that respondents generally rated themselves more favorably on all of the scales. This is not uncommon with the use of self-report surveys as respondents may respond in a way they deem to be socially desirable (Nederhof, 1985). An acceptable skewness value is between -2 and 2 (Osborne, 2013). All of the variables met this skew criterion. An acceptable

kurtosis value is between -10 and 10. Again all of the variables met this criterion.

Table 8

Skewness and Kurtosis Values

Variable	Skewness	Kurtosis
DSE	-.68	.10
CSE	-.92	1.10
ASE	-.90	.55
SEA	-1.07	1.23
OEA	-.99	.86
ROE	-.79	.23
UOE	-1.25	1.95
MetaCQ	-.73	.43
CogCQ	-.56	-.06
MotCQ	-.39	-.17
BehCQ	-.54	.13
TSRClose	-.72	-.14
TSRCon	-.29	-.99
CCSat	-.67	.55
CCPeer	-.44	.32
CCComp	.23	-.41
CCDif	-.53	-.55

Correlations

Two Pearson correlation matrices were analyzed to, preliminarily, assess the proposed relationships among the variables. For clarity and ease of consultation, one correlation matrix was developed for each of the two models. One table presents correlations for the class climate outcome (see Table 9), and the other presents correlations for the teacher-student relationship outcome (see Table 10).

With the exception of cognitive cultural intelligence (CogCQ), all of the indicator variables were positively correlated with each other and the intermediate variables in both models ($p < .001$). The greatest bivariate correlation, $r = .65$, is small enough to signify the absence of multi-collinearity (Allison, 1999). Again, for both outcome models, all bivariate correlations between CogCQ and exogenous variable, EI, and each of its indicators (SAE, OAE, ROE, and UOE) were nonsignificant. Similarly, all bivariate correlations between CogCQ and intermediate variable, ISE, and each of its indicators (CSE and ASE) were nonsignificant in both models.

Considering the class climate matrix exclusively, the correlations with the outcome variable, TMCI and its indicators (CCSatis, CCPeer, CCComp and CCDif) are mixed. All of the indicator variables correlate with TMCI ($p < .001$). Although BehCQ also correlates with TMCI, it has less significance ($p \leq .01$). CogCQ has a negative correlation with TMCI ($r = -.25$, $p < .001$) indicating an inverse relationship between the two variables. All of the other correlations with TMCI are positive. Again, the greatest bivariate correlation with TMCI, $r = .73$, indicates noncollinearity (Allison, 1999).

Although there are significant correlations between TMCI and the indicator

variables, not all indicator variables that load onto TMCI significantly correlate with the non-TMCI-loading indicators. As a reminder, the TMCI indicators are satisfaction (CCSatis), peer relations (CCPeer), competition (CCComp), and difficulty (CCDif). With the exception of CogCQ all other non-TMCI-loading indicators correlate with CCSatis ($p < .001$). With the exception of CogCQ and BehCQ, all other non-TMCI-loading indicators correlate with CCPeer ($p < .001$; MotCQ, $p \leq .01$). Finally, with the exception of BehCQ, all non-TMCI-loading indicators correlate with CCDIF ($p < .001$; MotCQ and UOE, $p \leq .01$). The CogCQ and CCDif correlation is negative indicating an inverse relationship.

Correlations among non-TMCI-loading indicators and CCComp are more mixed. CCComp is negatively correlated with ASE ($r = -.19, p < .001$), UOE ($r = -.14, p \leq .01$), MetaCog, ($r = -.21, p < .001$), CogCQ ($r = -.36, p < .001$), MotCQ ($r = -.23, p < .001$), and BehCQ ($r = -.25, p < .001$). There is no significant correlation between CCComp and CSE, SEA, OEA, and ROE.

As for intermediate, latent variables, only EI and ISE correlate with TMCI ($p < .001$). Latent, intermediate variable CQ does not correlate with latent, outcome variable TMCI. CQ was maintained in the model despite this lack of correlation because of the significant correlational relationships among TMCI and CQ indicators.

The teacher-student relationship (TSR) correlation matrix is more consistent. All indicator and intermediate variables correlated with TSR ($p < .001$). The CogCQ/TSR correlation was negative ($r = -.19, p < .001$) showing an inverse relationship between the two variables. As for the indicator variables loading onto TSR (TSRClose and TSR Con),

all non-TSR-loading indicators correlated with TSRClose ($p < .001$) with the exception of CogCQ. CogCQ negatively correlated with TSRCon ($r = -.24, p < .001$). With the exception of BehCQ, all other non-TSR loading indicators positively correlate with TSRCon ($p < .001$). Finally, TSRClose positively correlated with all of the intermediate, latent variables ($p < .001$), but TSRCon positively correlated with only ISE and EI. TSRCon did not correlate with CQ.

Table 9*Class climate: Means, Standard Deviations and Pearson Correlation Matrix*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Indicator																				
1. DSE	58.61	12.94	-																	
2. CSE	16.86	2.48	.65**	-																
3. ASE	16.01	2.94	.57**	.54**	-															
4. SEA	22.90	3.85	.58**	.55**	.51**	-														
5. OEA	22.32	3.80	.54**	.51**	.48**	.65**	-													
6. ROE	22.68	3.73	.56**	.48**	.57**	.63**	.50**	-												
7. UOE	22.09	4.15	.54**	.56**	.55**	.52**	.51**	.59**	-											
8. MetaCQ	21.74	3.68	.65**	.57**	.48**	.56**	.53**	.50**	.50**	-										
9. CogCQ	26.31	7.66	.24**	.05	.04	-.03	.06	.01	.11	.41**	-									
10. MotCQ	26.17	5.28	.55**	.38**	.36**	.43**	.37**	.41**	.39**	.57**	.48**	-								
11. BehCQ	25.61	5.16	.43**	.30**	.32**	.30**	.31**	.35**	.39**	.49**	.40**	.56**	-							
Observed Outcome																				
12. CSatis	24.32	3.51	.64**	.60**	.56**	.57**	.58**	.63**	.60**	.54**	.04	.44**	.39**	-						
13. CPeer	15.81	2.07	.34**	.30**	.20**	.25**	.28**	.32**	.21**	.27**	.07	.17*	.12	.38**	-					
14. CDif	16.79	4.59	.33**	.43**	.27**	.41**	.35**	.38**	.30*	.20**	.34**	.14*	.02	.38**	.12	-				
Latent																				
15. CQ	99.82	17.08	.55**	.35**	.33**	.33**	.35**	.35**	.40**	s	s	s	s	.39**	.18*	-.06	-	.43**	.39**	.19**
16. EI	90.00	12.77	.68**	.64**	.64**	s	s	s	s	.64**	.05	.48**	.41**	.72**	.32**	.44**		-	.73**	.68**
17. ISE	32.87	4.76	.69**	s	s	.60**	.56**	.60**	.63**	.59**	.05	.42**	.36**	.66**	.28**	.39**			-	.61**
18. CC	56.92	7.61	.58**	.62**	.47**	.58**	.56**	.60**	.52**	.45**	-.17*	.33**	.22*	s	s	s				-

Notes: s denotes that subscale loads onto latent variable** $p < .001$ * $p \leq .01$

Table 10*Teacher-Student relationships: Means, Standard Deviations and Pearson Correlation Matrix*

Variable Indicator	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. DSE	58.61	12.94	-																
2. CSE	16.86	2.48	.65**	-															
3. ASE	16.01	2.94	.57**	.54**	-														
4. SAE	22.90	3.85	.58**	.55**	.51**	-													
5. OAE	22.32	3.80	.54**	.51**	.48**	.65**	-												
6. ROE	22.68	3.73	.56**	.48**	.57**	.63**	.50**	-											
7. UOE	22.09	4.15	.54**	.56**	.55**	.52**	.51**	.59**	-										
8. MetaCQ	21.74	3.68	.65**	.57**	.48**	.56**	.53**	.50**	.50**	-									
9. CogCQ	26.31	7.66	.24**	.05	.04	-.03	.06	.01	.11	.41**	-								
10. MotCQ	26.17	5.28	.55**	.38**	.36**	.43**	.37**	.41**	.39**	.57**	.48**	-							
11. BehCQ	25.61	5.16	.43**	.30**	.32**	.30**	.31**	.35**	.39**	.49**	.40**	.56**	-						
Observed Outcome																			
12. TSRClose	33.46	5.27	.58**	.63**	.54**	.64**	.61**	.62**	.59**	.46**	-.08	.40**	.33**	-					
13. TSRCon	24.01	6.60	.38**	.45**	.29**	.47**	.36**	.39**	.31**	.29**	-.24**	.21**	.08	.59**	-				
Latent																			
14. ISE	32.87	4.76	.69**	s	s	.60**	.56**	.60**	.63**	.59**	.05	.42**	.36**	.66**	.41**	-			
15. CQ	99.82	17.08	.55**	.35**	.33**	.33**	.35**	.35**	.40**	s	s	s	s	.28**	.04	.39**	-		
16. EI	90.00	12.77	.68**	.64**	.64**	s	s	s	s	.64**	.05	.48**	.41**	.75**	.46**	.73**	.43**	-	
17. TSR	57.47	10.61	.53**	.59**	.45**	.61**	.53**	.55**	.49**	.41**	-.19**	.33**	.21**	s	s	.59**	.17*	.66**	-

Notes: s denotes that subscale loads onto latent variable

** $p < .001$, * $p \leq .01$

Measure Reliability, Average Variance Extracted, and Validity

Scale composite reliability, average variance extracted (AVE), and discriminant validity were calculated for each of the six measures in each of the models (see Table 11). Analysis of this measure evaluation led to elimination of TMCI as an outcome variable. It also raised questions about relationship of CQ to the other model variables.

With the exception of TMCI, all of the indicators had acceptable composite reliability values for both outcome models. Both ISE and WLEIS demonstrated acceptable AVE for both the class climate and teacher-student relationship outcome variables, as did the outcome measure, STRS. CQS did not meet the .50 threshold for either outcome variable. TMCI also did not have acceptable AVE.

Finally, important for later discussion, discriminant validity results were mixed between and within different outcomes. CQS exhibited discriminant validity from all other variables with the exception of TMCI. CQS did not exhibit discriminant validity from TMCI. With the exception of their relationship to CQS none of the other measures had discriminant validity from each other.

Table 11

Full Model Measures Loadings, Reliability, AVE, and Discriminant Validity

Measure/ Outcome	Loadings	Composite Reliability	Average Variance Extracted	Discriminant Validity				
				QTI-SE	WLEIS	CQS	TMCI	STRS
QTI-SE								
Class climate	ASE: .72 > .40 CSE: .75 > .40	.70 = .70	.54 > .50	$\sqrt[3]{.54} =$.73	.73 $\neq$ EI <i>r</i> of .94	.73 = CQ <i>r</i> of .73 *	.73 $\neq$ TMCI <i>r</i> of .93	-
Teacher- student relationship	ASE .70> .40 CSE .76> .40	.70 = .70	.53 > .50	$\sqrt[3]{.53} =$.73	.73 $\neq$ EI <i>r</i> of .94	.73 = CQ <i>r</i> of .73 *	-	.73 $\neq$ STRS <i>r</i> of .83

Measure/ Outcome	Loadings	Composite Reliability	Average Variance Extracted	QTI-SE	Discriminant Validity			
					WLEIS	CQS	TMCI	STRS
WLEIS								
Class climate	SEA: .78 > .40 OEA: .73 > .40 ROE: .77 > .40 UOE: .74 > .40	.84 > .70	.57 > .50	.75 $\geq$ QTI – SE r of .94	$\sqrt[3]{.57} = .75$	.75 > CQ r of .73 *	.75 $\geq$ TMCI r of .93	-
Teacher- student relationship	SEA: .78 > .40 OEA: .74 > .40 ROE: .76 > .40 UOE: .73 > .40	.84 > .70	.57 > .50	.75 $\geq$ QTI – SE r of .94	$\sqrt[3]{.57} = .75$	.75 > CQ r of .73 *	-	.75 $\geq$ STRS r of .85
CQS								
Class climate	MC: .75 > .40 CC: .47 > .40 MCC: .83 > .40 BC: .66 > .40	.72 > .70	.39 $\geq$.50	.62 $\geq$ QTI-SE r of .73	.62 $\geq$ EI r of .73	$\sqrt[2]{.39} = .62$ r of .66	.62 $\geq$ TMCI r of .66	-
Teacher- student relationship	MC: .74 > .40 CC: .47 > .40 MCC: .83 > .40 BC: .65 > .40	.71 > .70	.39 $\geq$.50	.62 $\geq$ QTI-SE r of .73	.62 $\geq$ EI r of .73	$\sqrt[2]{.39} = .62$	-	.62 > STRS r of .50*
TMCI								
Class climate	SAT: .85 > .40 DIF: .47 > .40 PR: .40 > .40 CMP: .12 $\geq$.40 **	.53 $\geq$.70*	.33 $\geq$.50	.57 $\geq$ QTI – SE r of .93	.57 $\geq$ EI r of .93	.57 $\geq$ CQ r of .66	$\sqrt[2]{.33} = .57$	-
STRS								
Teacher- student relationship	CLOS: .96 > .40 CONF: .61 > .40	.74 > .70	.59 > .50	.77 $\geq$ QTI – SE r of .83	.77 $\geq$ EI r of .85	.77 > CQ r of .50 *	-	$\sqrt[2]{.59} = .77$

Note: * = discriminant validity ** = inadequate loading

The loading of each item on each latent variable was also evaluated. Ford et al. (1986) advise that each loading should be greater than .40 to be considered a meaningful contributor to the latent variable. With the exception of Comp's loading on TMCI, all subscale loadings were significant and greater than .40 ($p \leq .001$). Comp's loading on TMCI was nonsignificant.

As a result, Comp was further evaluated and subsequently dropped as an indicator of TMCI. Eliminating Comp is theoretically defensible. Although a component of class climate (Sink & Spencer, 2007), class competitiveness is more dependent on student characteristics than teacher capacities. It is the students who are competitive. All of the other variables in the model are teacher level variables. Although not considered before developing the models, it came as no surprise that Comp does not load onto class climate in this model.

Loadings, reliabilities, validities, and average variance extracted (AVE) were recalculated without Comp (see Table 12). ISE, WLEIS, and CQS reliabilities, validities, and AVE remained the same as when Comp was part of the measurement model. ISE, WLEIS, and CQS indicator loadings also all remained greater than the .40 threshold as proscribed by Ford et al. (1986).

TMCI composite reliability, AVE and composite reliabilities all improved with the elimination of COMP (Table Q), but none of these recalculated values met the requisite thresholds (see Table Q). Moreover, the elimination of COMP as an indicator had only mild effects on the loading of the other three TMCI indicators (SAT, DIF, PR).

CQS also had inadequate AVE and discriminant validity in the full model set.

Nevertheless, CQS was retained as a measure because it did have discriminant validity from STRS, the measure for the teacher-student relationship outcome. Another reason for its retention is that overlap with EI is expected. Additionally, its bivariate correlations with EI and ISE were acceptable values: EI ($r = .43, p < .001$); ISE ($r = .39, p < .001$).

Table 12

TMCI Loadings Reliabilities, AVEs, and Discriminant Validities With & Without COMP

Measure/ Outcome	Loadings	Composite Reliability	Average Variance Extracted	QTI-SE	Discriminant Validity		
					WLEIS	CQS	TMCI
TMCI with COMP							
Class	SAT: .	.53 $\nless .70^*$	.33 $\nless .50$	.57 $\nless$	.57 $\nless$	.57 $\nless$	$\sqrt[3]{.33} =$
climate	.85 $> .40$			QTI –	EI r of	CQ r of	.57
	DIF: .			SE r of .93	.93	.66	
	.47 $> .40$						
	PR: .						
	.40 $> .40$						
	COMP: .12						
	$\nless .40^{**}$						
TMCI without COMP							
Class	SAT: .	.60 $\nless$	.38 $\nless .50$	.62 $\nless$	.62 $\nless$	.62 $\nless$	$\sqrt[3]{.38} =$
climate	.84 $> .40$	.70*		QTI –	EI r of	CQ r of	.62
	DIF: .			SE r of .94	.93	.65	
	.48 $> .40$						
	PR: .						
	.40 = .40**						

*Note: * = inadequate composite reliability ** = inadequate loading*

Measure reliabilities, AVEs, and discriminant validities were also calculated for the simplified models (see Table 13). Unfortunately, the elimination of self-efficacy in the simplified models did not improve TMCI's reliability, AVE, and discriminate validity. Again, TMCI did not meet the required thresholds to indicate that it was a sound measure. The persistent unreliability of TMCI rendered the class climate models

uninterpretable (Fornell & Larcker, 1981). Consequently, the full and simplified class climate models were not further evaluated.

The elimination of self-efficacy from the models did, however, improve CQS composite reliability, AVE and discriminant validities within acceptable values (Table 12). Of concern, CogCQ's loading onto CQ fell below the $> .40$ threshold in the teacher-student relationship ($.39 \nless .40$). Nevertheless, CogCQ was maintained as an indicator of CQ in the model because of its theoretical importance to the CQ construct.

Table 13

Simple Models Measures Loadings, Reliabilities,, AVE, and Discriminant Validity

Measure/ Outcome	Loadings	Composite Reliability	Average Variance Extracted	Discriminant Validity			
				WLEIS	CQS	TMCI	STRS
WLEIS							
Class climate	SEA:	.92 > .70	.74 > .50	$\sqrt[3]{.74} =$	.86 >	.86 $\nless$	-
	.78 > .40			.86	CQ r of	TMCI r	
	OEA: .				.71 *	of .92	
	.74 > .40						
	ROE:						
	.78 > .40						
Teacher- student relationship	UOE:						
	.72 > .40						
	SEA:	.84 > .70	.76 > .50	$\sqrt[3]{.76} =$	.87 >	-	.87 $\nless$
	.86 > .40			.87	CQ r of		STRS r
	OEA:				.75 *		of .91
	.75 > .40						
Class climate	ROE:						
	.81 > .40						
	UOE:						
	.78 > .40						
	CQS						
	Class climate	MC:.77 >.40	.93 > .70	.78 > .50	.88 > EI r	$\sqrt[3]{.78} =$	.88 $\nless$
Class climate	CC:			of .71 *	.88	TMCI r	
	.48 > .40					of .92	
	MCC:						
	.80 > .40						
	BC: .67 > .40						

Teacher-student relationship	MC: .66 > .40 CC: .39 $\geq$.40 MCC: .86 > .40 BC: .65 > .40	.71 > .70	.78 > .50	.88 > <i>El r</i> of .75	$\sqrt[2]{.78} = .88$	-	.88 > STRS <i>r</i> of .74
TMCI							
Class climate	SAT: .86 > .40 DIF: .46 > .40 PR: .41 > .40	.60 $\nless$.70*	.38 $\nless$.50	.62 $\nless$ <i>El r</i> of .92	.62 $\nless$ <i>CQ r</i> of .64	$\sqrt[2]{.38} = .62$	-
STRS							
Teacher-student relationship	CLOS: .84 > .40 CONF: .71 > .40	.74 > .70	.81 > .50	.90 $\nless$ <i>El r</i> of .91	.90 > <i>CQ r</i> of .74 *	-	$\sqrt[2]{.81} = .90$

Note: * = discriminant validity ** = inadequate loading

A final measure evaluation was conducted to further understand the relationship between the EI and CQ measures (see Table 14).

Table 14*EI with CQ Measure: Loadings, Reliabilities, AVE, and Discriminant Validity*

<u>Measure</u>	<u>Loadings</u>	<u>Composite Reliability</u>	<u>Average Variance Extracted</u>	<u>Discriminant Validity</u>
WLEIS	SEA: .82 > .40 OEA: .74 > .40 ROE: .76 > .40 UOE: .70 > .40	.92 > .70	.74 > .50	$\sqrt[2]{.74} = .86$ * .86 > CQ r of .71
CQS	MC: .77 > .40 CC: .49 > .40 MCC: .80 > .40 BC: .67 > .40	.93 > .70	.78 > .50	$\sqrt[2]{.78} = .88$ * .88 > EI r of .71

*Note: * = discriminant validity***Structural Equation Modelling**

This study proposed two sets of structural equation models that hypothesized relationships between and among teacher cultural intelligence, emotional intelligence, diversity self-efficacy, interaction self-efficacy, teacher-student relationships, and classroom environment. The first model set contained two models which are the same with the exception of the outcome variables: one for class climate and the second for TSRs. Both models of this set proposed two primary pathways. The first pathway

indicated that CQ influences diverse, classroom climate or TSRs directly and indirectly as mediated by diversity self-efficacy. The second pathway was that EI influences diverse, classroom climate and TSRs directly and indirectly as mediated by interaction self-efficacy. Covariances between CQ and EI and between the disturbances in interaction and diversity self-efficacy beliefs are also proposed.

A second set of structural equation models were also proposed to explore the direct relationships between teacher CQ, EI and the outcomes without the influence of self-efficacy. The first model was expected to provide insight into the direct effect of teacher CQ on the establishment of positive, diverse classroom environments. The second model was expected to provide insight into the direct effect of teacher EI in the establishment of positive, teacher-student relationships.

Although two sets of models were proposed, only the teacher-student relationship models were evaluated. The class climate measure's inadequate reliability, AVE and discriminant validity rendered the class environment models uninterpretable (Fornell & Larcker, 1981).

The remaining models proposed effects on teacher-student relationships only. The first model proposed influence of teacher EI, teacher CQ, diversity self-efficacy and interaction self-efficacy influence on creation of positive teacher-student relationships. This first model was referred to as the full model.

A second SEM model was also tested as an alternative to the proposed model. This second model was referred to as the simplified model. This simplified model does not include any self-efficacy variables as the full model did. This

model proposed that EI and CQ both directly influence teacher-student relationships with diverse student groups.

Full Teacher-Student Relationship (STRS) Model

Per SEM protocol, the measurement model was evaluated first. As necessitated by the measures themselves, interaction self-efficacy (ISE) was indicated by communion self-efficacy (CSE) and agency-efficacy (ASE). EI was indicated by use of emotion (UOE), self-awareness of emotion (SAE), awareness of others' emotions (OAE), and regulation of emotion (ROE). CQ was indicated by behavioral CQ (BehCQ), Meta-cognitive CQ (MetaCQ), cognitive CQ (CogCQ), and motivational CQ (MotCQ). Finally, teacher-student relationships were indicated by STRS subscales for closeness (CLOS) and conflict (CONF).

Both the comparative fit index, $CFI = .91$ and $SRMR = .074$ indicate a good fit. Although, Mplus suggested modifications, they were not considered to maintain the integrity of the measure without modifications (see Table 15).

Table 15*Measurement Model Results*

Latent Variable	Indicator	Estimate	S.E.	Residual Variance	Residual Variance S.E.
ISE by	ASE	.72**	.043	.48**	.062
	CSE	.75**	.041	.44**	.062
EI by	UOE	.74**	.037	.45**	.054
	SEA	.80**	.034	.39**	.052
	OEA	.73**	.038	.47**	.055
	ROE	.77**	.034	.41**	.052
CQ by	Cog	.47**	.064	.77**	.061
	Meta	.82**	.041	.32**	.068
	Mot	.75**	.046	.43**	.069
	Beh	.66**	.051	.57**	.067
STRS by	Clos	.93**	.061	.14**	.113
	Conf	.41**	.064	.83**	.053

Note: ** $p < .001$

Next the structural model was added to the final measurement model. As hypothesized STRS was regressed on DSE, ISE, CQ, EI; DSE on CQ; and ISE on EI (see Table 16). A CQ with EI covariance was also entered into the model.

Goodness-of-fit indices indicated differing fit. Both the Comparative fit index, CFI = .90, and standardized root mean-square residual, SRMR = .07 indicated a good fit model. However, root mean-square error of approximation, RMSEA = .11 and chi-square χ^2 , = 198.16, DF = 59, $p < .001$, both indicate an inadequately fitting model.

Table 16*First Full Model Results*

Latent Variable	Indicator	Estimate	S.E.	Residual Variance	Residual Variance S.E.
Measurement Model					
DSE				.34**	.052
ISE <i>by</i>	ASE	.72**	.042	.48**	.061
	CSE	.75**	.041	.44**	.061
EI <i>by</i>	UOE	.74**	.036	.46**	.053
	SEA	.77**	.034	.41**	.052
	OEA	.72**	.037	.47**	.054
	ROE	.76**	.034	.42**	.051
CQ <i>by</i>	CogCQ	.38**	.067	.85**	.052
	MetaCQ	.82**	.030	.32**	.050
	MotCQ	.71**	.042	.50**	.059
	BehCQ	.60**	.051	.64**	.061
STRS <i>by</i>	Clos	.91**	.059	.18	.106
	Conf	.42**	.063	.83**	.052
Structural Model					
<u>Regression Slopes</u>					
STRS <i>on</i>	DSE	.19	.106		
	ISE	.15	.658		
	CQ	-.13	.169		
	EI	.69	.681		
DSE <i>on</i>	CQ	.81**	.032		
ISE <i>on</i>	EI	.97**	.038		
<u>Covariances</u>					
CQ <i>with</i>	EI	.84**	.035		

Note: ** $p \leq .001$, * $p \leq .01$

Mplus suggested modifications were considered, and theoretically reasonable modifications were entered one at a time. Five modifications were made (see Table 17)

before the final model results indicated there were no more meaningful modifications. Theoretical justifications are outlined in Table 18, and final full model results are presented in Table 19 and Figure 11.

Table 17

Model Modifications, Goodness-of-fit and Structural Model Regression Slope Changes

Model	Modification	Δ regression slopes p values	χ^2	CFI	RMSEA	SRMR
1	Initial Model		198.16, DF = 59, $p < .001$	.90	.107	.072
2	EI on CogCQ **		124.54, DF = 58, $p < .001$	.95	.075	.049
3	DSE with ISE**		111.62, DF = 57, $p < .001$	.96	.068	.049
4	DSE on CogCQ**	DSE with ISE $p < .01$	88.49, DF = 56, $p < .01$	.98	.053	.046
5	OEA with SEA*		78.21, DF = 55, $p < .05$	.98	.045	.035
6	MetaCQ on SEA**	DSE with ISE nonsignificant	68.23, DF = 54, $p \not< .05$	.99	.036	.029

Note: ** $p \leq .001$, * $p \leq .01$

Table 18*Modification Justifications*

Model	Modification	Justification
1	Initial	
2	EI on CogCQ **	Teacher EI influenced by her cultural knowledge.
3	DSE with ISE**	Possible shared self-efficacy residual covariance. (Cole et al., 2007).
4	DSE on CogCQ	CogCQ great residual variance may have its own effect on diversity self-efficacy. ($\sigma = .85$)
5	OEA with SEA*	Consistent with EI's hierarchical structure. OEA builds upon on SEA. (Cole et al., 2007).
6	MetaCQ on SEA**	When in diverse settings, teacher awareness of her own emotion may depend on her ability to think about cultural differences.

Table 19*Final Full Model Results*

Latent Variable	Indicator	Estimate	S.E.	Residual Variance	Residual Variance S.E.	R^2
Measurement Model						
DSE				.33**	.051	.67
ISE by	ASE	.71**	.042	.49**	.060	.51
	CSE	.75**	.040	.43**	.060	.57
EI by	UOE	.74**	.037	.46**	.054	.54
	SEA	.75**	.035	.43**	.053	.57

	OEA	.69**	.041	.52**	.057	.48
	ROE	.77**	.033	.40**	.051	.60
CQ by	CogCQ	.63**	.055	.60**	.069	.40
	MetaCQ	.68**	.049	.35**	.044	.65
	MotCQ	.74**	.035	.54**	.062	.55
	BehCQ	.63**	.046	.61**	.058	.39
STRS by	Clos	.92**	.058	.15	.106	.85
	Conf	.41**	.063	.83**	.053	.17
Structural Model						
<u>Regression Slopes</u>						
STRS on	DSE	.12	.28			
	ISE	.04	.94			
	CQ	-.03	.13			
	EI	.76	.80			
ISE on	EI	.97**	.04			
DSE on	CQ	1.01**	.06			
EI on	CogCQ	-.70**	.09			
DSE on	CogCQ	-.40**	.08			
MetaCQ on	SEA	.19**	.06			
<u>Covariances</u>						
CQ with	EI	.96**	.02			
DSE with	ISE	.72	.40			
OEA with	SEA	.28**	.07			

Note: ** $p \leq .001$, * $p \leq .01$

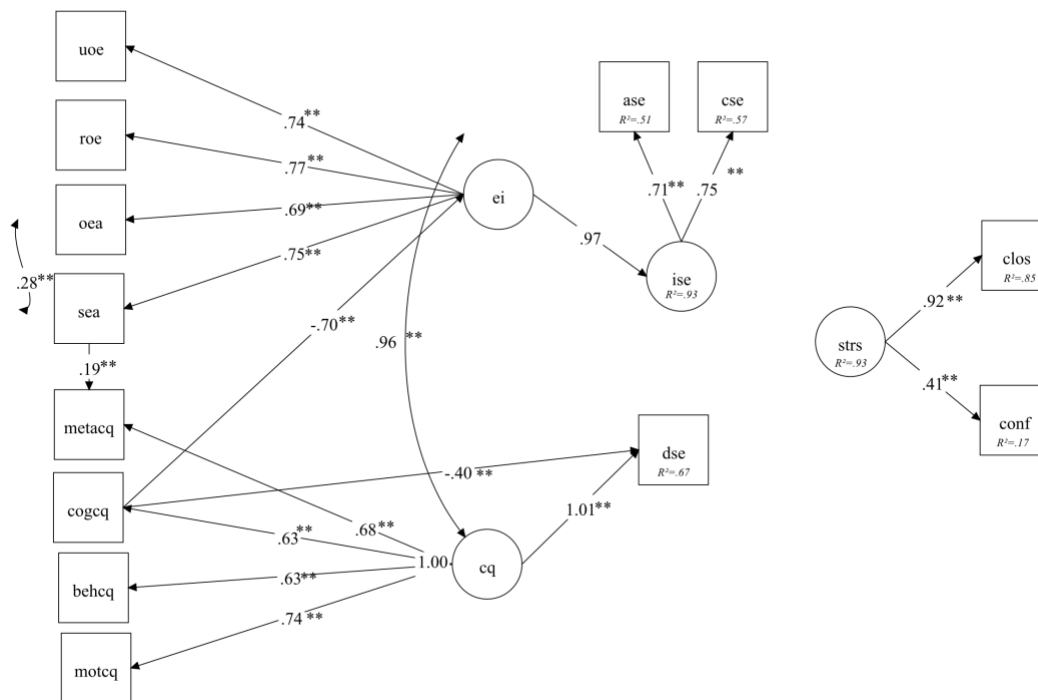


Figure 11

Significant Relationships of Full, Teacher-Student Relationships SEM Model (n = 205)

Notes: This figure shows the significant pathways of the full teacher-student relationship model. UOE: use of emotion, ROE: regulation of emotion, OEA: others' emotion awareness, SEA: self emotion awareness, MetaCQ: cultural metacognition, CogCQ: cultural knowledge, BehCQ: cultural behavior, MotCQ: cultural motivation, EI: emotional intelligence, CQ: cultural intelligence, ISE: interaction self-efficacy, ASE: agency self-efficacy, CSE: communion self-efficacy, DSE: diversity self-efficacy, STRS: teacher-student relationships, Clos: closeness, Conf: conflict.

** $p \leq .001$, * $p \leq .01$; Fit indices: chi-square = 68.23; DF = 54; comparative-fit index (CFI) = .99; standardized root mean-square residual (SRMR) = .029; root mean-square error of approximation (RMSEA) = .036. ISE $R^2 = .93$; STRS $R^2 = .76$.

Simplified Teacher-Student Relationship (STRS) Model

A simplified SEM model was also tested as an alternative to the proposed full model. This simplified model did not include any self-efficacy variables as the full model

did. This model proposed that EI and CQ both directly influence teacher-student relationships with diverse student groups.

Also like the full model, EI is measured by WLEIS subscales, SAE, OAE, ROE, and UOE. CQ is measured by CQS subscales, CogCQ, MetaCQ, BehCQ, and MotCQ. Teacher-student relationships are measured by STRS subscales, Clos and Conf.

The initial model proposed that STRS is directly influenced by CQ and EI. No self-efficacy variables were included (see Table 20). The model did not fit the data as indicated by all goodness-of-fit indices. Fit indices values were: chi-square= 149.53; DF = 32, $p < .001$; comparative-fit index (CFI) = .88; standardized root mean-square residual (SRMR) = .13; root mean-square error of approximation (RMSEA) = .09.

Table 20*First Simplified Model Results*

Latent Variable	Indicator	Estimate	S.E.	Residual Variance	Residual Variance S.E.
Measurement Model					
EI by	UOE	.71**	.039	.49**	.056
	SEA	.80**	.031	.35**	.050
	OEA	.74**	.036	.45**	.054
	ROE	.76**	.035	.42**	.053
CQ by	CogCQ	.49**	.063	.76**	.062
	MetaCQ	.80**	.043	.36**	.069
	MotCQ	.77**	.044	.41**	.068
	BehCQ	.67**	.049	.56**	.066
STRS by	Clos	.97**	.039	.06	.076
	Conf	.61**	.050	.62**	.061
Structural Model					
<u>Regression Slopes</u>					
STRS on	CQ	-.21	.102		
	EI	.99**	.095		
<u>Covariances</u>					
CQ with	EI	.71**	.055		

Note: ** $p \leq .001$

Mplus suggested modifications were considered, and theoretically reasonable modifications were entered one at a time. Three modifications were made (see Table 21) before the final model results indicated there were no more meaningful modifications. Theoretical justifications for the modification are presented in Table 22, and the final simplified model results are shown in Table 23 and Figure 12.

Table 21

Simplified Model Modifications and Associated goodness-of-fit and Structural Model Regression Slope Changes

Model	Modification	Δ regression slopes <i>p</i> values	χ^2	CFI	RMSEA	SRMR
1	Initial Model		149.53; DF = 32, $p < .001$	.88	.134	.095
2	CogCQ with EI**		70.79, DF = 31 p < .001	.96	.079	.047
3	MetaCQ with EI**		61.44, DF = 30 p < .001	.97	.072	.041
4	Conf with CogCQ**		48.85, DF = 29 p < .001	.98	.058	.033

Note: ** $p \leq .001$

Table 22*Modification Justifications*

Model	Modification	Justification
1	Initial	
2	CogCQ with EI**	Teacher EI influenced by her cultural knowledge. CogCQ with great residual variance, so allowed residuals to covary. The omission of theoretically justifiable correlated residuals could lead to inaccurate results (Cole et al., 2007).
3	MetaCQ with EI**	Teacher EI influenced by her ability to think about cultural differences. The omission of theoretically justifiable correlated residuals could lead to inaccurate results (Cole et al., 2007).
4	Conf with CogCQ**	Due to large CogCQ residual variance ($\sigma = .76$) and Conf residual variance ($\sigma = .62$), allowed residuals to covary. The omission of theoretically justifiable correlated residuals could lead to inaccurate results (Cole et al., 2007).

Table 23*Final Simplified Model Results*

Latent Variable	Indicator	Estimate	S.E.	Residual Variance	Residual Variance S.E.	R^2
Measurement Model						
EI by	UOE	.70**	.040	.51**	.056	.49
	SEA	.82**	.029	.33**	.047	.67
	OEA	.74**	.036	.45**	.053	.55
	ROE	.76**	.034	.42**	.052	.58
CQ by	CogCQ	.58*	.055	.66**	.064	.34
	MetaCQ	.71**	.047	.49**	.067	.51
	MotCQ	.82**	.038	.33**	.061	.67
	BehCQ	.67**	.046	.55**	.062	.45
STRS by	Clos	.96**	.037	.09**	.061	.91
	Conf	.62**	.050	.27**	.068	.38
Structural Model						
<u>Regression Slopes</u>						
STRS on	CQ	-.15	.082			
	EI	.94**	.070			
<u>Covariances</u>						
CogCQ with	EI	-.44**	.054			
MetaCQ with	EI	.28**	.078			
Conf with	CogCQ	-.24**	.064			

** $p \leq .001$

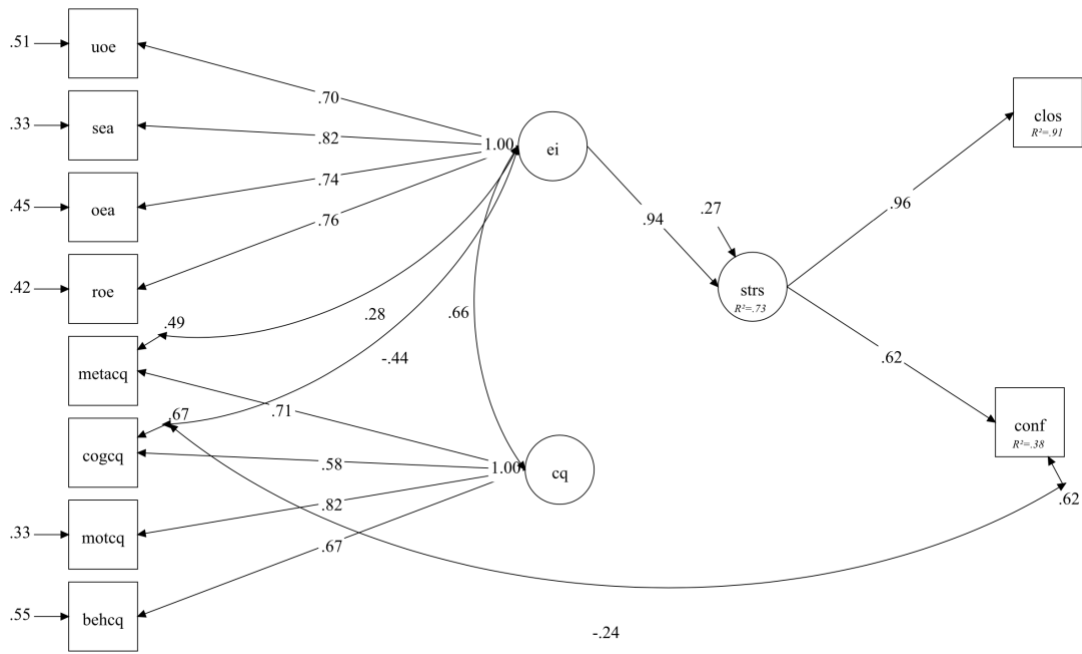


Figure 12

Significant Relationships of Simplified Teacher-Student Relationships SEM Model (n = 205)

Notes: This figure shows the significant pathways of the simplified teacher-student relationship model. UOE: use of emotion, ROE: regulation of emotion, OEA: others' emotion awareness, SEA: self emotion awareness, MetaCQ: cultural metacognition, CogCQ: cultural knowledge, BehCQ: cultural behavior, MotCQ: cultural motivation, EI: emotional intelligence, CQ: cultural intelligence, STRS: teacher-student relationships, Clos: closeness, Conf: conflict.

** $p \leq .001$, * $p \leq .01$; Fit indices: chi-square = 48.85; DF = 29 $p < .001$; comparative-fit index (CFI) = .98; standardized root mean-square residual (SRMR) = .03; root mean-square error of approximation (RMSEA) = .06. STRS: $R^2 = .73$

Chapter Five

The teacher-student social-emotional dynamic is essential to student learning and development. However, its benefits can be blunted by cultural differences between students and their teachers. To understand the factors that may influence this dynamic, the current study proposed two sets of structural equation models. The full model set explored the relationships between and among teacher emotional intelligence (EI), teacher cultural intelligence (CQ), teacher diversity self-efficacy, teacher interaction self-efficacy, and diverse class climate or diverse teacher-student relationships. The simplified model set did not include the self-efficacy variables. It explored the direct influence of teacher emotional and cultural intelligences on diverse class climate and diverse teacher-student relationships.

Rendering the full class climate models uninterpretable, the class climate measure (TMCI) did not meet acceptable composite reliability, average variance extracted (AVE), or discriminant validity standards (Farrell, 2010). TMCI's lack of fidelity applied to both the full and simplified models. Consequently, only the teacher-student relationship models were analyzed.

The full and simplified TSR models provided initial insight into the relationships among the latent variables and their related subscales. Although they yielded scant evidence of EI and CQ effects on diverse TSRs, they did highlight the importance of cultural knowledge. Not only did cultural knowledge influence teacher perceived teacher-student conflict, it also influenced teacher EI and self-efficacy beliefs.

Model Insights

The models' complexity allowed for insight into three sets of variable relationships corresponding to this study's three research questions and consequent hypothesis. First, variable direct effects on TSRs were explored. Second, insight was rendered on the variables influencing teacher diversity self-efficacy and interaction self-efficacy. Finally, an initial exploration into the relationship between EI and CQ and among their subscales was provided.

Effects on Teacher-student Relationships

Overall, the models' coefficients of determination (R^2) provided insight into how much of the variance in TSRs was explained by the models. They indicate how much influence the exogenous variables (EI, CQ, ISE, and DSE) had on the endogenous variables (ISE, DSE, and TSR). ISE and DSE are both exogenous and endogenous variables as they were hypothesized to mediate the effects of EI and CQ as well as have their own direct effects on TSRs.

The coefficient of determination for TSRs ($R^2 = .76$) in the full model indicated that 76% of the variance in teacher-student relationships with diverse student groups was explained by the effects of teacher EI, CQ, ISE, and DSE. TSR's remaining variance of 24% is explained by variables outside of the model. The simplified model explained a comparable proportion of TSR variance ($R^2 = .73$). In the simplified model, teacher EI and CQ accounted for 73% of TSR variance leaving 27% of its variance unaccounted for by the model.

With regard to the specific influence of the exogenous variables on TSRs,

simplified model results initially indicated that EI – not CQ – influenced teacher ability to develop supportive relationships with students whose cultures differed from their own. Teachers with greater EI are more effective at establishing positive teacher-student relationships with diverse student groups. This relationship between teacher EI and the outcome variables is consistent with earlier research connecting teacher EI to student outcomes (Nizielski et al., 2012).

Although the CQ latent variable did not directly influence the outcome, modifications allowing relationships among the latent variable subscales revealed that cultural knowledge (CogCQ) had its own association with diverse TSRs. CogCQ residuals had an independent, inverse relationship with the residuals of the TSR conflict subscale (simplified model). Confirming the effect, the TSR conflict residual changed from .62 to .27, and the CogCQ residual changed from .76 to .66 once the two subscales were allowed to covary.

Although these residual covariances indicate relationships between cultural knowledge and conflict in teacher-student relationships, the nature of the relationships is opaque because the residuals are unobserved variables in the model. What we can conclude is that some part of cultural knowledge is related to some parts of teacher-student relationship conflict. The greater a teacher's cultural knowledge, the less conflict she perceived in her teacher-student relationships.

Self-efficacy Effects on Teacher-student Relationships. Teacher efficacy for diversity and interaction self-efficacy were included in the full model. It was hypothesized that they would positively affect diverse teacher-student relationships and

mediate the effects of their corresponding intelligence. Teachers who believed that they were able to interact effectively with diverse student groups would have more positive teacher-student relationships.

The presence of diversity and interaction self-efficacy in the full model changed the other variables' effects in unexpected ways. First, EI's direct effect on teacher-student relationships disappeared with their inclusion in the full model. The residual covariance of CogCQ and TSR Conflict was also no longer evident.

This erasure of effects might be expected if interaction self-efficacy and diversity self-efficacy had fully mediated the effects of EI and CQ subscales. In the proposed mediation scenario, EI and CQ subscale effects would have been at least partially mediated by their related self-efficacy beliefs. Instead, nothing affected diverse TSRs. The effects of EI and CogCQ were not mediated by related self-efficacy beliefs nor were their direct effects maintained when diversity and interaction self-efficacies were added to the model.

This was contrary to the expectation that both efficacy beliefs would partially mediate the effects of their related intelligence. EI was expected to contribute to interaction self-efficacy and CQ to diversity self-efficacy. In turn, both diversity and interaction self-efficacy were expected to directly influence diverse TSRs. It was also expected that EI and CQ subscales would maintain some direct effect of their own. Theoretically, more EI would result in greater interaction self-efficacy and subsequently, more positive diverse TSRs. Similarly, greater CQ would bring about more diversity self-efficacy which would then also result in more positive diverse TSRs.

This unexpected result may be explained by the works of Fathi et al. (2021) and MacNab and Worthley (2012). Both research groups reversed the ordering of intelligences and self-efficacy in their models. Instead of self-efficacy mediating the effects of EI, Fathi et al. (2021) found that emotional regulation partially mediated the effect of self-efficacy on teacher burnout. Similarly, MacNab and Worthley (2012) found that self-efficacy was a significant contributor to CQ. Additional research might evaluate revised SEM models with diversity and interaction self-efficacy as the exogenous variables and EI and CQ as intermediate variables.

Inadequate discriminant validity is another explanation for the unmet expectations. The interaction self-efficacy measure was not statistically differentiated from any other measure in the model. As such, we are unable to draw any conclusions about the relationships among the constructs (Farrell, 2010). It may be that the strong, direct relationship between EI and interaction self-efficacy ($\beta = .97, p < .001$) subsumed all of the variance among the three variables, thus using up all of influence on TSRs.

Effects on Diversity Self-efficacy and Interaction Self-efficacy

Although diversity self-efficacy and interaction self-efficacy did not influence the outcomes, the models did indicate that teacher EI positively affected interaction self-efficacy. and teacher CQ positively affected diversity self-efficacy. This confirms the relationship between self-efficacy beliefs and related intelligences. Greater teacher EI led to greater teacher efficacy (Valente et al., 2020) and greater teacher CQ was associated with greater teacher self-efficacy (Wawrosz & Jurásek, 2021).

Again, the coefficients of determination indicated the proportion of variance in

ISE and DSE accounted for by the full model. Ninety-three percent of the variance in ISE was explained by the model ($R^2 = .93$) leaving only 7% of the variance explained by variables outside the model. Sixty-seven percent of DSE variance was accounted for by the model ($R^2 = .67$) leaving 33% of DSE variance attributed to unexplored variables.

The importance of cultural knowledge (CogCQ) was again apparent with its own inverse relationship to diversity self-efficacy. At first glance, this is contrary to expectations. One might expect that the more teachers knew about differing cultures, the greater their diversity self-efficacy. But perhaps, the more teachers knew about differing cultures, the more aware they were of the challenges they faced in relating to diverse student groups. This greater awareness may have, in turn, lessened their confidence in interacting with diverse student groups.

EI and CQ Covariance - Relationships Between EI and CQ Subcomponents

First, both models confirmed the hypothesis that EI and CQ would covary. The current study also provided corroboration and clarification of the relationships between and among EI, CQ and their subcomponents. Existing literature indicated that EI and CQ are distinct (Crowne, 2013; Moon, 2010; Thomas et al., 2008) but overlapping (Crowne, 2009) constructs. Earley and Mosakowski (2004) contend that this overlap is characterized by CQ "pick[ing] up where EI leaves off" (p.1).

EI and CQ discriminant validities confirm the distinctiveness of EI from CQ. This distinctiveness is maintained in the current study's simplified, measurement models - those without self-efficacy beliefs. This construct uniqueness is blurred, however, when diversity and interaction self-efficacy are added to the models. In the full model, CQ is

not significantly different from EI, but EI shows discriminant validity from CQ. Using discriminant validities is one way to assess the differences between constructs (Henseler et al., 2015).

Structural model results also confirm an overlap between CQ and EI with a substantial residual covariance in both models (full model: $\theta = .96$, simplified model: $\theta = .66$). This overlap between CQ and EI was also suggested by Dallman's (2019) hierarchical regression and canonical correlation analyses of EI, CQ and diversity self-efficacy. She found that the addition of CQ to the regression model masked the small but significant effects of EI. Her subsequent canonical correlation analysis results also suggested that being emotionally intelligent was a basis for being culturally adept as nearly 50% of the variance in EI and CQ was shared (Dallman, 2019).

Unfortunately, in addition to signifying an overlap between EI and CQ, their large residual covariance also indicates that the model is ill-fitting (Maydeu-Olivares & Shi, 2017). The large residual covariance indicated important relationships exist, but they exist outside the model. The relationship between EI and CQ is not as straightforward as modelled (Maydeu-Olivares & Shi, 2017).

EI and CQ Subcomponent Relationships. Despite the disappointing model, interactions and effects between EI and CQ subscales do offer tentative insight into the relationship between the latent constructs. CQ and EI subscales had their own, independent relationships to EI and to each other. In the full model, other emotion awareness (OEA) residuals covaried with self-emotional awareness (SAE) residuals emphasizing the hierarchical relationship among the EI subscales. Use of emotion builds

on regulation of emotion which builds on awareness of other emotions which builds on awareness of one's own emotions (Mayer & Salovey, 1997).

There was also a relationship between SAE and a CQ subscale, MetaCQ. Teacher awareness of their own emotions also directly and positively influenced their metacognition about cultural differences. This is intuitively reasonable as self-awareness is synonymous with being "conscious[ness] of cultural knowledge when interacting with people with different cultural backgrounds" (Item 1, Cultural Intelligence Center, 2005).

CQ subscales had their own, independent relationships to EI. Both MetaCQ and CogCQ were associated with teacher-student relationships. MetaCQ residuals positively covaried with EI residuals in the simple model. This indicates that greater teacher EI is associated with greater teacher awareness of her cultural thinking.

Surprisingly, CogCQ residuals had an inverse relationship with EI residuals in the simplified model. It was expected that the greater teachers' cultural knowledge the greater their EI. Cultural knowledge would inform and enhance teacher EI. This inverse relationship was indicated by Dallman's canonical correlation analysis (2019), but was left unexplored in the previous study.

This inverse relationship is born out also in the full model. Beyond covariance, in this model, CogCQ had an inverse direct relationship with EI, punctuating the unexpected inverse relationship. Again, this is contrary to expectations, but may, in part, be explained by the lack of bivariate correlation between CogCQ and any of the interaction self-efficacy beliefs, EI subscales, and class climate satisfaction (CCSatis) and class climate peer relations (CCPeer). CogCQ is a different construct than these other relational, social-

emotional variables. CogCQ is the possession of cultural knowledge whereas the other variables are social-emotional and cognitive capacities.

Additionally, because many of the model modifications were made among the subscales, there is the possibility that CogCQ acts as a suppressor to EI subscales, lending its effect to the enhancement of EI effects (Maassen & Bakker, 2001). Supporting the possibility of a suppressor effect, CogCQ's loading onto CQ in the initial, full model has a substantial residual value ($e = .85$) suggesting that it measures more than CQ. This residual lessens, however, when CogCQ's effect on EI are included in the model ($e = .60$) suggesting that some of CogCQ's residual can be accounted for by its effect on EI. The possibility of a suppressor effect deserves further exploration.

The Importance of Cultural Knowledge

Because the cultural knowledge subscale had independent effects on many of the latent and observed variables in the model, following is a discussion regarding its influence. Initial models did not allow for the independent effects of latent variable subscales on each other or on latent variables, but MPlus suggested modifications showed the independent effects of the CogCQ subscale.

CogCQ unique from the other subscales in that it is the possession of cultural knowledge versus the exercise of a cultural or emotional capacity. Its measure also behaved differently in its contribution to CQ and its influence on other subscales. Although loadings during measurement evaluations were adequate, CogCQ loadings onto CQ were only .38 for the initial full TSR model. The loadings onto CQ improved however, once a direct relationship to EI was added to the final, full model (.63 in final

full TSR model). CogCQ residuals were similarly affected. CogCQ residual variance was a whopping .85 in the initial model, but decreased to .60 once its independent effects on DSE and EI were added to the model.

CogCQ was the most influential subscale in the model. Its importance in working with diverse student groups is signified by model results. Although initially only an indicator of overall CQ, cultural knowledge (CogCQ) carried an unanticipated, independent effect on teacher emotional intelligence, diverse self-efficacy, and conflict in diverse teacher-student relationships. These effects indicate the importance of cultural knowledge on teacher emotional intelligence, and conflict in diverse teacher-student relationships. CogCQ also positively interacted with other CQ subscales influencing both MetaCQ, and MotCQ. Future research projects should explore the influence of cultural knowledge on EI subscales, CQ subscales, diversity self-efficacy, and teacher-student relationships.

Limitations

Measurement problems plagued and compromised this study. Substantial residuals, the lack of discriminant validity, and CQ's questionable average variance extracted, all weakened the conclusions that can be drawn. Although disappointing, results do point to future research that could explore the relationships between and among EI and CQ subscales and portions of the outcome measures.

The inadequacy of the measures was most disastrous with the measure of class climate. Its lack of composite reliability, average variance extracted (AVE), and discriminant validity from all other variables made the class climate models' results

inexplicable. Consequently, the class climate outcome models were dropped from consideration.

The CQ measure also had poor average variance extracted (AVE) in the full model. CQ's poor AVE is reflected in the residual values of its subscales. Great residuals indicate that there are critical variables missing from the model or that factors are causally related to each other (Neal & Cordon, 2013). In particular, the cultural knowledge (CogCQ) subscale had great residuals - especially in the initial measurement models. Some model modifications allowed residuals to covary resulting in a lessening of each variables's residual. This allowed a peek at the relationships among the subscales but not an explanation of them.

Future research might expand the model to include teacher beliefs about diversity. CRP researcher and advocate, Gay (2013) contends that the first and initiating variable in culturally responsive teaching is a teacher's belief about diversity or their attitudes toward students from differing cultures. Perhaps the inverse relationship of CogCQ and diversity self-efficacy could be further elucidated if teacher cultural beliefs were added to the model. Gay (2013) argues that teacher "beliefs and attitudes always precede and shape behaviors" (p. 49). It would be interesting to explore the relationship among teacher cultural knowledge, teacher cultural beliefs and teacher diversity self-efficacy.

That there were missing influential variables from the model is evident from the great residuals, but instead of adding more variables to the model, simplifying the model may be more practical. Narrowing the focus may provide interpretable results. This could be done and still maintain theoretical integrity. For example, eliminating some or all of

the latent variables may provide more insight. Many of the modifications that improved the model fit involved freeing subscales. Also, class climate was primarily accounted for by satisfaction and the other class climate subscales had great residuals. This would allow an exploration of each of the EI and CQ subscales' influence on class climate without bundling them into the latent variable. If successful, it would also provide more actionable results in that specific influential capacities could be pinpointed.

An additional limitation is the use of self-report surveys which may have resulted in bias as participants may have chosen what they deem to be socially desirable responses to instead of objectively reporting on self-perceptions (Nederhof, 1985). Also, having only teachers as a data source may have further compromised results as any personal participant bias was not balanced with other data sources. This is especially problematic as teacher-student relationships and class climates are group emotional experiences. Arizeta et al. (2016) contend that research regarding group emotions must include multiple levels of analysis to gain a more accurate understanding experience.

Another limitation is that a convenience, snowball sampling method was used to recruit teacher participants. These data collection methods have both advantages and disadvantages. They have the advantage of making data collection easier, more efficient, less time consuming and more affordable, but both are also non-randomized sampling methods (Etikan et al., 2016; Sadler et al., 2010). The disadvantage of non-randomized samples is that they may result in biased conclusions, because they may not adequately represent the entire teacher population (Etikan et al., 2016; Sadler et al., 2010).

Using a gift card to incentivize participation may also have compromised the data.

The combination of an incentive and Facebook open recruitment may have induced non-teachers to pose as teachers in order to collect the gift card. Although data collected during the bot period were analyzed for deletion, there is no way to verify the teaching status of participants. Griffin et al. (2021) explain that shielding online surveys from bot attacks is difficult. Bot creators use the anonymity of the surveys to protect themselves from discovery.

Theoretical Implications

Results offer several tentative theoretical insights. First, that teacher EI might be influential in forming positive teacher-student relationships with diverse student groups may explain the positive link between teacher EI and student academic and behavioral outcomes. Teachers with greater EI form more positive relationships and, in turn, students who experience stronger TSRs have better outcomes. Future research should explore a mediation model of teacher EI's effect on TSRs and then TSRs on student outcomes.

Results also affirm both the distinctiveness and overlap of the EI and CQ constructs highlighting the importance of considering both teacher EI and teacher CQ when working with diverse student groups. Subscales provided more specific insight into the nature of the relationship between EI and CQ. Indicating a confluence of EI and CQ, subscales from each of these latent constructs had an effect on subscales of the other. Self-emotional awareness, an EI subscale, directly and positively influenced CQ metacognition. Cultural knowledge negatively covaried with EI and CQ metacognition positively covaried with EI. Future research should explore these interrelationships more

closely.

Finally, the centrality of cultural knowledge to all dimensions of the models is signified by model results. Cultural knowledge influenced teacher-student conflict, independently influenced diversity self-efficacy, and directly influenced EI. Although further research is needed to understand the nature of cultural knowledge's influence, that it is important is shown by this study.

Practical Implications

Understanding the factors that contribute to teacher ability to positively influence the social-emotional dynamic with students allows for the development of this capacity in our teaching force. As discussed in chapter two, both emotional competence and cultural intelligence are malleable (Crowne, 2008, 2004; Sit et al., 2017), and, as such, can be developed through pre-service teacher education programs and in-service teacher professional development (Jennings et al., 2017; Nelis et al., 2009; Sit et al., 2017). Studies show that EI training and intervention programs can increase teacher emotional competence (Dolev & Leshem, 2017) leading to improved social relations (Jennings et al., 2017; Nelis et al., 2009). Not only could these improved social relations lead to greater student achievement, but teachers with greater emotional competence also have greater professional commitment (Collie et al., 2011) and job satisfaction (Collie et al., 2012).

Although there is less research regarding CQ training for teachers, studies of other professional groups indicate some effectiveness of cultural training. A systematic review of cultural competence training in the health field, found evidence that such programs

translate into better patient care (Lie et al, 2011), suggesting not just changes in cultural knowledge and metacognition, but also in cultural behavior. Lie et al. (2011) however, also point out the dearth of research regarding cross-cultural programs, their structure and effectiveness. Similarly, in their study of 110 government employees, Rehg et al. (2012) found that cultural training increased the cognitive and behavioral aspects of participants' cultural intelligence. Regarding cross-cultural training and teachers specifically, Keengwe (2010) found that pre-service teachers believed they were more culturally aware and competent after a cross-cultural education program and Tasan (2000) found that teachers' efficacy beliefs improved after teaching in diverse settings.

Even though EI and CQ can be developed, there is still some debate as to the best ways to do so (McAllister & Irvine, 2000). Additionally, there are no teacher training programs that attempt to develop both EI and CQ. Although Crowne (2013) examined the effect of cultural exposure on both CQ and EI, she found that such experiences affected CQ but not EI. Understanding how the factors of both EI and CQ influence a teacher's ability to manage social-emotional interactions with diverse students can support efforts to provide meaningful and effective professional development. Such professional development should address both teacher EI and CQ with an emphasis on developing teachers' knowledge of their students' cultural backgrounds. Teachers' reflective practices should also be developed to allow the incorporation of her students' cultural experience into her own emotional experience.

Directions for Future Study

Although the study's findings were inconclusive, they do suggest the need to re-

examine the constructs in reconfigured models. Adding relevant variables to the models or using only EI and CQ subscales may help to better explain the roles of teacher EI and CQ in diverse class climates and teacher-student relationships. Using only the subscales may also shed light onto overlap among CQ and EI subcomponents.

Future research should also further explore the relationship between EI and CQ to determine if CQ has a suppressive effect on EI. Such consideration may explain why it appeared that CQ had no effect on TSRs in either model. Understanding CQ's possible suppressive effect might also be better understood by exploring the relationships between and among EI and CQ subscales without the latent variables.

The independent effects of EI and CQ subscales on teacher-student relationships with diverse student groups should also be further analyzed. This would allow for a more precise understanding of what influences teacher capacity to form positive TSRs with diverse student groups and therefore allow for more focused teacher professional development to enhance these capacities. Future research should explore these relationships further with more reliable measures and multi-level data collection.

Conclusions

Understanding the factors that undergird the social-emotional dynamic between teachers and their students from diverse cultural backgrounds is paramount to effective teaching and learning. This study endeavored to understand if and how elementary teacher emotional intelligence, cultural intelligence, diversity self-efficacy, interaction self-efficacy influenced teacher-student relationships and diverse class climates. It also considered the relationships among these factors.

Results indicated the importance of teacher emotional intelligence in the creation of positive relationships with students from diverse cultural backgrounds. The relevance of cultural knowledge and reflection was also evident. Knowing about differing cultures was directly influential in reducing conflict in teacher-student relationships and also influenced teacher emotional intelligence. Cultural metacognition also influenced teacher emotional awareness.

Results imply that teacher professional education programs should incorporate the development of teacher emotional and cultural intelligences to enhance teacher capacity to form growth-enhancing dynamics with diverse student groups. Such programs should include an emphasis on expanding cultural knowledge and on developing teacher reflective practice regarding cultural differences. Further study is needed, however, to explore how cultural knowledge, cultural metacognition, and cultural intelligence overall, are effective in the social-emotional dynamic between teachers and students with differing cultural backgrounds.

Appendix A

Demographic Survey

Please indicate your gender:

_____ Female

_____ Male

_____ Other

Please indicate the description that best describes your school's community.

_____ Rural

_____ Suburban (near a large city)

_____ Urban

_____ Small City/Town

Please indicate your age.

Please indicate how many years you have been teaching.

What grade level do you currently teach?

_____ Kindergarten

_____ First - Second

_____ Third- Fourth

_____ Fifth-Sixth

Please indicate your primary role in the classroom.

- ☐ General education teacher
- ☐ Special education teacher
- ☐ Specialist, e.g., music, PE, art teacher

Please indicate your ethnicity.

- ☐ African American
- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Caucasian
- ☐ Hispanic
- ☐ Multi-ethnic (Please also indicate your predominate ethnicities.)

Although people belong to many different cultures simultaneously, this research is specifically considering differing ethnic cultures. Please indicate which phrase best characterizes the student composition of your current class.

- ☐ largely homogeneous
- ☐ heterogeneous - 2 cultures/ethnicities predominate
- ☐ heterogenous - no culture/ethnicity has a large predominance

Please describe the cultural/ethnic match between you and your students.

- ☐ most students share my cultural/ethnic background
- ☐ some students share my cultural/ethnic background
- ☐ most students have a cultural/ethnic background that is different from my

own.

Appendix B

Teacher Efficacy Scale for Classroom Diversity (TESCD)

Following are 8 teaching vignettes. Using the sliding scale, please indicate your response with 0 meaning you cannot do it at all and 100 meaning you are highly certain that you can do what is asked.

1. You are teaching a racially diverse class. Often during class discussions related to racial issues create friction which leads to hostility among the students. How certain are you that you can create a learning environment where your students can discuss these issues without being racially biased?
2. You are teaching a culturally heterogeneous class. You have observed that most of your students experience "cultural mismatch" between their homes and school culture. For example, some of your students have different standards about what behaviors are appropriate in the classroom. How certain are you that you can help your students to successfully adjust to the school environment?
3. You are teaching a class with students from diverse backgrounds that are at risk for academic failure. You have noticed that these students show signs of low self-esteem, disinterest in school activities, and at times exhibit disruptive behavior. How certain are you that you can develop culturally-related context activities to encourage your students to participate in academic classroom tasks?

4. You are teaching a class with students from various ethnic backgrounds with different traditions, customs, conventions, values, and religious beliefs. You notice that some of your students have trouble tolerating one another's differences. How certain are you that you can provide your students with opportunities that foster awareness and appreciation of cultural differences?

5. You are teaching a culturally diverse class. You have noticed that your ethnically diverse students show different learning modality preferences (e. g., written vs. auditory). For example, some of your students prefer listening to a tape of their reading assignment while reading rather than only reading it. How certain are you that you can create a learning environment that accommodates your students' modality preferences?

6. You are teaching a class with students from various socioeconomic backgrounds. Some of these students show lower aspirations for academic achievement, are often lethargic, seem isolated in class, and rejected by their more economically advantaged peers. How certain are you that you can create a favorable climate that will promote social interaction among your students?

7. You are teaching a unit in religion. Your students' religious beliefs vary considerably and classroom discussions of different religions would be a challenging task. How certain are you that you can ensure that your students develop appreciation and respect for religious diversity?

8. You are teaching students whose cultural climate (e.g., values, norms, school expectations etc.), differs substantially from that of the school and community. In fact, sometimes your expectations may conflict with the students' personal beliefs and values.

How certain are you that you can help your students understand how the school's core curriculum relates to their own cultural climate and life needs?

Appendix C

Questionnaire on Teacher Interaction Self-Efficacy (QTI-SE)

Directions: Using a five-point scale with 1 indicating “never” and 5 indicating “always”, please indicate your agreement with the following statements.

1. I can inspire trust in students.
2. I am capable of being patient with students.
3. I am capable of setting a norm to guide what students may and may not say.
4. I am capable of showing my authority in class.
5. I am capable of demanding silence in class.
6. I can create a pleasant atmosphere in class.
7. I am capable of interacting with students with flexibility.
8. I am capable of keeping strict order.

Appendix D

Wong and Law Emotional Intelligence Scale (WLEIS)

Directions: Using a seven-point scale with 1 indicating “strongly disagree” and 7 indicating “strongly agree”, please indicate your agreement with the following statements.

1. I have a good sense of why I have certain feelings most of the time.
2. I have good understanding of my own emotions.
3. I really understand what I feel.
4. I always know whether or not I am happy.
5. I always know my friends' emotions from their behavior.
6. I am a good observer of others' emotions.
7. I am sensitive to the feelings and emotions of others.
8. I have good understanding of the emotions of people around me.
9. I always set goals for myself and then try my best to achieve them.
10. I always tell myself I am a competent person.
11. I am a self-motivating person.
12. I would always encourage myself to try my best.
13. I am able to control my temper so that I can handle difficulties rationally.
14. I am quite capable of controlling my own emotions.
15. I can always calm down quickly when I am very angry.
16. I have good control of my own emotions

Appendix E

Cultural Intelligence Scale (CQS) ©

Read each statement and select the response that best describes your capabilities.

Select the answer that BEST describes you AS YOU REALLY ARE (1 = strongly disagree; 7 = strongly agree)

1. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
2. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
3. I am conscious of the cultural knowledge I apply to cross-cultural interactions.
4. I check the accuracy of my cultural knowledge as I interact with people from different cultures.
5. I know the legal and economic systems of other cultures.
6. I know the rules (e.g., vocabulary, grammar) of other languages.
7. I know the cultural values and religious beliefs of other cultures.
8. I know the marriage systems of other cultures.
9. I know the arts and crafts of other cultures.
10. I know the rules for expressing non-verbal behaviors in other cultures.
11. I enjoy interacting with people from different cultures.
12. I am confident that I can socialize with locals in a culture that is unfamiliar to me.
13. I am sure I can deal with the stresses of adjusting to a culture that is new to me.

- 14. I enjoy living in cultures that are unfamiliar to me.
- 15. I am confident that I can get accustomed to the shopping conditions in a different culture.
- 16. I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.
- 17. I use pause and silence differently to suit different cross-cultural situations.
- 18. I vary the rate of my speaking when a cross-cultural situation requires it.
- 19. I change my non-verbal behavior when a cross-cultural situation requires it.
- 20. I alter my facial expressions when a cross-cultural interaction requires it.

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Note. Use of this scale granted to academic researchers for research purposes only.

For information on using the scale for purposes other than academic research (e.g., consultants and non-academic organizations), please send an email to

info@culturalq.com

Appendix F

Teachers Version - My Classroom Inventory – Short Form (TMCI-SF)

1. The students enjoy their schoolwork in the class.
2. Students do not fight with each other.
3. Students often race to see who can finish their work first.
4. In the class the work is hard to complete.
5. In the class everyone is friends.
6. Students are happy with the class.
7. Most students want their work to be better than their friend's work.
8. Most students cannot complete their assignments without a lot of help.
9. Students in the class have good buddies.
10. Students seem to like the class.
11. Only the brightest students can do all the work.
12. All students in my class get along well with each other.
13. Most students appreciate their learning experiences in the class.

14. Some students always try to outperform their peers.
15. The schoolwork is too complicated for the students.
16. All students in the class are fond of one another.
17. The students see the class as fun.
18. Students in the class do not argue with each other.
19. Most students in the class do not know how to do their work very

Appendix G

Student Teacher Relationship Scale (STRS)

Please reflect on the degree to which each of the following statements applies to your relationships with the children in your current class. With 1 = "definitely does not apply" and 5 = "definitely applies", indicate the appropriate number for each item.

1. I share an affectionate, warm relationship with the children in my class.
2. The children in my class and I always seem to be struggling with each other.
3. If upset, students will seek comfort from me.
4. The students in my class are uncomfortable with physical affection or touch from me.
5. The children in my class value their relationships with me.
6. When I praise the children in my class, they beam with pride.
7. The children in my class spontaneously share information about themselves.
8. The children in my class easily become angry with me.
9. It is easy to be in tune with what the children in my class are feeling.
10. The children in my class remain angry or are resistant after being disciplined.

11. Dealing with the children in my class drains my energy.
12. When the children in my class are in a bad mood, I know we're in for a long and difficult day.
13. My students' feelings toward me can be unpredictable or can change suddenly.
14. The children in my class are sneaky or manipulative with me.
15. The children in my class openly share their feelings and experiences with me.

Appendix H

IRB Approval Letter



Office of Research Development, Integrity, and Assurance

Research Hall, 4400 University Drive, MS 6D5, Fairfax, Virginia 22030
Phone: 703-993-5445; Fax: 703-993-9590

DATE: August 15, 2019

TO: Anastasia Kitsantas, PhD
FROM: George Mason University IRB

Project Title: [1228027-3] Factors of the social-emotional dynamic between culturally diverse teachers and students

SUBMISSION TYPE: Amendment/Modification

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: August 15, 2019

REVIEW CATEGORY: Exemption category #2

Thank you for your submission of Amendment/Modification materials for this project. The Institutional Review Board (IRB) Office has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

Please remember that all research must be conducted as described in the submitted materials.

Please note that any revision to previously approved materials must be submitted to the IRB office prior to initiation. Please use the appropriate revision forms for this procedure.

If you have any questions, please contact Bess Dieffenbach at 703-993-5593 or edieffen@gmu.edu. Please include your project title and reference number in all correspondence with this committee.

Please note that all research records must be retained for a minimum of five years, or as described in your submission, after the completion of the project.

Please note that department or other approvals may also be required to conduct your research.

GMU IRB Standard Operating Procedures can be found here: <https://rdia.gmu.edu/topics-of-interest/human-or-animal-subjects/human-subjects/human-subjects-sops/>

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within George Mason University IRB's records.

Appendix I

Education Administrator Recruitment Letter

IRB Reference Number: 1228027

Dear {district administrator name}:

I am a former elementary school teacher working on my PhD in Educational Psychology at George Mason University's College of Education and Human Development. I am conducting my dissertation research with a study of the social emotional dynamic between teachers and their culturally diverse students.

{Possible customized introduction as I reach out to districts with which I have had some affiliation. For IRB review, possible examples are at the end of the letter.}

As a teacher, I always believed that the social-emotional dynamic between teachers and students was a fundamental key to student learning and development. After study and research, I found that this is true, but that the social-emotional dynamic can be confounded by cultural differences.

This is why my dissertation research explores the factors that influence teacher ability to establish positive dynamics with students from differing cultural backgrounds. My hope is that understanding what influences teacher ability to work with diverse groups will allow us to develop these capacities in our teachers.

I am hoping that I might share my on-line Qualtrics survey with {name of district} elementary school teachers. I would love to have their input!

Attached are inert copies of my recruitment letter, IRB approval, and on-line survey. The survey should take no more than 20 minutes of teacher time. I have also included my CV to show my path to and interest in this research.

May I ask {name of district} teachers to participate? What can I do to help this happen?

Looking forward to your response,

Laura Dallman
PhD Candidate
Educational Psychology
College of Education and Human Development
George Mason University
Fairfax, VA

Appendix J

Elementary Teacher Recruitment Letter

IRB Reference # 1228027

Hello elementary school teachers,

Please complete the survey linked below and earn a \$15 Amazon gift card.

I am a former elementary school teacher working on my PhD in Educational Psychology at George Mason University's College of Education and Human Development. I am conducting my dissertation research with a study of the social emotional dynamic between teachers and their culturally diverse students.

Although research tells us that positive social emotional dynamics enhance student learning and development, we don't know as much about the qualities and abilities teachers need to be effective at establishing these dynamics. This is especially true for teachers' interactions with students from differing cultural backgrounds.

That's why it is the goal of my research is to explore the factors that contribute to a teacher's ability to establish growth-enhancing dynamics with his or her students from diverse cultural backgrounds.

I really hope that you will help me with my research by filling out the survey embedded in this email. Filling out the surveys will take you between 15 and 21 minutes. There is no risk to participating and all of your responses will be submitted anonymously. Your participation is voluntary and you may quit the surveys at any time. Incomplete surveys will not be included in the data analysis.

I also hope that you will share the link below with your elementary school teacher friends. Having more teachers participate means more data and more meaningful results!

In appreciation for your participation, the first 250 elementary school teachers to complete the surveys will receive a \$15 Amazon gift card. Directions for how to claim your gift card are included in the survey.

Surveys: [LINK TO SURVEYS](#)

If you have any questions or concerns, please do not hesitate to contact me at ldallman@masonlive.gmu.edu. Thank you for your help.

Laura Dallman
PhD Candidate
Educational Psychology
College of Education and Human Development
George Mason University
Fairfax, VA

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Biography

Laura L. Dallman is a PhD candidate in educational psychology at George Mason University. She served as a graduate lecturer in both the College of Education and Human Development and the College of Health and Human Services, and was a graduate course assistant in the University's Transformative Teaching Master's program. Before her doctoral studies, Laura was an elementary school teacher in Fairfax County Public Schools and at international schools in Russia, Belgium, Haiti, and Georgia. She holds an MDiv from Yale University and a BA from Augustana College, IL. She and her husband, Amb. Henry Wooster, have four, wonderful, now-adult children.