2018

Examining The Relationship Between Teacher Beliefs, Prekindergartener'S Self-Regulation And Classroom Quality: Informing Professional Development Programs

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EXAMINING THE RELATIONSHIP BETWEEN TEACHER BELIEFS, PREKINDERGARTENER'S SELF-REGULATION AND CLASSROOM QUALITY: INFORMING PROFESSIONAL DEVELOPMENT PROGRAMS

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A DISSERTATION

Submitted to the graduate faculty of The University of Alabama at Birmingham,
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

BIRMINGHAM, ALABAMA

2018

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ABSTRACT

The purpose of this convergent parallel, mixed methods study was to examine and explore the relationship between subjective teacher beliefs, classroom quality, and pre-kindergartener's self-regulatory abilities within a publicly funded pre-kindergarten program. Teacher subjective beliefs (beliefs of classroom management, classroom practice, and beliefs of children) were studied operantly using Q-Methodology, in addition to, audio-recorded focus groups to explore the lived experience of teachers within the sample (n = 20). Classroom quality was measured using the Classroom Assessment Scoring System (CLASS) and pre-kindergartener's self-regulatory abilities were studied using pre/post proxy items from the Devereux Early Childhood Assessment for Preschoolers, Second Edition (DECA-P2). A criterion sort was created to determine correlation between trainer, coach, and model teacher beliefs sorts and teacher belief sorts. Data were separately collected and analyzed prior to intercepting for interpretation with priority assigned to the quantitative data. Non-parametric testing was employed with ranked beliefs, CLASS, and DECA-P2 distribution-free data. The following corroborated QUANqual results emerged: a) studying subjective beliefs operantly using Q-methodology provides researchers the ability to determine different and similar pure associations with constructs, b) in classroom coaching and training influence teacher beliefs about classroom management, practice, and children, c) teachers believe developing student's social emotional competence, specifically, d) self-regulation is fundamental for pre-kindergarteners, teacher beliefs impact children's self-regulatory

growth, e) classroom quality is influenced by teacher beliefs regarding classroom management, specifically regard of student perspective, reviewing teacher beliefs operantly, f) studying beliefs operantly provides additional insights for coaches or trainers to specifically target constructs. This study recommends that future studies include a larger nationally based sample to explore and examine the relationship between teacher beliefs, classroom quality, and children's ability to self-regulate. This study found that teachers beliefs, correlated with exemplars, effect the average change in self-regulatory abilities for prekindergaterners. The researcher recommends that future studies implement parametric testing with larger studies to determine the generalization of the effects.

DEDICATION

This work is dedicated to teachers who work with young children. The lasting relationships you create matter and the impact your actions have with the children in your classroom extends beyond our capacity of statistical measurement. This work is also dedicated to my family who tirelessly supported me throughout this process. To the love of my life, Dr. Matthew Kerch, and our beautifully autonomous daughter Anna, thank you for sacrificing and supporting me every step of this journey. To my family, Mom, Dad (from above), Shannon, Michael, Ginger, Frank, and Kate, thank you for your resolute support.

ACKNOWLEDGMENTS

I gratefully acknowledge the state agency's Department of Early Childhood Education for granting access to data to explore and examine teacher beliefs, classroom quality, and children's self-regulatory abilities. Thank you to all my friends, family, and fellow graduate students throughout the years, especially Dr. Barbara Rountree, the Rountree Family, the Young Family, Dr. Frankie Santos, Dr. Timothy Salazar, Dr. Ronnie Hebert, The Capitol School Faculty, and Highlands Child Development Center faculty. Thank you to all my former teachers and professors whom have inspired me, especially Dr. Lois Christensen, Dr. Constance Kami, Dr. Cora Causey, Dr. Kay Emfinger, Dr. Lynn Kirkland, Dr. Jennifer Pyles, Dr. Philip Diller, Dr. James Griffith, Ms. Diane Root, and Mr. Jim Zullinger. Thank you to my esteemed committee members, Dr. James Ernest, Dr. Jenna LaChenaye, Dr. Grace Jepkemboi, Dr. Jennifer Summerlin, and Dr. Jennifer Pyles for your support and guidance. Finally, thank you does not justify the amount of gratitude necessary to acknowledge Dr. James Ernest for his unwavering support from program entrance to program completion.

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LIST OF ABBREVIATIONS AND SYMBOLS

n	Number of ……
df	Degrees of freedom
CLASS	Classroom Assessment Scoring System
ES	Emotional Support
CO	Classroom Organization
IS	Instructional Support

CHAPTER I

INTRODUCTION

Prekindergarten classroom quality is a national concern for state-funded, private, licensed, and unlicensed four-year-old classrooms (Barnett, Friedman-Krauss, Weinsenfeld, Horowitz, Kasmin, & Squires, 2017; Casbergue, Bedford, & Burstein, 2014; LaParo, Pianta, & Stuhlman, 2004; Perlman, Falenchuk, Fletcher, McMullen, Beyene, & Shah, 2016). Similarly, professional development programs are focusing on teacher beliefs regarding young children and subsequent pedagogical practices in the classroom. Teacher beliefs actively change and have an interactive relationship with context and experiences (Fives & Buehl, 2012). Teacher beliefs may be changed through targeted professional development (Guskey, 2002; Hamre et al. 2012; Rimm-Kaufman, Storm, Sawyer, Pianta, & LaParo, 2006). Encouraging teachers to become aware of personal beliefs may also translate into new classroom practices, changed beliefs, and post professional development (Aman, 2016; Richardson, Tidwell, & Lloyd, 1991). Changing teacher classroom practices is a process that has been proven to be complex. Professional development programs that incorporate constant support, pressure from leaders, and utilize data can change teacher practices, thereby effecting student learning outcomes and teacher beliefs (Guskey, 2002). Combining a study examining the relationship between classroom quality, children's socio-emotional growth (specifically in terms of their self-regulatory functions), and teacher child-centered beliefs may inform

professional development models for early childhood classrooms (Pianta, Downer, Hamre, 2016; Sabol & Pianta, 2012).

Classroom quality contributes to child competencies and academic outcomes (Pianta, Downer, & Hamre, 2016). Quality Rating and Improvement Systems (QRISs) were established in the 1990's and early 2000's which often assess classroom environments using the Environment Rating Scale Revised (ECERS-R), among other instruments (Perlman et al., 2016; US Department of Health and Human Services: National Center on Childcare Quality and Improvement, 2015). Few studies are able to identify what improvements are made in schools participating in QRISs (Tarrent & Huerta, 2014). Pianta et al. (2016) reported that as ECERS-R scores increased, in a nationally representative sample of the Early Longitudinal Study-Birth Cohort, no significant growth outcomes were found. Programs are increasing their ECERS-R scores, however, research connecting ECERS-R scores to child outcomes have weakened (p. 122). The element of ECERS-R that is most connected to child outcome are those related to teacher-child interactions. More recently, programs have used the Classroom Assessment Scoring System (CLASS), which focuses on teacher-child interactions. CLASS defines quality in the prekindergarten classroom in three domains; 1) classroom organization, 2) emotional support, and 3) instructional support (Pianta, LaParo, & Hamre, 2016; Teachstone).

Purpose of the Study

Early academic skills and outcomes have a strong positive relationship with children's self-regulatory functions (Blair & Razza, 2007; Lonigan, Allan, & Phillips, 2017; McClelland, Farris, Cameron, Morrison, Connor, & Jewkes, 2007; Ponitz,

McClelland, Matthews & Morrison, 2009). Self-regulation significantly and positively predicted emergent literacy, vocabulary, and math skills on the Woodcock Johnson Tests of Achievement (Ponitz et al., 2009). There is a gap in the literature examining how to enhance children's self-regulatory behaviors regulation within the preschool classroom (McClelland et al., 2007). Recent research recommends examining the relationship between the teacher beliefs, classroom quality and children's self-regulatory behaviors to inform professional development (Hu, Fan, Yang, & Neitzel, 2017; Rimm-Kaufmann, Curby, Grimm, Nathanson, & Brock, 2009; Sawyer, A., Miller-Lewis, Seale, & Sawyer, M., 2015). The purpose of this mixed methods study is to examine the relationship between children's ability to self-regulate, overall prekindergarten classroom quality, and teacher beliefs. A convergent parallel mixed methods design was used to guide the study. Quantitative and qualitative data was collected concurrently. Data was separately analyzed and merged at the conclusion of the study with priority given to the quantitative data (Creswell & Clark, 2011; Ivankova, Creswell, & Stick, 2006).

Significance of the Study

The National Institute for Early Education Research (NIEER, 2017) reported $7,390,801,796 were spent in state funded three and four-year-old classrooms. In the 2015-2016 school year, 1,276,719 four-year-old children were enrolled in state funded preschool programs. 30 of the 40 state programs collect data on classroom quality (Barnett et al., 2017). Billions of tax dollars are funding preschool classrooms; implementing professional development programs that use data to develop teacher-child interactions is critical (Barnett et al., 2017; Pianta & Burchinal, 2016). Classroom quality is currently measured in the United States in thousands of prekindergarten classrooms

using the CLASS (Barnett et al., 2017). CLASS is an observational instrument used to assess classroom quality in pre-kindergarten. CLASS dimensions include Emotional Support (ES), Classroom Organization (CO), and Instructional Support (IS) which are based upon developmental theory that suggests student and teacher interactions are the most basic component of development and learning, such as attachment theory and ecological systems theory (Bronfenbrenner, 1979; Bronfenbrenner, 1994; Perlman et al., 2016; Pianta, LaParo, & Hamre, 2016). Professional development focused on understanding teacher beliefs and subsequent emotional and instructional practices in the classroom are needed in the publicly funded classroom (LaParo et al., 2004).

Professional development agencies such as Head Start, QRISs, and the NIEER describe raising classroom quality in publicly funded prekindergarten classrooms as a major priority (Barnett et al., 2017; US Department of Health & Human Services, 2015). Classrooms using CLASS often review data in coaching cycles to target improving specific areas of classroom quality, such as Teachstone or the Practice Based Coaching Model to develop teacher-child interactions and have been found to positively effect student outcomes (Pianta et al, 2016; Perlman et al., 2016; Teachstone; US Department of Health and Human Services, 2015). Recent research recommends professional development programs implement collaborative coaching cycles which are designed to encourage teachers to reflect and develop their own beliefs while learning about effective classroom practices (Summerlin, 2015). Furthermore, research suggests studying classroom CLASS scores and child self-regulatory behaviors (Perlman et al., 2016; Rimm-Kaufman et al., 2009). Rimm-Kaufman et al. (2009) report findings suggesting the importance of preparing teachers to organize their instruction in order to promote

children's self regulatory skills in prekindergarten. Few studies have examined the link between classroom quality, including teacher-child interactions, and self-regulation (Cadima, Verschueren, Leal, & Guedes, 2016; Fuhs, Farren, & Nesbit, 2013). Self-regulatory abilities are positively predicted by high classroom quality (Hamre et al., 2012; Perlamn et al., 2016). High self-regulatory abilities are linked to early academic outcome scores (Lonigan et al., 2017; McClelland et al., 2007; Ponitz, McClelland, & Morrison, 2009). Teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children impact their classroom interactions and overall classroom quality (Rimm-Kauffman et al., 2006; McClelland et al., 2007).

Closer teacher-child relationships tend to predict higher academic performance, lower external problem behaviors, and increased social skills (Ladd & Burgess, 2001; Pianta & Stuhlman, 2004; Sabol & Pianta, 2012). Strong teacher-child relationships are associated with increased academic and socio-emotional outcomes for children with behavioral or demographic risk (Sabol & Pianta, 2012). Socio-emotional development is broad; this study focuses specifically on children's self-regulation. Strong evidence exists that self-regulatory processes are linked to early academic skills and outcomes (Lonigan et al., 2017; McClelland et al., 2007; Ponitz et al, 2009). Self-regulation significantly and positively predicted emergent literacy, vocabulary, and math skills on the Woodcock Johnson Tests of Achievement. A gap in the literature exists examining how to enhance regulation skills within the preschool classroom (McClelland et al., 2007). Strong teacher-child relationships are associated with increased academic and socio-emotional outcomes (Rimm-Kaufman et al., 2009). Children's ability to self-regulate affects their long-term early academic outcomes and certain aspects of the prekindergarten classroom

(i.e. Emotional Support, Classroom Organization, or Instructional Support) encourage children's ability to self-regulate (Blair & Razza, 2007; Lonigan et al., 2017; McClelland et al., 2007; Ponitz, McClelland, Matthews & Morrison, 2009).

The gap in the literature is the connection between teacher beliefs, classroom quality, self-regulation, and related professional development opportunities (Dominguez, Vitiello, Fuccillo, Greenfield, Bulotsky-Shearer, 2010; Perlman et al., 2016; Rimm-Kaufman et al., 2009). Teacher beliefs are fluid and change depending upon a variety of factors, however, teacher beliefs implicitly or explicitly effect classroom practices (Fives & Buehl, 2012; Pajares, 1992). Examining the relationship between the interaction of classroom quality, self-regulation, and teacher beliefs may provide insights for the early childhood educational community to support children's self-regulatory behaviors in the classroom; thereby, increasing the likelihood of early academic success.

Research Questions

The purpose of the mixed methods study was to examine the relationship between children's socio-emotional growth, children's ability to self-regulate, overall prekindergarten classroom quality, and teacher beliefs. A convergent parallel mixed methods design was used to guide the study by concurrently collecting data. This study was guided by the following questions:

How are classroom quality (as measured by CLASS) and children's ability to self-regulate (as measured by DECA-P2) affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

1. What are the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

2. How do the sample's teacher beliefs compare to exemplar beliefs?
3. What is the relationship between teacher beliefs (TBQS), classroom quality (CLASS), and children's ability to self-regulate (DECA-P2)?
4. Do teacher beliefs impact overall classroom quality (CLASS)?

The studies mixed methods convergent parallel design is outlined below in Figure 1.

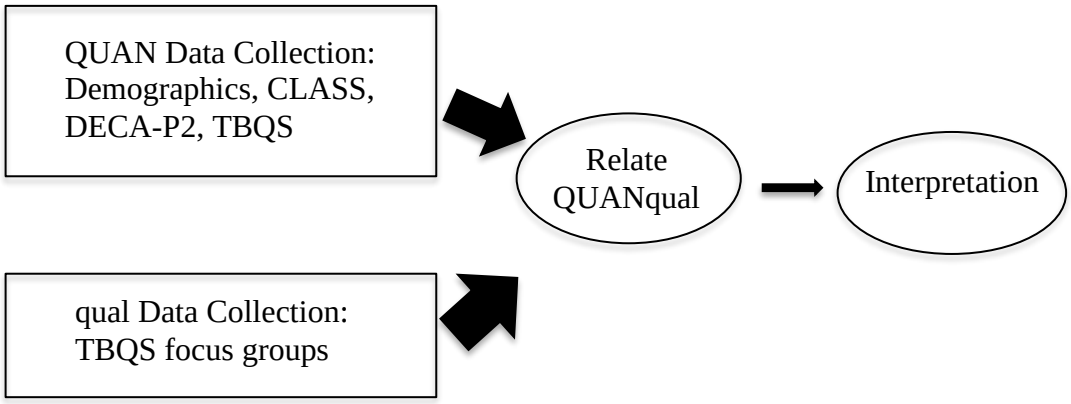


Figure 1. Convergent Parallel Design adapted from in Creswell & Clark (2011) pg. 69.

Limitations

The findings of the study were limited to:

1) Generalized results may not be representative of other publically funded prekindergarten classroom, except for those within the sample and study population
2) The number of statewide classrooms using the DECA-P2 is limited to only 83 classrooms will be involved the collection of the DECA-P2 data, therefore, they are the only classrooms eligible to be included in the study
3) Data gathered and subsequent analysis of teacher beliefs rely on the participants' honesty and integrity when completing Q-sorts

4) Q-methodology requires limited participants to produce significant findings, therefore, the P-sample of this study will be smaller than the overall study sample which limits generalizability of results (Ernest, 2011).

Delimitations

The researcher imposed the following delimitations due to the study's design:

1) Mixed methods convergent parallel design required the researcher to prioritize the quantitative or qualitative data. For this study the quantitative data was the priority.
2) Combining the data collected from quantitative and qualitative enhanced overall depth of findings, however, generalizing the results is not recommended beyond the scope of the sample (Ivankova, Creswell, & Stick 2006)

The research study examined the relationship between children's socio-emotional growth, children's ability to self-regulate, overall prekindergarten classroom quality, and student achievement scores. It explored current and past research in order to connect previous findings to the proposed areas of study. In conclusion, the findings will be used to explain how teacher beliefs, student self-regulation, and classroom quality relate to inform prekindergarten professional development programs.

Definition of Terms

Teacher Beliefs: beliefs of a teacher, implicit or explicit, about teaching practice, young children, and behavior management which guide teacher's behavior within or beyond the control of the teacher (Fives and Buehl, 2012).

Q-Methodology: a quantitative and qualitative approach whereby the researcher conducts a Q-study with participants (P-set). The participants prioritize declarative statements about a construct in a quasi-normal distribution range, which is analyzed to find statements of priorities in participant groups using principal factor analysis (Alghamdi, 2016; Ernest, 2011; Stephenson, 1980)

Q-Sort: a set of statements within a concourse to be sorted and ranked by participants (Rimm-Kauffman et al., 2006; Stephenson, 1980)

Operant Subjectivity: the act of reflecting and prioritizing declarative statements representative of personal opinion operantly (Stephenson, 1986)

Q-Sample: Set of statements that coincide with a construct or concourse of communication from a variety of perspectives that can be sorted in terms of agreeance or disagreeance, for this study, the Q-sample is the Teacher Belief Q-Sort (Rimm-Kauffman et al., 2006)

Concourse: Set of statements, approximately 40-60, intended to encompass full array of thoughts on a particular viewpoint for all people in the group. For this study, the TBQ-sort concourses include statements about teacher beliefs about classroom management and discipline, teaching practices, and children (Rimm-Kauffman et al., 2006)

P-set: Purposefully selected participants due to relevance of the study (Brown, 1993)

Classroom Quality: the measurement of proximal classroom experiences, including teacher-child interactions, teacher sensitivity to individual needs, positive behavior support, and stimulation of language and cognitive development, using the Classroom Assessment Scoring System (Pianta et al, 2016)

Self-regulation: the ability of a child to recognize and control emotion, cope with emotion, changes, etc., and cooperate in relationships with peers and adults (Center for Development of the Child, Harvard, 2017)

Executive function: the ability of a child to display inhibitory control, working memory, and attention (Center for Development of the Child, Harvard, 2017)

Theoretical Framework

The theoretical framework guiding this mixed methods study was the Concourse Theory of Communication. Communication is universal, subjective, and has schematic structure. Studying communication using Q-methodology allows the researcher to transform participant's subjective thoughts into operant, or defined, factor structures in a scientifically based approach (Brown, 1993; Ernest; 1999; 2011, Midgley & Delprato, 2017; Stephenson, 1935; Stephenson, 1980; Stephenson, 1986). Statements used in Q-methodology, for any context, are called a concourse. A concourse is a set of statements intended to include the array of all beliefs for a particular viewpoint that all people in the group being studied could hold. The Concourse Theory of Communication provides theoretical support for the use of concourses in Q research. Stephenson (1980) describes the integral connection between concourse theory and Q-methodology. Concourses provide an array of statements on the same topic. Statement x could mean y to one person and p to another. For example, the objective statement, "It is hot outside" could subjectively have inexhaustible meaning to participants, such as it's sweltering, it's not as hot as it was yesterday, it's sweaty hot outside, draught weather, etc. (Stephenson, 1986, p. 75). Concourse theory describes how ideas and concepts can be made into a collection of statements to operationalize subjective statements to study subjectivity scientifically

(Brown, 1993; Ernest; 1999; 2011, Midgley & Delprato, 2017; Stephenson, 1935; Stephenson, 1980; Stephenson, 1986). The application of the Concourse Theory of Communication is a fundamental component within Q-methodology when using Q research tools such as, Q-sorts. Q-sort is a set of statements or probes participants (P-set) sort in order of personal agreeance or disagreeance. Q-sorts offer participants a set of statements and instructions to rank those statements (a concourse) based upon personal prioritization or agreeance (Rimm-Kauffman et al., 2006).

Q-methodology is a "set of statistical, philosophy-of-science, and psychological principles, which...is demanded by the present scientific situation in psychological and social sciences (Stephenson, 1980, p. 1). Q-methodology systematically explores the subjective nature of human behavior and beliefs using a Q-sort (Brown, 1993; Ernest, 2011). Q-methodology allows the researcher to learn more about a participant's (subjective or objective) beliefs than otherwise possible by typical surveying techniques. Teachers often view themselves in a positive light and typical Likert or agree/disagree surveys are subject to bias or subjectivity (Ernest, 2011; Rimm-Kauffman et al., 2006). This process of prioritization of statements to a construct is similar to the phenomenological process of bracketing (Midgley & Delprato, 2017).

A study utilizing Q-methodology inherently captures the subjective nature of beliefs. For this study, the Concourse Theory of Communication and related research tool of a Q-sort allows the researcher to operantly measure subjectivity of beliefs (Ernest, 2011; Stephenson, 1980). Teachers beliefs are interconnected to their own subjective actions in the classroom. Q-methodology uses Q-sorts probes to identify subjective behavior of participants. For this study, the Q-sort created by Rimm-Kauffman et al.,

(2006) was used to study subjective teacher beliefs. Participant's subjectivity or viewpoint was assessed on a particular topic. A component of Q-methodology is factor analysis of the Q-sort, which reduces the many viewpoints of the individuals to a few shared factors. The act of sorting items within the Q-sort, in this study, allows the participants to induce, or form, a set of statements prioritized according to their beliefs for that moment in time. The Q-Sorts offers forced prioritization of choices in a concourse or totality of a viewpoint (Midgley & Delprato, 2017; Stephensen, 1986). Q-sorts allow the researcher to make the participants subjective beliefs operant and measurable instead of 'messy' and unmeasurable or 'subjective' (Ernest, 2011; Pajares, 1992; Stephenson, 1986). This process of prioritization of statements to a construct is similar to the phenomenological process of bracketing (Midgley & Delprato, 2017).

The participants are grouped into like factors or groupings, which are most like one another. Midgley & Delprato (2017) studied Stephenson's Q-methodology and The Concourse Theory of Communication in a recent review stating, "subjectivity is not a matter of the mind but of behaving--of observing and saying" (p. 594). The Q-sort is intended to allow the participants to sort statements based upon person agreeance allowing them to act upon statements instead of directly assigning a value (agree, disagree, or Likert scales). Participant sorts are designed to make a person's subjectivity operant, or measureable by comparing relative rank of statements to other participants. The study will use Q-methodology and the Concourse Communication Theory to make a teachers subjectivity (beliefs) operant to observe and explore (Ernest, 2011; Fives & Buehl, 2012; Rimm-Kaufman et al., 2006; Stephenson, 1980; Stephenson, 1986).

Beliefs are often defined epistemologically, however, teacher beliefs and the nature of knowledge are interconnected with teacher practices (Hutner & Markman, 2016; Fives & Buehl, 2012; Richardson, et al., 1991; Stephensen, 1986). Defining teacher beliefs can be difficult due to their subjective nature (Fives & Buehl, 2012; Pajares, 1992). Teacher beliefs include implicit (unaware) or explicit (conscious) proposition held by a teacher which impacts teaching practices (Dewey, 1986; Fives & Buehl, 2012; Rimm-Kaufman et al., 2006). Teacher beliefs can be stable or dynamic, their knowledge or belief can be distinct or related to practice, and are categorized as individual or systematic notions within mental structure (Fives & Buehl, 2012). Fives & Buehl (2012) reviewed 300 studies and identified six general components that researchers have used in their framework teacher beliefs constructs. Teacher beliefs were found to be framed using the following belief constructs: 1) self, 2) context or environment, 3) content or knowledge, 4) specific teaching practices, 5) teaching approach, 6) students (Fives and Buehl, 2012. p. 472). In this study, Q-methodology was used to measure teacher belief constructs similar to those outlined by Fives & Buehl's (2012) review: 1) teacher beliefs about classroom discipline and behavior management (specific teaching practices, context, environment), 2) teacher beliefs about children (self, students, teaching approach, specific teaching practices, developmental knowledge, context, self, environment), and 3) teacher beliefs about classroom practice (specific teaching practices, context, environment, context, knowledge, approach) (Rimm-Kauffman et al., 2006).

Ecological Systems Theory

Additionally, a second theoretical framework was used to guide this mixed methods study. The Ecological Systems Theory (Bronfenbrenner, 1979) provided a framework capable of connecting the relationship between teacher beliefs, classroom quality, and children's self-regulatory growth. Urie Bronfenbrenner, ecologist, created the Ecological Systems Theory based upon his belief that the child is a multi-faceted individual whereby the child's development is impacted bi-directionally from within and from the environment. The Ecological Systems Theory describes the relationship of physical, social, and cultural and the child as a developing being (Bronfenbrenner, 1974). Bronfenbrenner (1974) postulates that by ignoring environmental influences on the child we are ignoring the contextual relationship of the child and his surroundings, which effect development in a reciprocal relationship. Beyond the child, teacher beliefs are also contextual Figure 2 below briefly summarizes the Ecological System Theory:

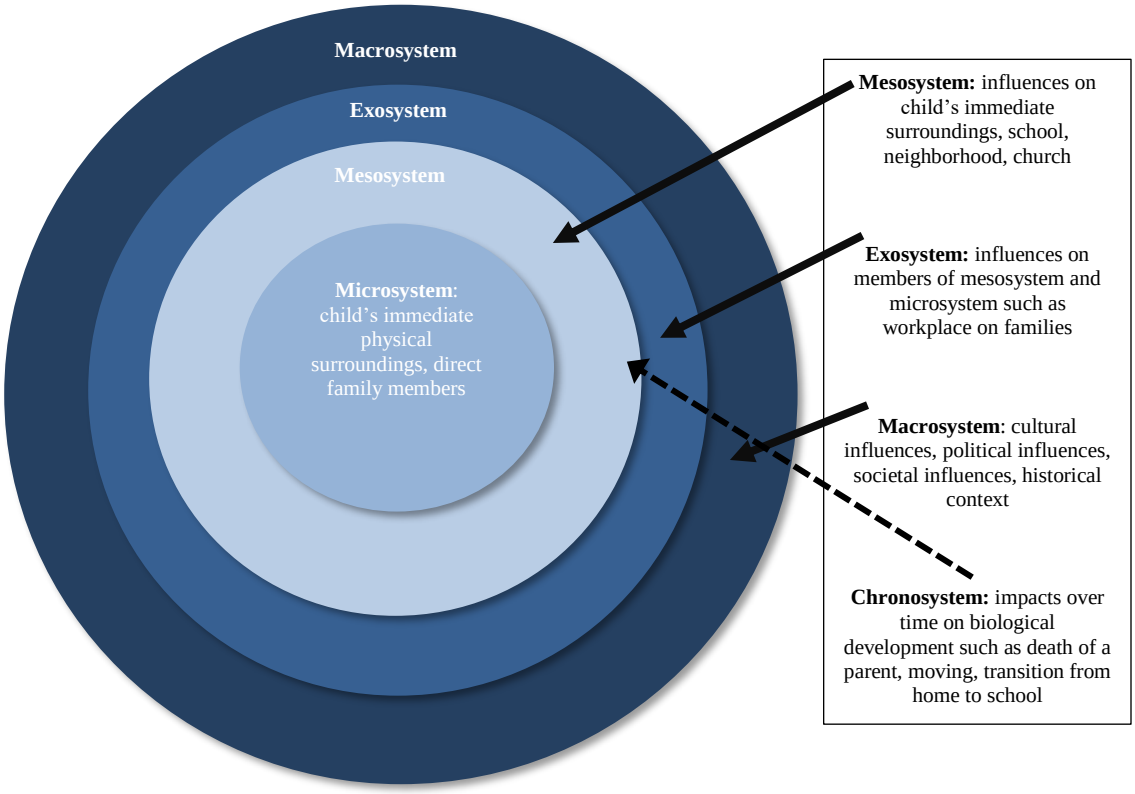


Figure 2. Visual summary of the Ecological System Theory (Bronfenbrenner, 1964; Bronfenbrenner,1979; Bronfenbrenner & Morris, 1998; Ernest, 1999; Thomas, 2005)

The systems in Figure 2 are environmental factors that influence the child as she develops over time. Families, siblings, peers, teachers effect the way a child develops in the micro and mesosystems. Bronfenbrenner describes the importance of personal stimulus characteristics selective responsivity, the way a child selects materials over others. The choice of objects provides an opportunity for the teacher to increase complexity of tasks, otherwise known as structural proclivity (Bronfenbrenner, 1979). Ethological validity and phenomonogical validity were key components of his theories. The child also uses selective responsivity and structural proclivity without the support of others. The child observes and constructs knowledge of being based upon what he or she hears, sees, or is able to act upon. Bronfenbrenner's theory profoundly influences child

rearing practices and the development of the Head Start program model. Bronfenbrenner has been mentioned as the 'father of head start' and was largely involved in the creation of the program (Bronfenbrenner, 1979; Thomas, 2005; US Department of Human Resources, 2015). His theories guide many of the Head Start Practices such as family home visits, family-school partnerships, family education programs, teacher education programs, nutritional care for children living in low socio-economic conditions. For this study, the Ecological Systems Theory is used as a lens to consider the relationship of teacher education, the development of teacher beliefs, and subsequent classroom practice.

The environment and the child have a reciprocal relationship (A→B←A) as the child moves through stages of development. The Ecological Systems Theory provides practitioners, specifically those within early child development classrooms the practical importance of understanding the environmental influences on the child (birth through five) (Johnson & Chestnut, 2009). The core competencies of the Developmentally Appropriate Practices Framework (Bredekamp, 1987; Bredekamp, 2009) reflect components of Bronfebrenner's theory 1) knowing child developmental theory, 2) knowing what is individually appropriate for the child, and 3) knowing what is culturally important to the child. Early childhood teachers whose beliefs reflect components of responsivity to the young child's immediate and external ecological systems are found to have a more positive classroom environment, further, the classroom is the most proximal environment for professional development to occur (Connor, 2016). The current shift to focus on the reciprocal relationship between the teacher, child, and classroom environment is, in part, based upon the Ecological Systems Theory (Morris & Connors, 2016; Pianta, LaParo, & Hamre, 2008). For this study, the relationship between teacher

beliefs, classroom environment (i.e. classroom quality), and children's social emotional outcomes were considered using the Ecological Systems Theory (Pianta et al., 2008).

CHAPTER II

LITERATURE REVIEW

Prekindergarten classroom quality is measured by CLASS in thousands of classrooms in the United States (Barnett et al., 2017). The National Institute for Early Education Research (NIEER) (2017) reported $7,390,801,796 was spent in state funded three and four year old classrooms. 1,276,719 four-year-old children were enrolled in state funded preschool programs in the 2015-2016 school year. 30 of the 40 state programs collect data on classroom quality (Barnett et al., 2017). Billions of tax dollars are funding preschool classrooms; implementing professional development programs that use data to develop teacher-child interactions is critical (Barnett et al., 2017; Pianta & Burchinal, 2016). Over the past few decades the importance of high classroom quality, with a focus in teacher-child interactions, has emerged. Teacher beliefs have been identified as critical components of subsequent teacher-child interactions (Fives & Buehl, 2012; Rimm-Kauffman et al., 2006).

History of Prekindergarten Policy and Classroom Quality

State-funded prekindergarten programs have existed for decades with a wide variety of accessibility, quality, and curriculum resulting in a divergent assortment of classrooms in the nation (Kameron & Gatenio-Gabel, 2007; Brunsek, Perlman, Falenchuk, McMullen, Fletcher, & Shah, 2017). Historically, voluntary ECE programs began in the 1830's for 'unfortunate' children, which developed into nursery programs

(Kameron & Gatenio-Gabel, 2007). There were only three states offering state-funded ECE programs prior to 1960 (Mitchell, 2001). Head Start began in 1965, the first national ECE program for children in low-income families. After publication of the seminal longitudinal study, the Perry Preschool Project, new state-funded prekindergarten programs began appearing in legislative policy (Kameron & Gatenio-Gabel, 2007; Schweinhart & Weikert, 1993; Schweinhart & Weikert, 2002). Programs serving four year olds are widely varied in prekindergarten, they can be state-licensed, church exempt (non-licensed), privately funded, publicly funded, and accredited by agencies such as the National Association for the Education of the Young Child (NAEYC) or have no accreditation. Tarrant and Huerta (2015) describe the early childhood options for young children as a "fragmented amalgam of programs with disparate availability, accessibility, and most notably quality" (p. 1). Overall, national quality amongst the vast types of prekindergarten programs in the United States has been termed 'mediocre' at best (US Department of Education, 1999; Brunsek et al., 2017). The US Department of Health and Human Services established the Quality Rating and Improvement Systems (QRISs) to encourage programs to increase quality; however, QRISs is a system that is voluntary in most states that rates programs quality for the consumer with stars depending upon defined program standards beyond the minimum requirements to operate. Problematically, many states offer accreditation exempt statuses for religiously affiliated childcare operations, which do not have any minimum requirements.

The Early Childhood Environmental Rating Scale (ECERS) and the more recent revised version (ECERS-R) is designed for global use and is the most widely used measure of classroom quality in the United States (Brunsek et al., 2017). The ECERS and

ECERS-R are assessments often used within states QRISs. The ECERS-R assess the following areas of the classroom: space and furnishings, routines and care, language reasoning, activities, interactions, program structure, family and staff (Brunsek et al., 2017; US Department of Health and Human Services, 2015). QRISs assesses participating programs within the following criteria: structure, staff qualifications, and program dynamics (Mitchell, 2005). Criticism of QRISs includes the lack of definitions for program quality, unified data collections (such as, ECERS-R) from state to state, and that QRISs improve overall structure of programs, not necessarily classroom quality (Tarrant & Heurta, 2015). Furthermore, there have been limited studies that have examined the relationship between ECERS-R and child outcomes (Brunsek et al., 2017).

A recent meta-analysis examined the relationship between ECER-S, cognitive, social-emotional, and gross motor outcomes from center-based programs that met systematic criteria review. The children in the studies included were ages 30 to 72 months old, and selected only studies with statistical data. After looking at reviewing 823 studies, the authors systematically selected 16 studies that had sufficient statistics and no idiosyncratic outcomes (Brunsek et al., 2017). The study found weak, positive relationship between the overall ECERS-R score on language and positive behavior outcomes, perhaps due to the fact that ECERS-R included structural components and does not solely assess classroom interactions. Additionally, the meta-analysis reported no subscale of the ECER-S related to socio-emotional outcomes significantly. The implications of the study reveal the ECERS-R identifies aspects of the classroom environment that are critical to child development, however, high ECERS-R scores alone do not relate directly to increased teacher- child outcomes. The authors recommended

using alternative measures for staff development that more accurately assess classroom interactions (Brunsek et al., 2017).

Two longitudinal studies: 1) Cost Quality and Outcome study (CQO) and the 2) National Center for Early Development and Learning (NCEDL) also report that ECERS-R modestly predicts positive child outcomes (Peisner-Feinberg et al, 2000; Pianta et al., 2016). Therefore, prekindergarten need assessments to accurately assess environmental quality in the classroom in terms of organization, interactions, and instruction (Brunsek et al., 2017; Pianta et al., 20016; Sabol & Pianta, 2014). CLASS is a measure designed to focus on teacher-child interactions across multiple domains and commonly used in United States classrooms (Department of Education, 2015). Researchers using large data sets have suggested that dimensions of class are closely linked to children's early academic skills: positive climate, children's ability to self-regulate, productivity, and concept development (Teachstone, 2014).

Prekindergarten Classroom Quality and Student Outcomes

CLASS has been found to be a valid and reliable instrument where certified assessors rate teachers on a one to seven scale in the following areas: Emotional Support (ES), Instructional Support (IS), and Classroom Organization (CO). Classrooms with high levels of Instructional Support have been found to produce short-term academic success but are also associated with higher behavioral concerns and lower teacher-child relationships (Dominguez et al., 2010; Perlman et al., 2016). Classrooms with higher ES scores tend to have warm-responsive teacher-child interactions, higher teacher-child attachment relationships, and lower externalization of concerning behaviors (Dominiguez et al., 2010). A gap exists in the literature examining the relationship between classroom

quality, teacher-child interactions, and self-regulatory and executive function behaviors (Blair and Razza, 2007; Lonigan et al., 2017; Miller et al., 2013; Rimm-Kauffman et al., 2009). Early childhood education programs are using CLASS data to inform professional development and study teacher-child interactions with associated child outcome scores (Pianta, Downer, & Hamre, 2016; Pianta, LaParo, & Hamre, 2016; Teachestone, 2014; Sabol & Pianta, 2012; Pianta & Stuhlman, 2004).

Sabol and Pianta (2012) examine the trends for the teacher-child relationship using the attachment theory and developmental systems theory frameworks. Children with less secure attachments continued to form less secure adult bonds when teacher sensitivity was low. Inversely, when teacher sensitivity was high, children with less secure attachment levels were more likely to form secure or closer attachment to the teacher. The authors describe a moderating role of the teacher-child relationship. The closer the child-teacher relationship is in early childhood, the higher the likelihood the child will have high academic performance, increased social-emotional skills, and will be less likely to externalize behaviors (Ladd & Burgess, 2001; Pianta & Stuhlman, 2004; Sabol & Pinata, 2012). Examining teacher belief effects on children's self-regulatory behaviors and classroom quality may provide an opportunity to direct professional development (Hur, Buettner, & Jeon, 2015).

The CLASS data is often used within programs to examine the quality of teacher child relationships. Recent studies are examining the relationships between teacher-child interactions and the development of socio-emotional competencies of the child. Most specifically, studies are examining children's ability to self-regulate and executive functioning skills in relationship to teacher child dyads. Executive function and self-

regulation require mental processing within the prefrontal and cortex of the brain (Center for Developing Child, 2018; Merz, Landry, Montroy, & Williams, 2016). Executive function and self-regulation are interrelated and operate together, once developed, to execute the following brain functions: working memory, mental flexibility, and self-control (Center for Developing Child, 2018). Cognitive self-regulation includes the function of inhibition control, attention, executive function, and effortful control (Lipsey, Farran, Fuhs, Nesbitt, Dong, & Wilson, 2017). Children who develop self-regulation and executive functioning are predicted to have longitudinal advantages, especially from vulnerable children (i.e. children from low-income families, dual language learners, etc.), social emotionally, in early literacy, and mathematics (Bernier, Carlson, Deschenes, & Matte-Gagne, 2011; Pianta, Downer, & Hamre, 2016; Shal & Schwartz, 2013). Synaptic connections within the prefrontal cortex are kept due to frequent use or pruned away due to lack of use (Bernier et al., 2011).

Environments are found to promote or inhibit executive functioning or self-regulatory growth (Center for Developing Child, 2018). Specific environmental influences, especially positive, reciprocal caregiver interactions, have been found to directly predict the development of executive function and self-regulatory processes for young children (Bernier et al., 2011). Meta-analtyic data surrounding parent-child and teacher-child dyad's led to a study that investigated young children's attachment relationships and their development of executive control (including self-regulation) (Bernier at al., 2011). Attachment theory, defined as the "universal innate propensity for humans to form protective/comforting relationships" (Crittenden, 2017, p. 438; Bowlby, 1990). Attachment theory is often mentioned in the literature surrounding the warm,

responsive reciprocal relationship between the caregiver or teacher and the child (Bernier et al., 2011; Downer, Lopez, Grimm, Hamagami, Pianta, & Howes, 2012; Merz et al, 2017; Snyder, Shapiro, Treleaven, 2011). Future research is recommended to examine the relationship of teacher and the child in the classroom environment to identify practices that further support the development of executive function and self-regulatory processes for the young child. The current study proposes to explore and examine the relationship between teacher's beliefs (beliefs about classroom management, children, and practices), classroom environment ratings, and children's self regulatory growth.

Research concerning the CLASS has found inconsistent results. Perlman et al. (2016) conducted a meta-analysis, which reviewed 19 large studies, revealed inconsistent methodological approaches and small associations between CLASS and children's outcomes. However, research by Pianta and colleagues review nationally representative data sets with thousands of classroom participants (ages birth through high school). Positive classroom quality, as measured by CLASS, was found to predict higher student achievement and student outcomes (Pianta, Downer, & Hamre, 2016; Pianta, LaParo, & Hamre, 2016; Teachstone, 2017; US Department of Education, 2016). Prekindergarten classroom quality has been proven to positively influence children's outcomes in small and/or large relationships depending upon the study reviewed (Hamre et al., 2012; Perlman et al., 2016). The strength of the relationship between classroom quality and children's academic outcomes were disputed in literature, however, a trend for future research is apparent. The relationship between children's socio-emotional outcomes, self-regulatory behaviors, and classroom quality are outcomes recommended for future research (Perlman et al., 2016; Weiland, Ulvestad, Sachs, & Yoshikawa, 2013).

Classrooms studied with higher levels of Emotional Support positively predict executive functioning skills (cognitive processes, working memory, inhibitory control, and cognitive flexibility (TeachStone, p. 6). Positive relationships between classrooms with high emotional support and children's ability to solve early-applied math are also reported (Curby & Chavez, 2013). Warm, responsive classrooms with developmentally appropriate activities support preschool and kindergarten readiness (Connor, Son, Hindman, & Morrison, 2005). Classrooms with children exhibiting challenging behaviors were buffered by high scoring ES teaching teams practices, whereas, challenging behaviors were exacerbated in classrooms with high scoring IS teaching teams (Dominguez et al., 2010). Dominguez et al., (2010) recommend further research to increase teacher's abilities to recognize children's emotional capacities and adapt classroom settings to children's socio-emotional abilities.

Current research comparing domains of CLASS with self-regulatory behaviors use the following measures: 1) the Pencil Tapping measure, a portion of the Preschool Self-Regulation Assessment (PSR) provides snapshot type assessment of a child's ability to self-regulate or inhibit dominant responses to requests, 2) the Social Skills Rating System (SSRS), which measures positive social behaviors, such as self-control, or 3) the Head Toes Knees and Shoulders (HTKS), which combines executive function, attention, memory, and inhibitory control in a short game (McClelland & Cameron, 2012; Perlman et al., 2016; Ponitz et al., 2009; Rimm-Kauffman et al., 2009).

A meta-analysis indicated high Emotional Support (ES) scores, 5-7 on average, and low Instructional Support (IS) scores, 1-2 on average (Perlman et al., 2016). Perlman et al. (2016) found a) small correlations between the Pencil Tapping assessment and the

CLASS domain of Classroom Organization (CO), b) no significant relationship between the studies for the SSRS and CO, c) no significant associations between the CLASS domain of Emotional Support (ES), and d) small significant correlations between the CLASS domain of Instructional Support (IS) and the SSRS subscale. Another study implemented hierarchical linear modeling comparing behavioral regulation, measured by HTKS, was used to measure 343 kindergarten students in the US. After controlling for variables such as site, gender, and background the model indicated domain specific evidence in which behavioral regulation score in the pre-test predicted gains in mathematics in the school year (Ponitz et al., 2009). Recent literature suggests studying process embedded interactions of the relationship teacher-child interactions and student outcomes (Pianta et al., 2016; Hamre, Pianta, Hatfield, & Jamil, 2014).

Teacher-child interactions were studied in 325 preschool teachers serving 1,407 children over an eighteen month study with two phases of professional development (Downer et al., 2012 Hamre et al., 2012) comparing classroom quality (CLASS), children's self-regulatory behaviors (HTKS), and the Student Teacher Relationship Scale (STRS). A bifactor model and a three factor analysis approach identified CLASS domain-specific associations between teacher-child interactions with loadings suggesting instructional support, teacher sensitivity, and cognitive facilitation (Hamre et al., 2014). Positive connections between domain-specific associations, teacher-child interactions, and student's academic and social outcomes exist; however, translating practices for professional development is an area with unclear direction in the literature (Hamre et al., 2012). Hamre et al., (2012) is one of few studies to show direct effects of a modeled professional development course, using CLASS as a framework, with early childhood

teachers that positively influenced effective teaching practices in prekindergarten classrooms. The authors studied 440 prekindergarten classroom teachers and randomly assigned half of the teachers to a fourteen-week course on effective teacher-child interactions. Hamre et al., (2012) found that the connection between teacher beliefs, the course, and changed practices were weak likely because targeting teacher beliefs necessitates providing direct teaching practice approaches. The literature supports studying classroom quality with a process embedded focus studying the daily back and forth exchanges of children and their teachers. These interactions directly affect children's social emotional outcomes and potentially positively predict academic and social outcomes longitudinally. The gap in the literature remains, how can practitioners and policy makers systematically support pre-service and early childhood educators to develop beliefs and positive teacher-child interactions in the classroom to effectively support young children's social emotional development (Dominguez et al., 2011; Hamre et al., 2012; Pianta et al., 2016; Rimm-Kaufman et a., 2009; Teachstone, 2014).

Social Emotional Development and Classroom Quality

The debate of the importance of social emotional development is not a new topic in the field (Bredekamp, 1987; Bredekamp & Copple, 2013; Campbell, Denham, Howarth, Jones, Whittaker, Williford, Willoughby, Yudron, & Darling-Churchill, 2016; National School Readiness Initiative, 2005). Curricular approaches in the mid-19th century discuss the importance of honoring the young child and empowering the child to regulate behaviors, make decisions, engage in play with peers, and cooperate with adults such as, the Reggio Emilia Approach, Bank Street, HighScope, Waldorf, Montessori, etc. (HighScope Educational Research Foundation, 2014; Roopnarine & Johnson, 2009). The

tenants of the developmentally appropriate approaches listed above are grounded in child development theoretical frameworks and designed to develop children in multiple domains, especially social emotional development (Bredekamp & Copple, 2013).

All domains of child development are considered of equal importance: social emotional development, cognitive development, physical development, language & literacy, mathematics, the arts, social studies, science, and technology (Bredekamp & Copple, 2009; Teaching Strategies, 2013; US Department of Education, 2015). However, there is a growing body of research supporting the predictive relationship between aspects of social emotional development with early academic skills (Lonigan et al., 2017; McClelland et al, 2007; Perlman et al., 2016; Ponitz et al., 2009).

The Early Learning Guidelines (ELG), in a southern state, outline specific goals that are developmentally appropriate for prekindergarten children to achieve in appropriate, safe, responsive environments (Department of Human Resources, 2009). Social emotional development encompasses children's abilities to: 1) recognize, produce, control, and describe emotions, 2) manage emotions and navigate conflict, 3) develop secure relationships with familiar adults and peers, 4) develop inhibitory control, attention, and memory 5) initiate, sustain, and develop play, 6) cope with changes. NAEYC Position Statements, statewide ELG and Teaching Strategies GOLD Developmental Continuum illustrate the importance of warm, responsive interactions in a bidirectional relationship to encourage social emotional social emotional development in young children (Bredekamp & Copple, 2013; Bohart & Procopio, 2017; Department of Education, Alabama, 2015; National Association of the Education for the Young Child, 2009; Teaching Strategies, 2013).

The National Institute for Early Childhood Educational Research (2017) published a state of prekindergarten report for the United States describing ten benchmarks of program quality for publicly funded programs. One of the benchmarks requires each state to create or mandate the use of Early Learning Standards or Guidelines, which include social emotional standards to guide teachers' practices with young children (NIEER, 2017). Understanding the process of social emotional development of the young child is a critical practice to inform practical instruction and pedagogical development. The relationship between children's social emotional development and teacher-child interactions are essential to promoting the healthy development of the young child (Rimm-Kaufman, et al., 2009). Classroom quality can be measured in many ways, however, recent studies suggest examining teacher-child interactions and subsequent relationships to child outcomes (Blair & Razza, 2007; Cadima et al., 2016; Hatfield, Burchinal, Pianta, & Sideris, 2016; Perlman et al., 2016). The Quality Rating Improvement Systems (QRIS) study programmatic and classroom quality, however, recent assessments for quality are focusing on examining the teacher-child reciprocal relationship using CLASS (Brunswek et al., 2017; Tarrant & Huerta, 2015).

Curby and Brock (2013) studied two sites conducted by the National Center for Early Development and learning (NCEDL) called the Statewide Early Education Programs Study (SWEEP) studying prekindergarten programs in six states by using the CLASS observation tool at least four times during a typical school day. The most significant finding included the emotional consistency of the teacher across the observations and related student outcome scores. Emotional Support consistency, rather

than Emotional Support averages, were found to be significantly related to children's academic and social outcomes in prekindergarten and in kindergarten in the expected direction. The implications of the study suggest that understanding teacher Emotional Support consistency may benefit teachers and professional development agencies targeting early childhood teachers to increase academic and social outcomes for children. Teacher knowledge and beliefs are intertwined and separating knowledge, belief, and teacher practices is 'messy' (Ernest, 1999; Hutner & Markman, 2016; Pajares, 1992). The relationship between teacher beliefs, knowledge, and emotional support practices and subsequent relationships to student outcomes are cited as important components for researchers to examine (Curby & Brock, 2013; Rimm-Kaufman et al., 2009).

Aspects of social emotional development that have been found to concurrently and longitudinally predict early literacy skills and early math skills (Darling-Churchill & Lippman, 2016; McClelland et al., 2007; Pontiz et al., 2009; Teachstone, 2015). Specifically, self-regulation and executive function are uniquely related to predicting three to five year olds early academic skills (Darling-Churchill & Lippman, 2016; Campbell et al., 2016). Despite academic 'push down' for early childhood educations to engage in direct instruction from No Child Left Behind, these studies provide empirical evidence that playing, cooperating with others, and making choices in the classroom in developmentally appropriate practice (DAP) ways are necessary and vital components for long term academic success for young children (Finn, 2009; US Department of Education, 2002). Some public Kindergarten programs are returning to playful environments partially due to the large body of empirical support that children play is a vehicle to develop self-regulatory and executive function (NAEYC, 2009; Teaching

Strategies, 2013, US Department of Education, 2015). Self-regulation is defined as the ability to recognize and control emotion, cope with emotion, changes, etc., and cooperate in relationships with peers and adults. Executive function is defined as the child's ability to display inhibitory control, working memory, and attention (Campbell et al., 2016; Center for Development of the Child, Harvard, 2017). A child's ability to self-regulate and executive function are shaped by brain development, especially in in the prefrontal cortex of the brain (McClelland, Cameron, Duncan, Bowles, Acock, Miao, & Pratt, 2014). Self-regulation and autonomy over heteronomy is the goal of education (Kamii & Clark, 1993). Recent literature describes neurological support backing earlier claims that autonomy supports development compared to heteronomy (Cadima et al., 2015; Center for Development of the Child, Harvard 2017; Kamii & Clark, 1993). Classrooms that value autonomy, or value children's ability to self-govern, may employ sanctions of reciprocity within the classroom. Sanctions of reciprocity include direct and material consequences. Children also are required to employ critical thinking when given a sanction for a behavior, encouraging the development of self-regulatory skills. For example, if a child spills paint the child may clean up the spill or may not paint again for a period of time (Kamii, 1991). Autonomy and self-regulation are similar concepts and have been found to be predictors of early academic aptitude. The literature indicates the development of self-regulatory and executive function may predict children's early academic skills (Cadima et al., 2015; Pointz et al., 2009).

Ponitz, McClelland, Matthews, and Morrison (2009) studied a group of over 300 children comparing outcomes of the Woodcock Johnson Psychoeducational Battery III Tests of Achievement (WJAT) with the Head Toes Knees and Shoulders (HTKS)

assessment in the fall and spring of the students Kindergarten year in a predominately middle to upper-middle socioeconomic status (SES). The HTKS experiment asks a child to do the opposite command of the experimenter, for example after discussion the directions and practicing according to the assessments protocol, the child is asked to 'place hands on head' and should actually do the opposite and place hands on toes. HTKS concentrates on behavioral regulation, which falls under the broad concept of self-regulatory behaviors: inhibitory control, working memory, and attention, which are directly related to executive function (Ponitz et al., 2009). Children's higher executive functioning positively predicted higher academic outcomes in mathematics on the WJAT (Pointz et al., 2007). Lonigan, Allan, and Phillips (2017) studied 1,084 preschool children with the average age of 55 months comparing teacher rating scales (including behavioral concerns, self-regulatory and executive function constructs) to The Early Reading Assessment (TERA), The Winchester Preschool Scale, the Preschool Phonological and Print Knowledge Test (early phonemic awareness, phonics knowledge, concepts of print, vocabulary, syntax) using a predictive model. After analyzing the predictive model for direct and indirect effects using a latent growth curve, the authors concluded that high self-regulatory and executive function scores on the teacher rating scale uniquely predicted early literacy skills.

Problematically, most studies comparing self-regulatory behaviors or executive function using HTKS, the Social Skills Rating Scale (SSRS), or the Pencil-Tapping test (PPT). These instruments only measure certain constructs of self-regulation and executive function. Darling-Churchill and Lippman (2016) stated that finding measures that are stable, valid, reliable, and brief is necessary to continue to examine the predictive

relationship of self-regulation, executive function, and early academic success for young children. The connection of research and practice is critical to increasing teachers' knowledge, perceptions, and abilities to encourage young children to self-regulate and improve executive functioning abilities. In a recent study examining preschool children's self-regulation and adaptive behaviors and classroom quality, the end of their preschool year and early in the Kindergarten year in a rural area serving families predominantly in the working class produced significant findings. Hierarchical linear models indicated that classroom quality (specifically, classroom management) was linked to student's higher behavioral engagement, cognitive self-control, and time spent on task. An ecological approach to understanding 'school-readiness' is suggested to guide future research. (Rimm-Kaufman et al. 2009).

The link between children's ability to self-regulate and early academic classroom success is strong; however, further research is needed to examine the relationship between children's self-regulatory functions and classroom quality. For example, do classrooms with warm relationships, child-centered beliefs, positive climates, and organized classroom environments positively relate to children exiting preschool with higher regulatory functions? Is there a relationship between classroom quality and children's ability to self-regulate? This study expands upon the recommendation to examine the relationship between teacher beliefs, classroom quality, and children's self-regulatory outcomes using the Devereux Early Childhood Assessment for Preschoolers, Second Edition (DECA-P2) instead of typical direct measures such as HTKS, SSR, or the PPT. Despite the evidence that social emotional competencies such as self-regulation and executive function are positively linked to student outcomes, the development of

psychometrically valid measures were found to be inadequate (Darling-Churchhill & Lippman, 2016).

The DECA-P2 is a standardized, norm-referenced behavior rating scale measuring three resiliency protective factors: initiative, self-regulation, and attachment/relationships. The DECA-P2 can be used to measure outcomes for individual children, groups, or for program evaluation and/or to investigate quality improvement (Fleming & LeBuffe, 2014, p. 1). The PSR and SSRS measures are widely used because the assessments are non-invasive, relatively fast to administer, and provide data on children's social-emotional abilities. However, the DECA-P2 provides data to deeply examine the relationship between CLASS and child outcomes related to the constructs of self-regulation. Research suggest future studies examine the effectiveness of mid-high scoring classrooms in the CO and ES domains compared to assessments measuring self-regulation, student independence, and executive function (Cadima et al., 2016).

A study examining the association between the ECERS-R and the Devereux Early Childhood Assessment-Clinical (DECA-C) form, conducted in Cairo, Egypt, found through hierarchical multiple regression analysis that ECERS-R subscales, activities and interactions, significantly predicted Total Behavioral Concerns composite scores from the DECA-C (Hassan, Mohamed, & Marzouk, 2016). Two subscales of the ECERS-R; 1) space and furnishings and 2) language and reasoning predicted Total Protective Factors composite scores from the DECA-C (including attachment, self-control, initiative). Understanding the relationship between high quality childcare and children’s affective self-regulation skills can strengthen children’s social development (Broekhuizen, Aken, Dubas, Mulder, & Leseman, 2015). The Devereux Early Childhood Assessment

Preschool Program Second Edition (DECA-P2) is a strength-based measure that can inform appropriate early intervention (Carlson & Voris, 2017). Further studies examining the relationship between classroom interactions, quality, and children's socio-emotional behaviors are suggested; the DECA-P2 is a valid and reliable measure to examine children's socio-emotional and behavioral progress in the prekindergarten classroom (Carlson & Voris, 2017; Hassan et al., 2016).

A compulation of five papers studying the components that measure social emotional development: social competence, emotional competence, behavioral problems, self-regulation, and executive function outline the most appropriate psychometrically designed measures recommended for the early childhood field to use in the context of the classroom (Campbell et al., 2016). The authors describe defining social emotional competence as challenging because a child's behavior is a manifest of their social competence and skills within the cognitive, social, and emotional domains visible in Figure 3 below.

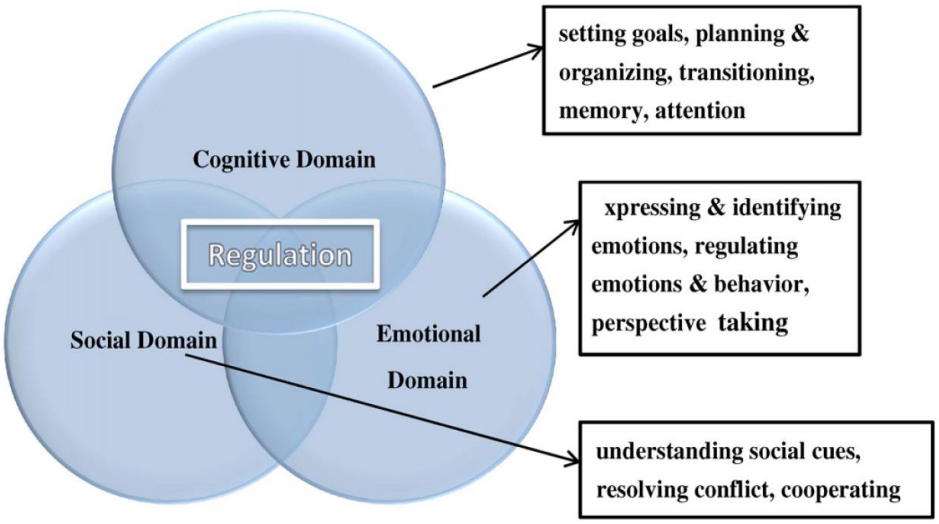


Fig. 1. Domains of social-emotional learning (SEL) and example component skills.

Figure 3. Domains of Social-Emotional Learning found in Cambell et al. (2016) p.20

Researchers often use measures that study antecedent competencies and social emotional emergent skills, such as a child's emotional knowledge or ability to interpret peers social cues, out of context from social and physical interactions. The DECA-C is listed as a measure that is simple to administer and is useful for education planning, however, the original measure may rater bias (Campbell et a., 2016). The DECA Preschool Second Edition has improved rater reliability as compared with the original measure (Flemming & LeBuffe, 2014). Research suggests that it is necessary to include teacher demographic information linked to children's scores may reflect teacher characteristics (Bultosky-Shearer, Fernandez, & Rainelli, 2013; Hamre, Pianta, Downer, & Mashburn, 2007).

Professional Development

Teachers' known and unknown beliefs about student's abilities to succeed emotionally, socially, and academically may impact their child-centered behaviors in the classroom and subsequently affect children's self-regulatory behaviors. Studying teacher beliefs is 'messy' due to a theoretical dispute centered around the subjective nature of beliefs (Ernest, 1999; Fives and Buehl, 2012; LoCasale-Crouch, DeCoster, Cabell, Pianta, Hamre, Downer, & Roberts, 2016; Pajares, 1992). Empirical evidence supports the predictive relationship of early academic success for young children and social emotional development, especially a child's ability to self-regulate and develop executive functions (Lonigan et al., 2017; McClelland et al., 2007; Perlman et al., 2017). Programmatic policy and practice now need to further examine the connection between self-regulatory and executive functions measurements and implementing results to inform practice in the classroom (LoCasale-Crouch et al., 2016). Empirical studies confirm teacher beliefs affect classroom practice; however, identifying teacher beliefs to inform domain specific professional development is unclear (Ernest, 1999; Fives & Buehl, 2012; Pajares, 1992;).

A comprehensive review of published literature in multiple disciplinary perspectives, through 1999, selected studies for review using the search terms 'teacher' and 'beliefs' (Fives & Buehl, 2012). The authors coded 300 articles and organized results in the following teacher belief categories: development, diversity, knowledge, pedagogy, self, school, vested parties, and teacher participation. Most studies were found to relate teachers' beliefs to practice or studied the changes of teacher belief due to intervention. Furthermore, the study synthesized inconsistent definitions across disciplines to frame an

overall definition of the term teacher beliefs. The nature of teacher beliefs were found to have two common approaches: 1) describe the perspective the teacher holds on various topics and can be summarized across belief areas and 2) defining the underlying constructs of and related characteristics of beliefs (Fives & Buehl, 2012, p. 472). Teacher beliefs are inconsistently described across domains, yet, the authors found agreement among the literature identifying key characteristics of teacher beliefs including: "a) implicit and explicit nature of beliefs, b) stability over time, c) situated or generalized nature, d) related to knowledge, e) existence as beliefs guide a teachers behavior and interpretation of teaching experiences" consciously and unconsciously (Fives & Buehl, 2012, p. 473-474). Questions among these characteristics are argued depending upon the researchers' worldview and subsequent beliefs, knowledge, etc. Tension exists in the literature regarding the implicit or explicit nature of teacher beliefs and how those beliefs are translated into classroom practices.

Theoretical tensions regarding implicit and explicit teacher beliefs can be simple to describe, but imply the importance of acknowledges the subjectivity associated with studying teacher beliefs. Implicit beliefs are described as beliefs that a teacher is unaware of which are beyond the control of a teacher. Explicit beliefs are described as the beliefs a teacher is conscious of and can control (Fives & Buehl, pp. 473-474). The researcher's theoretical stance on the explicit and implicit nature of beliefs is associated with which type of measure is employed in beliefs related studies. Five and Buehl's (2012) review found three types of approaches studying teacher beliefs: 1) researchers who postulate that teacher beliefs are strictly explicit may interview teachers or use questionnaires to measure statements as measures of actual beliefs, 2) researchers who assert teacher

beliefs are implicit may study beliefs by observing teacher's practices, teacher action plans, or teacher's speech and infer the beliefs of the teacher from collected data since teachers may unconsciously view the same construct differently, and 3) researchers use metaphors or statements to transform implicit beliefs into explicit statements that are measurable (Fives and Buehl, 2012, p. 474).

This study utilized Q-methodology and the related Concourse Theory of Communication, to study implicit (unaware) beliefs and explicit (aware, subjective) teacher beliefs using Q-sorts (TBQS). The purpose of using Q-sorts was to make the participants subjective beliefs operant and measurable (Brown, 1993; Ernest, 2011; Stephenson, 1980). Fives and Buehl (2012) also report the literatures description of the stable and dynamic nature of teacher beliefs, that teacher beliefs are interwoven with knowledge, that teacher's beliefs are activated by context, and that teacher beliefs (implicit or explicit) impact teaching practices (p. 478).

Examining teacher beliefs and related practices challenges researchers due to the subjectivity of beliefs (Fives & Buehl, 2012; Pajares, 1992). Hu, Fan, Yang, & Neitzel (2017) examined the relationship between 164 Chinese kindergarten teachers' beliefs, teacher knowledge, teacher beliefs about children, teacher-child interactions (measured by CLASS) found a mediating relationship between beliefs and teacher practices in the classrooms. Authors measured teacher beliefs using an adapted version of the Parent Modernity Scale which is a Likert questionnaire with statements about teacher's beliefs about children and child or adult-centered practices. Teachers also completed the Knowledge of Effective Teacher-Child Interactions scale, which measures teachers' knowledge of effective interactions using multiple choice questions and responses from

classroom examples. A significant direct association between teacher's knowledge and teacher-child interaction quality was found using a path analysis with bootstrapped confidence intervals (Hu et al., 2017). An indirect relationship between teacher's knowledge about teacher-child interactions and quality of interactions was discussed (Hu et al., 2017). A mediating relationship between teacher's child-centered beliefs and teaching quality (as measured by CLASS) with a central idea that "the mediating effect (of teacher beliefs) suggests that, just having knowledge about classroom interactions is insufficient; teachers also need to have child-centered beliefs in order to implement their knowledge in classroom interaction practice" (Hu et al., 2017, p.142). The authors also concluded that teacher beliefs may be an important indicator of teaching quality, specifically beliefs that support children's behavior, language, and cognition. The authors suggest focusing future research to examine teacher child-centeredness within professional development (Hu et al., 2017).

For this study, the Parent Modernity Scale was considered, however, the TBQS will allow the researcher to look at subjective beliefs operantly. Hu et al. (2017) also found that teacher's child-centered beliefs are predicted by degree (early childhood focus) and years of experience. This study collected demographic data which will provide additional insight into the lived experience of the teacher.

Teachers with more child development coursework, beyond an associate's degree, were directly found to respond less negatively to children's social emotional displays and have more positive child-centered beliefs (Lang, Mouzourou, Jeon, Buettner, & Hur, 2017). Lang, Mouzourou, Jeon, Buettner, and Hur (2017) suggest future research examines teacher's child-centered beliefs and other factors that motivate teacher's

responsiveness. Hur, Buettner, and Jeon (2015) explored the link between teacher quality, teachers psychological attributes, teacher's child centered beliefs, and children's academic achievement. Research indicates responsive teacher-child interactions and classroom quality may positively relate to children's socio-emotional outcomes (Williford & LoCasale-Crouch, 2014). A positive relationship has been found between teacher's responsive teacher-child interactions, classroom quality, and socio-emotional outcomes. This study seeks to explore the beliefs teachers hold in a sample of prekindergarten classrooms.

Exploring teacher beliefs, the relationship between classroom quality, and children's self-regulation may strengthen inferences and provide a more in depth understanding of the quantitative data findings (Early, Maxwell, Ponder, & Pan, 2017)..Children who have secure relationships with teachers, are able to be independent in the classroom and make autonomous choices, regulate relationships with peers, and exercise inhibitory control with the support of educators are predicted to have early academic success (Cardinal et al., 2015; Perlman et al., 2016; Pianta, Downer, & Hamre, 2016). Measures assessing self-regulation and executive function exist, however, teachers seldom engage in the process, collection of data, analysis of measures, or formatively use results to impact practice (Darling-Churchill & Lippman, 2016; Rimm-Kaufman, 2009). The participants in the study are teachers who are directly collecting DECA-P2 data and interacting with data to inform classroom decisions. National and state funded early childhood programs can impact practice in the field by appropriately assessing children's self-regulatory and executive function behaviors and by providing teachers professional development to be able to use, interpret, and implement classroom level changes. A

recent study of 444 preschool children and 103 preschool teachers examined the relationship between teacher's child centered beliefs (as measured by the Teacher Modernity Scale), children's self-regulatory behaviors (as measured by Head Toes Knees Shoulders), children's academic achievement (as measured by Peabody Picture Vocabulary Test, Phonological Awareness Literacy Screening for Preschool, and Woodcock Johnson-III) (Hur et al., 2015). The authors conducted a path analysis which indicated that teachers' child-centered beliefs were indirectly associated with early literacy and math achievement scores through children's self-regulatory abilities. Hur et al., (2015) suggest that teachers' child-centered beliefs may enhance children's self-regulatory behaviors and thereby are indirectly associated with academic achievement. The authors note that teacher beliefs may also be considered a component determining teacher quality. The study identifies the following areas for future research: influence of teacher beliefs on children's self-regulatory behaviors, academic achievement, and related professional development reflective practices to explore personal beliefs related to practice and to explore more opportunities to enhance children's self-regulatory behaviors (Hur et al., 2015, p. 321-322).

Recently, a first grade teaching team in a school service 92 first grade students were involved in a pre-post a case study exploring metacognition, teacher beliefs, and literacy related professional development. The teachers participated in three professional development sessions over a five month period to review student data (text levels, accuracy percentages, self-correction ratios, etc.) (Prat & Martin, 2017). The teachers reflected upon practice and engaged in peer coaching to implement new strategies related to student data. At the onset, teachers perceived their role to be implicit, guiding students

to use metacognition during reading; at the end of the study, the teachers began explicitly modeling their own cognitive processes to positively affect students' metacognition. The authors suggest future research professional development can influence teacher beliefs but need to be tied to explicit action and practical suggestions of implementation (Hutner & Markman, 2016; Prat & Martin, 2017). Professional development targeting awareness of specific teacher beliefs targeting the cognitive, emotional development, self-regulatory abilities and school adjustment are thought to be a potential strategy to positively affect overall school success (Buyse, Verschueren, Doumen, Van Damme, & Maes, 2008; McNally & Slutsky, 2017).

A recent study comparing 183 teacher beliefs (Modernity Scale), teacher behavior attributions (Teaching Classroom Management Strategies Questionnaire), classroom quality (CLASS) and other factors with teacher-child relationships (The Student Teacher Relationship Scale) and child behavior problems (Sutter-Eyberg Student Behavior Inventory-Revised) among 432 children and found an association between non-child centered, authoritarian beliefs attribute to negative, more punitive causal and responsibility attributions in the classroom (Williford & LoCasale-Crouch, 2014). Furthermore, Williford and LoCasale-Crouch (2014) suggest studying teacher's teacher beliefs as a method of improving child-teacher interactions. Professional development targeting teacher beliefs can be successful (as measured by child-outcome scores, such as self-regulation) when a) teachers understand foundational concepts (knowledge) associated with teacher practices, b) teachers are provided support when making changes within practice, c) when teachers are provide specific opportunities for reflection with intermittent support connected to classroom practices (Buyse et al., 2008; Fives and

Buehl, 2012; McNally & Slutsky, 2017). Fives and Buehl (2012) commend the qualitative studies that have been conducted exploring teacher beliefs but call for empirical studies with strong methodological designs to move the literature in this area forward.

Summary

The literature above examines components of the relationship between teacher beliefs, subsequent teacher-child interactions (i.e. high quality prekindergarten classrooms) and those factors direct or indirect effects on children's ability to self-regulate. The articles and reviews above recommend future research focus upon examining teacher beliefs and related practices, teacher beliefs and classroom qualities impact on children's ability to self-regulate (Early, Maxwell, Ponder, & Pan, 2017; Fives and Buehl, 2012; Fleming & LeBeuffe, 2014; Hur et al., 2015; Hutner & Markman, 2016; LoCasale-Crouch et al., 2016; Rimm-Kaufman et al., 2006; Williford & LoCasale-Crouch, 2014). The study further examines this relationship within the population of publicly funded prekindergarten classrooms in a southern state. The study uses Q-methodology to make teacher's subjective beliefs operant and examine the beliefs relationship with classroom quality (CLASS) and children's self-regulatory abilities (DECA-P2).

CHAPTER III

METHODOLOGY

This chapter discusses the measures and mixed method design of the study. The measures that were used in this study are: The Classroom Assessment Scoring System (CLASS), The Devereux Early Childhood Assessment Preschool Program, Second Edition (DECA-P2), the Teacher Belief Q-Sort (TBQS), and focus group interviews. The measures provide a comprehensive overview to determine the relationships between the following variables: children's overall social-emotional growth, children's self-regulation, classroom quality, and teacher beliefs about discipline, teaching practices, and beliefs about children.

Purpose of the Study

The purpose of this mixed methods study is to examine the relationship between children's socio-emotional growth, children's ability to self-regulate, overall prekindergarten classroom quality, and teacher beliefs. A convergent parallel mixed methods design guided the study. Quantitative and qualitative data were collected concurrently. These data were analyzed and merged at the conclusion of the study, with priority given to the quantitative data (Creswell & Clark, 2011; Ivankova et al., 2006). The quantitative data were used to examine the relationship between children's socio-emotional growth, children's ability to self-regulate, overall prekindergarten classroom quality, and teacher beliefs. The qualitative data were collected in focus groups while

participants completed a Q-Sort to explore teacher beliefs. Further insight and explanation of teachers' prioritization of beliefs were collected by recording focus group sessions and note taking. Quantitative and qualitative data were collected simultaneously to corroborate results and bring two forms of data to gather greater insight to inform professional development using different but complimentary data (Creswelll, 2012; Teddlie & Tashakkori, 2009).

Research Design

The study employed a mixed methods design to examine the relationship between children's ability to self-regulate, overall prekindergarten classroom quality, and teacher beliefs. A convergent parallel mixed methods design was employed and the researcher concurrently collected data. Data were separately analyzed and merged at the conclusion of the study with priority given to the quantitative data (Creswell & Clark, 2011; Ivankova et al., 2006). The quantitative data was examined to determine the relationship between children's socio-emotional growth, children's ability to self-regulate, overall prekindergarten classroom quality, student outcome scores, and teacher beliefs. The qualitative data were collected in focus groups while participants were completing a Q-Sort to explore teacher beliefs. A small portion of classrooms were randomly selected to participate in the Teacher Belief Q-Sort (TBQS) that explored the relationship between teacher beliefs, classroom quality, and children's socio-emotional growth. The TBQS has three 20-item Q-Sorts designed for teachers to force prioritization of statements into a category and sorts them based upon which are most representative of their views (Rimm-Kaufman et al., 2006). The Q-Sort method itself was originally borrowed from the field of developmental psychology (Ernest, 2011; Rimm-Kaufman et al. 2006; Stephenson,

1935). Q-Sort methodology combines components of qualitative and quantitative designs using the factor analytic method clustering factors to compare groups and responses the form of a data matrix (Ernest, 1999; Rimm-Kauffman et al., 2006). Further insight and explanation of teachers' prioritization were collected by recording focus group sessions and note taking. Quantitative and qualitative data were collected simultaneously to corroborate results and bring two forms of data together greater insight to inform professional development.

State-funded prekindergarten four-year old classrooms that assess children pre/post using the Devereux Early Childhood Assessment Preschool Program Second Edition (DECA2) and formally assess pre/post using the CLASS were considered for the study. Secondary data were requested from programs meeting these characteristics from a southern state. Classroom quality was assessed using the CLASS data collected by the state-wide program's external assessors. Secondary student achievement data were requested from the state. The researcher requested access to statewide data for 83 prekindergarten classrooms measured pre and post using the CLASS and DECA-P2 assessment. Classroom demographics were also be collected, such as ZIP code of classroom, public or private site, years of teaching, teacher education level, curriculum approach, religious association of program, and the length of time the teacher has taught prekindergarten in this state-funded program.

Role of Researcher

The researcher subscribes to a pragmatist worldview which is frequently associated with mixed methodology (Creswell & Clark, 2011; Teddlie & Tashakkori, 2009). Pragmatism is a philosophical assumption, which emphasize the importance of

gathering practical results for the social sciences over subscribing to traditional quantitative or qualitative methodologies to answer research questions. The researcher employed multiple theoretical perspectives in this study to interpret data to answer the study's research questions (Creswell & Clark, 2011; Teddlie & Tashakkori, 2009). The researcher also holds a contextualistic worldview, whereby the bi-directional, reciprocal relationship between individuals and their environment is of the priority (Aldridge & Goldman, 2002). The researcher interpreted secondary quantitative data from a southern states publicly funded prekindergarten program in addition to the results from the TBQS which is both quantitative and qualitative. The researcher directly interacted with participants to administer the Q-sort to the P-set and simultaneously gathered anecdotal notes, audio recorded focus group sessions. The audio-recorded focus group sessions recorded conversations between the teachers in the focus group and the researcher as the Q-sorts were completed. The qualitative data (audio-recordings of focus group session) occurred during the Q-sort sessions to further explore participants' viewpoints. The researcher acknowledges her personal lens to view the world as a former pre-kindergarten and early childhood teacher. The researcher is an outsider to the participants, however, avoided inputting bias during interpretative procedures. The researcher's positionality acknowledges the presence of personal viewpoint, however, as a pragmatist the researcher interpreted the data to view components of the 'truth' in the social world (Denzin, 1986).

Materials and Instrument Design

The Teacher Belief Q-Sort (TBQS) method includes three 20-item Q-Sort exercises that assesses teachers' belief priorities, including: discipline/behavior

management, teaching practices, and beliefs about children, is included as Appendix A. The Q-sort is administered using paper Q-Sort cards or using an electronic interface. The participant assigns priority to statements below an 'anchor card' ranging from 'least characteristic of my approach or beliefs about..." to "most characteristic of my approach or beliefs about..." (Rimm-Kauffman, et al., 2006, p. 151). The Q-sort method forces participants to prioritize constructs. Typically, principal component analysis (PCA) factor analysis is conducted for each Q-Sort to reduce variables by attempting to explain total variance constructs, in this case belief statements, by identifying clusters of variables that correlate highly with each other in a correlation matrix (Field, 2013). The TBQS is preferable compared to teacher questionnaires as the Q-sort method reduces bias. Furthermore, due to the mathematics behind the Q-sort method, less participants are needed to produce significant, generalizable findings. Q methodology enables a person to hold beliefs constant for evaluation (Ernest, 2011). Q-sorts are highly correlated; Q methodology provides an empirical way to study phenomena (Ernest, 1999; LaParo, Siepak, Scott-Little, 2009). The authors of the instrument compare the TBQS of participants to the TBQS completed by specialists using the criterion method using Fisher Z values to show the relatedness between teachers and specialist (Rimm-Kauffman et al., 2006).

During the administration of the TBQS, the participants used physical cards to sort each of the three 20-item Q-Sort. Audio recordings that include teacher comments and interactions with participants of each session was also collected and analyzed. Transcriptions of teachers discussing the Q-sort, focus group questions, and other comments were documented, the researcher also recorded nonverbal behavior using

anecdotal observational notes. The addition of the qualitative data provides further exploration into the relationship of teacher beliefs and factors within the research questions. Recording teachers comments and experiences during the administration of the TBQS provided data to explore the subjective experiences to better understand how the teachers' beliefs and context of their lived experiences impact their classroom practice (Creswell, 2012).

The Classroom Assessment Scoring System for Pre-Kindergarten (CLASS) is an observational instrument used to assess classroom quality in pre-kindergarten, is included as Appendix B. CLASS dimensions include Emotional Support (ES), Classroom Organization (CO), and Instructional Support (IS) based upon developmental theory that suggests student and teacher interactions are the most basic component of development and learning, such as attachment theory and ecological systems theory (Bronfenbrenner, 1979; Bronfenbrenner, 1994; Perlman et al., 2016). CLASS defines quality in the prekindergarten classroom in three domains 1) classroom organization, 2) emotional support, and 3) instructional support (Pianta et al., 2016).

Teachstone (TS) provides training to assessors, programs, and teachers using the CLASS observational tool. TS reports in their summary of research, Effective Teacher-Child Interactions and Child Outcomes: Pre-K-3rd Grade, about 150 peer-reviewed studies using the assessment in large and small-scale projects (Teachstone). TS reports that classroom quality, as measured by CLASS, predicts positive developmental and academic outcomes. The CLASS observational data paired with professional development provides support to help teachers improve their classroom interactions.

Sandilos and DiPerna (2008) evaluated the reliability of scores from the CLASS and found the interrater agreement in the CLASS technical manual was comparable using the percent-within-one analysis, Cohen's *kappa*, and weighted *kappa*. Pianta, LaParo, Hamre (2016) describe how users become reliable using the instrument. Assessors complete CLASS training cycles, watch and code video segments, rate segments, and agreement of master CLASS coders' ratings are compared. After completing training, assessors complete a reliability test. Pianta et al. (2016) report that user ratings were within one point of each other approximately 87% of the time for all items. Construct validity was met during the development of the CLASS assessment as each dimension were originated from other assessments, child care experts, focus groups, literature on effective teaching practices, and piloting. Criterion validity was tested comparing CLASS scores with the Early Childhood Environment Rating Scale, Revised Edition. The CLASS observational tool is comprised of the following dimensions, in Figure 4, among the Emotional Support (ES), Classroom Organization (CO), and Instructional Support (IS) domains.

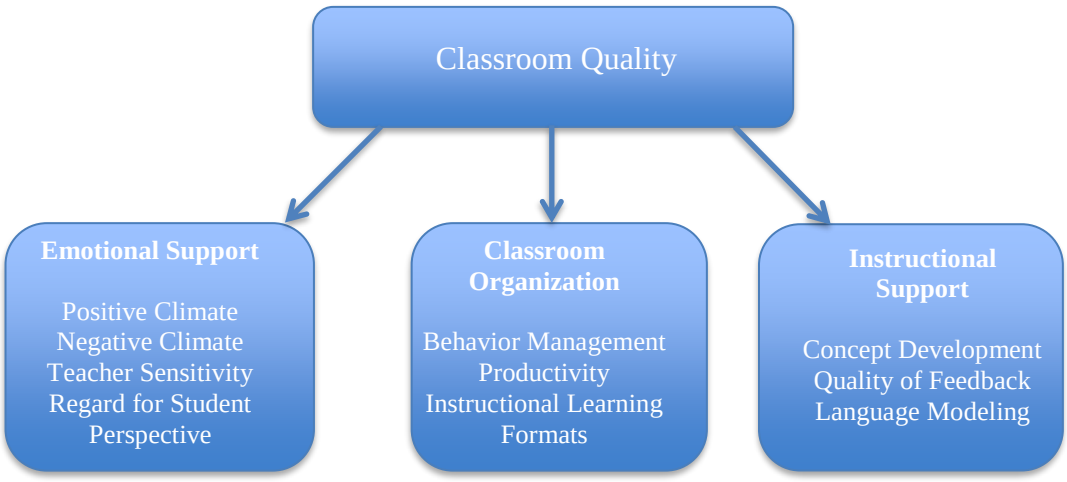


Figure 4: CLASS Domains and Dimensions. Adapted from Pre-K/K-3 CLASS Manual Technical Appendix, Pianta et al., 2016

Each CLASS domain is scored on a 1.00-7.00 Likert scale with 1-2 classified as low, 3-5 classified as mid, and 6-7 classified as high for all dimensions. Unlike the other dimensions, Negative Climate (NC) has a desired score of 1.00 indicating low instances of negative climate in the classroom teacher-student and peer-peer interactions during the observation.

The Devereux Early Childhood Assessment Preschool, Second Edition (DECA-P2) is a "standardized, norm-referenced behavior rating scale that assesses young children's within-child protective factors related to resilience" (Flemming & LeBuffe, 2014, p. 1). The three key resilience factors measured are: initiative, self-regulation, and attachment/relationships. Generally, these components are considered key domains comprising of a child's social emotional competency. The behavior rating scales are designed to be completed by a family member or teacher. The DECA-P2 is a psychometrically sound measure that studies the within-child protective factors for individual and groups of children (Flemming & LeBuffe, 2014). For the purposes of this study, paired sample t-tests were conducted on pre and post with the same class of children, while individual scores were requested, this study focused on one classroom as a group of children. Raters are recommended to have contact with a child for at least two or more hours for at least two days per week in a four week period, about sixteen hours of contact with a child in four weeks (Flemming & LeBuffe, 2014). A rater is required to have sufficiently observed the child's behavior to complete the measure. A child's protective factors are scored using percentile scores and *T*-scores. According to the authors, percentile scores describe the child's protective factors (initiative, self-regulation, and attachment/relationships) as compared to other children assessed with the

DECA-P2 (Flemming & LeBuffe, 2014). "*T*-scores are standard scores with a set mean of 50 and a standard deviation of 10, with equal units along the scale" (Flemming & LeBuffe, 2014, p. 2). A child or group of children are assigned a composite score on individual protective factor constructs, initiative, self-regulation, and attachment/relationships. Additionally, each child or group of children are assigned a Total Protective Factor score (TFP), which represent an overall indicator of a child's or group of children's social and emotional competence (Flemming & LeBuffe, 2014).

The DECA-P2's internal reliability for TPF for parent raters and teacher raters is .92 and.95 respectively. The other ratings meet or exceed the defined minimum standards for the instrument (LeBuffe & Naglieri, 2012). The instruments test-rest and inter-rater reliability are significant with $p < .01$, except one parent scale (unspecified). Content, criterion, and construct validity are considered high based upon literature reviews, samples comparing student groups with emotional behavioral disturbances and typically developing young children (LeBuffe & Naglieri, 2012). Appendix C includes a parent scale and teacher scale of the DECA-P2 used for this study.

Population and Sample

The researcher requested secondary CLASS and DECA-P2 data from all classrooms participating in a southern state's publically funded pre-kindergarten program serving four-year-old children. The program provides funding to classrooms who apply for grants and are thereby able to staff classrooms with teachers who have early childhood four year degrees, or similar. The classrooms provide full day child care, August through May, and student eligibility is not determined by financial need. The population for this study included all classrooms in the southern state's first class pre-

kindergarten program, including teachers and children. Eighty-three classrooms in the state were selected to have a family member and teacher rate each child using the DECA-P2 for a pilot study. This sample participating in the pilot was the target sample. The state program selected classrooms participating in the pilot based on which programs or teachers volunteered to participate. The researcher invited voluntary participation from all 83 classroom pilot study to request teachers to complete the TBQS in focus groups. In mixed methodology purposeful sampling allows the researcher to target specific participants within a specific setting or who have important information relative to the study (Onwuegbuzie & Collins, 2007; Teddlie, 2007). The researcher followed non-probability sampling and convenience sampling whereby all eligible participants were contacted, however, focus groups were scheduled with those willing and able to participate in the study (Creswell, 2012). The researcher requested access to the following secondary data of the 83 classrooms participating in the pilot study: pre and post CLASS scores, pre and post DECA-P2 rated by teacher teams, and requested permission to administer the Q-sort with a stratified sample of teachers from within the sample. The researcher voluntarily requested the following demographic information from focus group participants: education level, and years of teaching in early childhood (birth through third grade).

Research Questions

This study followed a mixed methods convergent parallel design. The main research question this study will answer is: How are classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

The following are the sub-questions for this study:

a. What is the relationship between teacher beliefs (TBQS), classroom quality (CLASS), and children's ability to self-regulate (DECA-P2)?
b. What are the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children? How do the sample's teacher beliefs compare to exemplar (coaches, trainers, highly qualified teachers) beliefs? Do teacher beliefs' impact overall classroom quality (CLASS)?

Data Analysis and Statistical Procedures

A concurrent parallel mixed methods research design was used for the study. The researcher gathered quantitative and qualitative data simultaneously and merged results to answer the overarching mixed methods question guiding the study (Creswell & Plano Clark, 2011). The researcher employed data analysis and statistical procedures for each sub question individually, and created meta-inferences for overarching mixed methods question guiding the study (Teddlie & Tashakkori, 2009). The qualitative data collected from the Q-sort focus groups were interpreted using a phenomenological approach exploring the experience of the individual participant. The researcher selected the phenomenological approach to explore the long term lived experiences that impacted the participants within the prekindergarten program and while working with prekindergarten children. Integrating participants lived experience, working within the prekindergarten program and with prekindergarten children, with the quantitative data and mixed Q-sort data provided depth to the overall meta-inferences and conclusions for the study (Mayoh & Onwuegbuzie, 2015).

Qualitative Methods

Qualitative data was gathered by audio-recording focus group sessions while participants were completing the q-sort activities. The researcher selected a phenomenological approach to describe the experience or phenomenon of the lived experience for the teachers within the prekindergarten program working with prekindergarten students (Creswell, 2014). The purpose of a phenomenological study is to reduce the experiences of the group of participants to a description of the essence of experience among the group (Creswell, 2014; Shosha, 2012). Initially, the researcher went through the transcripts multiple times to identify significant statements that describe the experience of the participants. The phenomenological researcher must set aside her own experiences in a process known as 'epoche' when selecting statements of significance (Creswell, 2014). The researcher employed bracketing which is a technique used to soley focus on the statements and experiences of the participants instead of prior viewpoints or constructs previously known outside of the data collected (Denzin, 1986; Moustakas, 1994). Bracketing also isolates content within the data that pertains to the the phenomenon explored within the scope of the study.

The researcher employed the process of bracketing whereby the researcher isolates the significant statements pertaining to the research questions and relevant lived experiences of the participants. The researcher also followed the phenomenological reduction strategy called horizontilization, which is a process of equalizing each statement. Using the aforementioned strategies, the researcher followed Colazzi's (1978) strategy of descriptive phenomenological data analysis to reveal the 'essence' of the

participants lived experiences describing how what influences the development of their beliefs about practice, classroom management, and children (Anderson & Spencer, 2002; Colaizzi, 1978; Morrow, Rodriquez, & King, 2015).. The researcher followed seven steps from Colaizzi's seven step method: 1) read and re-read transcripts to acquire a 'feel' for each, 2) evaluate and extract significant statements, 3) formulate meanings, 4) organize formulated meanings to form cluster themes, 5) combine clusters to provide comprehensive picture of phenomenon, 6) examine comprehensive picture to detect any other meanings, 7) Seeking verification of fundamental structure (Colaizzi, 1978, p. 59; Bowen; Eaves; Vance; & Moneyham, 2015, p. 223).

Mixed Methods Design

The researcher followed a convergent parallel design with priority on the quantitative data (QUANqual) (Ivankova, 2014). The researcher collected and interpreted the quantitative and qualitative data separately within the convergent design (Creswell & Plano-Clark, 2011). The researcher assigned priority to the quantitative data based upon the scope of the research questions and quantitative measures used within the study. The point of intercept occurs when the researcher relates and interprets the data as shown in Figure 5.

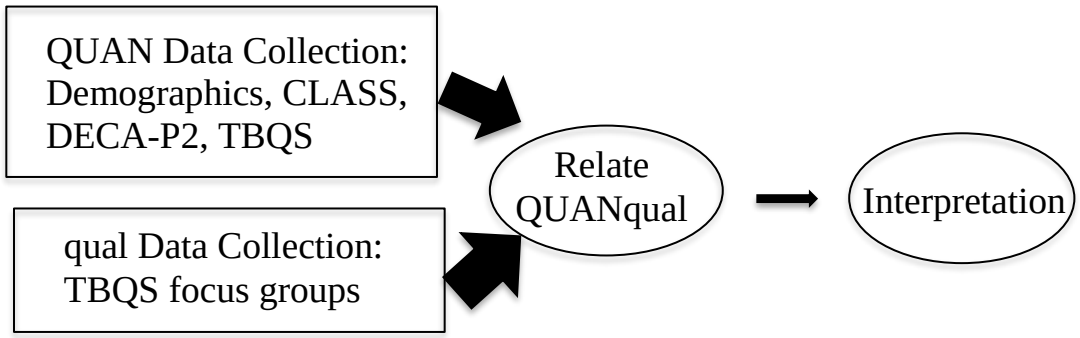


Figure 5: Adapted from Convergent Parallel Design Creswell & Plano-Clark (2011) pg. 69.

QUANqual Mixed Methods Question

The researcher related the results from the sub questions in order to examine and explore the findings of the study to triangulate and converge results of the different methods to gather a more complete understanding of the variables and perspectives (Creswell & Plano Clark, 2011). The combined results provide a mixed methods answer to the QUANqual question above with priority assigned to the quantitative data (Ivankova, 2014). The researcher merged the qualitative and quantitative data after data was analyzed and the qualitative data was used supplementally to validate and further describe the quantitative findings. The null hypothesis is that no relationship exists between classroom quality (CLASS), children's ability to self-regulate, and teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children.

Research Question 1

What are the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

Q methodology is neither quantitative nor qualitative, but a combination of the two (Alghamadi, 2016; Ernest, 2011). An exploratory factor analysis was completed with

the P-set for each teacher Q sort with alpha set at $p > .05$. A subsequent principal component factor analysis was conducted identifying specific factors using varimax rotation (Ernest, 2011; Field, 2013; Rimm-Kaufman et al., 2006). PCA was used to reduce factors to explanatory constructs that account for total variance, which the researcher calculated using IBM Statistics Package for Social Sciences (SPSS) (Field, 2013). The constructs that emerge as significant from the PCA transform the entered data to reflect constructs which cannot be measured directly (Fields, 2013). Subsequent mixed methods procedures using the "interpretation of statistics within a qualitative framework of interrelated statements" yield categories of high and low priority (Ernest, 2011, p. 229). Qualitative data gathered from focus groups in the form of anecdotal notes and observational records provide additional insight into teachers' viewpoints and beliefs. The researcher merged the qualitative and quantitative results at the point of intercept outlined in Figure 5 once the data were all collected. These data were corroborated to answer the above question after results are merged for interpretation (Creswell & Plano Clark, 2011).

Research Question 2

How does the sample's teacher beliefs compare to exemplar beliefs?

The TBQS's authors suggest comparing the participants (P-set) subjective teacher beliefs to an exemplar's Q sort using the criterion method. The researcher compared the P set results to the exemplar's scores in order to interpret the degree of relation between teacher beliefs to an exemplar teacher. For this study, this provided the researcher further information regarding the types of beliefs held by the sample's teachers. The exemplars from Rimm-Kauffman et al., (2006) study had high priority items for Q-Sorts 1, 2, and 3,

such as: “It is important to respect students’ autonomy and expect them to act in a responsible manner;” “Permitting students to choose from a variety of activities;” and “Students need to feel safe and secure in their classrooms” (Rimm-Kauffman et al., 2006, pg. 153). Spearman correlation coefficients were computed between the P-set and the exemplar Q sorts to indicate the relatedness of each teachers Q sort to exemplars, which were then standardized to a Fisher Z used for further analysis (Rimm-Kaufman et al., 2006, pp. 153-154). Qualitative data gathered from focus groups in the form of anecdotal notes and observational records provide additional insight into teachers’ viewpoints and beliefs. The data from the focus groups were used to further support the findings from PQ analysis and criterion sorts to answer the above question. These data were intercepted at the conclusion of the study to answer the overarching mixed methods question.

Research Question 3

What is the relationship between teacher beliefs (TBQS), classroom quality (CLASS), and children’s ability to self-regulate (DECA-P2)?

The researcher used the results from the PCA from sub question a. to examine the relationship between teacher beliefs from the TBQS, CLASS domains (IS, CO, ES), and children’s self-regulatory scores from the DECA-P2 using a non-parametric tests, due to small sample size, to determine if any variation among variables are explained by teacher beliefs. The researcher initially intended on determining how much variation exists and how much can be explained by teacher beliefs using a regression model, however, due to missing data within the secondary data set the researcher employed non-parametric tests to accommodate for small sample size. The researcher used Wilcoxin Signed-Rank Tests and Kruskal-Wallis Tests to determine if hypothesis should be retrained or rejected and to

test differences among groups. The researcher confirmed no assumptions associated with distribution free tests were violated and ranked data accordingly to appropriately run non-parametric tests (Field, 2013).

Research Question 4

Do teacher beliefs impact overall classroom quality (CLASS)?

The researcher used the results from the PCA from sub question a. to examine teachers beliefs as related to their end of year CLASS scores in each domain (IS, CO, ES) using a regression model to determine how much variation, if any, between domain scores are explained by teacher beliefs. Non-parametric testing was conducted due to missing data from the secondary sources (CLASS, DECA-P2). The qualitative data collected during Q-sort focus groups intercept with the quantitative data to further explain individual teachers perspectives. Integration of the quantitative and qualitative data does not mean there is a singular interpretation, however, the mixed methods researcher used both forms of data to report meaningful conclusions or inconsistent results (Teddlie & Tashakkori, 2009). The researcher employed interpretive rigor by following components within the Integrative Framework for Inference Quality shown below in Figure 6 (Teddlie & Tashakkori, 2009).

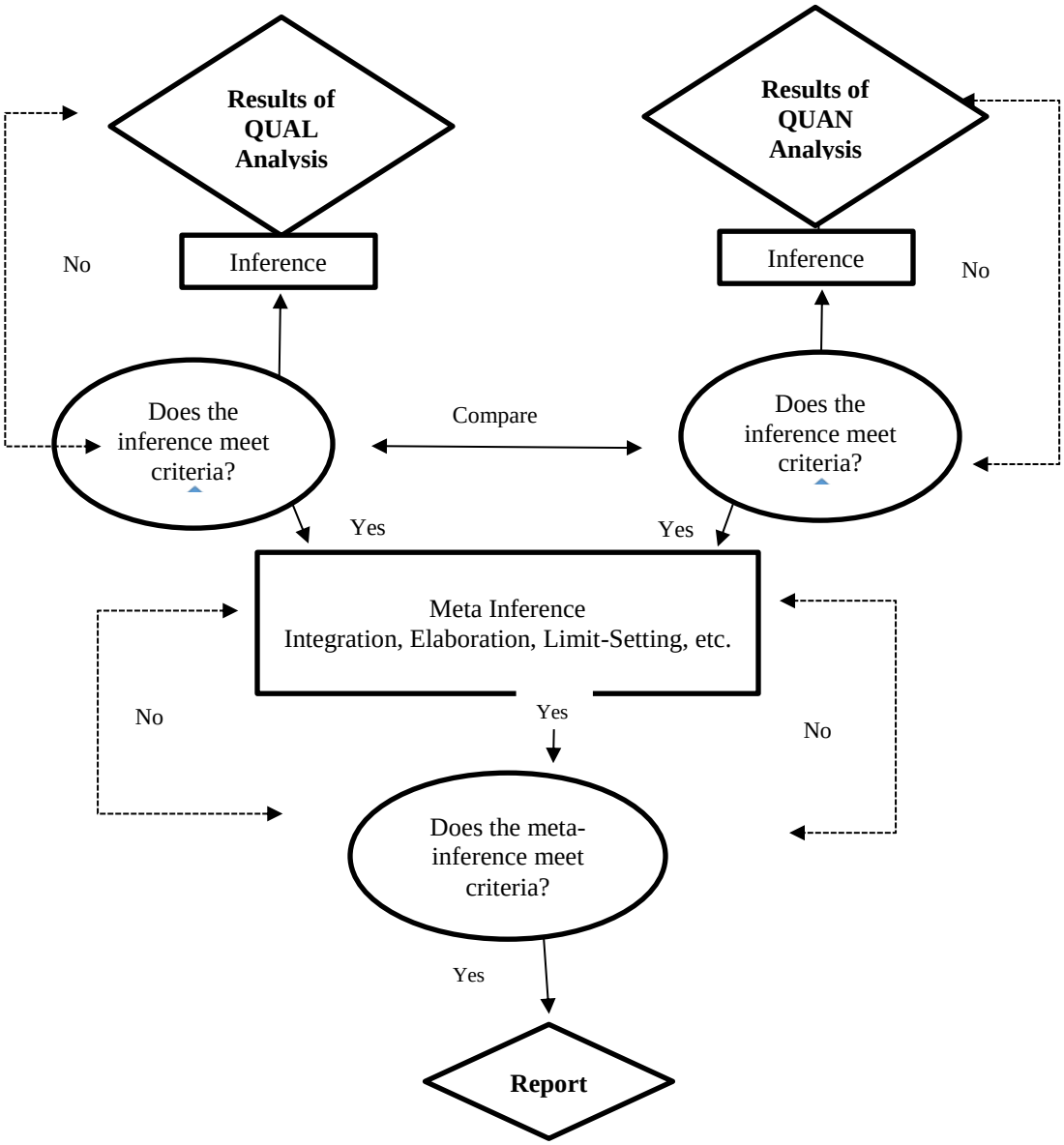


Figure 6. Adapted from Process of Evaluation for Inference Quality (Teddlie & Tashakkori, 2009, p. 307)

Ethical Considerations

A publicly funded state-wide prekindergarten program was asked to participate in the study. The researcher requested teachers to voluntarily participate in the Q-sorts after gatekeeper access is granted (Creswell & Creswell, 2013). The state system was not identified in the study A data request was made to senior administrators within a state department that oversaw the state-funded program. The researcher requested secondary

data with no identifiable information to locate specific schools within the study; classroom data will appear as follows, class 1, class 2, class 3 etc. However, the researcher selected a small convenience sample from the 83 classrooms to participate in the Q-sort (Field, 2013). The researcher requested access to identifiable information for the stratified sample to complete focus groups and the Q-sorts with participants. The participants were provided a letter of consent which includes the ability to withdraw at any time, study purpose statement, voluntary nature of the study, use of the data, and the researchers contact information. The names of the participants were altered to numerical identification when entered into software to ensure anonymity except to the primary researcher. Focus group data was destroyed after electronically uploaded to the primary researchers' computer and G-drive. The electronic data were stored on a password-protected computer and a G-drive to maintain confidentiality. The study was granted approval by to the Institutional Review Board (IRB) at the University of Alabama at Birmingham for research approval prior to commencement of the data collection process.

CHAPTER 4

RESULTS

The study explored and examined the relationship between teacher beliefs (beliefs of classroom management, young children, and classroom practice), classroom quality (CLASS), and pre-kindergartener's self-regulatory abilities. The study collected both quantitative and qualitative data. Teacher beliefs were examined and explored by administering three Q-Sorts (classroom management, classroom practice, and beliefs about children) following Q-Methodological procedures, which enables the researcher to make the subjective teacher beliefs operant (Stephensen, 1980). Secondary quantitative data was collected from publicly-funded pre-kindergarten classrooms using the CLASS and DECA-P2 (teacher ratings) where $n = 80$. All lead teachers from the eligible sample were contacted to participate in focus group to complete teacher belief Q-Sorts and audio-recordings.

The study employed a convergent parallel mixed methods design, which separately analyzes the qualitative and quantitative data to merge both forms for interpretation at the conclusion of the study. For this study, the priority was assigned to the quantitative data and the qualitative data providing triangulation, confirming findings, and adding depth to the perspectives of participants' lived experiences. The data was converged after collection was completed and integrated as appropriate within each sub-question. The convergent parallel design (Figure 5) was adapted from Creswell & Plano

Clark (2011) pg. 69. After each sub-question was completed, the researcher integrated the QUANqual data to deduce inferences and meta-inferences using the Process of Evaluation for Inference Quality (Teddlie & Tashakkori, 2009). The researcher selected teachers to conduct focus groups based upon eligibility, scheduling, and first responses (*n* = 20). Focus groups took place on site in a private space across a southern state. The following data sources were used and are described below to answer the studies research questions: a) q-sort sorting matrix grids ranking statements within three concourses (beliefs about practice, children, and classroom management), b) secondary CLASS data collected by a publicly funded state agency, and c) secondary DECA-P2 data collected by state agency and competed by classroom teachers.

The mixed methods approach analyzed quantitative and qualitative data to determine how classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children? The following four research questions specifically asked:

1. What are the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?
2. How do the sample's teacher beliefs compare to exemplar (coaches, trainers, highly qualified teachers) beliefs?
3. What is the relationship between teacher beliefs (TBQS), classroom quality (CLASS), and children's ability to self-regulate (DECA-P2)?
4. Do teacher beliefs impact overall classroom quality (CLASS)?

Research Question 1

Research question one explores what similarities and differences exist, if any, between prekindergarten teachers' beliefs regarding disciplinary practices (classroom management), teaching practices, and beliefs about children. Prekindergarten teachers, within a publicly funded program in a southern state, participating in a DECA-P2 pilot group were contacted to participate in the study. The state program identified classrooms participating in the DECA-P2 pilot located in many regions across the state. Each teacher was contacted by the researcher to request voluntary participation in the current study. The researcher scheduled focus groups in a private setting at the teacher's classroom site or off-site location. Overall, 24 teachers responded that they would like to participate and 20 teachers completed Q-Sorts and focus group sessions. The researcher voluntarily requested the following demographic information from focus group participants: education level, years of teaching in early childhood (birth through third grade), and years of teaching (K-5).

Twelve focus group sessions (n = 20) were audio-recorded while participants completed the TBQS. Participants were encouraged to talk aloud as they completed sorts and were prompted to answer questions by the researcher. Audio recordings were transcribed to explore the participants' experiences, which impacted the development of their belief systems on a deeper level (Anderson & Spencer, 2002). The researcher followed the phenomenological approach to find the 'essence' of the lived experience for prekindergarten teachers practicing in the prekindergarten program (Colaizzi, 1978). The researcher avoided inserting personal bias by bracketing significant statements to deduce further meaning. Using components of Colaizzi's (1978) phenomenological methods as a

process to reveal the ‘essence’ of the participants lived experiences describing how what influences the development of their beliefs about practice, classroom management, and children (Anderson & Spencer, 2002; Colaizzi, 1978; Morrow et al., 2015). Verbatim transcripts were read multiple times. Significant phrases from focus groups were sorted into broad categories (beliefs, change in beliefs, children’s behavior, classroom management, development, experiences, family, misconceptions, and classroom practice) using NVivo 12 case nodes. The NVivo 12 case node feature allows the researcher to extract significant statements from focus groups while maintaining their focus group and participant label. The extracted statements were printed from NVivo and the researcher selected 68 significant statements for further analysis. The 68 significant statements were clustered into groups to create formulated meanings and subsequently cluster themes (Anderson & Spencer, 2002).

Demographic Information

Descriptive demographics were collected for each focus group participant. All participants were female teachers within the publicly funded prekindergarten program in a southern state. The teachers’ age, degree type, years teaching prekindergarten, and overall years teaching are included in Table 1.

Table 1

Code	Age	Degree	Years Teaching Pre-K	Years Teaching PK+
TA	34	Master’s	5	15
TB	47	Bachelor’s	5	5
TC	44	Bachelor’s	5	5
TD	48	Master’s	11	21
TE	32	Bachelor’s	13	11
TF	41	Master’s+	1	14
TH	53	Master’s+	5	8

TK	26	Bachelor's	3	4
TL	32	Master's	2	4
TN	24	Bachelor's	2	2
TO	26	Bachelor's	3	3
TP	43	Bachelor's	3	7
TQ	35	Bachelor's	9	12
TR	40	Master's	3	19
TS	28	Bachelor's	2	4
TT	56	Master's	5	18
TU	28	Bachelor's	3	5
TV	48	Master's	7	9
TW	50	Master's	2	25
TX	47	Bachelor's	1	18

Demographic Information of Focus Group Teachers

The focus group participants, on average, are 39.1 years old. The age range of the focus group participants was as follows: five teachers are 20-30 years old (25%), five are 30-40 years old (25%), nine teachers are 40-50 years old (40%), and one teacher is 50-60 years old (10%). There education level within the focus group participants was as follows: 11 teachers (55%) who hold a Bachelor's degree in early childhood education and/or dual early childhood and elementary education with pre-kindergarten certification, seven teachers (35%) hold a Master's degree in early childhood education, special education, or leadership in addition to a Bachelor's degree in early childhood, elementary education, or psychology, two teachers (10%) hold an Educational Specialist degree or credits beyond a Master's degree in the field of early childhood or elementary education. The average length of teaching pre-kindergarten to fifth grade is 10.45 years with 4.5 years in pre-kindergarten.

Cluster Themes

Verbatim transcripts were also uploaded into NVivo software after the researcher read and re-read transcripts for familiarity and accuracy. The researcher completed bracketing and horizonalization to avoid inserting bias of opinion and interpret statements

based on the essence of participants experience. Initial transcripts were reduced to 68 significant statements using NVivo software to sort statements into initial categories (experiences related to professional development, children's behavior, misconceptions of prekindergarten, knowledge of children, and social emotional development). Table 2 displays examples of significant statements and related formulated meanings.

Table 2

Sample of Significant Statements of Teachers Development and Related Formulated Meanings

Significant Statement	*Formulated Meaning*
You can't… you know, in college, I remember learning theories…but until you have a face in front of you, you don't really know.	Classroom experience influences teacher development.
We need real world (experiences). Well, in college I feel like it's hard to have a teacher (professor) who has been out of the classroom.	Professional development connected to classroom experiences is influential.
In college, we learned you had to control them (children.)…not let them learn how to do it within the classroom.	Classroom experiences influences teacher management practices.
For the kindergarten experience (what is most important), I think it would be their social/emotional development because all of the other stuff can be taught and, while they're in pre-k, if they can learn how to be healthy socially and emotionally helpful then everything else can fall in place because they then know how to solve problems, take care of themselves, they show concern for others. And that is something that they're not going to get another classrooms unless they have a teacher who knows the importance of that.	Social emotional development is fundamental.
Self-monitoring or self-regulation is most important skills for students to develop…I say if they have learned nothing else…we want them to learn to self-regulate because if they go into kindergarten, they can know all the letters, all the sounds, everything academic wise but, if they cannot sit there and they cannot regulate their emotions, they will never be able to pass that barrier to be able to you know, accept that academic things coming into them.	Developing self-regulation precedes academic learning.

…Students need to be…to have their strengths recognized to promote learning. Well they need to be encouraged but they also have to feel safe and secure in the classroom before you can get to that point.	Knowledge of the child and relationships influence teacher practices.
You know (about child's family), I think you need to know because when the child comes into the classroom, he doesn't bring himself. He brings all of us his family, his sides, his everything.	Knowing about the child's family or child's background influences teacher interactions.
It's been very hard to break out of the mentality though, we're always considered 'just child care'. What we do matters.	Misconceptions of the importance of prekindergarten exists.

Note. Table format adapted from Anderson & Spencer, 2002, p. 1343

Subsequently, the formulated meanings were arranged into cluster themes displayed in Table 3 (Anderson & Spencer, 2002; Colaizzi, 1978; Morrow et al., 2015). Significant statements within Table 3 portray the greater majority of participants per theme cluster.

Table 3

Examples of Two Theme Clusters with Significant Statement

Theme Cluster	*Significant Statement*
Experience as predominant influence	That's something you get (development) when you get in there (classroom).
	Definitely experience in the classroom (influenced beliefs).
Social emotional development is fundamental	I take what I see, what I'm encountering (in the classroom) and look for solutions that will help me. It's building my tool box.
	It's all about socialization.
	They are trying to navigate their feelings and their self regulation,…I need to help them first with this, you know, before they can truly start to begin that work.

	Self-monitoring behaviors are important skills for students to develop…if preschool could do one thing, that's what it would need to do.

Note: Adapted from Anderson & Spencer, 2002 p. 1343

The researcher followed components of Colaizzi's (1978) phenomenological methods as a process to reveal the 'essence' of the participants lived experiences describing how what influences the development of their beliefs about practice, classroom management, and children (Anderson & Spencer, 2002; Colaizzi, 1978; Morrow et al., 2015). The researcher followed the seven steps from Colaizzi's seven step method: 1) read and re-read transcripts to acquire a 'feel' for each, 2) evaluate and extract significant statements, 3) formulate meanings, 4) organize formulated meanings to form cluster themes, 5) combine clusters to provide comprehensive picture of phenomenon, 6) examine comprehensive picture to detect any other meanings, 7) Seeking verification of fundamental structure (Colaizzi, 1978, p. 59; Bowen et al., 2015, p. 223). The following themes emerged from the qualitative data collected during focus groups:

Theme 1: Experience in the classroom is a predominant influence of teaching practices, knowledge, and development of beliefs.

Theme 2: Social emotional development is fundamental for exiting pre-kindergarteners.

Theme 3: Knowing the child influences teacher's behavior and practices.

The first theme that emerged from the focus groups clusters was that experience in the classroom is a predominant influence of teaching practices, knowledge, and development of beliefs. In this cluster, respondents described ways in which classroom experiences or experiences with children influenced their teaching practices, knowledge of children, and

development of beliefs. The second theme that emerged was that social emotional development is fundamental for exiting pre-kindergarteners. In this cluster, respondents described ways in which social emotional development, most often self-regulation, is a fundamental skill for rising Kindergarteners. Teachers described the importance of a child's ability to self-regulate or the importance of social emotional development in prekindergarten. The third theme that emerged was that teacher's knowledge of the child influences teacher's behavior and practices. In this cluster, respondents described ways in which knowledge of the child influenced teacher's behavior and classroom practice. Teachers described the importance of understanding the child's family, background, or establishing a relationship with the child beginning with understanding the child. Research question one asks about the similarities and differences of teacher's beliefs regarding classroom practice, classroom management, and classroom beliefs. The phenomenological approach seeks to find the essence of the participants experience.

The first theme 'Experience in the classroom is a predominant influence of teaching practices, knowledge, and development of beliefs' respondents described ways in which classroom experiences or experiences with children influenced their teaching practices, knowledge of children, and development of beliefs. The participant's descriptions were consistent but came from a variety of individual experiences, such as, children challenging specific classroom practices or professors or coaches who encouraged classroom experiences to supportively encouraged experiential learning. Teacher W stated:

> Well the rule, you know, the classroom rules and expectations for behavior, those kind of things, you know, we were taught in college…you don't know it until

> you've lived it, really…I had the book smarts in my brain that's what I needed to do but you just don't…you just have to do it, to me. You have to live it, you have to know it.

Teacher N stated, "it's just something you get once you're in there (classroom), you learned that (management) more so in the classroom than in professional development in your teaching career. Another teacher, Teacher O, stated "no matter what amount of training we've had, we still have students that blows your mind so then you start seeking help."

Further, many participants described that they believed their coach and tangible classroom adaptations influenced their beliefs, as compared to external professional development opportunities. Teacher N stated, "Like we need real world. Well, in college I feel like it's hard to have a teacher who has been out of the classroom." Teacher A stated, "Mine (major influence on beliefs) has definitely been for experience in the classroom." Teacher R stated, "I think it's still going to the professional development that you can take back to your classroom then. Our coach does do a lot to help us because she will come in and do the, you know, constructive criticism whenever there's a need but even if she's like well, I see this is positive, this and that and the other, then she'll still give us something to look at, to consider (in the classroom)."

Multiple teachers mentioned the professional development that influenced the development of their personal beliefs occurred on-site and was provided by coaches or colleagues. For example, Teacher E stated, "I think it's a combo and I think it ... the best way to handle that is to have on the job professional development." Another teacher

described the coaching process as a means of on-site professional development, for example, Teacher B stated:

> Like, I have been mentoring in both ways. I have been told go see how great this other person does things and I have also been able to balance ideas off of my coworkers and being able to share like in an exchange of back and forth where you can say I like this, I think you can get better at this. That's much more beneficial to me as a person and as a teacher to help me grow.

Integrating this qualitative finding with the quantitative data that there is a significant statistical difference between groups of teachers' beliefs (correlated with exemplar's beliefs or uncorrelated) classroom quality scores and average classroom self-regulation growth provides a deeper understanding of the participants lived experiences.

The second theme that emerged was that social emotional development is fundamental for exiting pre-kindergarteners. In this cluster, respondents described ways in which social emotional development, most often self-regulation, is a fundamental skill for rising Kindergarteners. Teachers described the importance of a child's ability to self-regulate or the importance of social emotional development in prekindergarten. Teacher G describes what she feels is most important objective or skill for prekindergartener's exciting her classroom:

> There's a lot to it. But again, it just… to me what it boils down to is just teaching the child how to self-regulate, giving them strategies so that they know okay, I'm angry, what do I need to do. And giving them like direct strategies…refocuses yourself or the child, they call it your offset. You know, when you're offset, when you're off balance, your emotions, your feelings that can calm you down, refocus

> and then you can think in an executive mind frame, you know, thinking in the highest order of your brain and then you can make the best decision based off of that.

Teachers in focus groups consistently described the importance of self-regulation or social emotional development within the prekindergarten classroom. Teacher W stated, "self-monitoring behaviors are important skills for students to develop. Like I said, that's huge…that's everything. If preschool could do one thing, that's what it would need to do." Teacher V said, "Early on when I was teaching PreK, I thought my job was to teach them the letters, and the shapes, and the numbers. The more I've done it the more I realize it's all about their social emotional development."

The third theme that emerged was that teacher's knowledge of the child influences teacher's behavior and practices. In this cluster, respondents described ways in which knowledge of the child influenced teacher's behavior and classroom practice. Teachers described the importance of understanding the child's family, background, or establishing a relationship with the child beginning with understanding the child. For example, Teacher B stated, "His learning is going to be built on the relationship that he establishes with you, so that knowledge to me is key." Teacher T stated, "You know, I think you need to know (about family) because when the child comes into the classroom, he doesn't bring himself. He brings all of us his family, his sides, his everything. Another teacher, Teacher G stated:

> It's a little of both (developing relationship or knowing the child's background) because even if you know that information, if you have no true relationship with the child, the child's not going to trust you enough to open up to you. So you have

> to have that relationship but then you have to build the trust…You have a relationship with each and every child and each relationship is different and your actions, the things you say, and the things you do shape that relationship in the classroom.

Teacher T stated, "The first time a had him (a child) write his name, he had a total meltdown, tears, sobbing,…dry heaving....And so, we began making mistakes in the classroom so that he could see that there were times that we would do it …" Teacher A stated:

> Students cannot be understood without knowing something about their families. I am connecting this to positive intent for Conscious Discipline…having knowledge of their families does help…I don't need to know it to be able to teach…but it can help.

The researcher merged the themes drawn from the purely qualitative focus groups and the results from the Q-Sorts employed using Q-Methodology, which is neither purely quantitative nor qualitative within Chapter 5 (Ernest, 1999; Rimm-Kauffman et al. 2006). At the point of intercept, the researcher used the phenomenological data analysis and results to create meta-inferences from both forms of data (Creswell, 2006). Priority is given to the quantitative data per the design of the study (Teddlie & Tashakkori, 2009).

Q-Methodology

Focus group participants completed Q-sorts regarding: 1) teacher beliefs of children, 2) teacher beliefs regarding classroom practice, 3) teacher beliefs regarding classroom management. Q-methodology was employed when the participants rank sets of statements using a Q-Sort grid (Brown, 1980; Kim, Kim, & Sohn; Watts & Stenner,

2012). The Q-sort grid (Fig. 7) for the study was symmetric and designed for participants to rank statements depending upon their agreeance or disagreeance (Brown, 1980; Watts & Stenner, 2012). Q-sort grids are typically a normal distributed; however, the current study replicated the Q-Sort used in Rimm-Kauffman et al.'s (2006) study which was designed to have an equal number of statement per anchor instead of fewer statement cards on the extremes (Rimm-Kauffman et al., 2006, p. 151). The participants rank statements to be least representative (-2) of their belief of the statement or characteristic of practice to most representative or characteristic (+2).

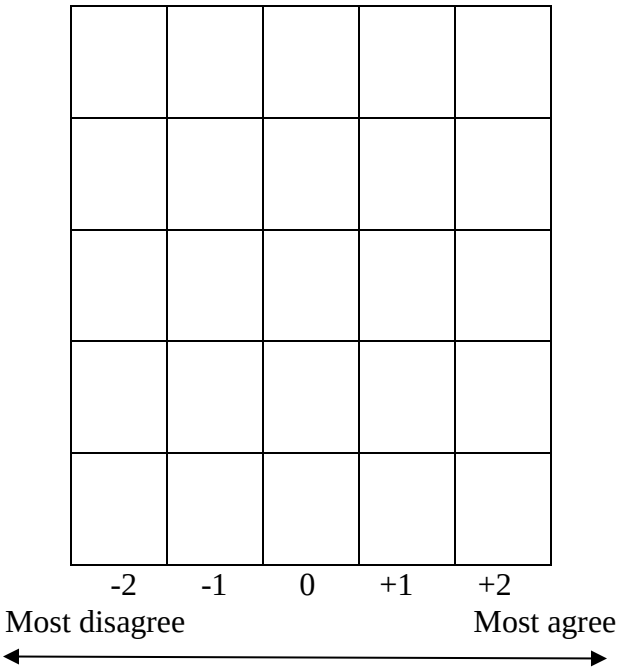


Figure 7. Q-sort grid for study

Q-sort data were analyzed using PQMethod software (Schmolk, 1998) to perform principal components analysis and varimax rotation. The Q-Sort grid data of sort rankings were entered into an excel file and uploaded to PQMethod version 2.35 (Schmolck, 2014) to analyze. PQMethod software created a 20 x 20 matrix for each Q-

Sort (beliefs about classroom management, practices, and children). A subsequent principal component analysis was conducted to identify common factors using varimax rotation (Rimm-Kaufman et al., 2006; Ernest, 2011; Fields, 2013). PCA is used to reduce factors to explanatory constructs that account for total variance which the researcher will calculate using PQMethod (Ernest, 2011; Fields, 2013, p. 681). The constructs that emerge as significant from the PCA transform the entered data to reflect constructs which cannot be measured directly (Fields, 2013). Factors with Eigenvalues (EV) of 1.00 or above explain more variance than one Q-sort (Watts & Stenner, 2012, p. 106). Eigenvalues are calculated by 'summing the squared loadings used to derive the commonality' of all respondent's Q-Sorts on a specific factor (Watts & Stenner, 2012, p. 104). The researcher entered participants' data directly into PQMethod 2.35. The following terms, included as Table 4, will be used to describe each Q concourse.

Table 4

Q-Sort Concourse Terms

Concourse Topic	Term
Teacher Beliefs regarding:	
Classroom Management: Q-Sort 1	Classroom Management Sort
Classroom Practices: Q-Sort 2	Classroom Practice Sort
Children: Q-Sort 3	Beliefs about Children Sort

PQMethod 2.35 was used to perform a principal component analysis to represent the degree of relation between the viewpoints of the participants (Kim et al., 2017). The factor structure is interpreted based upon the factor loadings with a correlation coefficient above .40, which indicates the degree of association to a factor or view (Kim et al., 2017, p. 14). The researcher is able to rotate viewpoints using varimax rotation to interpret which viewpoint best fits participants view. There is "no set strategy for interpreting a

factor structure…(it) depends foremost on what the investigator is trying to accomplish" (Brown, 1980: p. 247; Watts & Stenner, 2012). However, for this dissertation, determining how many factors to extract are based upon the following criterion: 1) eigenvalue (EV) above 1.00 and 2) representative of at least three participants (Watts & Stenner, 2012). A defining sort correlates with a participant's degree of association with a factor.

The researcher examined the unrotated factor matrix for each Q-Sort (Classroom Management Sort, Classroom Practice Sort, and Beliefs about Children Sort) to determine how many respondents most associate with a factor and how much variance a factor explains. The researcher initially selected seven factors for varimax rotation for each Q-sort (Watts & Stenner, 2012). The researcher performed automatic pre-flagging using PQMethod 2.35's add-on program PQROT (PQRotate). Factor 1 and 2 for each Q-Sort were selected based upon the EV's of the correlation matrix and representation of multiple respondents (more than two) per factor.

Additionally, retaining more than factor 1 and 2 per sort (1, 2, 3) did not significantly increase the explained variance per sort. Respectively, the variance explained for factor 1 and 2 for each sort was 62%, 66%, and 70%. Retaining factor 1, 2, 3, and 4 would have added explained variance (12%,14%, and 11%) but the addition was only positively associated with for one or two participants loading on another factor. Following the scientific process of parsimony, the researcher concluded the first two factors explained the most variance efficiently and accurately (Gauch, 2002). Table 5 lists the factor matrix with an X indicating a defining sort for Q-Sort 1, Q-Sort 2, and Q-Sort 3, and explained variance. An X indicates the participant's sort correlate with a

noteworthy and statistically significant degree with the overarching shared viewpoint of the perspective

Table 5

Q-Sort 1, 2, 3 Factor Matrix: Defining Sorts

Respondent	QSort 1 Factor 1	QSort 1 Factor 2	QSort 2 Factor 1	QSort 2 Factor 2	QSort 3 Factor 1	QSort 3 Factor 2
Teacher A	0.5499X	0.3653	0.7299X	0.2380	0.4725	0.6772X
Teacher B	0.4933X	0.7945X	0.7945X	0.3501	0.5356	0.6883X
Teacher C	-0.0129	0.8255X	0.6578X	0.6374X	0.6374X	0.4121
Teacher D	0.5855X	0.591	0.7959X	0.0787	0.6765X	0.5444
Teacher E	0.7407X	0.2085	0.6863X	0.5642	0.8283X	0.3885
Teacher F	0.8424X	-0.0589	0.7186X	0.5422	0.7155X	0.5271
Teacher H	0.8936X	0.1742	0.7325X	0.2882	0.4216	0.7375X
Teacher K	0.8272X	0.2538	-0.3351	0.6025X	-0.2931	0.7952
Teacher L	0.7016X	0.3950	0.7814X	0.6025X	0.7535X	0.0948
Teacher N	0.3959	0.8183X	0.7814X	0.1681	0.5121	0.8105X
Teacher O	0.0268	0.8916X	0.8334X	0.2543	0.6696X	0.6218
Teacher P	0.4810X	0.3853	0.5932X	0.5668	0.1775	0.7596X
Teacher Q	0.8702X	0.0663	0.36544	0.723	0.6277X	0.5760
Teacher R	0.8232X	0.2410	0.5975	0.6042X	0.2248	0.4785X
Teacher S	0.7688X	0.3715	0.0786	0.8285X	0.4739	0.4778X
Teacher T	0.5111X	0.0954	0.6897X	0.4392	0.9018X	0.1644
Teacher U	0.71797	0.4060	0.4116	0.6723X	0.8409X	0.0932
Teacher V	0.5358X	0.5232	0.2147	0.8355X	0.7511X	0.4602
Teacher W	0.6818X	0.6030	0.6604X	0.5322	0.6497X	0.6264
Teacher X	0.7563X	0.2237	0.4039	0.6921X	0.5574	0.8105X
Number of loadings	16	4	13	7	11	9
Eigenvalues	10.3823	2.1116	10.9279	2.4178	12.2490	1.8537
Explained Variance	43%	19%	39%	27%	38%	32%

Table 5 also shows how closely a particular factor is associated with an individual respondent's belief structure. For example, for Q-Sort 2 Teacher K's association with Factor 1 is -0.3351 which indicates that the participant's belief structure is negatively associated with the factor, but positively correlated to a statistically significant and moderate degree (r = .60) with Factor 2. The data within the factor matrix, Table 5, can

be used for further interpretation to assess each teacher in terms of their association within a factor/perspective.

Tables 6, 9, and 11 list statements representative of each perspective in order of priority. The first four statements with the highest *z*-scores are identified as statements most associated with the perspective. For example, for Q-Sort 1 (classroom management), Table 6, statement number 11, "Self-monitoring behaviors (or self-regulation) are important skills for students to develop" has a *z*-score of 1.597. Statement 11 is most common belief of respondents who load within factor 1, Q-Sort 1, whereas, statement number 9, "A classroom runs smoothly when there are clear expectations for behavior" with a *z*-score of 1.55911 is most common belief of respondents who load within factor 2, Q-Sort 1. Table 7 lists factor arrays that represent factor viewpoints most and least associated with Q-Sort 1 (classroom management) for factor 1 and 2 perspectives.

Table 6

Classroom Management: Q-Sort 1: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	1.597
17	If I treat students with respect, kindness, and concern, there are less behavior problems.	1.449
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	1.013
9	A classroom runs smoothly when there are clear expectations for behavior.	0.852
14	Rules for the students' classroom behavior need to be reinforced consistently.	0.818
15	Praise from me is an effective way to change students' behavior.	0.816
4	When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.	0.463
2	A noisy classroom is okay as long as all the students are being productive.	0.457
10	Classroom rules should be discussed and posted.	0.406
19	If I anticipate problems before they happen and discuss them with students, I have fewer discipline problems.	0.275

13	Students should try to solve conflicts on their own before going to the teacher.	0.182
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	-0.013
6	Monitoring students can prevent problematic situations.	-0.201
20	Extrinsic rewards for desirable behaviors (e.g. stickers, candy bars, etc.) undermine students' motivation; it is better not to give such rewards at all.	-0.625
3	Students must be kept busy doing activities or they soon get into trouble.	-0.657
5	Proper control of a class is apparent when the students work productively while I am out of the room (either briefly or when a substitute is present).	-0.803
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-1.396
1	The primary goal in dealing with students' behavior is to establish and maintain control.	-1.491
7	Peer interactions are best left to recess and snack time.	-1.566
16	Students learn best in primarily teacher-directed classrooms.	-1.568

Factor 2 Statement No.	Factor 2 Statement	Factor 2 Z-Score
9	A classroom runs smoothly when there are clear expectations for behavior.	1.559
10	Classroom rules should be discussed and posted.	1.559
13	Students should try to solve conflicts on their own before going to the teacher.	1.354
14	Rules for the students' classroom behavior need to be reinforced consistently.	1.344
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	0.789
1	The primary goal in dealing with students' behavior is to establish and maintain control.	0.574
6	Monitoring students can prevent problematic situations.	0.350
17	If I treat students with respect, kindness, and concern, there are less behavior problems.	0.265
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	0.205
2	A noisy classroom is okay as long as all the students are being productive.	0.136
4	When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.	-0.000
19	If I anticipate problems before they happen and discuss them with students, I have fewer discipline problems.	-0.000
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-0.555
20	Extrinsic rewards for desirable behaviors (e.g. stickers, candy bars, etc.) undermine students' motivation; it is better not to give such rewards at all.	-0.634
3	Students must be kept busy doing activities or they soon get into trouble.	-0.779
15	Praise from me is an effective way to change students' behavior.	-0.925
5	Proper control of a class is apparent when the students work productively while I am out of the room (either briefly or when a substitute is present).	-0.984
16	Students learn best in primarily teacher-directed classrooms.	-1.139
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	-1.559
7	Peer interactions are best left to recess and snack time.	-1.559

Using table 6, the researcher extracted four statements with the highest (statement 9, 10, 13, and 14) and lowest (statements 5, 16, 18, 7) *z*-score to create Table 7. Table 7 illustrates basic constructs for significant statements most representative and least representative of teachers who load for factor 1 and 2 on Q-Sort 1 (classroom management).

Table 7

Q-Sort 1: Comparison between factors

	Factor 1	*Factor 2*
Management beliefs most representative	Self-regulation, treating students with respect, positive management, and clear expectations of rules	Clear expectations, rules discussed, children should try to solve conflicts independently, rules need to be reinforced
Management beliefs least representative	Peer interactions to be left for snack/recess, curriculum over student needs, maintain control, teacher directed	Control of class is apparent when teacher is not present, teacher directed, positive management techniques, peer interactions best left for snack/recess

Q-Sort 2 (beliefs about children), Table 8, statement number 1, "Having a morning routine" has a *z*-score of 1.679. Statement 1 is most common belief of respondents who load within factor 1, Q-Sort 2. Whereas, statement number 3, "Welcoming each student by name to class" with a *z*-score of 1.489 is most common belief of respondents who load within factor 2, Q-Sort 2. Table 8 lists factor arrays that represent factor viewpoints most and least associated with Q-Sort 2 (beliefs about practice) for factor 1 and 2 perspectives.

Table 8

Q-Sort 2: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
1	Having a morning routine.	1.679
3	Welcoming each student by name to class.	1.359
13	Modeling behaviors for students.	1.106
14	Introducing new objects or new activities in the room through demonstration.	1.049
2	Talking about our plan or schedule for the day.	0.922
16	Permitting students to choose from a variety of activities.	0.873
4	Doing an activity to create a sense of community.	0.550
18	Using whole group instruction.	0.168
17	Encouraging students and giving feedback that focuses on the processes of students' creations or thinking, not the outcomes or the solution.	0.166
7	Having at least a few students share something that has happened to them.	0.162
10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.	0.155
19	Using a theme-based approach to instruction.	0.122
8	Discussing a written announcement or message created by the teacher.	-0.580
11	Reflecting on the content of an academic lesson and talking about what we learned.	-0.597
6	Using hand signals.	-0.654
20	Working on group projects.	-0.950
5	Talking about current events	-1.017
9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.	-1.222
12	Using drill and recitation for factual information (math facts, etc.).	-1.575
15	Using worksheets.	-1.715

Factor 2 Statement No.	Factor 2 Statement	Factor 2 Z-Score
3	Welcoming each student by name to class.	1.489
17	Encouraging students and giving feedback that focuses on the processes of students' creations or thinking, not the outcomes or the solution.	1.481
11	Reflecting on the content of an academic lesson and talking about what we learned.	1.237
13	Modeling behaviors for students.	1.128
4	Doing an activity to create a sense of community.	1.044
10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.	0.770
16	Permitting students to choose from a variety of activities.	0.620
19	Using a theme-based approach to instruction.	0.452
14	Introducing new objects or new activities in the room through demonstration.	0.148
20	Working on group projects.	-0.143
7	Having at least a few students share something that has happened to them.	-0.191
1	Having a morning routine.	-0.228
9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.	-0.412

18	Using whole group instruction.	-0.455
2	Talking about our plan or schedule for the day.	-0.610
6	Using hand signals.	-0.797
5	Talking about current events	-0.879
15	Using worksheets.	-1.511
8	Discussing a written announcement or message created by the teacher.	-1.518
12	Using drill and recitation for factual information (math facts, etc.).	-1.625

Table 9

Q-Sort 2: Comparison between factors

	Factor 1	*Factor 2*
Practice beliefs most representative	Moring routine, welcoming by name, modeling behaviors, introduction of new activities	Welcoming by name, encouraging feedback, reflecting on what 'worked', modeling behaviors
Practice beliefs least representative	Talking about current events, conducting business of classroom (lunch money), drill and recitation, using worksheets	Talking about current events, using worksheets, discussing teacher made written message, drill and recitation

Participants loading within factor 1 and factor 2 on Q-Sort 2 (classroom practice) both place low priority on the statements "Using worksheets," "Talking about current events," and "Using drill and recitation for factual information." Within Factor 1 and 2, participant's belief structure also has commonalities on the statements "Welcoming by name" and "Modeling behaviors." Table 9 provides a comparison between statements most and least representative of factor/perspective 1 and 2.

Table 10

Q-Sort 3: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
14	Students need to feel safe and secure in the classroom.	1.617
13	Students meet challenges best when they feel that their teachers care about them.	1.510
3	Students should feel as though they are "known" and "recognized" in the classroom.	1.387
12	Students cannot be understood without knowing something about their families.	1.222
5	Each one of my students teaches me something.	0.952

17	Students learn best by being actively involved in lessons.	0.641
10	Students need some choice of activities within the classroom.	0.476
18	Students need some choice of activities within the classroom.	0.370
4	Students need to be met where they are in terms of ability.	0.250
16	Students need to have their strengths recognized to promote learning.	0.239
9	Students learn best when they have good role models for their behavior.	-0.140
1	Almost all children in my class try their best.	-0.180
7	Most students respect teachers and authority.	-0.671
6	Almost all students are equally likeable and enjoyable.	-0.684
11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.925
19	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.977
15	Students need opportunities to think in a quiet classroom environment.	-1.045
8	Students seldom take care of their materials if they are not supervised.	-1.106
20	Students are more motivated by grades than they are by the acquisition of competence.	-1.384
2	Many of the students in my class try to get away with doing as little work as possible.	-1.454

Factor 2 Statement No.	Factor 2 Statement	Factor 2 Z-Score
14	Students need to feel safe and secure in the classroom.	1.754
18	Students need some choice of activities within the classroom.	1.415
9	Students learn best when they have good role models for their behavior.	1.104
4	Students need to be met where they are in terms of ability.	1.084
10	Students need some choice of activities within the classroom.	1.048
17	Students learn best by being actively involved in lessons.	0.926
3	Students should feel as though they are “known” and “recognized” in the classroom.	0.867
13	Students meet challenges best when they feel that their teachers care about them.	0.385
16	Students need to have their strengths recognized to promote learning.	0.065
5	Each one of my students teaches me something.	-0.119
11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.172
6	Almost all students are equally likeable and enjoyable.	-0.644
15	Students need opportunities to think in a quiet classroom environment.	-0.655
1	Almost all children in my class try their best.	-0.659
12	Students cannot be understood without knowing something about their families.	-0.687
19	Some students show little desire to learn.	-0.800
7	Most students respect teachers and authority.	-0.979
8	Students seldom take care of their materials if they are not supervised.	-1.077
2	Many of the students in my class try to get away with doing as little work as possible.	-1.292
20	Students are more motivated by grades than they are by the acquisition of competence.	-1.563

Using table 10, the researcher extracted four statements with the highest (statement 14, 13, 3, 12) and lowest (statements 15, 8, 20, 2) *z*-score to create Table 11. Table 11 illustrates basic constructs for significant statements most representative and least representative of teachers who load for factor 1 and 2 on Q-Sort 3 (beliefs about children).

Table 11

Q-Sort 3: Comparison between factors

	Factor 1	*Factor 2*
Beliefs about children most representative	Students need to feel safe, students meet challenges when cared for, students should feel 'known,' knowing families is important to understand students	Students need to feel safe, students need to have choices, students learn best with models for behavior, students need to be met in terms of ability
Beliefs about children least representative	Students need a quiet classroom, students do not take care of materials without supervision, students are motivated by grades, students try to get away with as little work as possible	Most students respect teachers and authority, students do not take care of materials without supervision, students try to get away with as little work as possible, students are motivated by grades,

Participants loading within factor 1 and factor 2 on Q-Sort 3 (beliefs about children) both place low priority on the statements "Many of the students in my class try to get away with doing as little work as possible," "Students seldom take care of their materials if they are not supervised," and "Students are more motivated by grades than they are by acquisition of competence." Within Factor 1 and 2, participant's belief structure also has commonalities on the statements "Welcoming by name" and "Modeling behaviors." Participants loading within factor 1 and factor 2 on Q-Sort 3 (beliefs about children) both place high priority on the statements "Students need to feel safe and secure in the classroom." Table 11 provides a comparison between statements most and least representative of factor/perspective 1 and 2.

The researcher conducted further analysis of the data searching for themes and interpreting the results using statements of consensus and distinguishing statements provided within the output of PQMethod (Ernest, 2011). Consensus statements have no statistical difference among z-score for a particular viewpoint and are placed in similar positions within a perspective, whereas, distinguishing statements indicate a significant difference with alpha set at the 0.05 level (Ernest, 2011, p. 228). Tables 12, 13, and 14 list distinguishing statements for Q-Sort 1, 2, and 3, respectively.

Table 12

Q-Sort 1: Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	1.59*	0.21
17	If I treat students with respect, kindness, and concern, there are less behavior problems.	1.45*	0.26
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	1.01*	-1.56
9	A classroom runs smoothly when there are clear expectations for behavior.	0.85	1.56
15	Praise from me is an effective way to change students' behavior.	0.82*	-0.92
10	Classroom rules should be discussed and posted.	0.41*	1.56
13	Students should try to solve conflicts on their own before going to the teacher.	0.18*	1.35
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	-0.01*	0.79
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-1.40*	-0.56
1	The primary goal in dealing with students' behavior is to establish and maintain control.	-1.49*	0.57

Note: * $p < .01$

Table 12 identifies nine distinguishing statements indicating a significant difference with alpha set at 0.05 level (Ernest, 2011, p. 228). Statement 11, "self-monitoring behaviors (or self-regulation) are important for students to develop" and

statement 1, “the primary goal in dealing with student’s behavior is to establish and maintain control” are distinguishing statements with greater disparity between respondents associated with factor 1 and 2 within Q-Sort 1 (classroom management).

Table 13

Q-Sort 2: Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
1	Having a morning routine.	1.68*	-0.23
14	Introducing new objects or new activities in the room through demonstration.	1.05*	-0.61
4	Doing an activity to create a sense of community.	0.55	-0.46
18	Using whole group instruction.	0.17*	1.56
17	Encouraging students and giving feedback that focuses on the processes of students’ creations or thinking, not the outcomes or the solution.	0.17*	1.48
10	Reflecting and talking about something, such as a social interaction, that "worked” or “didn’t work” in our class.	0.15*	0.77
8	Discussing a written announcement or message created by the teacher.	-0.58*	-1.52
11	Reflecting on the content of an academic lesson and talking about what we learned.	-0.60*	1.24
20	Working on group projects.	-0.95	-0.14
9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.	-1.22*	-0.41

Note: * $p < .01$

Table 13 identifies eight distinguishing statements indicating a significant difference with alpha set at 0.05 level (Ernest, 2011, p. 228). Statement 1, “Having a morning routine” and statement 9, “Conducting the business of the classroom following a set routine” are distinguishing statements with greater disparity between respondents associated with factor 1 and 2 within Q-Sort 2 (classroom practice).

Table 14

Q-Sort 3: Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
13	Students meet challenges best when they feel that their teachers care about them.	1.51*	0.38
3	Students should feel as though they are "known" and "recognized" in the classroom.	1.39	0.38
12	Students cannot be understood without knowing something about their families.	1.12*	-0.69
5	Each one of my students teaches me something.	0.95*	-0.12
10	Students need some choice of activities within the classroom.	0.48	1.05
18	Students need some choice of activities within the classroom.	0.37*	1.42
4	Students need to be met where they are in terms of ability.	0.25*	1.10
9	Students learn best when they have good role models for their behavior.	-0.18	-0.66
11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.92*	-0.17

Note: * $p < .01$

Table 14 identifies six distinguishing statements indicating a significant difference with alpha set at 0.05 level (Ernest, 2011, p. 228). Statement 13, "Students meet challenges best when they feel that their teachers care about them" and statement 12, "Students cannot be understood without knowing something about their families" are distinguishing statements with greater disparity between respondents associated with factor 1 and 2 within Q-Sort 1 (classroom management). Data for research question 1 is listed and compared above in accordance with the studies convergent parallel mixed methods design. Merging of the QUANqual data and interpretation occurs using QUANqual data from each research question to answer the overarching mixed methods question within Chapter 5 (Creswell & Plano Clark, 2011).

Research Question 2

Research question 2 compares the sample's teacher beliefs to exemplar beliefs using the Criterion Method to provide a degree of relation between the teacher's ratings

and an exemplar (Rimm-Kauffman et al., 2004; Waters & Deane, 1985). Modeled after Rimm-Kaufmann et al. (2006) original study validating the TBQS, three early childhood exemplars (one coach, one professional development trainer, and one prekindergarten teacher) completed Q-sorts regarding teacher beliefs of practice, children, and classroom management. An initial PCA with varimax rotation was conducted with these data as with the teacher Q-Sorts using PQMethod 2.35 (Schmolk, 1998) to perform principal components analysis and varimax rotation.

Exemplar Demographic Information

Descriptive demographics were collected for each exemplar. The exemplar teacher, coach, and professional development trainer were female employees within the publicly funded prekindergarten program in a southern state. The exemplar's age, degree type, years teaching prekindergarten, and overall years teaching are included in Table 15.

Table 15

Demographic Information of Focus Group Teachers

Code	Role	Age	Degree	Years Teaching Pre-K	Years Teaching PK+
E1	Trainer	42	Master's in ECE	4	20
E2	Coach	58	Master's in ECE	0	34
E3	Teacher	32	Bachelor's in ECE	10	8

The researcher entered exemplar statements and each participants Q-sort grids directly into PQMethod 2.35. The following terms found in Table 16, will be used to describe each Q concourse.

Table 16

Q-Sort Concourse Terms

Concourse Topic	Term
Teacher Beliefs regarding:	
Classroom Management	Exemplar Q-Sort 1
Classroom Practices	Exemplar Q-Sort 2
Children	Exemplar Q-Sort 3

Table 17 lists the factor matrix with an X indicating a defining sort for Exemplar Q-Sort 1, Exemplar Q-Sort 2, and Exemplar Q-Sort 3, and explained variance. An X indicates the participant's sort is most representative of the factors statements. Factor 1 and 2 for each Q-Sort were selected based upon the EV's of the correlation matrix and representation of multiple respondents per factor.

Table 17

Exemplar Q-Sort 1: Class Management, 2: Class Practice, 3: Beliefs about Children: Factor Matrix: Defining Sorts

Respondent	ExQSort 1 Factor 1	ExQSort 1 Factor 2	ExQSort 2 Factor 1	ExQSort 2 Factor 2	ExQSort 3 Factor 1	ExQSort 3 Factor 2
Trainer	0.3009	0.9422X	0.8337X	0.4244	0.4329	0.8964X
Coach	0.9438X	0.2819	0.8888X	0.3379	0.8885X	0.3802
Model Teacher	0.7093X	0.6416	0.3932	0.9181X	0.7752X	0.5274
Number of loadings	2	1	2	1	2	1
Eigenvalues	2.4378	0.4256	2.4342	0.3427	2.5502	0.2538
Explained Variance	49%	46%	55%	38%	53%	41%

Table 17 also shows how closely a particular factor is associated with an individual respondent's belief structure. For example, for Exemplar Q-Sort 2, the model teacher association with Factor 1 is 0.3932 which indicates that the participant's belief structure is not as associated as with the trainer and the coach. The statistics provide an indication that the trainer and coach had similar views about classroom practice that

weren't shared by the teacher. In contrast, for Factor 1, Classroom Management, and Beliefs about Children, it is clear from Table 17 that the coach and the teacher, but not the trainer, shared similar views to each other.

Table 18

Exemplar Q-Sort 1 Classroom Management: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	1.413
17	If I treat students with respect, kindness, and concern, there are less behavior problems.	1.413
20	Extrinsic rewards for desirable behaviors (e.g. stickers, candy bars, etc.) undermine students' motivation; it is better not to give such rewards at all.	1.413
6	Monitoring students can prevent problematic situations.	1.113
9	A classroom runs smoothly when there are clear expectations for behavior.	0.807
10	Classroom rules should be discussed and posted.	0.707
14	Rules for the students' classroom behavior need to be reinforced consistently.	0.707
19	If I anticipate problems before they happen and discuss them with students, I have fewer discipline problems.	0.606
4	When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.	0.100
13	Students should try to solve conflicts on their own before going to the teacher.	0.100
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	0.000
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	0.000
2	A noisy classroom is okay as long as all the students are being productive.	-0.606
15	Praise from me is an effective way to change students' behavior.	-0.707
3	Students must be kept busy doing activities or they soon get into trouble.	-0.707
1	The primary goal in dealing with students' behavior is to establish and maintain control.	-0.807
5	Proper control of a class is apparent when the students work productively while I am out of the room (either briefly or when a substitute is present).	-1.313
16	Students learn best in primarily teacher-directed classrooms.	-1.413
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-1.413
7	Peer interactions are best left to recess and snack time.	-1.413
Factor 2 Statement No.	**Factor 2 Statement**	**Factor 2 Z-Score**
5	Proper control of a class is apparent when the students work productively while I am out of the room (either briefly or when a substitute is present).	1.378
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	1.378
14	Rules for the students' classroom behavior need to be reinforced consistently.	1.378

17	If I treat students with respect, kindness, and concern, there are less behavior problems.	1.378
10	Classroom rules should be discussed and posted.	0.689
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	0.689
4	When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.	0.689
20	Extrinsic rewards for desirable behaviors (e.g. stickers, candy bars, etc.) undermine students' motivation; it is better not to give such rewards at all.	0.689
9	A classroom runs smoothly when there are clear expectations for behavior.	0.000
2	A noisy classroom is okay as long as all the students are being productive.	0.000
13	Students should try to solve conflicts on their own before going to the teacher.	0.000
19	If I anticipate problems before they happen and discuss them with students, I have fewer discipline problems.	0.000
3	Students must be kept busy doing activities or they soon get into trouble.	-0.689
15	Praise from me is an effective way to change students' behavior.	-0.689
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	-0.689
6	Monitoring students can prevent problematic situations.	-0.689
7	Peer interactions are best left to recess and snack time.	-1.378
1	The primary goal in dealing with students' behavior is to establish and maintain control.	-1.378
16	Students learn best in primarily teacher-directed classrooms.	-1.378
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-1.378

Using table 18, the researcher extracted four statements with the highest (Factor 1 statements: 11, 17, 20, 6) and lowest (Factor 1 statements: 5, 16, 8, 7) for each factor using the *z*-score to create Table 19. Table 19 illustrates basic constructs for significant statements most representative and least representative of model teacher who load for factor 1 and 2 on Exemplar Q-Sort 1 (classroom management).

Table 19

Exemplar Q-Sort 1 Classroom Management: Comparison between factors

	Factor 1	*Factor 2*
Beliefs highly associated for classroom management	Self-regulation is important, treating students with respect and kindness yields less behavior problems, extrinsic rewards undermine students motivation, monitoring students can prevent problematic situations	Proper control is apparent when teacher is not present, self-regulation is important, behavioral rules need to be reinforced, treating students with respect and kindness yields less behavior problems

Beliefs least associated for classroom management	Proper control is apparent when teacher not present, teacher-directed classrooms are best, curriculum and schedule over student's specific interests, peer interactions are for snack and recess	Peer interactions are for snack and recess, Primary goal in student behavior is establish and maintain control, teacher-directed classrooms are best, curriculum and schedule over student's specific interests,

The trainer loaded within factor 2 on Q-Sort 1 (beliefs about management) placing low priority on the statements "Peer interactions are for snack and recess," "The primary goal in dealing with students' behavior is to establish and maintain control." Within Factor 1 and 2, the trainer's belief structure also has commonalities on the statements "Self-monitoring behaviors (or self-regulation) are important skills for students to develop," and "If I treat students with respect, kindness, and concern, there are less behavior problems."

The researcher conducted further analysis of the data searching for themes and interpreting the results using statements of consensus and distinguishing statements provided within the output of PQMethod (Ernest, 2011). Consensus statements have no statistical difference among z-score for a particular viewpoint and are placed in similar positions within a perspective, whereas, distinguishing statements indicate a significant difference with alpha set at the 0.05 level (Ernest, 2011, p. 228). Table 20 lists distinguishing statements.

Table 20

Q-Sort 1 Classroom Management: Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.	1.59*	0.21
17	If I treat students with respect, kindness, and concern, there are less behavior problems.	1.45*	0.26
18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.	1.01*	-1.56

9	A classroom runs smoothly when there are clear expectations for behavior.	0.85	1.56
15	Praise from me is an effective way to change students' behavior.	0.82*	-0.92
10	Classroom rules should be discussed and posted.	0.41*	1.56
13	Students should try to solve conflicts on their own before going to the teacher.	0.18*	1.35
12	It is important to respect students' autonomy and expect them to act in a responsible manner.	-0.01*	0.79
8	The curriculum and class schedule need to be prioritized over students' specific interests.	-1.40*	-0.56
1	The primary goal in dealing with students' behavior is to establish and maintain control.	-1.49*	0.57

*Note: * $p < .01$*

Table 20 identifies nine distinguishing statements indicating a significant difference with alpha set at 0.05 level (Ernest, 2011, p. 228). Statement 11, "self-monitoring behaviors (or self-regulation) are important for students to develop" and statement 1, "the primary goal in dealing with student's behavior is to establish and maintain control" are distinguishing statements with greater disparity between respondents associated with factor 1 and 2 within Q-Sort 1 (classroom management).

Using Table 21, the researcher extracted four statements with the highest (Factor 1 statements: 1, 4, 3, 2) and lowest (Factor 1 statements: 9, 8, 12, 15) for each factor using the *z*-score to create Table 22. Table 22 illustrates basic constructs for significant statements most representative and least representative of the trainer, coach, and model teacher who load for factor 1 and 2 on Exemplar Q-Sort 2 (classroom practice).

Table 21

Exemplar Q-Sort 2 Classroom Practice: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
1	Having a morning routine.	1.459
4	Doing an activity to create a sense of community.	1.459
3	Welcoming each student by name to class.	1.173
2	Talking about our plan or schedule for the day.	1.173

13	Modeling behaviors for students.	1.016
16	Permitting students to choose from a variety of activities.	1.016
17	Encouraging students and giving feedback that focuses on the processes of students' creations or thinking, not the outcomes or the solution	0.729
6	Using hand signals.	0.286
14	Introducing new objects or new activities in the room through demonstration.	0.157
10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.	0.000
18	Using whole group instruction.	-0.286
19	Using a theme-based approach to instruction.	-0.286
7	Having at least a few students share something that has happened to them..	-0.443
11	Reflecting on the content of an academic lesson and talking about what we learned..	-0.433
20	Working on group projects.	-0.729
5	Talking about current events	-0.886
9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.	-1.016
8	Discussing a written announcement or message created by the teacher.	-1.459
12	Using drill and recitation for factual information (math facts, etc.).	-1.459
15	Using worksheets.	-1.459

Factor 2 Statement No.	Factor 2 Statement	Factor 2 Z-Score
3	Welcoming each student by name to class.	1.378
4	Doing an activity to create a sense of community.	1.378
10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.	1.378
13	Modeling behaviors for students.	1.378
7	Having at least a few students share something that has happened to them.	0.689
16	Permitting students to choose from a variety of activities.	0.689
17	Encouraging students and giving feedback that focuses on the processes of students' creations or thinking, not the outcomes or the solution.	0.689
20	Working on group projects.	0.689
1	Having a morning routine.	-0.000
2	Talking about our plan or schedule for the day.	-0.000
14	Introducing new objects or new activities in the room through demonstration.	-0.000
6	Using hand signals.	-0.000
9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.	-0.689
5	Talking about current events	-0.689
18	Using whole group instruction.	-0.689
19	Using a theme-based approach to instruction..	-0.689
11	Reflecting on the content of an academic lesson and talking about what we learned.	-1.378
15	Using worksheets.	-1.378
12	Using drill and recitation for factual information (math facts, etc.).	-1.378
8	Discussing a written announcement or message created by the teacher.	-1.378

Table 22

Exemplar Q-Sort 2 Classroom Practice: Comparison between factors

	Factor 1	*Factor 2*
Beliefs highly associated for classroom practice	Having a morning routine, creating community, welcoming by name, discussing schedule or plans	Welcoming by name, creating community, reflecting and talking: example, social interactions, modeling behaviors for students
Beliefs least associated for classroom management	Conducting the business of the classroom, discussing written announcement, using drill and recitation, using worksheets	Reflecting on academic lesson, using worksheets, drill an recitation, discussing written announcement

The trainer and coach loaded within factor 1 on Q-Sort 2 (beliefs about classroom practice) placing low priority on the statements "Using drill and recitation for factualy information" and "Using worksheets." Within Factor 1 and 2, the trainer's and coaches belief structure also has commonalities with the model teacher's belief structure on the statements "Welcoming students by name," and "Doing and activity to create a sense of community."

The researcher conducted further analysis of the data searching for themes and interpreting the results using statements of consensus and distinguishing statements provided within the output of PQMethod (Ernest, 2011). Consensus statements have no statistical difference among z-score for a particular viewpoint and are placed in similar positions within a perspective, whereas, distinguishing statements indicate a significant difference with alpha set at the 0.05 level (Ernest, 2011, p. 228). Table 23 lists distinguishing statements for the Exemplar's Q-Sort 2 (classroom practice).

Table 23

Exemplar Q-Sort 2 Classroom Practice: Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
1	Having a morning routine.	1.46*	-0.00
2	Talking about our plan or schedule for the day.	1.17	-0.00
10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.	0.00	1.38
7	Having at least a few students share something that has happened to them.	-0.44	0.69
20	Working on group projects.	-0.73	0.69

*Note: * $p < .01$*

Table 23 identifies one distinguishing statement indicating a significant difference with alpha set at 0.05 level (Ernest, 2011, p. 228). Statement 1, "Having a morning routine" is the distinguishing statements with greatest disparity between respondents associated with factor 1 and 2 within Q-Sort 2 (classroom practice). Another item that did not have a significant difference but is a distinguishing statement is statement 10, "Reflecting and talking about something such as social interaction, that "worked" or "didn't work" in our class. The trainer and coach's belief structure indicate that statement is in the mid-area ($Z = 0$ whereas, the model teacher indicates that statement a higher priority within her associated factor ($Z = 1.38$).

Using Table 24, the researcher extracted four statements with the highest (Factor 1 statements: 13, 14, 3, 4) and lowest (Factor 1 statements: 15, 2, 19, 20) for each factor using the *z*-score to create Table 25. Table 25 illustrates basic constructs for significant statements most representative and least representative of the trainer, coach, and model teacher who load for factor 1 and 2 on Exemplar Q-Sort 3 (beliefs about children).

Table 24

Exemplar Q-Sort 3 Beliefs about Children: Factor Statements and Z-Scores

Factor 1 Statement No.	Factor 1 Statement	Factor 1 Z-Score
13	Students meet challenges best when they feel that their teachers care about them.	1.442
14	Students need to feel safe and secure in the classroom.	1.442
3	Students should feel as though they are “known” and “recognized” in the classroom.	1.215
4	Students need to be met where they are in terms of ability.	1.215
12	Students cannot be understood without knowing something about their families.	0.948
10	Students need some choice of activities within the classroom.	0.721
18	Students need opportunities to be creative in the classroom.	0.721
5	Each one of my students teaches me something.	0.455
17	Students learn best by being actively involved in lessons.	0.267
16	Students need to have their strengths recognized to promote learning.	0.000
9	Students learn best when they have good role models for their behavior.	0.000
7	Most students respect teachers and authority.	-0.227
1	Almost all children in my class try their best.	-0.494
6	Almost all students are equally likeable and enjoyable.	-0.494
11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.721
8	Students seldom take care of their materials if they are not supervised.	-0.948
15	Students need opportunities to think in a quiet classroom environment.	-1.215
2	Students need opportunities to think in a quiet classroom environment.	-1.442
19	Some students show little desire to learn.	-1.442
20	Students are more motivated by grades than they are by the acquisition of competence.	-1.442

Factor 2 Statement No.	Factor 2 Statement	Factor 2 Z-Score
3	Students should feel as though they are “known” and “recognized” in the classroom.	1.378
4	Students need to be met where they are in terms of ability.	1.378
12	Students cannot be understood without knowing something about their families.	1.378
16	Students need to have their strengths recognized to promote learning.	1.378
6	Almost all students are equally likeable and enjoyable.	0.689
10	Students need some choice of activities within the classroom.	0.689
13	Students meet challenges best when they feel that their teachers care about them.	0.689
14	Students need to feel safe and secure in the classroom.	0.689
5	Each one of my students teaches me something.	0.000
15	Students need opportunities to think in a quiet classroom environment.	0.000
17	Students learn best by being actively involved in lessons.	0.000

18	Students need opportunities to be creative in the classroom.	0.000
7	Most students respect teachers and authority.	-0.689
9	Students learn best when they have good role models for their behavior.	-0.689
11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.	-0.689
1	Almost all children in my class try their best.	-0.689
8	Students seldom take care of their materials if they are not supervised.	-1.378
2	Many of the students in my class try to get away with doing as little work as possible.	-1.378
19	Some students show little desire to learn.	-1.378
20	Students are more motivated by grades than they are by the acquisition of competence	-1.378

Table 25 illustrates basic constructs for significant statements most representative and least representative of model teacher who load for factor 1 and 2 on Exemplar Q-Sort 3 (beliefs about children).

Table 25

Exemplar Q-Sort 3 Beliefs on Children: Comparison between factors

	Factor 1	*Factor 2*
Beliefs highly associated for classroom management	Students meet challenges best when they feel that their teacher cares, students need to feel safe and secure, students should feel as though they are 'known' and 'recognized,' students need to be met in terms of ability	Students should feel as though they are 'known' and 'recognized, students need to be met in terms of ability, students cannot be understood without understanding their family, students need to have their strengths recognized
Beliefs least associated for classroom management	Students need opportunities to think in quiet room, many students try to get away with as little as possible, some students show little desire to learn, students are motivated by grades compared to competence	Students do no take care of materials unless supervised, many students try to get away with as little as possible, some students show little desire to learn, students are more motivated by grates compared to competence

The trainer loaded within factor 2 on Q-Sort 3 (beliefs about children) placing low priority on the statements "Students are more motivated by graded compared to the acquisition of competence," and "Some students show little desire to learn." Within Factor 1 and 2, the trainer's belief structure also have commonalities with the coaches

and the model teachers' belief structure on the statements highly ranked statement "Students should feel as though they are "known" and "recognized" in the classroom," and the lower ranked statement "Some students show little desire to learn."

The researcher conducted further analysis of the data searching for themes and interpreting the results using statements of consensus and distinguishing statements provided within the output of PQMethod (Ernest, 2011). Consensus statements have no statistical difference among z-score for a particular viewpoint and are placed in similar positions within a perspective, whereas, distinguishing statements indicate a significant difference with alpha set at the 0.05 level (Ernest, 2011, p. 228). Table 26 lists distinguishing statements.

Table 26

Exemplar Q-Sort 3 Beliefs of Children : Factor 1 and 2 Distinguishing Statements

Statement Number	Statement	Factor 1	Factor 2
16	Students need to have their strengths recognized to promote learning.	0.00	1.38
6	Almost all students are equally likeable and enjoyable.	-0.49	0.69
15	Students need opportunities to think in a quiet classroom environment.	-1.21	0.00

*Note: * p < .01*

Modal exemplar values from Exemplar Q-Sort 1, 2, and 3 were found within each data matrix each statement to create a 'criterion sort' (Rimm-Kaufman et al., 2006, p. 153; Sawyer & Campell, 2009, p. 334). The criterion sort revealed a set of statements that are representative of the early childhood exemplar specialists using excel to find the modal exemplar values for each statement for the trainer, coach, and model teacher. The criterion sort was used for further interpretation for classroom management, classroom

practice, and beliefs of children and analysis to find correlation between criterion sorts and each teacher's Q-Sort (Rimm-Kauffman et al., 2006).

Tables 27, 28, and 29 list the Spearman's correlation coefficient between each teacher as related to the exemplar 'criterion sort' using SPSS, Version 23. The Spearman's correlation coefficient were computed to replicate the Criterion Method employed within Rimm-Kauffman et al., (2006) study to demonstrate a relatedness of a teacher to an exemplar. The Spearman correlation coefficient, *r*-value was standardized into a Fisher Z value for subsequent analysis.

Table 27

Average degree of relation to an exemplar using "Criterion Method" for Q-Sort 1

Teacher	*Q-Sort 1:* Spearman's	*P*	*Q-Sort 1:* Fisher Z
A	.597*	.005	0.688
B	.314	.177	0.178
C	.091	.703	0.091
D	.402	.079	0.426
E	.503*	.024	0.055
F	.324	.164	0.336
H	.459*	.042	0.496
K	.537*	.015	0.599
L	.487*	.029	0.532
N	.393	.087	0.415
O	.270	.249	0.276
P	.261	.267	0.267
Q	.559*	.010	0.631
R	.644*	.002	0.764
S	.638*	.002	0.754
T	.521*	.018	0.577
U	.335	.148	0.348
V	.515*	.020	0.569
W	.638*	.002	0.754
X	.559*	.010	0.631

Note. * = $p < 0.50$

Teachers A, E, H, K, L, Q, R, S, T, V, W, and X's Q-Sort 1 is positively correlated with the 'criterion sort' at the 0.05 alpha level. Teacher R, S, and W's have a strong positive correlation between their Q-Sort 1 with the criterion Exemplar Q-Sort 1, $r_s = 0.638$, $p < .01$. The higher the correlations in the table represent closer beliefs with the modal response from the trainer, coach, and model teacher exemplar sort, Table 26. Here, teachers R, S, and W were more similar to the Coach than the other teachers, and Teacher C was least like the Coach. Teachers B, C, D, F, N, O, P, and U's Q-Sort 1 is not significantly correlated with the 'criterion sort' at the 0.05 alpha level. Table 27 identifies nine teachers, or 75%, whose sort was not significantly correlated with the criterion sort hold a bachelor's degree (Teacher B, C, N, O, P, U) and have an average of 5.75 years of teaching prekindergarten. Table 27 also identifies 11 teachers, or 66%, of teachers whose sort positively correlated with the criterion sort hold a master's degree or higher (Teacher A, E, H, L, R, T, V, W) and have an average of 4.75 years teaching prekindergarten.

Table 28

Average degree of relation to an exemplar using "Criterion Method" for Q-Sort 2

Teacher	*Q-Sort 2:* Spearman's	*p*	*Q-Sort 2:* Fisher Z
A	.737*	.000	0.944
B	.800*	.000	1.099
C	.277	.237	0.284
D	.495*	.027	0.543
E	.778*	.000	1.040
F	.743*	.000	0.957
H	.743*	.000	0.957
K	.044	.854	0.044
L	.520*	.019	0.576
N	.734*	.000	0.937
O	.699*	.001	0.865
P	.718*	.000	0.904
Q	.614*	.000	0.715

R	.517*	.020	0.572
S	.557*	.011	0.628
T	.589*	.006	0.676
U	.498*	.026	0.547
V	.718*	.000	0.904
W	.838*	.000	1.214
X	.504*	.023	0.555

Note. * = $p < 0.50$

Teachers A, B, D, E, F, H, L, N, O, P, Q, R, S, T, U, V, W, and X's Classroom Practice Sort (Q-Sort 2) is positively correlated with the 'criterion sort' at the 0.05 alpha level. Teacher A, B, E, F, H, N, O, P, Q, T, V, and W's have a strong positive correlation between their Classroom Practice Sort and the criterion Exemplar Classroom Practice Sort (Q-Sort 2), $r_s = 0.638$, $p < .01$. Teachers C and K's Classroom Practice Sort is not significantly correlated with the 'criterion sort' at the 0.05 alpha level. All teachers (100%) whose sort was not significantly correlated with the criterion sort hold a bachelor's degree (Teacher C and K) and have an average of four years of teaching prekindergarten. Half of teachers (50%) whose sort positively correlated with the criterion sort hold a master's degree or higher (Teacher A, D, F, H, L, R, T, V, W) and have an average of 4.5 years teaching prekindergarten. Many teachers (80%) Classroom Practice Sorts significantly correlate with the Exemplar, leaving only two teachers whose classroom practice sorts uncorrelated.

Table 29

Average degree of relation to an exemplar using "Criterion Method" Q-Sort 3: Beliefs/Children

Teacher	*Q-Sort 3:* Spearman's	*P*	*Q-Sort 1:* Fisher Z
A	.643*	.002	0.763
B	.844*	.000	1.235

C	.595*	.006	0.685
D	.822*	.000	1.163
E	.762*	.000	1.001
F	.809*	.000	1.124
H	.627*	.003	0.736
K	.230	.329	0.234
L	.671*	.001	0.813
N	.772*	.000	1.025
O	.844*	.000	1.235
P	.454*	.045	0.490
Q	.775*	.000	1.033
R	.428	.060	0.457
S	.638*	.002	0.754
T	.356	.124	0.372
U	.702*	.001	0.871
V	.696*	.001	0.860
W	.794*	.000	1.082
X	.737*	.000	0.944

Note. * = $p < 0.50$

Research Question 3

Research question 3 examines the relationship between teacher beliefs (TBQS), classroom quality (CLASS) and children's ability to self-regulate (DECA-P2). All teachers within the pilot group using the DECA-P2 and CLASS, as identified by the state program, were contacted to participate in the focus groups completing the TBQS. Twenty teachers voluntarily participated from all over the state at the close of the 2017-2018 school year. End of year CLASS data and DECA-P2 data was still being collected and accounted for at the time of the focus groups. Select teachers from the focus groups did not have an end of the year (EOY) CLASS observation or submit post DECA-P2 scores on their students. The researcher collected complete secondary EOY data sets of CLASS and DECA-P2 data for eleven teachers. Due to small sample size, non-parametric tests were employed to explore the relationship between TBQS, DECA-P2, and CLASS. Non-parametric tests make fewer assumptions as compared to more robust statistical,

parametric tests. Scores for each measure are ranked to make distributional assumptions that are not normality distributions (Field, 2013). The following exploratory analyses were conducted, instead of explanatory quantitative tests, which effects weight of interpretation and recommendations listed in Chapter 5.

The DECA-P2 measure has 38 items on the instrument, eight of which are proxy's for children's ability to self-regulate (site). Proxy self-regulation items are listed in Table 30 below.

Table 30

DECA-P2 Self-Regulation Proxy Statements

Item	Statement: During the past 4 weeks, how often did the child…
2	listen or respect others?
3	control his/her anger?
16	show patience?
19	share with other children?
20	handle frustration well?
25	accept another choice when his/her first choice was not available?
28	students should try to solve conflicts on their own before going to the teacher.
29	Calm himself/herself down?

DECA-P2 pre/post data, Table 31, was de-identified and collected per teacher's classroom, per child. The items that serve as a proxy to self-regulation were extracted from the data pre/post. A change score was created per child by subtracting the EOY DECA-P2 proxy items from the beginning of year (BOY) DECA-P2 proxy items. Average change of self-regulation was tabulated and ranked (SRRank) one to ten per class for use in subsequent analysis (one being least change in self-regulation and ten being greatest change).

Table 31

DECA-P2 Class Average Self-Regulation Change Score, Class Self-Regulation Rank, EOY Class Domain Scores, and CLASS Rank

Classroom	$\bar{x}$ Change in Self Regulation	SRRank	ES Domain CLASS	CO Domain CLASS	IS Domain CLASS	CLASSRank
D	3.33	5.00	6.25	5.33	1.67	1.00
E	2.57	4.00	6.75	7.00	2.33	4.00
K	1.08	8.00	6.25	6.00	2.33	3.00
L	6.76	1.00	7.00	6.00	2.00	3.00
N	3.8	2.00	6.25	5.67	3.00	3.00
O	0.17	9.00	6.50	6.33	2.33	3.00
P	-1.13	11.00	5.75	5.00	2.67	1.00
Q	4.28	3.00	6.00	6.00	4.33	4.00
R	0.41	10.00	5.25	4.33	3.33	1.00
S	3.36	6.00	6.00	6.00	3.33	3.00
V	1.72	7.00	6.25	6.00	4.00	4.00

EOY CLASS data, Table 31, was de-identified and collected per teacher's classroom. ES, IS, and CO Domain scores as well as individual CLASS items scores were collected secondarily. Domain scores were added together and ranked (CLASSRank) one to ten per class for use in subsequent analysis (one being lowest CLASS scores and ten being highest CLASS scores). The participant's TBQS exemplar comparison criterion sort Fisher Z (FZRank) score was used for non-parametric analysis for each Q-Sort.

The researcher used SPSS to compare two conditions (Q-Sort 1: FZRank and SRRank) using the non-parametric Wilcoxon signed-rank test (Field, 2013). Additional Wilcoxin signed-rank tests were conducted for the following pairs of data: Q-Sort 2: FZRank and SRRank, Q-Sort 3: FZRank and SRRank, Q-Sort 1: FZRank and CLASSRank, Q-Sort 2: FZRank and CLASSRank, Q-Sort 3: FZRank and CLASSRank). Results for the Wilcoxin signed rank tests are listed in Table 32 below.

Table 32

Wilcoxin Signed-Rank Tests: Q-Sort 1-3 Beliefs, Average Change in Self-Regulation, CLASS

Null Hypothesis	*p*	T-Score	Decision
The median difference between Q-Sort 1 FZRank and SRRank equals 0.	.003*	-2.934	Reject the null hypothesis
The median difference between Q-Sort 1 FZRank and CLASSRank equals 0.	.003*	2.934	Reject the null hypothesis
The median difference between Q-Sort 2 FZRank and SRRank equals 0.	.003*	2.934	Reject the null hypothesis
The median difference between Q-Sort 2 FZRank and CLASSRank equals 0.	.003*	2.934	Reject the null hypothesis
The median difference between Q-Sort 3 FZRank and SRRank equals 0.	.003*	2.223	Reject the null hypothesis
The median difference between Q-Sort 3 FZRank and CLASSRank equals 0.	.003*	2.934	Reject the null hypothesis

Note. * = $p < 0.50$

A Wilcoxin signed-rank test determined a statistically significant increase in children's average change in self-regulation when teachers beliefs of classroom management positively correlated with the Q-Sort 1 exemplar criterion sort, z = -2.934, *p*

= 0.003. An additional Wilcoxin signed-rank test determined a statistically significant increase in EOY CLASS scores when teachers beliefs of classroom management positively correlated with the Q-Sort 3 exemplar criterion sort, z = .003, $p < 0.01$. An inverse relationship exists between Q-Sort 1 ranked beliefs about management and average change in self-regulation scores (z = -2.984). As classroom belief management scores (Fisher *Z*) increase, change in self-regulation scores decrease. A positive relationship exists between Q-Sort 2 ranked beliefs, overall CLASS scores increase (z = 2.934). A positive relationship exists between Q-Sort 2 and Q-Sort 3 ranked belief score and change in self-regulation scores. As Q-Sort 2 (beliefs about practice) and Q-Sort 3 (beliefs about children) ranks increase, change in self-regulation scores increase (z = 2.934, z = 2.223). A positive relationship exists between Q-Sort 1, 2, and Q-Sort 3 ranked beliefs and overall CLASS scores. As Q-Sort 1, 2, and 3 ranks increase overall CLASS score rank increases (z = 2.934, z = 2.934, z = 2.934).

Research Question 4

Research question four examines whether teacher beliefs for this sample impact overall classroom quality (CLASS). Sub-question d. examines the relationship between teacher beliefs (TBQS) and classroom quality (CLASS). Non-parametric tests were employed by ranking data (EOY CLASS scores and average change in BOY to EOY DECA-P2 scores) to make distributional assumptions, outlined in Table 33 (Field, 2013).

Table 33

CLASS Rank, CLASS Domain, Teacher Belief Rank Per Q-Sort, and Average Change in Self-Regulation

Classroom	$\bar{x}$ Change in Self Regulation	Q1Belief	Q2Belief	Q3Belief	ES Domain CLASS	CO Domain CLASS	IS Domain CLASS
D	3.33	5.00	3.00	10.00	6.25	5.33	1.67
E	2.57	4.00	11.00	7.00	6.75	7.00	2.33

K	1.08	8.00	5.00	1.00	6.25	6.00	2.33
L	6.76	1.00	10.00	5.00	7.00	6.00	2.00
N	3.8	2.00	8.00	8.00	6.25	5.67	3.00
O	0.17	9.00	9.00	11.00	6.50	6.33	2.33
P	-1.13	11.00	7.00	3.00	5.75	5.00	2.67
Q	4.28	3.00	4.00	9.00	6.00	6.00	4.33
R	0.41	10.00	6.00	2.00	5.25	4.33	3.33
S	3.36	6.00	9.00	4.00	6.00	6.00	3.33
V	1.72	7.00	1.00	6.00	6.25	6.00	4.00

The researcher used SPSS to compare EOY4 CLASS scores by running a Kruskal-Wallis Test in SPSS for teacher's with full EOY CLASS scores (n = 11) with Q-Sort's grouped as correlated or uncorrelated to exemplar sorts. A Kruskal-Wallis is on-parametric test similar to a one –way ANOVA, but with ranked data (Laerd, 2018). The researcher compared overall EOY CLASS and individual CLASS dimension scores with Q-Sort 1: Classroom Management, Q-Sort 2: Classroom Practice, and Q-Sort 3 Beliefs about Children.

Table 34

Kruskal-Wallis Tests: Q-Sort 1 Classroom Management and EOY CLASS

Null Hypothesis	*p*	*df*	Decision
The distribution of CLASS score is the same across categories of Q1Beliefs	.450	1	Retain the null hypothesis
The distribution of Positive Climate is the same across categories of Q1Beliefs	.903	1	Retain the null hypothesis
The distribution of Negative Climate is the same across categories of Q1Beliefs	1.00	1	Retain the null hypothesis
The distribution of Teacher Sensitivity is the same across categories of Q1Beliefs	.145	1	Retain the null hypothesis
The distribution of Regard for Student Perspective is the same across categories of Q1Beliefs	.044*	1	Reject the null hypothesis

The distribution of Behavior Management is the same across categories of Q1Beliefs	.490	1	Retain the null hypothesis
The distribution of Productivity is the same across categories of Q1Beliefs	.144	1	Retain the null hypothesis
The distribution of Instructional Learning Formats is the same across categories of Q1Beliefs	.766	1	Retain the null hypothesis
The distribution of Concept Development is the same across categories of Q1Beliefs	.210	1	Retain the null hypothesis
The distribution of Quality Feedback is the same across categories of Q1Beliefs	.078	1	Retain the null hypothesis
The distribution of Language Modeling is the same across categories of Q1Beliefs	.214	1	Retain the null hypothesis

Note. * = $p < 0.50$

The null hypothesis that the overall distribution of EOY CLASS Scores is consistent across belief groups of Q-Sort 1 (correlated with exemplars or not correlated with exemplars) is retained, $p = 0.450$. Individual dimensions of CLASS scores were also compared with Q1Belief groups. The null hypothesis that individual dimensions of EOY CLASS scores is consistent across belief groups of Q-Sort 1 for the following CLASS dimensions: Positive Climate (PC), Negative Climate (NC), Teacher Sensitivity (TS), Behavior Management (BM), Productivity (P), Concept Development (CD), Quality Feedback (QF), and Language Modeling (LM) was retained. The null hypothesis was rejected that the overall distribution of EOY CLASS Scores is consistent across belief groups for Q-Sort 1 Regard for Student Perspective (RSP), $p = 0.044$. A positive

correlation exists between groups (correlated with exemplar beliefs for Q-Sort 1, management) and RSP.

Table 35

Kruskal-Wallis Tests: Q-Sort 2 Classroom Practice and EOY CLASS

Null Hypothesis	*p*	*df*	Decision
The distribution of CLASS score is the same across categories of Q2Beliefs	.206	1	Retain the null hypothesis
The distribution of Positive Climate is the same across categories of Q2Beliefs	.540	1	Retain the null hypothesis
The distribution of Negative Climate is the same across categories of Q2Beliefs	1.00	1	Retain the null hypothesis
The distribution of Teacher Sensitivity is the same across categories of Q2Beliefs	.862	1	Retain the null hypothesis
The distribution of Regard for Student Perspective is the same across categories of Q2Beliefs	.595	1	Retain the null hypothesis
The distribution of Behavior Management is the same across categories of Q2Beliefs	.741	1	Retain the null hypothesis
The distribution of Productivity is the same across categories of Q2Beliefs	.861	1	Retain the null hypothesis
The distribution of Instructional Learning Formats is the same across categories of Q2Beliefs	.618	1	Retain the null hypothesis
The distribution of Concept Development is the same across categories of Q2Beliefs	.484	1	Retain the null hypothesis
The distribution of Quality Feedback is the same across categories of Q2Beliefs	.140	1	Retain the null hypothesis
The distribution of Language Modeling is the same across categories of Q2Beliefs	.119	1	Retain the null hypothesis

The null hypothesis that the overall distribution of EOY CLASS Scores is consistent across belief groups of Q-Sort 2 (correlated with exemplars or not correlated with exemplars) is retained, $p = 0.206$, $df = 1$. Individual dimensions of CLASS scores were also compared with Q2 Belief groups. The null hypothesis that individual dimensions of EOY CLASS scores is consistent across belief groups of Q-Sort 2 for all CLASS dimensions: PC, NC, TS, BM), P, CD, RSP, QF, and LM was retained.

Table 36

Kruskal-Wallis Tests: Q-Sort 3 Beliefs about Children and EOY CLASS

Null Hypothesis	*P*	*df*	Decision
The distribution of CLASS score is the same across categories of Q3Beliefs	.034*	1	Reject the null hypothesis
The distribution of Positive Climate is the same across categories of Q3Beliefs	.361	1	Retain the null hypothesis
The distribution of Negative Climate is the same across categories of Q3Beliefs	1.00	1	Retain the null hypothesis
The distribution of Teacher Sensitivity is the same across categories of Q3Beliefs	.795	1	Retain the null hypothesis
The distribution of Regard for Student Perspective is the same across categories of Q3Beliefs	.597	1	Retain the null hypothesis
The distribution of Behavior Management is the same across categories of Q3Beliefs	.219	1	Retain the null hypothesis
The distribution of Productivity is the same across categories of Q3Beliefs	.794	1	Retain the null hypothesis
The distribution of Instructional Learning Formats is the same across categories of Q3Beliefs	.804	1	Retain the null hypothesis

The distribution of Concept Development is the same across categories of Q3Beliefs	.794	1	Retain the null hypothesis
The distribution of Quality Feedback is the same across categories of Q3Beliefs	.028*	1	Reject the null hypothesis
The distribution of Language Modeling is the same across categories of Q3Beliefs	.020*	1	Reject the null hypothesis

Note. * = $p < 0.50$

The null hypothesis that the overall distribution of EOY CLASS Scores is consistent across belief groups of Q-Sort 3 (correlated with exemplars or not correlated with exemplars) is rejected, $p = 0.34$. Individual dimensions of CLASS scores were also compared with Q3 Belief groups. The null hypothesis that individual dimensions of EOY CLASS scores is consistent across belief groups of Q-Sort 2 for the following CLASS dimensions is retained: PC, NC, TS, BM), P, CD, RSP, QF, and LM was retained. The null hypothesis that individual dimensions of EOY CLASS scores is consistent across belief groups of Q-Sort 3 for the following CLASS dimensions is rejected: QF, $p = 0.28$, LM $p = 0.20$.-. A significantly different distribution exists between groups for beliefs about children (correlated with exemplar beliefs for Q-Sort 3, beliefs, or uncorrelated) and EOY classroom management in expected direction. Teachers whose beliefs about children positively correlate with exemplars have higher overall CLASS scores.

Teacher Beliefs, Classroom Quality, and Pre-Kindergartener's Self-Regulation

The researcher compared and related the results for each research question (1-4) to answer the overarching mixed methods research question guiding the study: How are classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

Priority of the data was given to the quantitative data (QUANqual). The point of interface within the convergent parallel design was after individual forms of data were independently analyzed and reported (Creswell & Plano Clark, 2011). The researcher related the results from the research questions to examine and explore the findings of the study to converge results of the different methods to gather a more complete understanding of the variables and perspectives (Creswell & Plano Clark, 2011). The combined results provide a mixed methods answer to the QUANqual question above. The null hypothesis is that no relationship exists between classroom quality (CLASS), children's ability to self-regulate, and teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children. The point of intercept occurred after sub-questions was answered and data was merged for interpretation. Figure 8 shows the convergent parallel design guiding the study.

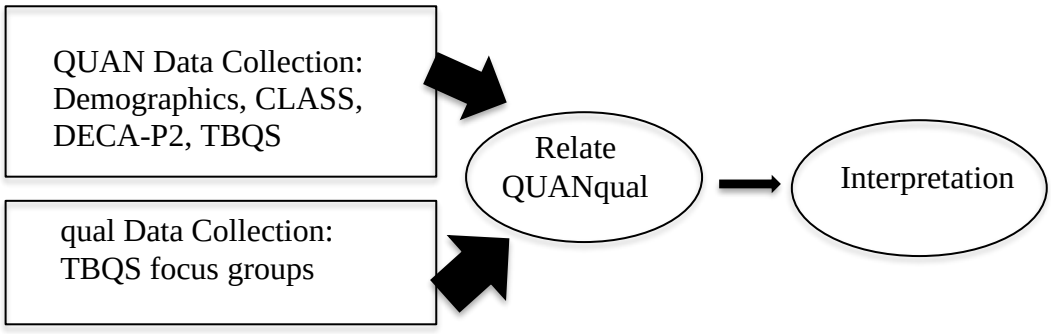


Figure 8. Adapted from Convergent Parallel Design adapted from Creswell & Plano Clark (2011) pg. 69.

The following inference criteria were used to interpret related QUANqual data listed below in Table 37. Interpretation and integration is a critical stage within a mixed methods study.

Table 37

Integrative Framework for Inference Quality

Criterion	Indicator
Interpretive consistency	Inferences follow findings closely, multiple inferences based on same findings
Theoretical consistency	Inferences consistent with theory or knowledge within field
Interpretive agreement	Other scholars likely to conclude basic findings with same results
Integrative distinctiveness	Inferences distinctive, credible, and plausible
Integrative efficacy	Meta-inferences incorporate each inference with theoretical explanation for inconsistencies explored, including explanations
Interpretive correspondence	Inferences correspond with stated purpose and research questions, meta-inferences formed following MM design

Note. Adapted from Process of Evaluation for Inference Quality (Tashakkori & Teddlie, 2009, p. 301)

The researcher employed interpretive rigor by following components within the Integrative Framework for Inference Quality shown in Figure 8 (Tashakkori & Teddlie, 2009). The criteria used to determine the quality and integration of inferences was adapted from the model used within the Tashakkori and Teddlie's (2009) process of evaluation for inference quality. The results include inferences and literature connections and therefore are included in Chapter 5: Discussion, Conclusion, and Implications.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to examine and explore the relationship between teacher beliefs, children's ability to self-regulate, and overall prekindergarten classroom quality. A convergent parallel mixed methods design guided the study. Quantitative and qualitative data were collected concurrently. Data strands were analyzed separately and merged at the conclusion of the study with priority given to the quantitative data (Creswell & Plano Clark, 2011; Ivankova et al., 2006). Priority was given to the quantitative data. Multiple theoretical perspectives were drawn upon to design and implement the study including: a pragmatic world-view, the Concourse Theory of Communication and the Ecological Systems Theory. The researcher implemented Q-methodology to transform participant's subjective thoughts into operant, or defined, factor structures in a scientifically based approach (Brown, 1993; Ernest; 1999; Ernest, 2011, Midgley & Delprato, 2017; Stephenson, 1935; Stephenson, 1980; Stephenson, 1986). The Ecological Systems Theory provides a foundational perspective of the impact teacher beliefs (explicit or implicit) has on a child's development, specifically within the micro and mesosystems, in the classroom environment (Bronfenbrenner, 1979; Pianta et al., 2016). The findings of the study indicate that there is a significant relationship between teacher beliefs (TBQS), components of classroom quality (CLASS), and children's self-regulatory growth (DECA-P2) for the sample collected. Additionally, the

TBQS results may also provide professional development agencies additional insights into teacher's beliefs and subsequent practices to target professional development opportunities.

This study explored and examined the relationship between teacher beliefs, children's ability to self-regulate, and overall prekindergarten classroom quality. An overarching mixed methods research question and subsequent research questions guided this study: How are classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

1. What are the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?
2. How do the sample's teacher beliefs compare to exemplar (coaches, trainers, highly qualified teachers) beliefs?
3. What is the relationship between teacher beliefs (TBQS), classroom quality (CLASS), and children's ability to self-regulate (DECA-P2)?
4. Do teacher beliefs impact overall classroom quality (CLASS)?

The researcher requested and analyzed de-identified, secondary data collected from a state funded prekindergarten program collected within a nine-month period from August, 2017-May, 2018. The secondary classroom environment data (CLASS) were collected by outside evaluators or regional managers. The secondary self-regulatory data (DECA-P2) were collected by classroom teachers. The researcher conducted focus groups with twenty teachers to complete the TBQS. Approximately 320 children were in the twenty

classrooms included for this study. Audio-recordings of focus groups were transcribed and analyzed to explore the participants lived experience.

Research Question One

Research question one explored and examined the similarities and differences of teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children. The study's population was a southern state's publically funded prekindergarten program. The sample of teachers were eligible to participate from a pilot program, within the population, using the DECA-P2 and CLASS. There were 103 teachers eligible to participate in the study, listed by the publically funded program. All 103 teachers were contacted via email with an invitation to voluntarily participate in the study. 20 teachers agreed to participate in focus groups to complete Q-Sorts regarding their beliefs about classroom management (Q-Sort 1), beliefs about classroom practice (Q-Sort 2), and beliefs about children (Q-Sort 3). Each Q-Sort consisted of 20 statements within a concourse (beliefs about classroom management, children, and classroom practice). Participants ranked twenty cards per sort ranging from least characteristic of their beliefs to most characteristic of their beliefs. Sixty Q-Sorts ($n = 20$) were entered into PQMethod (version 2.35), which is a Q Methodology analysis package. Twenty sorts per concourse were entered into PQMethod for analysis of each respective sort (Q-Sort 1, 2, 3). A subsequent principal component factor analysis was conducted to identify common factors using varimax rotation (Rimm-Kaufman et al., 2006; Ernest, 2011; Field, 2013). PCA is used to reduce factors to explanatory constructs that account for total variance.

The common factors extracted using varimax rotation and the researcher selected factors that met the following criteria: EVs above 1.00 account for more variance than an

individual Q-statement alone and at least three respondents loading per factor (Watts & Stenner, 2012, p. 104). The factors that emerged represent perspectives that most closely associate with respondents as determined by their defining sort loading on the factor matrix (Table 5). The research used the factor matrix table, in addition to the factor statement and *z*-score tables (Table 7, 8, 10) to interpret a perspective identify within each factor (Watt & Stenner, 2012). Statements for each factor within the concourse factor was inspected for interpretation using the associated *z*-score to summarize the unique perspective for each group of respondents. Two factors per Q-Sort (beliefs about classroom management, practice, and children) were used to define respondent's perspectives per Q-Sort.

The following tables summarizes the statements of highest and lowest associated statements per factor (1, 2) per Q-Sort (classroom management, classroom practice, and beliefs of children). Table 38 highlights the similarities and differences among teacher beliefs for the sample:

Table 38

Summary of Similarities and Differences Representative of Teachers Beliefs

Q-Sort 1: Comparison between factors

	Factor 1	*Factor 2*
Management beliefs most representative	Self-regulation, treating students with respect, positive management, and clear expectations of rules	Clear expectations, rules discussed, children should try to solve conflicts independently, rules need to be reinforced
Management beliefs least representative	Peer interactions to be left for snack/recess, curriculum over student needs, maintain control, teacher directed	Control of class is apparent when teacher is not present, teacher directed, positive management techniques, peer interactions best left for snack/recess

Q-Sort 2: Comparison between factors

	Factor 1	*Factor 2*
Practice beliefs most representative	Moring routine, welcoming by name, modeling behaviors, introduction of new activities	Welcoming by name, encouraging feedback, reflecting on what 'worked', modeling behaviors
Practice beliefs least representative	Talking about current events, conducting business of classroom (lunch money), drill and recitation, using worksheets	Talking about current events, using worksheets, discussing teacher made written message, drill and recitation

Q-Sort 3: Comparison between factors

	Factor 1	*Factor 2*
Beliefs about children most representative	Students need to feel safe, students meet challenges when cared for, students should feel 'known,' knowing families is important to understand students	Students need to feel safe, students need to have choices, students learn best with models for behavior, students need to be met in terms of ability
Beliefs about children least representative	Students need a quiet classroom, students do not take care of materials without supervision, students are motivated by grades, students try to get away with as little work as possible	Most students respect teachers and authority, students do not take care of materials without supervision, students try to get away with as little work as possible, students are motivated by grades

Research Question Two

Research question two compares the sample's teacher beliefs to exemplar beliefs using the Criterion Method to provide a degree of relation between the teacher's ratings and an exemplar (Rimm-Kauffman et al., 2004; Waters & Deane, 1985). Methods to compare teacher Q-Sorts with exemplar Q-sorts were replicated using Rimm-Kaufmann et al. (2006)'s original study validating the TBQS. Three early childhood exemplars (one coach, one professional development trainer, and one prekindergarten teacher) completed Q-sorts regarding teacher beliefs of practice, children, and classroom management. An initial PCA with varimax rotation was conducted with these data as with the teacher Q-Sorts using PQMethod 2.35 (Schmolk, 1998) to perform principal components analysis

and varimax rotation. Two factors per Q-Sort (beliefs about classroom management, practice, and children) were used to define respondent's perspectives per Q-Sort (1, 2, 3) which accounted for 95%, 93%, and 94% of the variance, respectively. Modal exemplar values from Exemplar Q-Sort 1, 2, and 3 were found within each data matrix each statement to create a 'criterion sort' (Rimm-Kaufman et al., 2006, p. 153; Sawyer & Campell, 2009, p. 334). The criterion sort revealed a set of statements that are representative of the early childhood exemplar specialists. The Spearman correlation coefficient, *r* = value, was standardized into a Fisher Z value for subsequent analysis.

The modal exemplar values extracted the following statements for the Classroom management sort as most positively associated with the exemplars (+2): Statement 11, "self-monitoring behaviors (or self-regulation) are important for students to develop" and statement 17, "if I treat students with respect, kindness, and concern there are less behavior issues." The following statements most negatively associated (-2) with the modal exemplar criterion sort: statement 1, "the primary goal in dealing with students' behavior is to establish and maintain control" and "students learn best in primarily teacher directed classrooms." An example of a neutral statement (0) from the criterion sort was, "students should try to solve conflicts on their own before going to the teacher."

The criterion sort was compared with each teacher's individual q-sort matrix using the criterion method replicated from Rimm-Kauffman et al., (2006). Interestingly, 70% of the teachers who positively associated with factor 1, Q-Sort 1, had significant Spearman correlations with the criterion sort at the 0.05 alpha level. The remaining 30% of the teachers did not have a significant correlation with the criterion sort. Six teachers did not have significant correlation with the criterion sort, four of the six purely

associated with Factor 2: Q-Sort 1. This finding indicates the consensus of the majority of teachers (87.5%) of teachers who positively associate with factor 1 also significantly correlate with the criterion sort. The criterion method identified that 90% of teacher's who loaded with Factor 1 or 2 for Q-Sort 2 (classroom practice) significantly correlated with the corresponding exemplar's criterion sort. The 10% (n = 2) that did not correlate with the exemplar spoke about how their practice differed from their trainers within their focus groups. The criterion method also identified that 85% of teacher's who loaded with Factor 1 or 2 for Q-Sort 3 (beliefs of children) significantly correlated with the exemplar's corresponding criterion sort.

Research Question Three

Research question three examines the relationship between teacher beliefs (TBQS), classroom quality (CLASS) and children's ability to self-regulate (DECA-P2). Non-parametric tests were employed by ranking data (EOY CLASS scores and average change in BOY to EOY DECA-P2 scores) to make distributional assumptions (Field, 2013). The researcher used SPSS to compare two conditions (Q-Sort 1: FZRank and SRRank) using the non-parametric Wilcoxon signed-rank test (Field, 2013). Additional Wilcoxin signed-rank tests were conducted for the following pairs of data: Q-Sort 2: FZRank and SRRank, Q-Sort 3: FZRank and SRRank, Q-Sort 1: FZRank and CLASSRank, Q-Sort 2: FZRank and CLASSRank, Q-Sort 3: FZRank and CLASSRank). In summary, the median difference between belief ranks (FisherZ) and average self-regulation rank and EOY CLASS rank (Q1, Q2, and Q3) does not equal zero (p = 0.003).

Research Question Four

Research question 4 examines the relationship between teacher beliefs (TBQS) and classroom quality (CLASS). Non-parametric tests were employed by ranking data (EOY CLASS scores and average change in BOY to EOY DECA-P2 scores) to make distributional assumptions (Field, 2013). The researcher used SPSS to compare EOY CLASS scores by running a Kruskal-Wallis Test in SPSS. A Kruskal-Wallis a non-parametric test similar to a one –way ANOVA, but with ranked data (Laerd, 2018). The distribution of CLASS score dimension, Regard of Student Perspective, is different across categories of classroom management beliefs (categories: 1) correlated with exemplar management sort, 2) uncorrelated with exemplar sort). The distribution of CLASS scores is the same across categories of beliefs about classroom practice (categories: 1) correlated with exemplar management sort, 2) uncorrelated with exemplar sort). The distribution of overall CLASS score is different across categories of beliefs about children (categories: 1) correlated with exemplar management sort, 2) uncorrelated with exemplar sort). The distribution of the CLASS dimensions, specifically Quality Feedback and Language Modeling, scores are different across categories of beliefs about children (categories: 1) correlated with exemplar management sort, 2) uncorrelated with exemplar sort).

Mixed Methods Research Question: QUANqual interpretation

The researcher merged the QUANqual results to from each research question to answer an overarching mixed methods research question guiding the study: How are classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children?

The researcher related the results from the research questions to examine and explore the findings of the study to converge results of the different methods to gather a more complete understanding of the variables and perspectives (Creswell & Plano Clark, 2011). The combined results provide a mixed methods answer to the QUANqual question above. The null hypothesis is that no relationship exists between classroom quality (CLASS), children's ability to self-regulate, and teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children. The point of intercept occurred after research questions were answered and data was merged for interpretation. Figure 9 shows the convergent parallel design guiding the study.

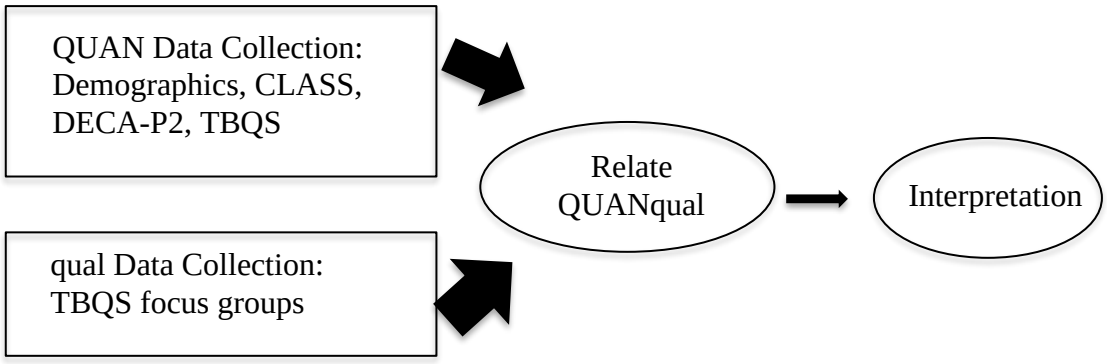


Figure 9. Convergent Parallel Design adapted from Creswell & Plano Clark (2011) pg. 69.

The researcher followed the inference criteria were used to interpret related QUANqual data listed in Figure 8. Interpretation and integration is a critical stage within a mixed methods study. The researcher employed interpretive rigor by following components within the Integrative Framework for Inference Quality shown in Figure 8, including: interpretive consistency, theoretical consistency, interpretive agreement, integrative distinctiveness, integrative efficacy, and interpretive correspondence. (& Teddlie & Tashakkori, p. 301).

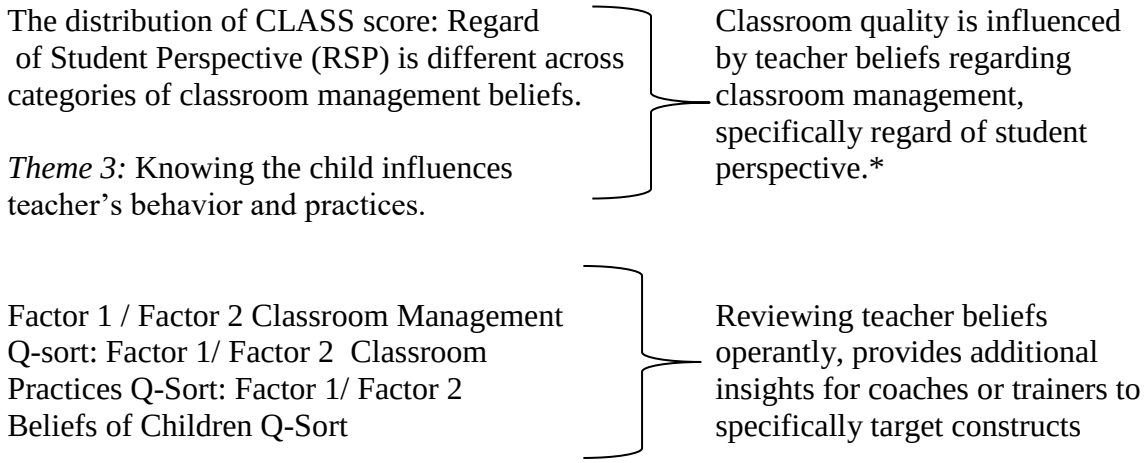
Summary of Findings

The QUANqual data was integrated and meta-inferences were created from the combined data sets exploring and examining each research question (Teddlie & Tashakkori, 2009). The meta-inferences were derived from all forms with priority placed on the quantitative findings. The following table illustrates the meta-inferences drawn and the data source(s) from each research question:

Table 39

Merging Qualitative and Quantitative Data: Data and Meta-Inferences

QUAN and qual Data	Meta-Inference
Overall CLASS score significantly differs in distribution across groups (correlated or uncorrelated with exemplar) $p = 0.034$ Overall, 78% of teachers Q-Sorts correlated with exemplar's 'criterion sort.' *Theme 1*: Experience in the classroom is a predominant influence of teaching practices, knowledge, and development of beliefs.	In classroom coaching, training, and other forms of professional development influence teacher beliefs about classroom management, practice, and children.
The median difference between belief rank score (compared to exemplar) and average self-regulation score did not equal zero. *Theme 2:* Social emotional development is fundamental for exiting pre-kindergarteners.	Teachers believe developing student's social emotional competence, specifically, self-regulation is fundamental for pre-kindergarteners. Teacher beliefs impact children's self-regulatory growth.



**Note: CLASS defines RSP: "the degree to which the teacher's interactions with students and classroom activities place emphasis on student's interests, motivations, and points of view to encourage and support student responsibility and autonomy." (*Hamre, Goffin, & Kraft-Sayre, 2009, p. 15).

Discussion of Findings

The researcher explored and examined the influence of beliefs on classroom practice by merging and interpreting the results from all forms of collected data with emphasis on quantitative data (QUANqual). The researcher followed the Process of Evaluation for Inference Quality to reach conclusive QUANqual meta-inferences (& Teddlie & Tashakkori, 2009, p. 301, p. 307). The findings below answer the over-arching mixed methods question guiding the study: How are classroom quality (CLASS) and children's ability to self-regulate affected by teacher beliefs regarding disciplinary practices, teaching practices, and beliefs about children? The meta-inferences stated below are supported by theoretical consistency, interpretive agreement, and integrative efficacy (Teddlie & Tashakkori, 2009, p. 301).

The researcher merged the QUANqual data once each research question was completed to report integrated inferences to answer the overarching research question by

first exploring and integrating results from each belief perspective representative of each teacher participant to a certain degree (classroom management, classroom practice, beliefs of children) (Alghamdi, 2015; Watts & Stenner, 2012). The following meta-inferences emerged for the sample included within the study:

1. In classroom coaching, training, and other forms of professional development influence teacher beliefs about classroom management, practice, and children
2. Teachers believe developing student's social emotional competence, specifically, self-regulation is fundamental for pre-kindergarteners.
3. Teacher beliefs impact children's self-regulatory growth.
4. Classroom quality is influenced by teacher beliefs regarding classroom management, specifically regard of student perspective.
5. Reviewing teacher beliefs operantly, provides additional insights for coaches or trainers to specifically target constructs.

The meta-inferences were confirmed using the support of theoretical consistency. For example, for the first meta-inference, the connection between professional development in the form of in-classroom coaching and eliciting changes in teacher beliefs (explicit) are supported within the literature as an essential component of influencing teacher's operational beliefs. (Department of Education, 2015; Fives & Buehl, 2012; Hutner & Markman, 2016; Rimm-Kauffman et al., 2006; Teachstone, 2014). Studying teacher subjective beliefs operantly allows the researcher to view the relationship between beliefs and practice. For example, "There is a clear statistical relationship between teachers' beliefs about teaching and learning and their classroom practice" (Roehrig, Kruse, Kern, 2007, p. 9). The relationship between teacher belief's and classroom practice is supported

as a proximal relationship, additionally, this study adds to the literature that reports in-classroom training where positive classroom effects are visible may elicit development of teacher beliefs (Borg, 2001; Hamre et al., 2012; Pajres, 1992).

This study also supports the current literature indicating that beliefs do not, necessarily, translate into classroom practice (Hutner & Markman, 2017). For example, the sample in the study receives professional development using classroom level data and programmatic objectives and 80% of teacher's (n = 20) Classroom Practice sort significantly correlated with exemplars criterion sort ($p < 0.05$). Teacher C mentioned in her focus group that she disagreed with her coaches' suggestions. She taught elementary level for five years. Teacher C's Q-sorts (classroom management and classroom practice) did not correlate with the exemplar's criterion sort, however, her beliefs of children significantly correlated with the exemplar sort. Teacher C stated in her focus group session, "We're going to do it however it works for our classroom and not some guidelines that someone made that never came in the classroom…I kind of go against the grain sometimes…I'll do it when she's here, you leave, an guess what?"
Beliefs of practice may not translate immediately into changes in classroom practice or teacher behavior (Fives & Buehl, 2012; Hutner & Markman, 2017; Teachstone, 2014).

The literature reviewed for the study revealed a connection between the proximal relationship of teacher beliefs and children's social emotional competencies (Blair & Razza, 2007; Hamre et al., 2014; Lonigan et al., 2017; Miller et al., 2013; Rimm-Kauffman et al., 2009). This study's second meta-inference revealed that teachers believe that developing student's social emotional competence, specifically, self-regulation is fundamental for pre-kindergarteners. For example, Teacher S stated:

> So it says self monitoring behaviors or self regulation or important skills for students to develop. That is the most important skills and I tell parents this myself when I meet with them. I say if they have learned nothing else, I said, you know, we want them to learn self regulation because, if they go into kindergarten, they can know all the letters, all the sounds, everything academic wise but, if they cannot sit there and they cannot regulate their own emotions, they will never be able to pass that barrier to be able to, you know, accept that academic, you know, things coming into them.

The median difference between pre-kindergartener's average change in self-regulatory beliefs between teacher belief ranks (Fisher Z-score) was significantly different ($p <$ 0.003) as compared to exemplar's 'criterion sort.' Integrating this finding that there is a significant statistical difference between groups of teachers beliefs (correlated with exemplar's beliefs or uncorrelated) average classroom self-regulation with theme 2 (Social emotional development is fundamental for exiting pre-kindergarteners) growth provides a deeper understanding of the participants lived experiences. Exemplars highly ranked a self-regulation construct (statement 11) on the classroom management Q-sort (Factor 1: $z = 1.413$, Factor 2: $z = 1.378$), Table 16. The non-parametric Wilcoxin Signed-Rank Test identified that there is a statistical difference between teacher beliefs classroom management (Fisher *Z*-score) and children's average ability to self-regulate. An inverse relationship exists between Q-Sort 1 (management) and average change in self-regulation scores. As teacher beliefs approximated the exemplar sort, scores in self-regulation decreased. This may be due to a smaller change score as rated by the teacher in the beginning of the year (DECA-P2). This may also be due to differences among the

teacher's beliefs surrounding developmentally appropriate self-regulatory behaviors. The researcher recommends further exploration of this area within future research studies.

A positive relationship exists between Q-Sort 2 (practice) and Q-Sort 3 (beliefs) and average change in self-regulation. This finding indicates that as teacher beliefs about practice and beliefs about children correlate with exemplar beliefs (higher Fisher *Z*) there is a positive change in average self-regulation score. The teachers with beliefs more closely mirroring the exemplar sort had children that improved their self-regulation scores, on average. This finding is corroborated by the qualitative results indicating the majority of teachers within the sample value the importance of self-regulation and social emotional competencies. For example, 95% of focus group sessions discussed the importance of developing social emotional competencies, most frequently named 'self-regulation. This finding is supported by the literature that young children's ability to self-regulate is a predictor of later academic success (Blair & Razza, 2007; Lonigan et al., 2017; Miller et al., 2013; Rimm-Kauffman et al., 2009). Social emotional competencies, specifically self-regulation, are noted as a priority for the sample. Self-regulation is defined as the ability of a child to recognize and control emotion, cope with emotion, changes, etc., and cooperate in relationships with peers and adults (Center for Development of the Child, Harvard, 2017). Interestingly, teachers within the sample who loaded within Factor 1 for Q-Sort 1 (management) loaded the self-regulation statement most representative of their viewpoint (Z = 1.587) and the autonomy statement was ranked as characteristic or less characteristic of their viewpoint (*Z* = -0.013)., Teachers who loaded within Factor 2 for Q-Sort 1 (management) loaded the autonomy statement most more characteristic of their viewpoint (*Z* = 0.789) and the self-regulation statement

less characteristic (*Z = 0.205*). These results indicate teachers who load on factor 1 and 2 of the classroom management sort have a disagreence regarding the importance of autonomy vs. self-regulation. According to Kamii (1984), 'Autonomy means being governed by oneself. It is the opposite of heteronomy, which means to be governed by someone else' (pg. 410). Within Piagetian theory, an autonomous child, who is developing the ability to self-regulate, has the ability to make decisions (recognize, control, cope, change) independent of rewards or punishments (Kamii, 1991; Piaget, 1997). These results indicate the sample likely have differing definitions of autonomy and self-regulation. An area of recommended professional development may be to focus on the difference between teaching to develop autonomy and/or to support children's self-regulation.

The third meta inference emerged from the focus groups transcripts and classroom management q-sorts also revealed that all teachers, whether their sort was most purely associated with classroom management factor 1 (highest priority: self-regulation, lowest priority: teacher directed activities) or factor 2 (highest priority: class expectations, lowest priority: peer interactions best left to snack/recess), ranked self-regulation constructs as most characteristic of their beliefs. Teacher's, in this sample, highly regard the importance of self-regulation for the development of the young child and the correlation of the teacher's beliefs to the exemplar's 'criterion sort' displays a difference in the average change in the child's ability to self-regulate. For example, Teacher K stated:

> I think it would probably ... for the kindergarten experience, I think it would be their social/emotional development because all of the other stuff can be taught

> and, while they're here in PreK, if they can learn how to be healthy, socially and emotionally helpful then everything else can fall in place because then they know how to solve problems, they know how to take care of themselves, they show concern for others. And that is something that they're not going to get in other classrooms unless they have a teacher that knows the importance of that.

The majority of teachers described the importance of self-regulation or social emotional growth in pre-kindergarten when asked what was 'most important' exiting objective for pre-kindergarteners to embody.

The fourth meta-inference that emerged from the study was that 'classroom quality is influenced by teacher beliefs regarding classroom management, specifically regard of student perspective.' Classroom quality indicated a significant difference in scores as compared to the teacher's q-sort correlation to the exemplar's 'criterion sort' for the classroom management q-sort and the beliefs about children q-sort. The qualitative theme 'knowledge of the child influences teacher practice' emerged from bracketing and horizonalization of the significant statements taken from the verbatim transcripts. Interestingly, the non-parametric quantitative Kruskal-Wallis Test revealed that teacher's beliefs which correlated with the exemplar's 'criterion sort' had a significant difference of end of year classroom quality rank (CLASS) for each q-sort, classroom management, classroom practice, and beliefs about children. Classroom management dimension, Regard for Student Perspective (RSP), differed significantly among teachers correlated or not correlated with the exemplar's classroom management 'criterion sort.' CLASS defines RSP as: "the degree to which the teacher's interactions with students and classroom activities place emphasis on student's interests, motivations, and points of

view to encourage and support student responsibility and autonomy" (Hamre, Goffin, & Kraft-Sayre, 2009, p. 15). For example, Teacher H stated, "Students cannot be understood without knowing something about them" and Teacher A stated:

> You know, I think you need to know because when the child comes into the classroom, he doesn't bring himself. He brings all of us in his family, his side and everything… his learning is going to be built on the relationship that he establishes with you so that knowledge to me is key.

Teacher S stated:

> I don't feel like I could have really addressed that situation the way that I did without knowing that background knowledge…It's a little of both (develop relationship or knowing the child's background) because even if you know that information, if you have no true relationship with the child, the child's not going to trust you enough to open up to you so you have to have that relationship but then you have to have that built trust. I mean, even in a classroom, you've got to think about it. It is a relationship. You have a relationship with each and every child and each relationship is different and your actions and the things you say and the things you do shape that relationship in the classroom. And the relationship we had at that point, it was towards the end of the year so we had got to know each other. So she was able to trust me enough to open up to me and know that that information she shared, you know, would be accepted and that I would be able to help her, you know, that it was a trusted source.

The relationship of knowing the young child and incorporating children's autonomy, interests, and motivations in the classroom is well supported within the literature

reviewed for this study. The responsivity of the teacher to the child's interests, background, and need to be autonomous is a critical component within the reciprocal classroom environment (Bronfenbrenner, 1994; Connors, 2016; Kamii, 1991; Morris & Connors, 2016; Pianta, LaParo & Hamre, 2008). The theoretical framework used to guide the study, the Ecological Systems Theory, further confirms the relationship that teacher's knowledge of the child and subsequent classroom practice has a practical importance to understand environmental influences on the child (birth through five) (Johnson & Chestnut, 2009; Morris & Connors, 2016).

Limitations

The study's findings are limited to generalizations within the sample population due to the data set size (n = 11) for the non-parametric tests employed in the aforementioned analyses. However, due to the availability of complete data sets (n = 11) for comparisons between classroom quality, children's self-regulatory growth, and teacher beliefs the researcher selected non-parametric tests which are specifically designed to accommodate small sample size and independent, non distributed data (Field, 2013). Additionally, the study was conducted within one state and the sample was drawn from a sample representative of teachers who voluntarily participated in a pilot program. The voluntary nature of the pilot program may have a cofounding effect on the variables within the study. Further, gathering data regarding teacher's beliefs relies on the participants' ability to honestly report beliefs which are often implicit, therefore, the researcher employed Q-methodology to make the subjective beliefs operant as an accommodation. Q-methodology requires limited participants to produce significant

findings, further, Q-methodology and mixed-method designs yield results which are not intended for generalization to a larger population (Ivankova & Stick, 2006; Ernest, 2011).

The literature review conducted did not specifically necessitate or suggest collecting the socio-economic status, cultural background, or prior experiences of the teachers or children within the study. However, each child, family, and teacher have innumerable experiences which influence their development, belief systems, and behavior (Bronfenbrenner, 1978). This study did not include demographic information beyond the teacher's education level and years of teaching in prekindergarten and elementary school.

Future Research and Implications for Practice

Measuring subjective teacher beliefs operantly provides reasearchers the ability to view belief statements ranked by priorty of association within a construct and within groups of association using Q-Methololgy. This studied explored and examined the result of the q-sorts, focus group transcripts, and quantitiatve classroom quality data (CLASS) and self-regulatory data (DECA-P2). The following can be concluded from the study's mixed methods results:

1. Using Q-methodology to study subjective beliefs operantly provides researchers the ability to deteremine different and simialar pure associations with constructs.
2. In classroom coaching, training, and other forms of professional development influence teacher beliefs about classroom management, practice, and children.
3. Teachers believe developing student's social emotional competence, specifically, self-regulation is fundamental for pre-kindergarteners.

3. Teacher beliefs impact children's self-regulatory growth.

4. Classroom quality is influenced by teacher beliefs regarding classroom management, specifically regard of student perspective.

5. Reviewing teacher beliefs operantly, provides additional insights for coaches or trainers to specifically target constructs.

The following statements are recommendations for future research:

1. This study recommends that future studies include a larger nationally based sample to explore and examine the relationship between teacher beliefs, classroom quality, and children's ablity to self-regulate.
2. This study found that there is a significant relationship between teacher beliefs, classroom quality, and teacher beliefs (particiualrly beliefs of classroom management and beliefs of children). Future studies could examine this relationship with a larger sample.
3. This study found that teachers beliefs, correlated with exemplars, effect the average change in self-regulatory abilities for prekindergaterners. The researcher recommends that future studies implement parametric testing with larger studies to further examine the direction and determine the predictability of the effects.

The following are recommendations for future practice and policy:

1. Results from this study indicated that reviewing teacher beliefs using Q-methodology may allow professional development agencies to target specific constructs held by a group of teachers.

2. The majority of teacher's q-sorts correlated significantly with the exemplar's 'criterion sort' had significant differences compared to teachers whom were uncorrelated with the exemplar in terms of classroom quality and average annual change in children's ability to self-regulate. A potential area of future research is to examine the alignment of professional development personelle, such as coaches, and teachers.
3. Social-emotional development, specifically the pre-kindergatener's ability to self-regulate, the sample within this study indicated self-regulation is effected by teacher beliefs as correlated with exemplars. The researcher recommends that leaders and professional development personelle supervising prekindergarten programs review teacher beliefs regarding the priority of self-regulation to inform professional development.
4. Self-regulation and/or autonomy in the prekindergarten classroom are supported by this sample's teachers and trainers. Further, according to the teachers within this sample, the importance of knowing the young child (background, interests, family culture, etc.) enhances the teacher's ability to respond to the young child's social-emotional growth. This study recommends that practicioners and policy makers continue to support children's autonomy over heteronomy in the classroom. In this study, there was a relationship between teacher's positive perceptions of a child's autonomy and the child's ability to self-regulate. Therefore, future policy is recommended to focus more closely on supporting the teacher's ability to responsively adapt to the young child's social emotional development.

This study's findings provide implications for future research and policy, especially when teacher's subjective beliefs are studied operantly and coberated with teachers lived experiences. Further, the study concluded that there is a significant relationship between specific constructs of teacher beliefs, as related to trainer beliefs, classroom quality (CLASS), and average change in self-regulatory scores (DECA-P2). Additionally, teachers within this study place high priority on self-regulatory and/or autonomy statements and knowing the child (child's interests, family, background) within the concourse. The teachers describe the development of children's social emotional competencies, specifically self-regulation, as the most imporant objective or aim of prekindergarten. Findings from this study contribute to the growing body of literature promoting the importance of social emotional competencies in early childhood education and the considerable effect teachers beliefs and interactions have on young children.

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APPENDIX A

IRB APPROVAL

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
Office of the Institutional Review Board for Human Use

470 Administration Building
701 20th Street South
Birmingham, AL 35294-0104
205.934.3789 | Fax 205.934.1301 | irb@uab.edu

Kerch, Cailin J

University of Alabama at Birmingham Institutional Review Board
Federalwide Assurance # FWA00005960
IORG Registration # IRB00000196 (IRB 01)
IORG Registration # IRB00000726 (IRB 02)

09-May-2018

IRB-300001446
Examining the Relationship between Teacher Beliefs, Prekindergarten's Self-Regulation, and Classroom Quality

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The IRB reviewed and approved the Initial Application submitted on 09-May-2018 for the above referenced project. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services.

	Exempt (Category 1)
Determination:	Exempt
	09-May-2018
	No Continuing Review

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- praf.180508
- exempt.clean.180504

APPENDIX B

Q-SORT INSTRUMENTS

Q-Sort 1: Beliefs About Classroom Discipline and Behavior Management
Take the 20 statement cards and sort them into five piles of four cards each. Sort these into the following five categories:

1. Least characteristic of my approach or beliefs about discipline and behavior management.
2. Less characteristic of my approach or beliefs about discipline and behavior management.
3. Somewhat characteristic of my approach or beliefs about discipline and behavior management.
4. Characteristic of my approach or beliefs about discipline and behavior management.
5. Very characteristic of my approach or beliefs about discipline and behavior management.

QSORT 1

QSORT 1	#1	The primary goal in dealing with students' behavior is to establish and maintain control.
	#2	A noisy classroom is okay as long as all the students are being productive.
	#3	Students must be kept busy doing activities or they soon get into trouble.
	#4	When students are engaged in interesting problems and challenging activities, they tend to have very few discipline problems.
	#5	Proper control of a class is apparent when the students work productively while I am out of the room (either briefly or when a substitute is present).
	#6	Monitoring students can prevent problematic situations.
	#7	Peer interactions are best left to recess and snack time.
	#8	The curriculum and class schedule need to be prioritized over students' specific interests.
	#9	A classroom runs smoothly when there are clear expectations for behavior.
	#10	Classroom rules should be discussed and posted.
	#11	Self-monitoring behaviors (or self-regulation) are important skills for students to develop.

	#12	It is important to respect students' autonomy and expect them to act in a responsible manner.
	#13	Students should try to solve conflicts on their own before going to the teacher.
	#14	Rules for the students' classroom behavior need to be reinforced consistently.
	#15	Praise from me is an effective way to change students' behavior.
	#16	Students learn best in primarily teacher-directed classrooms.
	#17	If I treat students with respect, kindness, and concern, there are less behavior problems.
	#18	Verbal punishment is an unacceptable means of controlling students' behavior; I believe it is more important to use only positive management techniques.
	#19	If I anticipate problems before they happen and discuss them with students, I have fewer discipline problems.
	#20	Extrinsic rewards for desirable behaviors (e.g. stickers, candy bars, etc.) undermine students' motivation; it is better not to give such rewards at all.

Q -Sort 2: Classroom Practices
Take the 20 cards and sort them into five piles of four cards each. Sort these into the following five categories.

1. Those practices that are least essential and/or characteristic of my teaching.
2. Those practices that are less essential and/or characteristic of my teaching.
3. Those practices that are somewhat essential and/or characteristic of my teaching.
4. Those practices that are essential and/or characteristic of my teaching.
5. Those practices that are most essential and/or characteristic of my teaching.

QSORT2

QSORT 2	#1	Having a morning routine.
	#2	Talking about our plan or schedule for the day.
	#3	Welcoming each student by name to class.
	#4	Doing an activity to create a sense of community.
	#5	Talking about current events
	#6	Using hand signals.
	#7	Having at least a few students share something that has happened to them.
	#8	Discussing a written announcement or message created by the teacher.
	#9	Conducting the business of the classroom (e.g. collecting lunch or milk money) following a set routine.
	#10	Reflecting and talking about something, such as a social interaction, that "worked" or "didn't work" in our class.
	#11	Reflecting on the content of an academic lesson and talking about what we learned.
	#12	Using drill and recitation for factual information (math facts, etc.).
	#13	Modeling behaviors for students.
	#14	Introducing new objects or new activities in the room through demonstration.

	#15	Using worksheets.
	#16	Permitting students to choose from a variety of activities.
	#17	Encouraging students and giving feedback that focuses on the processes of students' creations or thinking, not the outcomes or the solution.
	#18	Using whole group instruction.
	#19	Using a theme-based approach to instruction.
	#20	Working on group projects.

Q-Sort 3: Beliefs About Children
Take these 20 cards and sort them into five piles of four cards each. Sort these into the following five categories:

1. Least characteristic of my belief system.
2. Hardly characteristic of my belief system.
3. Somewhat characteristic of my belief system.
4. Characteristic of my belief system.
5. Most characteristic of my belief system.

QSORT 3

QSORT 3	#1	Almost all children in my class try their best.
	#2	Many of the students in my class try to get away with doing as little work as possible.
	#3	Students should feel as though they are "known" and "recognized" in the classroom.
	#4	Students need to be met where they are in terms of ability.
	#5	Each one of my students teaches me something.
	#6	Almost all students are equally likeable and enjoyable.
	#7	Most students respect teachers and authority.
	#8	Students seldom take care of their materials if they are not supervised.

	#9	Students learn best when they have good role models for their behavior.
	#10	Students need some choice of activities within the classroom.
	#11	Students need to work on skills at which they are not good, even if it means giving them fewer choices.
	#12	Students cannot be understood without knowing something about their families.
	#13	Students meet challenges best when they feel that their teachers care about them.
	#14	Students need to feel safe and secure in the classroom.
	#15	Students need opportunities to think in a quiet classroom environment.
	#16	Students need to have their strengths recognized to promote learning.
	#17	Students learn best by being actively involved in lessons.
	#18	Students need opportunities to be creative in the classroom.
	#19	Some students show little desire to learn.
	#20	Students are more motivated by grades than they are by the acquisition of competence.

APPENDIX C

CLASS AND DECA-P2

Classroom Assessment Scoring System			
Positive Climate Low 1-2 Mid 3-5 High 6-7	**Negative Climate** Low 1-2 Mid 3-5 High 6-7	**Teacher Sensitivity** Low 1-2 Mid 3-5 High 6-7	**Regard for Student Perspectives** Low 1-2 Mid 3-5 High 6-7
Relationships Physical proximity Shared activities Matched affect Social conversation	*Negative Affect* Irritability Anger Harsh Voice Aggression Disconnected	*Awareness* Anticipates problems and plans Notices lack of understanding	*Flexibility and Student Focus* Shows flexibility Incorporates students ideas Follows lead
Positive Affect Smiling Laughter Enthusiasm	*Punitive Control* Yelling Threats Physical Control Harsh punishment	*Responsiveness* Acknowledges emotions Provides comfort and assistance Provides individualized support	*Support for Autonomy and Leadership* Allows choice Allows students to lead lessons Gives students responsibilities
Positive Communication Verbal affection Physical affection Positive expectations	*Sarcasm/Disrespect* Sarcastic voice Teasing Humiliation	*Addresses Problems* Helps in effective and timely manner Helps resolve problems	*Student Expression* Encourages student risk Elicits ideas and perspectives
Respect Eye contact Warm calm voice Respectful language	*Severe Negativity* Victimization Bullying Physical Punishment	*Student Comfort* Seeks support and guidance Freely participates Takes risks	*Restriction of Movement* Allows movement Is not rigid
Behavior Management Low 1-2 Mid 3-5 High 6-7	**Productivity** Low 1-2 Mid 3-5 High 6-7	**Instructional Learning Format** Low 1-2 Mid 3-5 High 6-7	**Concept Development** Low 1-2 Mid 3-5 High 6-7
Clear Behavior Expectations Clear expectations Consistency Clarity of rules	*Maximizing Learning Time* Provision/Pacing Choice Few disruptions Effective completion of managerial tasks	*Effective Facilitation* Teacher involvement Effective questioning Expanding children's involvement	*Analysis and Reasoning* Why/how questions Problem solving Prediction Experiments Classification Evaluation
Proactive Anticipations of problem behavior Low reactivity Monitors	*Routines* Students know what to do Clear instruction Little wandering	*Variety of Modalities* Range of auditory visual and movement opportunities Interesting and creative materials Hands-on opportunities	*Creating* Brainstorming Planning Producing
Redirection of Misbehavior Effective reduction of misbehavior	*Transitions* Brief Explicit follow-through	*Student Interest* Active participation Listing Focused attention	*Integration* Connect concepts Integrates with previous knowledge

<table>
<tr><td>Attention to positive
Uses subtle cues to redirect
Efficient redirection</td><td>Learning opportunities within</td><td></td><td></td></tr>
<tr><td>Student Behavior
Frequent compliance
Little aggression and defiance</td><td>Preparation
Materials ready/accessible
Knows lesson</td><td>Clarity of Learning Objectives
Advanced Organizers
Summaries
Reorientation statements</td><td>Connections to Real World
Real-word applications
Related to students' lives</td></tr>
<tr><td>Quality Feedback
Low 1-2
Mid 3-5
High 6-7</td><td>Language Modeling
Low 1-2
Mid 3-5
High 6-7</td><td colspan="2">Emotional Support Domain
Positive Climate
Negative Climate
Teacher Sensitivity
Regard for Student Perspective</td></tr>
<tr><td>Scaffolding / Encouragement
Hints
Assistance
Recognition
Reinforcement</td><td>Frequent Conversations
Back and forth exchanges
Contingent responding
Peer conversations</td><td colspan="2" rowspan="3">Instructional Support Domain
Concept Development
Quality of Feedback
Language Modeling</td></tr>
<tr><td>Feedback Loops
Back and forth exchanges
Persistence by teacher
Follow-up questions</td><td>Open-Ended Questions
Questions require multi word response
Students respond</td></tr>
<tr><td>Prompting thought processes
Asks students to explain thinking
Quarries responses</td><td>Repetition and extension Self/Parallel Talk
Repeats
Extends/elaborates
Maps own actions with language
Maps student action with language</td></tr>
<tr><td>Providing Information
Expansion
Clarification
Specific feedback</td><td>Advanced Language
Variety of words
Connected to familiar words and/or ideas</td><td colspan="2">Classroom Organization Domain
Behavior Management
Productivity
Instructional Learning Format</td></tr>
</table>

CLASS Domains and Dimensions. Adapted from Pre-K/K-3 CLASS Manual Technical Appendix, Pianta et al., 2016

N- Never R- Rarely O-Occasionally F-Frequently VF-Very Frequently

Item #	During the past 4 weeks, how often did the child…	N	R	O	F	VF
1	acts in a way that made adults smile or show interest in him/her					
2	listen to or respect others					
3	control his/her anger					
4	seem sad or unemotional at a happy occasion?					
5	show confidence in his/her abilities					
6	have a temper tantrum?					
7	keep trying when unsuccessful (show persistence?)					
8	seem uninterested in other children or adults?					
9	use obscene gestures or offensive language?					
10	try different ways to solve a problem?					
11	seem happy or excited to see his/her parent or guardian?					
12	destroy or damage property?					
13	try or ask new things or activities?					
14	show affection for familiar adults?					
15	start or organize play with other children?					
16	show patience?					
17	ask adults to play with or read to him/her?					
18	have short attention span (difficulty concentrating)?					
19	share with other children?					
20	handle frustration well?					
21	fight with other children?					
22	become upset or cry easily?					
23	show an interest in learning new things?					
24	trust familiar adults and believe what they say?					
25	accept another choice when his/her first choice was not available?					
26	seek help from children/adults when necessary?					
27	hurt others with actions or words?					
28	cooperate with others?					
29	calm himself/herself down?					
30	get easily distracted?					
31	make decisions for himself/herself?					
32	appear happy when playing with others?					
33	choose to do a task that was hard for him/her?					
34	look forward to activities at home or school?					
35	touch children or adults in a way you thought was inappropriate?					
36	show a preference for a certain adult, teacher, or parent?					
37	play well with others?					
38	remember important information?					

DECA-P2 Instrument. Adapted from LeBuffe & Naglieri (2013)