THE EFFECTS OF THE CLASSROOM SCHEDULE AND TEACHER BELIEFS ON
HEAD START TEACHER-CHILD INTERACTIONS

A DISSERTATION IN

Curriculum & Instruction
and
Educational Leadership, Policy and Foundations

Presented to the Faculty of the University
of Missouri - Kansas City in partial fulfillment of
the requirements for the degree

DOCTOR OF PHILOSOPHY

by

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2013
THE EFFECTS OF THE CLASSROOM SCHEDULE AND TEACHER BELIEFS ON HEAD START TEACHER-CHILD INTERACTIONS

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ABSTRACT

Time can be examined from several viewpoints in the early childhood classroom: wasted wait time; instruction which is undifferentiated or not on the child’s cognitive level, missing the child’s target learning needs; the source and control of the classroom schedule; children’s perceptions of time; and the current trend to maintain a rigid time schedule because of accountability demands. This study investigated Head Start preschool programs in a large midwestern urban area using an analysis of teacher beliefs and the classroom schedule. The instruments used to measure predictor variables were the Teacher Beliefs Scale (TBS) and Evaluation of the Early Childhood Classroom Schedule (EECCS); and the outcome variables were measured by observation with the Classroom Assessment Scoring System – PreK (CLASS) and the Individualized Classroom Assessment Scoring System (InCLASS). Thirty four teachers and 89 children participated. Correlation and hierarchical multiple regression were computed to assess the strength of
the relationships between the predictor and criterion variables. Research question 1 asked how teacher’s learner-centered use of time in the early childhood classroom, (EECCS), was related to Head Start classroom interactions and child engagement, (CLASS and inCLASS). Results indicated that EECCS was not a statistically significant predictor of CLASS scores or inCLASS scores. Research question 2 asked how teacher beliefs, (TBS), were related to Head Start classroom teacher-child interactions (CLASS), and Head Start classroom teacher-child, peer-peer, and child-material interactions, (inCLASS). No statistically significant results were found. Research question 3 asked how the early childhood classroom schedule moderated the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions. No statistically significant results were found. Supplementary analyses were performed with activity settings and yielded several significant findings. Statistically significant changes were found for all instruments from fall to spring. Teacher beliefs and the classroom schedule were statistically significantly correlated. This study will also add to the body of literature a connection between teacher child interactions (CLASS) and child engagement with teachers, peers and tasks (inCLASS).
The faculty listed below, appointed by the Dean of the School of Graduate Studies, have examined a dissertation titled “The Effects of the Classroom Schedule and Teacher Beliefs on Head Start Teacher-Child Interactions” presented by Margaret McMann Holley, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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ACKNOWLEDGEMENTS

Thank you to my committee, Dr. Sue Vartuli, Dr. Bonita Butner, Dr. Jake Marszalek, Dr. Jovanna Rohs, and Dr. Candace Schlein, for their challenging and thoughtful feedback all throughout this dissertation writing process. A special word of gratitude goes to my chair, Dr. Sue Vartuli, for her constant support, friendship and belief in me. Her passion for the field of early childhood has inspired me, as it has so many of her students before me. Her legacy at UMKC is held in the hearts of those she taught and touched, who do the right thing for children, listen to them and follow their interests, and teach them to think. I also absolutely could not have completed this degree without the unwavering support of my husband, Tom, who cooked dinner for me after many long days, listened to me vent, and read every word (including commas) of this dissertation. I also very much appreciate my friends and colleagues who regularly nudged and sometimes dragged me along the path.

“There are two lasting bequests we can give our children: one is roots, the other is wings”.

-Hodding Carter
CHAPTER ONE
INTRODUCTION

Time is a fundamental resource that individuals cannot control. A teacher cannot ask for more than 24 hours in a day. But it is not more time that is needed, just appropriate use of the available time (Fitzpatrick, Grissmer & Hastedt, 2011). Because it can be assumed that classroom teachers have a role in the use of time through setting the daily schedule of their early childhood classrooms, teacher’s beliefs of how children should best spend their time for optimal learning are important to examine.

Researchers have investigated time using many variables in the early childhood classroom, including children’s perception and use of time (Cox, 1997; Davis, 1999, 2003; Friedman, 1978, 1982; Grant & Suddendorf, 2011; Kayra-Stuart, 1977; Montangero, 1996; Wang, 1979; Zelanti & Droit-Volet, 2012), relation of time to global classroom quality, which the researchers define as rich materials, child-initiated exploration and sensitive and responsive interactions, in addition to child outcomes (Chien et al., 2010). Other variables investigated are instructional time which is undifferentiated or not properly targeted to the individual child’s learning needs (Early et al., 2010; Wahlberg, 1988), time use with children with special needs compared with typically developing children (McCann, Bull, & Winzenberg, 2012; Vannest & Hagan-Burke, 2010), media and children’s perception of time (Haddon, 2013), time in full day vs. half day programs (Elicker, 1997), specific elements of a daily schedule (Chien et al., 2010;
Early et al., 2010; Gerde, Bingham and Wasik, 2012; Kessler, 1993; Kontos & Wilcox-Herzog, 1997; Pianta, Belsky, Houts & Morrison, 2007; Wadsworth, Robinson, Beckham & Webster, 2012; Wilcox-Herzog, 2002), teacher’s beliefs about what activities children should be spending their time on throughout the school day, (Charlesworth, Hart, Burts & Hernandez, 1991; Charlesworth, Hart, Burts, Thomasson, Mosley & Fleege, 1993), harmonizing room arrangement with the daily schedule (Apps & MacDonald, 2012), and the current trend to maintain a rigid time schedule in the school day because of accountability (Certo, 2006; Hatch & Freeman, 1988).

Early childhood teachers use a variety of strategies in using time to create activity settings during the school day with the goal of providing optimal child engagement and learning. Typical activity settings in the early childhood classroom day include: whole group, free choice, recess, transitions/routines, meals, small group, and individual time (Booren, Downer & Vitiello, 2012). Quality of children’s experiences and learnings have been found to differ depending upon the activity setting in which children are immersed (Cameron, Connor & Morrison, 2005; Chien et al., 2010; Fuligni, Howes, Huang, Hong & Lara-Cinisomo, 2012; Piasta & Wagner, 2010). Booren, et al.’s (2012) results show interactions with teachers were higher in more structured settings, but interactions with peers and tasks were greater in more child-directed settings. Early et al. (2010) found that greater quantity of free play does not necessarily equal more learning, but that a balance is needed between teacher-directed and child-initiated activities. Activity settings are related to child engagement (Ling & Barnett, 2013; Williford, Whittaker, Vitiello & Downer, 2013), teacher-child relationships (Howes, Fuligni, Hong, Huang & Lara-Cinisomo, 2013)

Teacher pedagogical beliefs, in some ways, affect teacher strategies and use of time in the classroom (Caudle & Moran, 2012; Hamre, et al., 2012; Hedges, 2012; McMullen, 1999; Nespor, 1987; Riojas-Cortez, Alanis & Flores, 2013; Vartuli, 1999; Wilcox-Herzog, 2002). Most of the beliefs and practices research has been conducted with kindergarten and primary classrooms (Maxwell, McWilliam, Hemmeter, Ault & Schuster, 2001; McCarty, Abbott-Shim & Lambert, 2001; Smith & Croom, 1993; Stipek & Byler 1997). Some focus on only one age group of children, while others examine several grades (McMullen, 1999; Spodek, 1988; Stipek & Byler, 1997; Vartuli, 1999). However, there is great disagreement in the literature about how well teachers’ beliefs and practices are observed to align by grade level (Bryant, Clifford & Peisner, 1991; Maxwell, et al., 2001; Stipek & Byler, 1997; Vartuli, 1999), and by preservice vs. inservice teachers (Caudle & Moran, 2012; Florio-Ruane & Clark, 1990; McDiarmid, 1990; Murphy, Delli & Edwards, 2004; Pajares, 1993; Rimm-Kaufman, Storm, Sawyer, Pianta & LaParo, 2006; Rohs & Vartuli, n.d.). In addition, there are numerous ways to approach the training and changing of teacher beliefs (Hamre et al., 2012; Hedges, 2012; Riojas-Cortez et al., 2013).

Fundamental to any teacher-child interactions in the classroom are respectful appropriate relationships. Positive relationships enhance children’s cognitive learning
(Marcon, 1999; Mashburn et al., 2008; Pianta & Stuhlman, 2004), as well as help children’s socio-emotional adjustment in first grade (Ahnert, Harwardt-Heinecke, Kappler, Eckstein-Madry & Milatz, 2012), in later years (Arbeau, Coplan & Weeks, 2010; Baker, 2006; Birch & Ladd, 1997), and in different settings (Gallagher, Kainz, Vernon-Feagans & White, 2013; Koles, O’Connor & Collins, 2013). Children’s academic learning is enhanced through strong positive teacher-child relationships specifically in the area of language (Schmitt, Pentimonti, & Justice, 2012) and writing (White, 2013). Relationships between young children and their teachers are of utmost importance in enhancing learning, as well as in providing positive first school experiences, concepts that are founded in solid research and grounded in rich theory. References to adult-child relationship theory abound in the literature, from tangential to thoroughly developed, with references as to how attachments are initially formed (Ainsworth, 2010; Mahler, Pine & Bergman, 1975; Schuengel, 2012; Stevenson-Hinde, 2007), relationships and stages of development (Erikson, 1963), relationships and classroom interactions, (Haberman, 2004; Noddings, 2001), teacher-child relationship type (Wu, Hughes & Kwok, 2010), explanations of inter-relational cultural systems (Bandura, 1989, 1997; Bronfenbrenner, 1993; Friere, 1997; Hamre, Pianta, Mashburn & Downer, 2007; Pianta & Walsh, 1998), and their long lasting consequences with regard to relational and academic outcomes as far off as eighth grade (Hamre & Pianta, 2001; Murray, Murray & Waas, 2008). Thorough meta-analyses of teacher-child relationships have been written about at risk children, their parents and teacher training, (Sabol & Pianta, 2012), their influence on student
engagement (Roorda, Koomen, Spilt & Oort, 2011) and their connections with students’ characteristics (Nurmi, 2012).

**Statement of the Problem**

Although teacher beliefs, strategies, time, and interactions are widely studied independently, little is written in the literature about the appropriate use of time in activity settings of the daily preschool classroom schedule related to teachers’ developmentally appropriate beliefs, or the choice of activities in the daily schedule and their relation to classroom interactions and child engagement. It is known that variables moderate or interfere with teacher beliefs, creating incongruence between beliefs and practice (McCarty, et al., 2001; Sherwood & Reifel, 2013; Vartuli, 1999; Wilcox-Herzog, 2002). Because of the fast societal pace, pressures of imposed rigid schedules, and administrative accountability, many teachers are forced into adopting a daily classroom schedule which is not responsive to children’s social or academic needs or reflective of their beliefs (Certo, 2006; Hatch & Freeman, 1988), feel a loss of control (Sadowski & Woodward, 1983), or are made to teach subjects in ways which may not be developmentally appropriate (Stipek, 2013). Individual children’s experiences are not consistent (Meyer, Linn & Hastings, 1991). There is unengaged time, loss of play, large amounts of teacher directed group time, and little autonomous inquiry investigation by children, even when teachers believe other methods of instruction would be more beneficial for children. These unproductive practices do not lead to desired dispositions in adulthood. Bodrova & Leong (2007) and Fisher, Hirsch-Pasek, Goinkoff, Singer & Berk, (2010) believe that child-initiated play, not memorizing information, is the vehicle through which children develop
many of the skills that education reformers and business leaders say they need, such as collaboration, critical thinking, and confidence.

Because much of the research regarding the relationship between teacher beliefs and practice has been conducted with kindergarten classes or older (Charlesworth, et al., 1991; Burts et al., 1993; McCarty et al., 2001; Maxwell, et al., 2001; Smith & Croom, 1993; Stipek & Byler, 1997), more research about the preschool classroom and early childhood teachers will enrich the literature and help inform practice. Head Start programs in the greater Kansas City area were chosen to be participants in this study because of the importance of supporting learning in young children living in poverty. The Head Start program began in 1964 under President Lyndon B. Johnson’s War on Poverty Program. Influenced by important research on the negative effects of poverty and the positive impacts of education, Johnson assembled a group of academic and civil rights activists who were sociologists, psychologists, and pediatricians and charged them to design a system to break the cycle of poverty and help children overcome the obstacles caused by poverty. Key beliefs were that the program be culturally responsive and that the community be invested in volunteer hours and donations. The name “Head Start” came from the hope that these classes would give young preschool-aged children a “head start” on development to even the playing field with middle class students.

Head Start began as an eight-week summer program and served 560,000 rising kindergarten children across the United States the first summer of 1965, with preschool classes, medical care, dental and mental health services (Office of Head Start, n.d.) Later developments included moving the program from the Office of Economic Opportunity to
The Department of Health, Education and Welfare in 1969, and the inclusion of bi-cultural and bi-lingual programs in 21 states in 1977, so that by 1984, the budget for the Head Start was over one billion dollars and nine million children had been served. Early Head Start, a program serving families and children younger than age three began in 1995, and in 1998, Head Start was re-authorized to expand to full day and full year. In 2007, President Bush re-authorized Head Start, aligned the readiness goals with state early learning standards, set higher quality goals for the workforce, set up state advisory councils on early care and education, increased program monitoring, and set up a five year monitoring cycle. Since 1965, over 30 million children have been served, at approximately one million per year. Classes are located in all 50 states, including the District of Columbia, Puerto Rico and US Territories, including American Indian, Alaskan Native and migrant / seasonal communities (Office of Head Start, n.d.)

Head Start recently officially adopted the CLASS as its quality indicator instrument. Center administrators use the CLASS observation as part of their professional development with teachers and if programs do not reach a certain threshold score in each dimension of CLASS, Head Start grantees must re-compete to be re-authorized. So, Head Start programs benefitted by participating in this study, because it helped familiarize staff with the tool, and because they received data to use in further professional development.

In addition to needing data on preschool aged programs, the field also needs data which connects teacher beliefs and the strategies they embed in the daily schedule. This is important for children because they need models of good use of time and deserve consistent, effective learning experiences which support their learning without wasting
their time. This study is one of the very few to integrate the Classroom Assessment Scoring System (CLASS; Pianta, LaParo & Hamre, 2008) along with the Individualized Classroom Assessment Scoring System (inCLASS; Downer, Booren, Hamre, Pianta & Williford, 2012). It significantly adds to the body of literature a connection between teacher-child interactions and child engagement with teachers, peers, and tasks. These results will also help teachers intentionally plan more effective learning activities and experiences, and guide administrators in planning targeted in-service and training sessions. Finally teacher educators will benefit from these data, because of the need to know how best to shape learning for teacher candidates.

**Theoretical Basis of the Study**

This study was based on theories which derive from John Carroll and Lev Vygotsky. Carroll, one of the first to investigate time needed for optimal learning, proposed a Model of School Learning (Anderson, 1985; Carroll, 1963, 1989; Hymel, 1973; Slavin, 1994), in which the degree of child learning is a function of a ratio of the amount of time that individual learners actually spend on the learning task to the total amount of time that they need. The factors included in time spent are opportunity, or time allowed for learning by the schedule and the teacher, and perseverance, or the time the learner is willing to spend in learning. The factors defining time needed for learning include a child’s aptitude for learning the task, the child’s ability to understand instruction and the quality of the instruction (Anderson, 1985; Carroll, 1963, 1989). Carroll’s model suggests that teacher behaviors, such as planning, management, and instruction, lead to the student behaviors of coverage, involvement, and success, which in turn lead to student
achievement. So, because it is the classroom teacher who ultimately is in control of the learning environment and time schedule of the day, it is the teacher who is a major factor in a child’s opportunity to learn and subsequent learning. Unlike some other uses of the term “opportunity to learn” which may be more politically or socially based (Boykin & Noguera, 2011), Carroll’s model does not include outside influences on the classroom such as the administrator, family, or community and predates awareness of social justice issues.

Lev Vygotsky (1978) proposed that learning happens most effectively when it is focused on children’s emerging capabilities. He called this the zone of proximal development, which is the difference between what children can do independently and what they can do with assistance from an adult or more competent peer. Vygotsky’s followers have pointed out that as teachers build relationships with children, and begin to know their interests and needs, teachers can provide experiences which serve to give children the mental tools they need to move beyond being reactive learners to becoming proactive learners (Bodrova & Leong, 2007). Because learning becomes more of a self-directed activity, or a co-constructed one, than a teacher directed activity, children are able to learn more in social contexts, interacting and using language with their peers, being supported by teachers with questions to extend learning, and drawing on past experience to facilitate their cognitive construction (Trawick-Smith & Dziurgot, 2011). Optimal learning happens in social situations with peers and adults, with intentional scaffolding, mediation and support (Bodrova, 2008). Wood, Bruner and Ross (1976) labeled these “scaffolded” interactions, meaning, “The adult ‘controlling’ those elements of the task
which are initially beyond the learner’s capacity, thus permitting him to concentrate on and complete only those elements which are in his range of competence” (Wood, Bruner, Ross, 1976, p. 90).

Consequently, Vygotsky’s followers believed that the most effective learning occurs with supported differentiated instruction in social situations in the classroom (Bodrova & Leong, 2007). Teachers who use only whole group instruction, who do not plan for scaffolded play (Bodrova & Leong, 2007; Chien et al., 2010; Early et al., 2010), and who do not take children’s individual needs into account when planning activities, will be less effective in addressing specific growth areas, both academic and social, of each child.

Purpose of the Study

The purpose of the study was to explore (a) the relationship between teacher’s use of time (The Evaluation of the Early Childhood Classroom Schedule, Vartuli & Everett, 1993) and Head Start classroom interactions (The Classroom Assessment Scoring System, Pianta, LaParo & Hamre, 2008), and child engagement (InCLASS, Individualized Classroom Assessment Scoring System; Downer, Booren, Hamre, Pianta & Williford, 2012), (b) the relationship between teacher beliefs (The Teacher Beliefs Scale, Charlesworth, et al., 1991) and Head Start classroom interactions and child engagement, and (c) the amount of impact that time use in activity settings in the early childhood classroom daily schedule has on the relationship between developmentally appropriate beliefs and Head Start classroom’s interactions and child engagement.
Research Questions

Research questions investigated were:

1. How is teacher’s learner-centered use of time in the early childhood classroom, as evidenced by the EECCS, related to Head Start classroom interactions and child engagement, as defined by CLASS and inCLASS?

2. How are teacher beliefs, as defined by The Teacher Beliefs Scale, related to Head Start classroom teacher-child interactions as defined by CLASS, and Head Start classroom teacher-child, peer-peer, and child-material interactions, as defined by inCLASS?

3. How does the early childhood classroom schedule moderate the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions?

Hypotheses

Research Hypothesis 1: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom interaction scores, as defined by CLASS.

Research Hypothesis 2: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom child engagement scores, as defined by inCLASS.

Research Hypothesis 3: Early childhood teachers with higher developmentally appropriate belief scores, as defined by the TBS, will demonstrate higher Head Start classroom interaction scores, as defined by CLASS.
Research Hypothesis 4: Children in early childhood classrooms with teachers who have higher developmentally appropriate belief scores, as defined by the TBS, will have higher classroom child engagement scores, as defined by inCLASS.

Significance of the Study

The educational significance of the study is to advance the literature in the field of early childhood education on the topic of teacher beliefs and teacher’s use of time; the impact of teacher beliefs and use of time on teacher-child relationships; and child engagement with adults, peers, and tasks, in classrooms serving children considered to be at-risk. This study sought to improve the understanding of how the teacher’s use of time, as demonstrated through the daily classroom schedule, moderates the relationship between teacher beliefs in developmentally appropriate practice and teacher–child interactions and child engagement.

In addition, significant results from this study could have ramifications beyond contributions to the literature. Because low statistically significant results were obtained for the predictive ability of teacher’s higher developmentally appropriate beliefs to lead to of higher interaction and engagement as seen in CLASS scores, then this has implications for practice in the Head Start classroom. Some researchers (Marcon, 1999; Stipek & Byler, 1997) have found that children in urban schools often experience a more teacher-directed learning environment often due to administrative accountability or parental pressures. Significant data from this study can help demonstrate that a learner-centered classroom focus could lead to higher outcomes for children in urban settings.
Definitions of Terms

Activity Settings: Activity settings is a term used to define the parts of a typical early childhood classroom daily schedule, including, whole group, free choice, recess, transitions, routines, meals, small group, individual time, in addition to teacher presence and teacher-directed settings (Booren, et al., 2012). Activity settings were measured in the protocol section of the inCLASS observation tool (Downer et al., 2012), as well as the evaluation of the classroom schedule.

Whole Group: The preschool child is part of an organized class activity that includes all or most of the class and is most likely led by the teacher. This structured activity could include stories, songs, calendar instruction, discussions, book reading, demonstrations, or outdoor games.

Free Choice: The preschool child has either chosen the activity or location in which to play or learn, or is engaged in an activity which he or she has selected, even if this is within an area that the teacher has assigned. This term will be used instead of the term “play”, because of clearer interpretability.

Transitions / Routines: The preschool child is part of a major transition from one activity setting to another, or routine classroom procedures, such as toileting, standing in line, lining up, waiting between activities, or waiting for materials to be passed out.

Small Group: The preschool child is part of an organized smaller group activity that has been split from the whole group by the teacher, which could include such structured activities as group art projects, writing stories, cooking projects, small group
individual, science experiments, etc. Small group is typically described as no more than five children (Wasik, 2008), or as three to six children (Copple & Bredekamp, 2009).

**Individual Time:** The preschool child is completing work individually with or without teacher’s assistance, including such activities as worksheets or independent projects. This is a structured activity in which peer interactions are not involved.

**Child Outcomes:** The preschool child’s scores of their engagement with adults, peers and tasks / activities in the classroom will be measured by the inCLASS observation tool (Downer et al., 2012).

**Child Engagement with Adults, Peers, and Tasks:** Child Engagement was measured by the inCLASS observation tool (Downer et al., 2012). Dimensions include positive engagement with the teacher, teacher communication, teacher conflict, peer sociability, peer assertiveness, peer communication and peer conflict.

**Developmentally Appropriate Practice:** Developmentally Appropriate Practice (DAP, Copple & Bredekamp, eds., 2009) is a framework for best practice for early childhood programs serving children from birth through age eight, designed to promote young children’s optimal learning and development, as a part of the National Association for the Education of Young Children’s (NAEYC) statements on practice for the early childhood field (p. 1).

**Early Childhood:** In the literature traditionally, early childhood refers to children who range in age from birth to age eight (Copple & Bredekamp, eds., 2009). For this investigation, early childhood refers to preschool aged children, ranging in age from three to five years, enrolled in a Head Start classroom.
**Head Start:** Head Start is a comprehensive “federal program that promotes the school readiness of children ages birth to five from low-income families by enhancing their cognitive, social, and emotional development” (U. S. Department of Health and Human Services, 2012).

**Teacher Pedagogical Beliefs:** Teacher pedagogical beliefs are “implicit theories about the nature of knowledge acquisition [affecting] their behavior and ultimately student learning” (Vartuli, 2005, p. 78).

**Teacher / Child Interactions:** Teacher-child interactions were measured by the CLASS observation protocol (Pianta, et al., 2008). Domains and dimensions of the instrument include positive climate, negative climate, teacher sensitivity, regard for student perspectives, behavior management, productivity, instructional learning formats, concept development, quality of feedback, and language modeling.

**Teacher’s Use of Time:** The early childhood classroom teacher’s use of a daily schedule in which the children’s activities and learning are organized around a variety of activity settings. The teacher may have made all decisions of selection and timing of activities, or may have had some scheduling, curricular, pedagogical or strategic decisions made by the school administrators. Teacher’s use of time will be measured by the Evaluation of the Early Childhood Classroom Schedule (Vartuli & Everett, 1993).

**Methodology of the Study**

This study was conducted using an accessible population of Head Start Classrooms in a large urban midwestern city. Head Start Teachers filled out a demographics questionnaire, completed the Teacher Beliefs Scale (Charlesworth et al., 1991), provided a
detailed copy of their classroom daily schedule, and allowed observers into the classroom on two days to rate teacher–child interactions (CLASS, Pianta, et al., 2008) and observe engagement with adults, peers and tasks (inCLASS, Downer et al., 2010) for four children per classroom. Data were collected through systematic sampling in the fall of 2012 and the spring of 2013 to allow for pre-post comparison of changes in teacher’s use of time through the course of the school year, and examination of which schedules and activities promoted increased interactions and engagement over time. In addition, the pre-scores on CLASS and inCLASS were used as baseline measures of children’s functioning in the classroom. It was expected that the classroom schedule would change over the course of the school year as teachers learned more about their children’s needs and responded to them. Further, it was expected that teacher–child relationships seen in CLASS scores would improve, and children’s engagement scores with the inCLASS would increase, as teachers gained knowledge and improved their pedagogy from the coaching they received throughout the year, as well as from expected maturation of children.

**Sampling Frame**

This convenience sample consisted of Head Start programs in a midwestern urban area, already participating in an ongoing coaching study, administered by Mid America Head Start (MAHS). Consequently, generalizability of the findings will be limited to Head Start pre-kindergarten teachers and classrooms with the same characteristics as teachers in the study.

The sample size of 34 teachers and 135 children was a delimitation for this study. Because of the coordination with an ongoing study, this researcher was limited in the
number of participant teachers available. Consequently, choices of statistical models and methodology were carefully considered to increase generalizability and interpretability of data.

**Limitations of the Study**

Participants for this study completed a teacher beliefs questionnaire individually on a voluntary basis. The teacher beliefs were measured with a self-report questionnaire, leading to the possibility that teachers may have interpreted the items in different ways or marked items which were, for unknown reasons, inconsistent with their intent. (Dobbs & Arnold, 2009; Northrup, 1996) With self-report instruments, it is always possible that the teachers may create cover stories and answer items in ways that they expect the researcher wants to hear based on understandings of current concepts in the early childhood education field. Teachers may be unclear in their beliefs or unaware of some beliefs. In addition to expected individual differences between teachers, they will also have a variety of educational backgrounds and experience, possible different motivations and abilities in completing the beliefs scale, and potentially differing interpretations of questionnaire items.

This is a mixed methods study. The Teacher Beliefs Scale and the Evaluation of the Early Childhood Classroom Schedule are quantitative instruments. And although the CLASS and the inCLASS yield quantitative data, observation is fundamentally a subjective qualitative process. Additional qualitative elements, including interviews of participating teachers, would add much to the richness of this, or any, investigation. Interviews personalize and humanize otherwise impersonal quantitative data (Lincoln &
Denzin, 2003). Discussions with teachers could have added important insights into why changes were occurring in the classroom schedule, the classroom relationships, and child engagement. Qualitative investigations would have allowed the researcher to look beyond numbers into the hearts and minds of participants, in rich, flexible, focused ways. However, qualitative studies are not without limitations, such as the inability to generalize data to other settings or to come to definitive conclusions.

Although quantitative research may have difficult logistics, be more costly due to large samples sizes required, and be less flexible than qualitative investigations, it does offer the advantages of producing data which can more easily be generalized and understood more definitively due to the quantifiable results obtained. And because state legislatures and school administrators use largely data-driven decision making practices, results may be more interpretable and useable for making changes in schools today. So, this study was designed as mixed methods, specifically to take advantage of the benefits of both genres of research.

Every effort has been made to choose gender-neutral language in this study, with the choice of plural or specific nouns instead of pronouns, to avoid sexist bias. However, some masculine pronouns still remain in direct quotations from researchers and theorists in an effort to ensure accuracy.

**Organization of the Remaining Chapters**

Chapter Two contains a literature review regarding the theoretical basis for this study, as well as addresses the constructs of teacher–child relationships, teachers’ developmentally appropriate beliefs, and teachers’ use of time. Chapter Three addresses
the methodology for this study, participant selection, data collection procedures, instruments selected, statistical model, and ethical considerations. The detailed data analysis and summary of results are included in Chapter Four. Chapter Five contains a discussion of the study, conclusions, and recommendations for future research. The instruments used in the study are included in Appendix A. The approval from the Social Sciences Institutional Review Board is presented in Appendix B.
CHAPTER TWO
REVIEW OF THE LITERATURE

Researchers have found that teachers who hold developmentally appropriate
beliefs build positive relationships with children, plan rich learning experiences, and
promote more respectful efficient use of children’s learning time (Charlesworth et al.,
1993; McKenzie, 2013; McMullen, 1999, 2006; Oakes & Caruso, 1990; Riojas-Cortez, et
al., 2013; Taleb, 2013; Wright & Stork, 2013). But there is little quantitative evidence
connecting teacher’s developmentally appropriate beliefs with the important variable of
teacher’s use of time in the daily schedule, and how time is used or misused in the early
childhood classroom. Fast societal pace, pressures of imposed rigid “production”
schedules (Wien, 1996), and administrative accountability lead many teachers to adopt
schedules which are not responsive to children’s social or academic needs. There is
inconsistency, unengaged time, loss of play, large amounts of teacher directed group time,
and little autonomous inquiry investigation by children.

This literature review begins with an overview of the theories which form the
foundation of the research regarding how teacher-child interactions and planning of the
daily schedule effect positive change in child interactions and engagement. First, Carroll’s
Model of School Learning (1963), which proposes that children must have an opportunity
to learn, will be reviewed. Then, systems and social theories related to the study will be
explored, including Vygotsky’s (1978) Social Constructivism, which holds that children
learn best when in social situations filled with rich language, varied experiences, and
imaginative possibilities; and Pianta’s Contextual Systems Theory which includes a child and family system as well as a school system.

After establishing the theoretical context for the study, the primary constructs of teacher-child relationships, teachers’ pedagogical beliefs, and teacher use of time will be detailed. Teacher-child relationships are fundamental to all classroom processes. The discussion of teacher beliefs in this study will be focused on developmentally appropriate practice beliefs. Following this, the discussion of teacher’s use of time will include administrative pressures and implications for the classroom. Finally, the ways each of the constructs will be measured in this research study will be described, including use of the instruments in the literature.

**Theory**

**John Carroll.**

To account for variations in students’ learning, Carroll proposed a Model of School Learning (Anderson, 1985; Carroll, 1963, 1989; Gettinger, 2012; Hymel, 1973; Slavin, 1994), in which the degree of child learning is a function of a ratio of the amount of time that individual learners actually spend on the learning task to the total amount of time that they need. Figure 1 shows a conceptual model, rather than a mathematical formula, of Carroll’s theory.

\[
\text{Degree of learning} = \frac{\text{Time actually spent (Opportunity & Perseverence)}}{\text{Time needed (Aptitude, Ability to Understand, and Quality of Instruction)}}
\]

Figure 1. Carroll’s Model of School Learning (Carroll, 1963, 1969)
The factors included in time spent are opportunity, or time allowed for learning by the schedule and the teacher, and perseverance, or the time the learner is willing to spend in learning. The factors defining time needed for learning include a child’s aptitude for learning the task, the child’s ability to understand instruction, and the quality of the instruction (Anderson, 1985; Carroll, 1963, 1989). Carroll’s model fundamentally changed the way researchers thought about instructional time and individual differences, and was an enormous change from the classic model in which all students are given the same amount of time to learn (Berliner, 1990). Today it can help teachers see young children not as good or bad learners, but as faster or slower learners, as well as remind teachers of the extremely complex process of learning.

Carroll (1963) postulated five basic classes of interactive variables that would account for variations in school achievement, three of which can be expressed in terms of time. Aptitude is the variable that determines the amount of time a student needs to learn a specific task to some acceptable degree of mastery, under optimal conditions of instruction and student motivation. So if a student needs very little time to grasp a concept, the student is said to have high aptitude; conversely, if considerable time is needed, then the student is said to have low aptitude, with all other external conditions being optimal. Another variable which can be described in terms of time is opportunity to learn, a term actually coined by Carroll (1963). This is the amount of time allowed by the teacher or classroom daily schedule to perform the task or learn the concept. If a schedule limits a child’s time on math problems to twenty minutes, than the child’s opportunity to
learn is defined within that time limit. The third time variable is perseverance, which is the amount of time a student is willing to spend on learning the task, sometimes also referred to as motivation. The amount of time actually spent on learning is the time actually needed, reduced by any amount of time the student is able to spend based on lack of opportunity from circumstances not under the child’s control, and also reduced by the student’s own unwillingness to spend time on the task.

Bandura (1997) believes that it is not so much perseverance or motivation which is a factor in learning as it is self-efficacy. “When successes are hard to come by, individuals of high self-efficacy are persistent and those of low efficacy are rapid quitters... raising beliefs in their efficacy makes them more perseverant (Bandura, 1997, p. 216). Although Carroll does not refer specifically to self-efficacy, Bandura’s definition would seem to imply that if individuals have high self-efficacy for performing a certain school tasks, then they would be likely to set more challenging goals, to work harder on difficult aspects of tasks, to master new competencies, and to achieve more. It follows that individuals with higher self-efficacy might then persevere longer or work harder to learn.

Carroll’s other two variables, quality of instruction by the teacher and the student’s ability to understand instruction, can be thought of in terms of achievement. The model is not detailed about what constitutes good quality of instruction in the classroom, but Carroll does include topics like clear instructions, adequate materials, and planned steps to learning in his explanation (Carroll, 1963), which are similar to the components in CLASS. He describes the effectiveness with which the unit of instruction is actually delivered. Teachers need to know the nature of the learning tasks, the prerequisite skills,
and present them in a logical format. Ability to understand can be seen in the classroom. If young children are taught about an abstract concept before they have the prerequisite skills, they may parrot back words, but construct no clear understanding which they could transfer to new learning situations. However, if the concept is something in which the child has interest, and the ability to understand it, then the child willingly grasps the concept more readily and applies the learning to practical situations.

Some researchers following Carroll have interpreted quality of instruction to mean tasks broken down into small parts and taught in a lockstep “drill and practice” way, but in his retrospective, Carroll (1989) described that while it may be useful to look at specific skills, “each must be taught in the context of the broader final task and in relation to each other” (p. 28). All that is required is clear specification of the task to be learned. Some delivery methods may take children longer to acquire skills or knowledge than others, but other than that are no better or worse.

Carroll’s framework can also be described as having both internal and external variables. The internal variables, aptitude, perseverance, and ability to understand, are individual differences in the child. It is the external variables of instructional quality and opportunity to learn which will be the focus of this investigation.

The model suggests that teacher behaviors, such as planning, management, and instruction, lead to the student behaviors of involvement, coverage, and success, which in turn lead to student achievement (Squires, Huitt & Segars, 1981). The teacher must be aware of the child’s level of prior knowledge and match instruction to the child’s learning needs. So, because it is the classroom teacher who ultimately is in control of the learning
environment and time schedule of the day, it is the teacher who is a major factor in a child’s opportunity to learn and subsequent learning.

Carroll’s retrospective in 1989 outlines his thoughts about how his model has been applied and interpreted in classrooms. The complexity of the model has proven to be challenging to researchers because it involves a very multifaceted dynamic of variables. Unfortunately, Carroll says, some of the time-on-task research may have placed too much attention on child engagement, with too little on the quality of that engagement. Carroll’s Model of School Learning does require the task to be clearly specified, but Carroll quickly points out “it makes no requirement that drill and practice procedures be followed” (Carroll, 1989, p. 28). Nor does his model require that skills be taught in isolation. He called for more research and better measures of time on task to clarify this misconception. The CLASS and inCLASS instruments used in this study will each help capture some of the quality of that engagement that Carroll deems crucial to effective learning. Limitations of Carroll’s model include the difficulty of describing individual learning tasks, as well as Carroll’s admittedly minimal definition of quality instruction, and lack of focus on outside influences such as peer, family, and community. His model is admittedly oversimplified (Carroll, 1963).

Bloom’s (1968) well-known work regarding Mastery Learning is based on Carroll’s broader, more theoretical model. Bloom believed that if aptitude can predict a student’s learning rate, and if the instructional variables under a teacher’s control are ensured, then Bloom concluded that given sufficient time and quality instruction, nearly all students could learn. Carroll might argue today that due to the limited time in the
school day and the lockstep way children are being asked to proceed through it, that there
is not the opportunity to learn for all students.

Many other studies base their work on Carroll’s Model of School Learning (Brown & Saks, 1986; Rosenberg & Baker, 1985). Slavin (2006) created the QAIT model, focusing on teacher behavior as the sole influence in learning: Q for quality of instruction; A for appropriate levels of instruction; I for incentive; and T for time. Aldridge (1983) tested a mathematical model based on Carroll’s, and Shulman and Carey (1984) added elements of affect to the Model of School Learning. Further researchers have expanded the Carroll model to include school level variables, like supervision, school climate and leadership (Squires, et al., 1981), the social environment of the classroom, including peer influences and mass media (Haertel, Walberg and Weinstein, 1983) and large scale assessment in research (Klieme, 2013). Scherff & Piazza (2008) highlight the need for all students’ access and exposure to high quality instruction, something unfortunately not always seen in urban schools. Researchers have investigated the stability of results throughout the day and from year to year (Jeon, Langill, Peterson, Luze, Carta & Atwater, 2010; Meyer, Linn & Hastings, 1991), suggesting that individual children’s experiences may be quite inconsistent. Gettinger (1984a, 1984b, 1986) outlines the complex relationship between time spent, time needed and engaged time for elementary children. Wyne & Stuck (1982) have surveyed the research on time and learning. But, despite the multitude of articles and studies based on the writings of Carroll and Bloom and followers, Carroll insisted in 1989 that researchers had still not adequately considered time as a variable, and that continues to be true today.
Regarding increasing opportunity to learn, researchers have investigated such ideas as changing the length of the school day or the school year (Elicker, 1997), even creating the National Center on Time and Learning based on Carroll and Bloom’s theories (Farbman, n.d.; Kolbe, Partridge & O’Reilly, n.d.). But it is Gettinger (1984a) who has provided additional data directly related to the causal influences of time needed and time spent in Carroll’s model, and to this current study. Gettinger (1984a) argues that time spent and time needed go hand in hand in learning. Operationalizing Carroll’s theories, Gettinger (1984a) investigated reading and spelling in elementary students and found that time needed for learning directly accounted for 91% of the explained variance in student learning. The ratio of time actually spent in learning to time needed to learn related consistently to learning, as predicted by Carroll’s model. The greater the discrepancy between time needed and time spent on a particular spelling task, the lower the overall achievement level. Gettinger (1984a) found that reducing opportunity to learn negatively impacted achievement.

In 1989, Gettinger investigated time spent in learning, and children’s retention. She discovered that increasing task perseverance through incentives did not change the degree of learning, but that using incentives to decrease time needed to perform a task to 100% accuracy, increased learning. A limitation of the study, Gettinger proposed, has led to the discussion of how to conceptualize a task. Carroll admits that his model is narrow regarding task definition, but that the model is limited to those aspects of education that can be specified as a task of a certain kind, such as factual criterion tasks (Gettinger, 1989). Gettinger’s study conceptualized the task as a participant’s 100% accuracy on a ten
item test series, each with a clearly specified objective. Carroll (1985) acknowledges that not all school tasks fit this model, but some aspects of school curriculum can and must be quantified in this way.

Perhaps the most important caveat to all of the past research based on Carroll’s Model of School Learning was Carroll’s (1989) own caution, “Emphasizing equality of opportunity means not only providing appropriate opportunities to learn (appropriate, not necessarily equal for all students) but also pushing all students’ potentialities as far as possible toward their upper limits” (p. 30). This is an important message for teachers: that children learn at different speeds and in different ways. Real learning can only be accomplished when instruction is differentiated, the daily schedule is varied, and activities are conducive to child focused learning. The limitations of the lack of focus on environmental and social elements of Carroll’s Model of School Learning can be supplemented in this proposed study by Vygotsky’s historical-cultural theory and its emphasis on learning in and from social settings.

**Systems and social theories.**

Several theorists see the social world as a key component to all life processes (Bandura, 1989, 1997; Pianta & Walsh, 1998; Vygotsky, 1978). No learning or development occurs in a vacuum and it is only through interactions with people and things that an individual is able to make sense of his world.

*Lev Vygotsky.*

When reading Vygotsky, one typically discovers his work on zone of proximal development, his use of Bruner’s scaffolding, or his theories of the importance of learning
in a social cultural context, which is rich in language (Bruner, 1961; Vygotsky, 1978; Bodrova & Leong 2007). Because learning occurs in social and cultural contexts, it is vital that young children have opportunities to talk and interact with peers and adults in the classroom regarding topics of their interest. “All else being equal, the more a child sees, hears, and experiences, the more he knows and assimilates, the more elements of reality he will have in his experience, and the more productive will be the operation of his imagination” (p. 15). Merely sitting in large group reciting math and language concepts by rote does not provide the rich experience needed for the formation of the child’s own thought and creativity. Vygotsky’s theories lead us to focus on not only the child, but also his or her current activities, history, cultural background, and social context, in addition to the structure of the entire classroom, the available tools, and cultural artifacts, teachers and peers (Winsler, 2003).

What makes Vygotsky’s theories important in educational psychology is his emphasis on social, cultural, and contextual influences on cognitive development. At the core of Vygotsky’s cultural-historical theory is the belief that a child develops as a result of interactions with the social environment (Bodrova & Leong, 2005). While Vygotsky’s focus was primarily on adult mediation and scaffolding to enhance mature play (Bodrova, 2008), a solid positive relationship needs to be in place as a basis for this specific intervention strategy to be successful. “Teaching is the means through which development is advanced” (Vygotsky, 1978, p. 130). Social experience, by means of interactions with others through the use of speech and tools, affects children as they imitate, not just by rote, but with changes to the internal structure of their intellectual operations (Vygotsky,
1978). Bodrova & Leong’s (2007) *Tools of the Mind* curriculum, based on Vygotskian principles, focuses on self-regulation, a skill which the teacher can foster. It is the role of the teacher to help children become masters of their own behavior, transforming their impulsive behavior into self-controlled actions, as well as to help them adjust to the social situation of school. These impulsive or controlled behaviors have been shown to affect the teacher-child relationship in many ways (O’Connor & McCartney, 2007).

Effective Vygotskian teachers not only manage behavior, they differentiate instruction. Vygotsky (1978) criticized teaching that lags behind children’s development instead of focusing on individual emerging capabilities in their zone of proximal development, which is precisely what happens when teachers impose the same learning targets at the same pace on all children. Vygotsky admired Freire’s adaptations of his educational methods to specific historical and cultural settings, so that children could combine their own spontaneous concepts with those introduced by teachers. Vygotsky (1978) proposed that learning happens most effectively when it is focused on children’s emerging capabilities. He called this the zone of proximal development, which is the difference between what children can do independently and what they can do with assistance from an adult or more competent peer. Vygotsky’s followers have pointed out that as teachers build relationships with children, and begin to know their interests and needs, teachers can provide experiences which serve to give children the mental tools they need to become no longer “reactive learners” (Bodrova & Leong, 2007), but proactive learners. Because learning becomes more of a self-directed activity or a co-constructed one vs. a teacher-directed activity, children are able to learn more in social contexts,
interacting and using language with their peers, being supported by teachers with questions to extend learning, and drawing on past experience to facilitate their cognitive construction (Trawick-Smith & Dziurgot, 2011).

Optimal learning happens in social situations with peers and adults, with intentional mediation and support (Bodrova, 2008). Wood, Bruner and Ross (1976) labeled these “scaffolded” interactions, with “the adult ‘controlling’ those elements of the task which are initially beyond the learner’s capacity, thus permitting him to concentrate on and complete only those elements which are in his range of competence” (Wood, Bruner, Ross, 1976, p. 90). Winsler & Carlton (2003) cautioned that teachers need to be watchful of the “early childhood error” by stepping back and refraining from getting directly involved in children’s activities, but to frequently aim for focused scaffolded “child on-task” goal-directed activity (p. 155).

The metaphor of scaffolding has been widely used in recent years to argue that, just as builders provide essential but temporary support, teachers need to provide temporary supporting structures to assist learners to develop new understandings, new concepts, and new abilities. As the learner acquires these skills, so teachers need to withdraw that support, only to provide further support for extended or new tasks, understandings, and concepts (Hammond & Gibbons, 2005, p. 8).

Consequently, Vygotsky’s followers believed that the most effective learning occurs with supported differentiated instruction in social situations in the classroom (Bodrova & Leong, 2007; Winslow & Carlton, 2003). Teachers who use only whole group instruction, who do not plan for scaffolded instruction (Bodrova & Leong, 2007;
Chien et al., 2010; Early et al., 2010), and who do not take children’s individual needs into account when planning activities will be less effective in addressing specific growth areas, both academic and social, of each child.

Also in Vygotsky’s theory, the development of language is seen as central to the child. Teachers can help children use language, memories, and anticipations of the future to help them cope with and learn from new situations. Vygotsky’s emphasis on children’s interactions with people more than with objects is one of the differences from Piaget’s theory (Bodrova & Leong, 2007, p. 30). Vygotsky contends that learning takes place in a cultural and social context, so truly independent learning is not possible. Thus, his emphasis is on the teacher’s role in facilitating learning, the sharing of language, and the importance of a positive relationship between them. He encouraged shared activities, both between teacher and child and among peers, using the term “educational dialog” to describe the give and take of conversational language as children express their understanding of their experiences, as the teacher gently leads them to meaning (Bodrova & Leong, 2007, p. 84).

Vygotsky is seen very frequently in the literature as the theoretical foundation for research with young children’s learning (Li, 2006; Tzou, 2007; Winsler, 2003). Winsler (2003) has created a comprehensive list of citations from 1993-2003 related to the many areas of Vygotsky’s theories, and additional citations have skyrocketed since then (Cicconi, 2013; Stipek, 2013). Many current researchers (Rudasill, Rimm-Kaufman, Justice & Pence, 2006; Pianta, 1999; Hamre & Pianta, 2001) base their work on Vygotsky’s beliefs about the importance of relationships and learning being a social
endeavor. Goh, Yamauchi and Ratliffe (2012), also basing their study on Vygotsky, stressed the importance of opportunities for teacher and peer conversation in the classroom as an integral component of developing language and literacy skills. Researchers are troubled by their findings that Vygotskian principles are lacking in today’s preschool and primary classrooms (Stipek & Byler, 1997).

**Pianta’s Contextual Systems Perspective.**

Pianta and Walsh (1998) developed the Contextual Systems Perspective out of a need to reframe the typical view of school failure. Rimm-Kaufman and Pianta (2000) described how failure could be viewed more comprehensively, with an understanding of the contemporary situation in which the school and the child are embedded, the family, the community, the culture, and the school. Too often the source of a relationship problem or success is thought to be located in one or another of the involved parties, but Pianta’s Contextual Systems Perspective calls for the researcher to place an emphasis on the “interactions, transactions, and relationships” among all individuals and the context, because it is widely known that development involves multiple systems acting in concert (Pianta & Walsh, 1998, p. 410). Behavior cannot be understood without reference to the context in which that behavior occurs, in adult-child interactions, for example. Pianta uses the term “co-action” to describe the premise that activity of a given system (an individual or a classroom) relies upon and affects the activities of other systems. For Pianta & Walsh (1998), “systems are units composed of sets of interrelated parts that act in organized, interdependent ways to promote the adaptation or the survival of the whole unit” (p. 24).
Classrooms and teacher-child relationships are among the many types of systems occurring in a school.

Pianta & Walsh (1996) described a Child / Family System and a School System, which are two separate but interactive circular systems. At the center of each is the child, surrounded by successively distant other systems. Examples of influences in the Child / Family System are the immediate family, which is surrounded by and influenced by child care extended family support, church, neighborhood, agencies, peers, and jobs, which are embedded in culture, ethnicity, community, law, and policy. In the School System, the primary influence is the classroom, which in turn is influenced by the school as a larger entity, and then beyond to the neighborhood, community, jobs, regulatory agency, culture, ethnicity, location, and finances.

Figure 2. Pianta’s Contexts for Development (Pianta, 1999)
In 1999, Pianta’s described a more unified, interrelated system, similar to Bronfenbrenner’s Ecological system (1993). In Pianta’s 1999 version, the child is seen at the center as before as in his earlier conceptualization and all of the same influences are present. But in the later version, the family and school systems are combined. See Figure 2. Each of these smaller systems in the diagram serves as a context for development and works in unique ways to influence child development. The implication of Pianta’s and Bronfenbrenner’s contextual systems is that there are many influences on a child, and that greater learning will take place in natural settings and when it is culturally relevant.

Specifically related to this study, the reciprocal interactions between students and their environment of the classroom, including the teacher, serve as proximal processes, which are the mechanism of development. (Bronfenbrenner & Morris, 2006). These occur in every moment of a child’s daily classroom experience, and are experienced uniquely by every individual child, not as an average rating, so it is crucial that researchers aim to get as close to that singular experience as possible.

Providing individualized instruction is important, however in research it can be problematic. Jeon, Langill, Peterson, Luze, Carta & Atwater (2010) found great variability in children’s individual experiences within the classroom; Meyer, Linn & Hastings (1991) noted similar inconsistencies throughout the day/year. Simple provision by a teacher of appropriate and enriching play and learning opportunities does not ensure all children will fully engage. In addition, Curby et al. (2011) cited a potentially serious issue in their findings that as the school day progressed, classroom interactions tended to be more
controlling and negative. Implications, not only for future research, but for children’s experiences, could be serious.

Like Rudasill et al. (2006) and O’Connor & McCartney (2010), Pianta believed that not only do the context and the individuals shape the relationship, but that this relationship also plays a role in shaping the individuals involved, because relationships are bi-directional and dynamic. This is why it is so important that teachers use their relationships with children with care and respect, because children are regulated and changed by classroom interactions, both behaviorally and cognitively.

Because relationships take time to develop, and because they are so important, it is imperative that teachers give sufficient time, energy, and focus to their development from the first day of school. The teacher who consistently successfully reads a child’s face and notices frustration, or who laughs with the child at a funny story, is an educator who will be effective at building meaningful teacher-child relationships. In turn, the children who are on the receiving end of this empathetic, insightful dyad will be better able to adapt to stressful situations and will be a more effective learner academically (Birch & Ladd, 1997; Curby, et al., 2009; Hamre & Pianta, 2005; Howes et al., 2008; Howes et al., 2013; Maldonado-Carreno & Votruba-Drzal, 2011; Mashburn et al., 2008; Pianta, LaParo, Cox & Bradley, 2002), will be encouraged to do more higher order thinking (Cadima, Leal & Bruchinal, 2010), will acquire the skills necessary for school success (Pianta & Stuhlman, 2004), and will enjoy more positive school adjustment during elementary school (Baker, 2006; Pianta, Hamre & Stuhlman, 2003).
Constructs

Teacher–child relationships.

The belief that relationships between young children and their teachers are of utmost importance in enhancing learning as well as in providing positive first school experiences is founded in solid research (Ahnert et al., 2012; Cadima, Leal & Burchinal, 2010; Eisenhower, Baker & Blacher, 2007; Koles et al., 2013; Gallagher et al., 2013; Koomen, Verschueren & Thijs, 2006; Maldonado-Carreno & Votruba-Drzal, 2011; Martin & Dowson, 2009; O’Connor & McCartney, 2007; Roorda, Koomen, Thijs & Oort, 2013; Pianta & Stuhlman, 2004; Pianta, 1994; Powell, Burchinal, File & Kontos, 2008; Roorda, Koomen, Thijs & Oort, 2013; Sabol & Pianta, 2012; Schmitt et al., 2012; Schuengel, 2012; White, 2013). Rich theory grounds the research, with a focus on how attachments are initially formed (Ainsworth, 2010; Mahler et al., 1975; Stevenson-Hinde, 2007), their relation to stages of development (Erikson, 1963), externalizing and internalizing behaviors (Roorda, Koomen, Spilt, Thijs & Oort, 2013), socially inhibited children (Roorda, Koomen, Thijs & Oort, 2013), classroom interactions (Haberman, 2004; Noddings, 1997), stability of interactions (Jeon et al., 2010; Meyer, Linn & Hastings, 1991), teacher-child relationship type (Wu, et al., 2010), explanations of interrelational cultural systems (Bandura, 1997; Bronfenbrenner, 1993; Friere, 1997; Hamre, Pianta, Mashburn & Downer, 2007; Pianta & Walsh, 1996; Thijs, Koomen, Roorda & ten Hagen, 2011), and relationship quality’s long lasting consequences with regard to relational and academic outcomes later in the school year (Mikami, Griggs, Reuland & Gregory, 2012), as late as eighth grade (Hamre & Pianta, 2001; Murray et al., 2008).
This current study will limit the focus on teacher–child relationships and communication which can be measured using the inCLASS and CLASS observation tools. The dimensions of the Classroom Assessment Scoring System focus on how the teacher builds positive relationships by setting the climate, remains sensitive to the needs of the children in the classroom, maintains a student focus, manages behavior effectively, maximizes learning time, effectively facilitates learning opportunities, develops analysis and reasoning skills in children, and gives appropriate feedback and enhance language. In addition, the Individualized Classroom Assessment Scoring System examines the children’s engagement with the teacher and with materials and tasks, as well as interactions with peers.

It is crucial that teachers reach out at the start of a school year and initiate and build bridges with each individual child. These bonds will help sustain the relationship even when behavior or an academic issue arises which causes turmoil in the classroom. The more a teacher succeeds in building and maintaining positive relationships with children, the more capable they feel, the more effective they are, and the more future positive encounters they create and sustain (Sabol & Pianta, 2012). Attention to making academic material more personally meaningful and relevant to students by building relationships with them has been a successful response to achievement gap concerns (Boykin & Noguera, 2011).

**Teacher pedagogical beliefs.**

All teachers hold beliefs about their work, students, subject matter, roles, and responsibilities (Pajares, 1992). Teacher beliefs affect, in some ways, their strategies and
pedagogy in the classroom (Caudle & Moran, 2012; Hamre, Pianta, Burchinal, Field, LoCasale-Crouch, Downer, Howes, LaParo and Scott-Little, 2012; Hedges, 2012; McMullen, 1999; Nespor, 1987; Riojas-Cortez, et al., 2013; Vartuli, 1999; Wilcox-Herzog, 2002). Most of the beliefs/practices research has been conducted with kindergarten and primary classrooms (Maxwell et al., 2001; McCarty et al., 2001; Smith & Croom, 1993; Stipek & Byler, 1997). Some focus on only one age group of children, while others examine several grades (McMullen, 1999; Spodek, 1988; Stipek & Byler, 1997; Vartuli, 1999). Some focus on beliefs in one aspect of the classroom such as play (Sherwood & Reifel, 2010, 2013), diversity and different cultures (Cabello & Burstein, 1995; Wang, Elicker, McMullen & Mao, 2008; Wertheim & Leyser, 2002), inclusive education (Hsieh & Hsieh, 2012), moral learning (Walker, Brownlee, Whiteford, Cobb-Moore, Johansson, Allwood & Boulton-Lewis, 2012), science (Akerson, Buzzelli & Eastwood, 2012), or teachers and their assistants (Han & Neuharth-Pritchett, 2010).

Many researchers write about the relationship between epistemological (knowledge) beliefs and pedagogical beliefs (Pajares, 1992; Vartuli, 1999; Walker et al., 2012), making the distinction between beliefs as suppositions, commitments or ideologies, and knowledge as factual propositions and understandings. Pajares (1992) called teacher beliefs a “messy construct” caused by “definitional problems, poor conceptualizations, and differing understandings of beliefs and belief structures” (p. 307). Beliefs are more influential than knowledge in dictating how individuals organize and define tasks and problems (Kagan, 1992; Pajares, 1992), consequently beliefs are a stronger predictor of behavior than knowledge is. Because beliefs exist in tacit form (Kagan, 1992; Kane,
Sandretto & Heath, 2002), then understanding teacher beliefs requires making inferences based on what teachers say and do (Ertmer, 2005, p. 29). Walker et al. (2012) described the implications for moral pedagogy in the classroom. Teachers with simple epistemic beliefs believed that children learn moral behavior from following rules; Teachers with more sophisticated beliefs believed children were capable of taking responsibility for their own moral learning. Walker et al. (2012) suggests that professional development may be necessary to help teachers understand how their own beliefs are related to practice.

Beliefs are reflective of teachers’ experience and background (Cabello & Burstein, 1995). Teachers under stress often revert to or fall back on beliefs to help them solve difficult situations in the classroom (Vartuli, 1999). Teacher beliefs in how children learn affect teacher behavior and student learning (Fang 1996). Because teachers’ pedagogical beliefs are instrumental in determining behavior (Fang, 1996; Kagan, 1992; Pajares, 1992; Vartuli, 1999), and because children’s participation rights in education are a social justice issue (Smith, 2007), beliefs are important to investigate.

**Definition.**

A major task is the definition of teacher beliefs (Kagan, 1992; Pajares, 1992; Vartuli, 1999, 2005). Hedges (2012) includes Gupta’s (2006) expression “funds of knowledge” (p. 10) definition in her research. Lim and Chan (2007) say, “Beliefs systems are dynamic mental structures that are susceptible to change by practical experiences” (p. 476). Chai (2010) refers to “…preferred ways of teaching by teachers” (p. 129). Kagan’s (1992) definition is “…tacit, often unconsciously held assumptions about students, classrooms, and the academic material to be taught” (p. 65). Rather than providing one
definition, Pajares (1992) has synthesized the fundamental assumptions about teachers’ educational beliefs into sixteen.

Some researchers distinguish beliefs from knowledge (Ertmer, 2005; Nespor, 1987). Beliefs are much more influential than knowledge in determining how individuals define tasks and problems (Ertmer, 2005; Nespor, 1987; Pajares, 1992). Vartuli (2005) includes Spodek’s (1988) definition, which will be utilized in this study. Teachers’ pedagogical beliefs are “implicit theories about the nature of knowledge acquisition [affecting] their behavior and ultimately student learning” (Vartuli, 2005, p. 78). This study will limit the focus of teachers’ pedagogical beliefs to those regarding developmentally appropriate practice.

**Developmentally appropriate practice (DAP).**

Developmentally appropriate practice is a child centered approach to teaching, originally outlined in 1987 by Bredekamp, under the auspices of the National Association for the Education of Young Children (NAEYC) and refined by Copple & Bredekamp (2009). Often shortened to DAP, it is grounded in research on how children develop and learn, as well as solid theory. “DAP involves teachers meeting young children where they are (by stage of development), both as individuals and as part of a group; and helping each child meet challenging and achievable learning goals” (http://www.naeyc.org/DAP/). DAP focuses on the overall development of a child, including social, emotional, moral, aesthetic, language, cognitive, and physical, (including health and fine and gross motor) development. DAP activities are designed to be individually, age, and culturally
appropriate, child generated and centered, and include a whole language approach to learning, as children actively interact with peers, teachers, and materials.

The theories forming the foundation of teacher developmentally appropriate beliefs are varied. Tzou (2007) has outlined the origins of child-centeredness, tracing it back to Froebel in 1778. Based primarily on theories of Dewey, Vygotsky, Piaget, and Erikson, developmentally appropriately practice demonstrates an interactive, constructivist view of learning (Copple & Bredekamp, 2009). Because the child is seen as intrinsically motivated and self-directed, constructing his own knowledge through interactions with the social and physical environment, effective teachers plan activities in their daily schedule to capture the child’s interest and motivation. In this interactive approach, the teacher is the one who facilitates, poses problems, and asks higher order questions to make learning meaningful for individual children, as the child is engaged in challenging activities.

Dewey’s (1938) theories which form the basis for DAP contain many child- and learner-centered concepts. Learning is experiencing. So, as the children function in the democratic setting of the school, they are immersed in a context of personal development, designed to make them better members of society. Teachers’ beliefs in a DAP theory of child-centeredness will influence their choice of a child-centered approach, concerned with developing problems solving skills, while maintaining children’s enthusiasm and self-confidence for learning (Stipek & Byler, 1997).

DAP is also founded on Piaget’s (1969) and Erikson’s (1963) beliefs that children’s growth proceeds in a relatively predictable sequence of growth and change.
during the first eight years. The DAP approach blends Piaget’s and Vygotsky’s teachings about learning and development, saying that strategic teaching on specific concepts can enhance learning in the child’s zone of proximal development, but inappropriate instruction not targeted at the child’s correct cognitive level will be wasted if the child cannot grasp the concepts (Novick, 1996, p. 13).

Underlying these primary theories, DAP also includes tenets of John Bowlby (Ainsworth & Bowlby, 1991; Bowlby, 1982; Pittman, Keiley, Kerpelman & Vaughn, 2011) and his emphasis on positive consistent primary relationships in a child’s life, as well as Maslow, who writes that learning is not possible until physical and psychological needs are met. Gardner’s Multiple Intelligences (Gardner, 1993) are included in DAP, because children should have multiple ways of exposure to concepts, as well as multiple avenues to express their knowledge and skills. In a DAP classroom, the development of aesthetic literacy is encouraged through the exploration of poetry, dance, painting, and music, instead of being limited to only logical/mathematical and verbal knowledge. Similarly, DAP is also related to Loris Malaguzzi’s work in Reggio Emilia, Italy. He proposed that there are numerous modalities through which children understand their world and represent knowledge. He called these the “Hundred Languages of Children” (Edwards, Gandini & Forman, 1993). The Reggio schools have been formed as a community of learners, which enables children, teachers, and families to develop shared understandings about learning.

In the standard curricular areas of language and mathematics, in a DAP classroom, children can be seen in reading and writing centers, and enjoying read alouds daily.
Literacy is not relegated to a specific block of time during the day, but integrated into everything that occurs throughout the day. Similarly with mathematics, Kamii (1989) has identified broad goals including opportunities for children to do their own thinking, to develop confidence in their ability to figure things out, and to exchange points of view thoughtfully with others. With regard to social-emotional development, children in DAP classrooms are more socially mature, less stressed, more creative and show greater affinity towards school than children in developmentally inappropriate classrooms (Burts, Hart, Charlesworth, Fleege, Mosley & Thomasson, 1992; Jambunathan, Burts & Pierce, 1999). Preschoolers in classrooms which use DAP practices display more self-competence, terms of peer acceptance (Jambunathan, Burts & Pierce, 1999).

Learning involves the whole child in a DAP classroom, in all four components of learning: knowledge, skills, dispositions, and feelings (Katz, 1993). DAP strives to help children “become lifelong learners, who can think critically and imaginatively, ask meaningful questions and formulate alternative solutions, appreciate diversity, work collaboratively, and perhaps most importantly, have the capacity to form caring relationships with others” (Novick, 1996, p. 5) The opposite of DAP is developmentally inappropriate practice (DIP), characterized by teacher-centered whole group and workbook or worksheet activities (Hart, Burts, Durland, Charlesworth, DeWolf, & Fleege, 1998).

The DAP-DIP dichotomy or continuum has been used as a variable in numerous studies (Burts et al., 1992; Charlesworth et al., 1991, 1993; Dunn & Kontos, 1997; Hart et
al., 1998; Hegde & Cassidy, 2009; Jambunathan, Burts & Pierce, 1999; Lee, Baik & Charlesworth, 2006; Maxwell et al., 2001; McKenzie, 2013; McMullen, 1997, 1999; McMullen et al., 2006; Wen, Elicker & McMullen, 2011; Van Horn & Ramey, 2004; Wilcox-Herzog, 2002). DAP curricula are learner-generated and learner-centered, yet teacher-framed (McMullen, 1999). DAP Activities encourage problem solving, and critical thinking, and lead to dispositions of lifelong learning better than well-intentioned efforts which have had the opposite effect (Bredekamp & Shepard, 1989; Elkind, 1988). DAP practices in the United States have been compared with those in other countries (Hoot, Parmar, Hujala-Huttunen, Cao & Chacon, 1996). Some researchers have found an overlap of DAP and DIP beliefs and practices (Buchanan, 1998; Charlesworth et al., 1993; Maxwell et al., 2001; McMullen, 1997; McMullen et al., 2006), demonstrating that these are two separate constructs and not one extended continuum. Han & Neuharth-Pritchett (2010) found that lead teachers with higher educational levels endorsed developmentally appropriate practices more strongly than teachers assistants did. Lee, Baik & Charlesworth (2006) found that DAP teachers made significantly greater gains on scaffolding children’s learning after a training program, than did developmentally inappropriate teachers.

Despite the widely-held belief that DAP can serve as a minimum foundation for quality in any country (Hegde & Cassidy, 2009; LaParo, Sexton & Snyder, 1998), not all are in favor of DAP practices as the goals of choice for all children (Becker & Gersten, 1982; Carnine, Carnine, Karp & Weisberg, 1988; Delpit, 1995; Grieshaber, 2008). Jipson (1991) asked whose experiences are represented by DAP? Whose ways of knowing are validated by it? Today, the majority of professionals in the early childhood field agree that
DAP can be defined inclusively, with cultural sensitivity, because it has at its core the interests and well-being of the child and the building of solid respectful teacher-child relationships (Copple & Bredekamp, 2009; McMullen et al., 2006). So, for the purposes of this research and because the majority of researchers and practitioners support the DAP principles, teacher beliefs in DAP will be incorporated into this study.

**Beliefs-practice congruence.**

There is great disagreement in the literature about how well teachers’ beliefs and practices are observed to align, by grade level (Bryant et al., 1991; Maxwell et al., 2001; Stipek & Byler, 1997; Vartuli, 1999), by preservice vs. inservice teachers (Florio-Ruane & Clark, 1990; McDiarmid, 1990; Murphy et al., 2004; Pajares, 1993; Rimm-Kaufman et al., 2006; Vartuli & Rohs, 2009), regarding technology, (Ertmer, 2005), and in other countries (Hegde & Cassidy, 2009), including beliefs, stated practice, and actual practice (Hegde & Cassidy, 2009).

Many researchers found correlations between beliefs and practice, specifically beliefs about authority sharing and DAP practices (Oakes & Caruso, 1990), curriculum beliefs and observed practices (Wen et al., 2011), and beliefs and intentions (Wilcox-Herzog & Ward, 2004). Fang (1996) offers a review of research on teacher beliefs and practices in the 80’s and early 90’s. Trivette, Dunst, Hamby & Meter (2012) created a meta-analysis of the findings from 29 studies including 4,194 early childhood practitioners. Beliefs have been found to be a greater determinant of a teacher’s practice than environmental factors, such as support from colleagues and principals (Nelson, 2000). Teacher beliefs are often categorized as knowledge transmission vs. knowledge
construction (Chai, 2010), or along a continuum of developmentally appropriate to developmentally inappropriate practices (Charlesworth et al., 1993; Vartuli, 1999; Marcon, 1999; McMullen, 1999; Stipek, 1992). McMullen et al. (2006) found that when child-directed choice time, emergent literacy, and language development activities were emphasized in the classroom, teachers’ reported beliefs that were developmentally appropriate. Conversely when consistent routines, organized classroom arrangements, and preplanned curriculum and teacher directed learning were the dominant behaviors in the classroom, the teacher reported more traditional or academic oriented beliefs.

However some factors converge to enhance the potential of beliefs-practice dissonance. Beliefs rely on episodic memory (Nespor, 1987), and so they have the potential to influence perceptions of later events. Nespor (1987) goes on to say that beliefs are unbounded; in other words, tend to be extended to areas perhaps unrelated to an immediate context. Because pedagogical beliefs, related to teaching and learning, are created through social construction and enculturation, they are embedded in a larger belief system (Pajares, 1992).

Knowledge does not presume consistency with beliefs or practices (Ertmer, 2005). Some researchers found incongruity between beliefs and practice. Hegde & Cassidy (2009) found that teachers’ beliefs were more developmentally appropriate than their stated practices or actual practices in India. Vartuli’s (1999) results with Head Start through third grade teachers indicated, “…beliefs were significantly more appropriate than practice at every grade level. As the grade level increased, the level of self-reported developmentally appropriate beliefs and practices decreased” with Head Start teachers
reporting the most developmentally appropriate beliefs (p. 489). McCarty et al. (2001) found consistency and statistical significance in comparing inappropriate beliefs and practice, but non-significant results with appropriate beliefs and activities.

Reasons for the incongruity have been suggested to be factors inherent in the setting (Stipek & Byler, 1997), children with special needs (File, 1994), the age level of the children (Vartuli, 1999), work related stressors or pressures (McMullen 1999), a weightier belief held true over actual practice (Ertmer, 2005, p. 29), or ineffective teacher education (McMullen, 1997). Stipek & Byler (1997) found significant associations among beliefs, goals and practices for preschool and kindergarten classrooms, but a small sample of first grade teachers reported that they were often not able to practice their appropriate beliefs because their classrooms were required to be too skill based. Ertmer (2005) reported inconsistencies in her studies when teachers claimed to be constructivist, but then implemented a mixed approach to technology learning.

*Locus of control.*

Carroll (1963) said that one way to provide more opportunity for learning is to let students proceed at their own rate through learning. To motivate students and to help them learn and grow, individuals should have some degree of freedom in the classroom and the opportunity to select experiences and materials. Klein & Keller (1990) found that locus of control had a small but positive relationship with performance and confidence. Social learning theorists, such as Rotter (1966) have suggested that locus of control will influence student performance in unfamiliar environments.
Internal or external locus of control is a term attributed to Rotter (1966), who defines locus of control as to whether or not “the person perceives the reward is contingent on his own behavior or independent of it” (p. 1). Related to expectancy theory, the way an individual behaves is related to the belief in the probability that a certain reinforcement will happen because of some particular behavior on the individual’s part in a specific situation (internal control), rather than believing that the reward is controlled by unpredictable outside forces (external control). Rotter believes that this is directly related to the learning process. Those individuals who believe that their successes are due to change or are controlled by some external force are less likely to believe that they will succeed in the future. Conversely, if they are typically governed by internal control, they will be more alert to the environment for clues in making future decisions and take more action themselves. Rotter relates the internal-external construct to differences in levels of passivity, self-esteem, alienation, achievement, autonomy, persistence, competition, and powerlessness, but cautions that it is very situation specific. (Rotter, 1966, p. 3).

Locus of control can be applied to both teacher and learner in contemporary educational settings. If an early childhood teacher believes that no matter what he or she does, the administration or other outside forces are ultimately in control of the way the classroom is run, then the beliefs of the teacher will probably not be as evident in the classroom. Teachers will be less likely to search for more effective teaching techniques if they believe they will not be able to put them into practice (DiBella-McCarthy, McDaniel & Miller, 1995). Smith & Croom (1993) call for more research in this area.
Locus of control is cited by some (McMullen, 1999) as a significant factor in the match or mismatch of beliefs and practice. If personality traits and work factors combine to lead to feelings of helplessness and burnout (Charlesworth et al., 1993; Kagan, 1992; McMullen 1999), then teachers will bend under administrative pressures to carry out more developmentally inappropriate practices. Charlesworth et al. (1991) looked at teachers’ feelings of control over the activities in the classroom, allowing practice to follow beliefs. They found that teachers with higher DAP beliefs and DAP practices felt the most control of planning and implementation of instruction. The teachers who had inappropriate beliefs and practices viewed outside forces such as principals and parents as having more influence on planning and instruction. Researchers have not specifically studied locus of control in relation to the daily classroom schedule.

**Teacher’s use of time.**

Teachers’ use of time in educational settings is being researched in the literature with increasing frequency (Fuligni et al., 2012). Researchers have emphasized transitions (Cameron, Connor & Morrison, 2005; Setodji, Le & Schaack, 2012), routines and activity settings (Fuligni et al., 2012), engagement during the school day (Chien, 2010; Vitiello, Booren, Downer & Williford, 2012), teacher assignment of activities vs. child directed activities (Early, 2005; Early et al., 2010), time spent on individual subjects (Phillips, Gormley & Lowenstein, 2009), free choice activities (Kontos & Wilcoxon-Herzog, 1997), quality, ethnicity and gender (Tonyan & Howes, 2003), the length of the school day and year (Farbman, n.d.; Kolbe, Partridge, & O’Reilly, n. d.), stability throughout the day and across years (Meyer, Linn & Hastings, 1991), time as a process variable (Seidel &
Shavelson, 2007), pressures of limited time (Rose & Whitty, 2010), and children’s perception of temporal concepts (Cox, 1997; Davis, 1999; Grant & Suddendorf, 2011; Kayra-Stuart, 1977; Russell, 2008). Results have consistently indicated the need for more research.

How early childhood teachers choose to use their time in the classroom reflects the values teachers hold (Gettinger, 1995), affects the quality of their interactions (Chien et al., 2010; Mitchell, Foulger, Wetzel & Rathkey, 2009; Pianta et al., 2005; Wien, 1996), is related to the ability to allow children some autonomy in the classroom (Huston-Stein, Friedrich-Cofer & Susman, 1977; Trawick-Smith & Diurgot, 2011), the amount of time wasted in transitions (Cameron, Connor & Morrison, 2005), as well as the quality of the overall learning experience (Downer, Rimm-Kaufman & Pianta, 2007; Early et al., 2010). Conversely, time spent by children in various activity settings has been associated with environmental quality, ethnicity, and gender (Tonyan & Howes, 2003).

Vartuli & Everett (1993) describe three types of time to examine in classrooms: scheduled time, actual time spent, and engaged time. The actual time children are not engaged in learning varies in the literature from 35% of the day spent in routines or meals (NICHD, 2005) up to 75% of the day on non-academic learning activities (Wang & Walberg, 1983). They found that children were more often off-task when engaged in prescriptive activities and assigned work, and they were more often on-task when engaged in student-selected, exploratory, and group interactive activities and self-initiated tasks.

When teachers and administrators think of available resources for education, they tend to think of money and space, rather than time, missing some valuable opportunities to
improve learning for children (Carter, 2005). Jacobson (2008) laments the loss of playtime in our nation’s schools. Up to 30 percent of the average classroom day is spent in routines and classroom management activities, “such as lining, up, making a transition to the next activity, or waiting for everyone to put materials away…It becomes clear that time is not well used, whether it's instruction or play,” (Jacobson, 2008, p. 2). Jacobson strongly advocates investigation into making critical changes. Fredrick & Walberg (1980) wrote one of the earliest reviews on the relationship between time and learning. While he found some modest positive correlations, he called for more experimental research on the complexities of diminishing returns, optimum amounts of time, proper unit of analysis, and the question of causality.

Not all researchers believe that only increasing the quality of the classroom, or teacher-child relationships or creating more enriched learning experiences is the answer. The National Center on Time and Learning has published several articles on the potential for expanded daily and annual hours in the classroom (Farbman, n.d.; Kolbe, Partridge & O’Reilly, n. d.). Stated benefits include more engaged time in academic and enrichment classes for children, increased opportunities for teacher collaboration and professional development. Other researchers have found diminishing returns on increased math and reading instruction offered per day (Link & Mulligan, 1986; Mazarella, 1984). Llach, Androgue & Gigaglia (2009) found that although graduation rates did significantly improve, “more education does not imply better education (p. 20).
**Administrative and Outside Pressures.**

Pressures on early childhood programs come from rigidly set time schedules mandated by school administrations, standardized curriculum, attempts to group pre-kindergarten programs with elementary schools, and the disconnect between teachers, principals, and law- or policy-makers. Too much pressure can lead to beliefs-practice discrepancies, and have consequences for both teachers and children. Although outside pressures affect many aspects of a classroom and a child’s experiences, this investigation will focus only on pressures which affect the use of time in the early childhood classroom.

The clock, the symbol of Western culture, is the “keystone holding institutional functioning together” (Wien, 1996, p. 399). For 2,000 years, we have been moving toward a “clock-bound world”, and Rose & Whitty (2010) question what we can do to “struggle against the tyranny of time governance?” (p. 261). An often fragmented, rigid “industrial concept” time schedule is taken for granted in most educational settings because of accountability (Vartuli & Everett, n. d., p. 3) even though a more responsive schedule is more appropriate for young children’s development (Certo, 2011; Copple & Bredekamp, 2009; Hatch & Freeman, 1988; Wien & Kirby-Smith, 1998). Compounding the concern about the effective use of time in the classroom is the increased accountability facing early childhood programs, which has led to requirements for teachers to implement rigid scripted curriculum with the intention to narrow the achievement gap.

The gap is wide. Children who are from low income families start their kindergarten year between 12 and 18 months behind their middle class counterparts, and half of the gap in literacy and math between White and Black students in high school is
apparent at kindergarten school entry (Stipek, 2006). Ryan (2008) stated that the field of early childhood “is at a pivotal point in its history (p. 69). Policy makers and legislators want to “reap the proven economic, social, and academic outcomes of early childhood for their communities” but at the same time, this publically funded support has led to “increased accountability and standardization of practices” as well as mandated curriculum models and schedules, in hopes of narrowing the achievement gap (Ryan, 2008, p. 69). Targeted scripted curriculum with built-in rigid time schedules is “…designed for ‘some’ children who do not have the ‘skills’ others do, such as being able to repeat sentences accurately or to understand the ‘precise language’ teachers use…. It’s not so much fun, but it’s necessary for these kids” (Parks & Bridges-Rhoades, 2012, p. 314).” This kind of stereotypical belief contributes to racism, and says that children who are minorities, come from low income families, or have special needs are incapable of doing intellectually demanding work or do not deserve to have a rich creative school experience. This is in contrast with other beliefs supporting curricula and schedules which strive to foster inquiry, creativity, and child thinking. Parks and Bridges-Rhoades’ (2012) ethnographic research with rural Black children found that highly structured scripts that teachers were made to use for literacy made innovation and child centeredness in even math less likely. Most of the day took on the rigid schedule structure of the scripted curriculum and other subjects were forced out due to lack of time. Nicolopoulou (2010) found that “play was being squeezed out of early childhood education in the US” (p. 1). Ironically though, “to achieve high academic standards, we need to be more, not less,
concerned about the nonacademic aspects of child development,” (Stipek, 2006, p. 743), which a more relaxed schedule allows.

Many are concerned that policy- and law-makers are becoming the leaders in pre-kindergarten reform rather than educators (Brown & Gasko, 2012). Policy-makers are seen as not understanding that children learn in ways and rates that are different from primary-aged children, or that young children demonstrate their learning in ways that cannot be captured in standardized scheduling methods typical of elementary education. Child-centered practices are often viewed differently between teachers and principals as well (Spidell Rusher, McGrevin & Lambiotte, 1992). These researchers found that teachers tended to firmly agree with child-centered practices, whereas their principal’s beliefs were less strong, and the similarity was even less between male principals and teachers than between female principals and teachers. Often the principal and teacher are more in agreement than the district or state administrators, but in Spidell, Rusher, McGrevin & Lambiotte’s (1992) study, there was conflict over the block of time that should be devoted to free play, with teachers advocating for more than principals. Because the principal’s role can influence what happens in classrooms, principals have a responsibility to work in collaboration with teachers to create the most effective learning environments.

Even if teachers hold developmentally appropriate beliefs that children need inquiry, creativity, thinking and flexible scheduling in their curriculum, when faced with displeasing a principal or creating the appearance that they don’t want to go along with the school’s agenda to improve test scores, the pressure becomes too much, and teachers may
give in (Parks & Bridges-Rhoades, 2012). Administrative regulation and disconnect may lead to the incongruencies observed in the literature between teacher held beliefs about how children learn and subsequent scheduling practices (Beneke, Osrosky & Katz, 2008; McMullen, 1999; Towers, 2012; Wien & Kirby-Smith, 1998). Charlesworth, Hart, Burts & Hernandez (1991) found that the teachers who had the more developmentally appropriate beliefs and activities most frequently felt they had the most control over planning and implementing their instruction, and, conversely, “those with the most inappropriate beliefs and practices viewed outside forces such as principals to have the most influence on instruction” (p. 33).

The consequences of too much time pressure are serious for both teachers and children.

The pressures from administration impact children as well as teachers. A rigorously kept time schedule undercuts support for children’s play, for children’s decision making and ownership of their activity, and for giving children the opportunity to assume responsibility for their actions…. The message to the child is that her own activity is less important than the demand to respond to the teacher’s change in activity (Wien & Kirby-Smith, 1998, p. 12).

Too much pressure can lead to less prosocial behavior and less independent task persistence (Huston-Stein et al., 1977). “Powerful messages are sent to children about the value of their own choices and the activities they construct for themselves by the way that teachers structure the days” (Van Hoorn, Nourot, Scales & Alward, 1993, p. 58). Very structured environments foster the belief that play, flexible inquiry based activities and
child choice activities are only recreational and not valuable or vehicles for learning. Stressors in children caused by inappropriate practices can have enduring changes in brain development (Teicher, Andersen, Polcari, Anderson, Navalta & Kim, 2003). When people become more valued than the clock, we will diminish the “standardization of life in daycares and beyond” and be in communities which are “enlivened and affirmed” (Rose & Whitty, 2010, p. 270).

Implications for the Classroom.

Theorists, writers, and educators, Bodrova and Leong (2007) liken the teacher’s role to driving to a new destination, when they state, “The teacher is the one who places the road signs at the most useful and important points” and the children drive at their own speed and make the decisions about where to turn (p. 85). Kamii and DeVries (1993) believe in encouraging children to think for themselves, to enhance their autonomy, adding, “muzzles are bad for the child’s moral development as well as his intellectual development” (p. 44).

Some researchers are frustrated by the tight school day schedule and take action to change it. Wien (1996) reports a qualitative study of three cases, in which she describes the organization of time in some contemporary early childhood classrooms as a “production schedule” format, where time is the determinant of learning events in the classroom and keeping the routine the dominant activity (p. 377) Tolerance for individual variation is missing. Wien & Kirby-Smith (1998) carried out a study in which all the clocks and watches were removed from a toddler classroom. The order of events was left the same, but children were allowed to lead the timing of those events. This desire to
offer children “unhurried time and sustained attention” came about because of a concern that time most often controls the events and activities in classrooms of any age child.

Results showed that “…a new curriculum began to emerge. It did not focus on an arbitrary program that the teachers believed was ‘good’ for the children. Rather, the children now began to co-own the curriculum with the teachers” (Wien & Kirby-Smith, p. 12). The children “ate very well, wasting less food, and they slept well and without fuss” (Wien & Kirby Smith, p. 11). The rushed feeling was gone.

Another study (Winsler, Manfra & Diaz, 2007) investigating what happens when the focus is placed on children’s needs in the classroom, studied a common requirement that children be silent during individual work time. Seventy-eight percent of children, both at risk and control group, performed better when they talked out loud. Children’s “private speech” is important because of its self-regulatory functions (Winsler, Manfra & Diaz, 2007, p. 216). Yet, when children spent long amounts of time doing worksheets or listening to rote information in large group, they are often told to be silent. Teachers who practice DAP and want to build relationships and differentiate instruction would “untime the curriculum” (Carter, 2005, p. 20). Differentiation and personalized feedback is difficult when daily schedules are run too tightly (Connor, Piasta, Glasney, Schatschneider, Crowe, Underwood, Fishman, & Morrison, 2009). Imposed curriculum elements, such as calendar time which is not based on children’s learning needs or interests, waste time in the classroom schedule (Beneke, Osrosky & Katz, 2008).
**Instruments for Examining Classroom Relationships and Engagement**

The literature often refers to quality in descriptions of classroom processes (Bodrova & Leong, 2005; Burchinal et al., 2008; Curby et al., 2009; Early, et al., 2007; LoCasale-Crouch et al., 2007; Mashburn et al., 2008; Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan & Yazejian, 2001; Pianta et al., 2005; Slavin, 1994; Wu et al., 2010). Because quality is an elusive multifaceted concept, this literature review will limit the focus of quality to instruments which directly focus on a) teacher interactions with children, and b) the experiences and interactions children themselves are having with teachers, peers, and tasks.

**Classroom Assessment Scoring System (CLASS).**

There are a variety of observational tools available to researchers in examining relationships, child engagement, and the environment in the early childhood classroom. Some focus primarily on the teacher: Classroom Assessment Scoring System (Pianta, LaParo & Hamre, 2008); Arnett Classroom Interaction Scale (CIS, Arnett, 1989) used in Wilcox-Herzog, (2002), and the Classroom Practices Inventory, created by Hyson, Hirsh-Pasek & Rescorla (1990), used in Vartuli (1999). Some focus on the child: Individualized Classroom Assessment Scoring System (Downer, Booren, Hamre, Pianta & Williford, 2012); Emergent Academics Snapshot Scale (Ritchie, Howes, Kraft-Sayre, & Weiser, 2001) used in Fuligni et al. (2012). Some focus on the environment or specific parts of it: Early Childhood Environmental Rating Scale (ECERS, Harms Clifford, 1980) used by Fuligni et al. (2012), and related environmental rating scales for school age, family, and infant settings; Assessment of Practices in Early Elementary Classrooms,
(APEEC, Hemmeter, Maxwell, Ault & Schuster, 2001) designed for primary classrooms and used in Maxwell (2001); The Early Language and Literacy Classroom Observation (ELLCO; Smith & Dickinson, 2002)

Most recently, researchers have chosen the Classroom Assessment Scoring System (CLASS; Pianta, LaParo & Hamre, 2008) to quantify the extremely complex construct of teacher-child relationships, because of its ease of use and developmentally appropriate constructs (see Appendix). Based on research from the University of Virginia’s Curry School of Education, the CLASS tool focuses on effective teaching, helps teachers recognize and understand the power of their interactions with students, aligns with professional development tools, and works across age levels and subjects (http://www.teachstone.org/about-the-class/). The CLASS Observation tool was created by Robert Pianta, Karen LaParo & Bridget Hamre (2008). Since 2008, the CLASS has been managed by Teachstone, founded by Pianta and Hamre, whose mission is “to support teaching and learning through proven, evidence based education programs.” (http://www.teachstone.org/about-teachstone/) The CLASS is the instrument utilized in this study to measure teacher-child relationships.

The CLASS organizes teacher-student interactions into three broad domains and 10 dimensions: Emotional Support (Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspectives), Classroom Organization (Behavior Management, Productivity, and Instructional Learning Formats), and Instructional Support (Concept Development, Quality of Feedback, and Language Modeling). Observers
evaluate the classroom relationships using the three domains, although individual dimensions may be used separately in statistical analysis.

Although numerous studies have used CLASS as a measure of quality (Curby, Grimm, Pianta, 2010; Downer, Lopez, Grimm, Hamagami, Pianta & Howes, 2012; Early et al., 2006; LoCasale-Crouch et al., 2007; Pianta et al., 2005, 2008), there are four which are cited by the Teachstone website as being studies which provide evidence of the validity of the CLASS instrument: Curby et al. (2009), Howes et al. (2008), Mashburn et al. (2008), Mashburn, Justice, Downer & Pianta, (2009). These papers present descriptive information from classroom observations or document the ways in which teacher and classroom characteristics are associated with classroom quality. LaParo, Pianta and Stuhlman (2004), LoCasale-Crouch et al. (2007), Pianta et al. (2005) and Vu, Jeon and Howes (2008) are cited by Teachstone as being studies which provide evidence of the reliability of the CLASS instrument. These studies link classroom observations using CLASS to students’ social and or academic development. The CLASS has been used with a diverse population since 2008 (Downer et al., 2012), lending support to its use with the sample for this proposed study.

Overall classroom quality, as measured by the Classroom Assessment Scoring System (CLASS), is related to increased child achievement (Burchinal et al., 2008; Curby et al., 2009; Early et al., 2007; Hamre & Pianta, 2005; Hamre, Pianta, Downer, & Mashburn, 2008; Howes et al., 2008; Mashburn et al., 2008; Pianta et al., 2005).

Burchinal et al. (2008), following 700 children in six states in both pre-kindergarten and kindergarten classes, found children’s higher language and reading scores at the end of
kindergarten when their preschool teachers planned from the children’s skill levels and provided clear, positive specific feedback. Curby et al. (2009) identified five types of teacher profiles, using the CLASS observation tool, ranging from a) profiles of highest overall quality, to b) profiles of moderate emotional and organizational support, but lower instructional support, to c) profiles of poorest overall quality. Children in classrooms with higher level of concept development showed greatest academic gains, and children in classroom with highest emotional support were highest in social competence (Burchinal, 2008).

Pianta et al. (2008), using the Classroom Assessment Scoring System (CLASS), includes several factors in their definition of quality: adherence to the benchmarks of the National Institute for Early Education Research (NIEER; Barnett, Hustedt, Robin & Schulman, 2004), overall quality of classroom environments (ECERS; Harms & Clifford, 1980), and observations of teachers’ emotional and instructional interactions with children in classrooms (CLASS; Pianta et al., 2007).

**Individualized Classroom Assessment Scoring System (inCLASS).**

The Individualized Classroom Assessment Scoring System (inCLASS, Downer, Booren, Hamre, Pianta & Williford, 2012) was also created at The University of Virginia, but is managed by The Center for Advanced Study of Teaching and Learning (CASTL) at the Curry School of Education (see Appendix). CASTL, founded in 2006 by Robert Pianta and colleagues, is a multi-faceted interdisciplinary research center, serving early childhood through university communities, and has as its stated mission, “…to advance the quality and impact of teaching through scientific study in educational settings from
infancy to higher education” (Curry School of Education, 2012). The inCLASS targets children’s interactions with materials/tasks, teachers, and peers. Like the CLASS does for teachers, this instrument gathers observationally oriented information about children, and quantifies it in psychometrically sound ways to better help researchers see trends and patterns. It complements the typical teacher-report method of measuring practice and provides a richer, more contextualized integrated picture.

The inCLASS items are divided into three domains and ten dimensions: Teacher Interactions (Positive Engagement, Teacher Communication, Teacher Conflict), Peer Interactions (Peer Sociability, Peer Communication, Peer Assertiveness, Peer Conflict), and Task Orientation (Engagement, Self-Reliance, Behavior Control). Like the CLASS, the inCLASS (Downer et al., 2010) requires observers to have two full days of training and pass an inter-rater reliability test at 80% against the “gold standard” master raters to officially use this instrument as well. To utilize the inCLASS, observers look at four children per classroom in a rotating schedule over a period of four hours.

Three initial studies (see chapter three for psychometric details) helped establish the validity and reliability of the inCLASS. One of these studies, the Hands-on Science Study (Downer et al., 2012), was carried out with a Head Start population which closely resembles the sample for this proposed study. Williford, Whittaker, Vitiello & Downer’s (2013) study also incorporated thirty-one percent Head Start centers.

Although the instrument is divided for use into three domains, child engagement with teacher, peers, and tasks, initial researchers (Downer et al., 2012) found four factors through exploratory factor analysis, three of which are positively toned related to Teacher
Interactions, Peer Interactions, and Task Orientation, and one is negatively toned, Conflict Interactions. The four factors accounted for 85.71% of the variance in inCLASS observations. Test-retest reliability was moderately significant for teacher interactions (.35 - .45), moderately significant for peer interactions (.44 - .59), low but still significant for task orientation (.05 -.24), and conflict interactions (17 - .29) (Downer et al., 2012). These four factors will be used in analysis for this study.

Downer et al. (2012) created the inCLASS observational instrument to tap into classroom context-specific relational processes of children’s competence in preschool classroom interactions with adults, peers, and tasks. The researchers described how these observations can be used to improve classroom interventions, as well as predictors of later classroom adjustment, because the inCLASS observations are not based on isolated or discrete behaviors, and capture more “global patterns of adaptation in response to developmentally appropriate situations and challenges,” which when measured to be high are considered quality (Downer et al., 2012, p. 6). Using the inCLASS, higher engagement with tasks and materials has been demonstrated to be predictive of higher fourth grade math scores, as well as less teacher-child conflict, and victimization by peers (Fitzpatrick & Pagani, 2013).

Several additional studies utilizing the inCLASS observation tool are in progress and not yet published (inCLASS, 2011). Poster presentations at The Society for Research in Child Development, and Head Start’s National Research Conference in 2012 and 2013 have indicated associations between child engagement and teacher reflection (Baldanza, Herrera, LoCasale-Crouch & Cabell, n.d.), teacher–child conversational exchanges and
large group and free choice activity settings (Cabell, Bohlmann, Booren, DeCoster & Williford, n.d.), gender, ethnicity and poverty status with child engagement (Bohlmann, Downer, Booren, Maier & Williford, n.d.), bi-directionality of impact between children and classrooms (Curby, Downer & Booren, n.d.), and the relation of children’s engagement along with teacher’s interactions as predictors of school readiness (Williford, Maier, Downer, Carter and Sanger, n.d.). Two of these (Curby, Downer & Booren, n.d.; Williford, Maier, Downer, Carter and Sanger, n.d.) appear to be the first studies to utilize both the CLASS and the inCLASS, as does this current investigation. Williford et al.’s (2013a) study demonstrates the importance of teacher interactions in CLASS to child engagement with the inCLASS. Small positive correlations were found between a “positively-engaged” profile and CLASS; Small negative correlations were found with a “negatively-engaged” profile (Williford, 2013a, p. 8). Certainly much more investigation is necessarily on how these two measures relate to one another.

**Activity Settings.**

The inCLASS system is based on observing interactions during different activity settings during the school day. The way classroom teachers design learning experiences includes the choices they make every day in activity settings. The way teachers design learning experiences matters greatly in children’s learning (NAEYC, 2009).

Activity settings have been found to be related to child gender (Goble, Martin, Hanish & Fabes, 2012; Hart, Burts, Durland, Charlesworth, DeWolf & Fleege, 1998; Tonyan & Howes, 2003), age (Aguiar & McWilliam, 2013; Tonyan & Howes, 2003), ethnicity (Early et al., 2010; Tonyan & Howes, 2003), socioeconomic status (Hart et al.,
1998), levels of engagement (Vitiello, Booren, Downer & Williford, 2012), self-regulation (Williford, Whittaker, Vitiello & Downer, 2013), and teacher-child interactions (Curby, Stuhlman, Grimm, Mashburn, Chomat-Mooney, Downer, Hamre, Pianta, 2011). Organization of the teacher and classroom has been found to reduce transitions for children (Cameron, Connor & Morrison, 2005). Fuligni et al.’s recent (2012) study, examined activity settings and daily classroom routines in classrooms for low income children. They isolated two daily routine profiles and suggested that teachers consider a “structured-balanced” approach to enhance language, literacy, and math (p. 198). Due to the magnitude of available data on this construct, this study will limit the focus of activity settings to associations with whole group, free choice, meals, transitions, teacher-directed and teacher presence, along with all of the domains of the inCLASS observation tool.

Most recently, the inCLASS observation tool has defined activity settings in the early childhood classroom as whole group, free choice, recess, transition / routines, meals, small group, and individual time. Three very recent studies using inCLASS have been conducted (Booren et al., 2012; Vitiello, Booren, Downer, Williford, 2012; Williford, Whittaker, Vitiello & Downer, 2013), which added to and further defined the inCLASS instrument using activity settings, aligning children’s observed ratings with the classroom setting in which they occur. Vitiello et al.’s (2012) hypothesis that children would engage more positively with peers and tasks in settings that provided greater autonomy was supported. Autonomy was higher during free choice and outdoor play.

The formation of small groups is particularly important for fostering learning (Copple & Bredekamp, 2009; Wasik, 2008). Small groups typically have three to six
children (Copple & Bredekamp, 2009) or no more than five children (Wasik, 2008). Developmentally appropriate practices suggest that small groups enable teachers to offer more focused experiences, giving each child more attention, support, and opportunities for exploration and questioning (Copple & Bredekamp, 2009). Wasik (2008) described the many benefits of intentionally planning time with fewer than five children every day: individualized instruction, more focused attention by teachers and children, greater engagement and comprehension of students, and more meaningful dialog. Wasik (2008) found small groups are too often underused and ineffectively implemented, randomly organized without purpose, or not integrated into the total classroom instructional experience. Challenges for teachers include the necessity of an assistant to work with the remainder of the classroom or set up centers or stations, which can be especially challenging in K-3 settings.

This inCLASS observation tool is a relatively new instrument, having been developed in 2010. Including activity settings through inCLASS as a part of this research contributes to the current body of literature by demonstrating that children’s positive engagement, learning, and development are higher in flexible settings including free choice in which child-centered instruction and children’s autonomy can occur. This research also helps provide additional data to establish the InCLASS as a valid and reliable tool for the observation of young children’s interactions.

*Child Engagement.*

Child engagement in the preschool classroom is challenging to define and measure. Some conceptualize it as simply the number of minutes children spend in each
activity setting (Chien et al., 2010). Others define it as “time on task” (Carroll, 1963, 1989; Seidel & Shavelson, 2007).

Similarly, Pianta, Hamre and Allen (2012) believe engagement is a relational process, and can best be understood “by understanding relationships and their behavioral expression in interpersonal interactions in the classroom – through observation of exchanges and interpretation of their value and meaning with regard to fostering opportunity to learn and develop” (p. 366). Consequently, authors of the inCLASS observation Pre-K Coding Manual (2012), Downer et al. operationalize positive engagement with the teacher as, “the degree to which the child is emotionally connected to the teacher(s) and adults, including seeking and enjoying interactions with them, and using them as a secure base” (p. 7). Peer sociability is not referred to as engagement but is, “the degree to which the child experiences positive emotions and behaviors with other children, including the tendency to seek peer interactions, show social awareness, and respond in a manner that peers react positively to” (Downer et al., 2012, p. 8). Task engagement is defined by inCLASS (Downer et al., 2012) as, “the degree to which the child is consistently and actively involved in classroom tasks and activities, including the amount of time the child remains focused on any given activity, the level of intensity or enthusiasm displayed, and the proportion of time the child spend on assigned activities” (p. 9). Also, it is important to note that children may be occupied or engaged in doing something that is not necessarily a high-quality task or experience, and it may be inconsistent (Vitiello et al., 2012).
In recent literature, the topic of child engagement in the classroom is pervasive. Some authors found higher engagement based on the teachers choice of activity setting (Rimm-Kaufman, LaParo, Downer & Pianta, 2009); more at free choice and outdoor time than teacher structured activities (Vitiello et al., 2012); during peer group activities (Powell, Burchinal, File and Kontos, 2008). Booren et al.’s (2012) study analyzed patterns of teacher behavior and children’s interactions across activity settings, and made recommendations for teachers when setting up the daily schedule, that they intentionally target some context-specific time for individualized interventions. These studies relate to Vygotsky’s theories that children learn best through social and interactive settings.

Positive outcomes for children are associated with greater engagement as well. Researchers found gains in executive function and emotional regulation (Williford et al., 2013b). Chien et al. (2010) found four profiles of child classroom engagement: free play, individual instruction, group instruction, and scaffolded learning. They found that process quality scores for children in the free play and scaffolded group were significantly higher than for those in group or individual instruction groups. Academic success is also a likely positive outcome of engagement in learning (Downer et al., 2007). Children were more likely to be engaged in small group conditions, during analysis and inference instruction compared to basic skills and when the quality of the instruction was higher. Small but significant correlations were found between children’s literacy engagement with both parent and teacher reports (Baroody & Diamond, 2013). Higher teacher sensitivity and responsiveness increased engagement (Downer et al., 2007).
Some researchers examined predictors of time spent in activities and engagement, because of concerns of wasted time. Early et al. (2010) examined the roles of gender, ethnicity, and income as predictors of how pre-kindergarten children spent their classroom time. “For pre-kindergarten to reduce the achievement gap, it is critical that the pre-kindergarten day be used productively and that all participating children experience meaningful activities” (Early, 2010, p. 177). Over 2000 children were observed with the Emerging Academics Snapshot, in three categories of activities: Free choice, teacher assigned activities, and meals / routines. They defined a “co-coded learning activity” which included unengaged and wait time as well as routine activities such as hand washing and called it a cause for concern” as it took up 44% of the entire day and 88% of meals and routines (Early, 2010, p. 189), meaning that children were not engaged in meaningful learning almost half of their time in the classroom. Time was wasted with unengaged waiting in line to use the bathroom down the hall from classrooms, lining up for activities, and quiet lunchrooms and hallways. The inCLASS observation tool is able to isolate these transition activities, score interactions, and help researches examine these relationships.

**Teacher Beliefs Scale (TBS).**

Tools measuring teacher beliefs are largely self-report instruments (Wilcox-Herzog, 2002). Northrup (1996) found that teacher self-report is problematic because teachers may misrepresent themselves. But, the notion of misrepresentation is complex. Teachers may construct stories for different audiences, as with secret, sacred, and cover stories. Teachers may attempt to answer the way they believe a researcher intends,
creating a cover story to align with the sacred stories of school, or they may be deceiving themselves, unaware of their true beliefs on an issue. If perceived question threat is low, then mis-reporting becomes less of a concern. The process of the instrument chosen for this study, the TBS, is designed to encourage honesty, with voluntary participation and responses that are not labeled with participant’s names. The percentage of accurate responses is unknown in the literature, but Kagan & Smith (1988) found strong consistency between self-reported beliefs and behaviors and outside raters’ observations. In addition McMullen et al. (2006) found both DAP and traditional beliefs-practices alignment using surveys, observations, time sampling, curriculum and artifacts.

The instrument selected for this study will be the Teacher Beliefs Scale (TBS, Charlesworth, et al., 1991), a 37 item graded response scale addressing both developmentally appropriate and inappropriate teacher strategies. The items are based on several areas of NAEYC’s appropriate practice guidelines: curriculum goals, teaching strategies, guidance of socioemotional development, language development and literacy, cognitive development, physical development, aesthetic development, motivation and assessment of children (Charlesworth et al., 1991). The sample for this proposed study will come from a very similar early childhood population demographically as those involved in the TBS pilot study, utilizing Head Start Pre-K classes. Because the TBS was based on NAEYC’s 1987 developmentally appropriate guidelines, which outline good practice for birth through eight year old children, the constructs of DIP and DAP upon which the TBS is based applies to both kindergarten and preschool age groups.
Numerous other studies have utilized the TBS in research: in kindergarten, (Maxwell et al., 2001); and in preschool, (McMullen et al., 2006; Vartuli, 1999; Vartuli & Everett, 1993; Wang et al., 2008; Wen et al., 2011). Wang et al., (2008) found internal consistency of .45-.88 and used two factors, DAP and DIP. Wen et al. (2011) found three subscales, teacher directed, child initiated, and broad curriculum beliefs, however only the first two were used in Wen et al.’s analysis. Vartuli & Everett (1993) examined kindergarten through third grade teachers’ beliefs and found the total scale Chronbach alphas for each grade level were moderately high (K = .91, 1st = .91, and 2nd = .92).

**Evaluation of the Early Childhood Classroom Schedule (EECCS).**

In a survey of the literature, specifically designed instruments to measure the use of time in the classroom were not found. Because of the complexity and interrelatedness of planned use of time, actual use of time, and children’s engaged time, studying this construct is challenging. Many researchers use observation of actual use of time (Chien et al., 2010; Dunn & Kontos, 1997; NICHD ECCRN, 2005; Wang & Walberg, 1983), others research engaged time by children (Booren et al., 2012; Pianta, Hamre & Allen, 2012; Powell, Burchinal, File & Kontos, 2008; Vitiello et al., 2012). Vartuli & Everett (1993) have created an evaluative tool to examine teachers written daily classroom schedules, measure teachers’ planned use of time, and relate it to developmentally appropriate practices.

Carroll’s Model of School Learning (Anderson, 1985; Carroll, 1963, 1989) was the basis for creating Vartuli and Everett’s (1993) EECCS because of Carroll’s inclusion of time actually spent by children in learning activities in the classroom as an integral part.
of his model. Carroll (1963) also created the term opportunity to learn, which is directly related to the classroom schedule and how much time a teacher allows during the day for specific learning to occur. Because groupings during the school day are related to student learning (Downer et al., 2007) and because developmentally appropriate practice (DAP; Copple & Bredekamp, 2009) indicates that teachers should meet young children where they are through integrating individual and small group exploratory activities, then the classroom schedule is important to study because of its relation to student learning. Dewey’s (1938) theories are the basis for developmentally appropriate practice and a learner centered approach, which is reflected in the way teachers design their time in the classroom.

The Evaluation of the Early Childhood Classroom Schedule (Vartuli & Everett, 1993) contains eight items regarding grouping and scheduling, and is measured on a three-point continuum: 1. The schedule has integrated scheduling of subjects vs. segmented subjects; 2. Teacher makes all decisions vs. child makes 50% of the decisions; 3. Children have a choice to leave the activity vs. do not have a choice; 4. Activities are large group oriented vs. activities are balanced in different groupings; 5. Children stay in large groups more or less than 20 minutes per day; 6. Children stay in sedentary activities more or less than 50% of the day; 7. Children have more or less than 20 minutes of outdoor play daily; and 8. Bathroom times are whole group or individual as needed. Teachers’ classroom schedules are coded as to percent of time in the daily schedule which is dictated by administration, or planned by the individual classroom teacher. Item scores are aggregated to form one composite schedule score.
Vartuli and Everett (1993) piloted this instrument with educators in one large urban school district, similar to this current study. Chronbach’s alpha for the eight item instrument was moderate, .67 (n = 132). Individual item scores were totaled for use in their analysis. Stability of the scores was measured over a four year period, with low to moderate stability scores (year 1 and 2, r = .55; year 1 and 3, r = .49; year 2 and 3, r = .73; year 2 and 4, r = .44; and year 3 and 4, r = .49) indicating significant correlations between all years but the first and fourth, due possibly to the low number of similar subjects.

These researchers found that “learner-centered vs. basic skills approaches can be identified through time use by examining schedules” and that classroom schedules can be used as an artifact for evaluating teacher decision-making in future studies (Vartuli & Everett, 1993, p. 25). Results varied by grade level with third graders having less decision making about curriculum than younger grades. Results also showed that teachers with early childhood certification and less teaching experience had the highest ratings of schedule scores.

**Conclusion**

This chapter presented the literature and theory that form the foundation for this study. Carroll’s theory outlines how time is viewed in classroom settings. Vygotsky’s theory explains teacher strategies and best practice. A discussion of the current literature regarding the primary constructs of teacher-child relationships, teacher beliefs, and teacher use of time and strategies followed. The literature review concluded with a discussion of the instruments used in the study. The intent of this research was to investigate the relationships between teacher developmentally appropriate beliefs,
teacher’s use of time in the classroom, and teacher–child interactions and child
generation. Chapter three will outline the design and methodology to address the
research questions of the study, as well as describe participants, procedures,
instrumentation, proposed analysis, and ethical considerations.
CHAPTER THREE
METHODOLOGY

In chapter two, the theoretical basis for this investigation was established and the primary constructs of teacher-child relationships, teachers’ DAP beliefs and teacher’s learner-centered use of time were investigated. Uses of the instruments in the literature followed. This chapter includes design and methodology to address the following research questions and hypotheses. Additional sections address methods, participants, procedures, instrumentation, proposed analysis, and ethical considerations.

Research Questions

Using a teacher demographics questionnaire, the Teacher Beliefs Scale (TBS), the Evaluation of the Early Childhood Classroom Schedule (EECCS), and the CLASS and InCLASS observation instruments, this study investigated the following research questions:

1. How is teacher’s learner-centered use of time in the early childhood classroom, as evidenced by the EECCS, related to Head Start classroom interactions and child engagement, as defined by CLASS and InCLASS?

2. How are teacher beliefs, as defined by the Teacher Beliefs Scale, related to Head Start classroom teacher-child interactions as defined by CLASS, and Head Start classroom teacher-child, peer-peer, and child-material interactions, as defined by InCLASS?
3. How does the early childhood classroom schedule moderate the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions?

**Hypotheses**

Research Hypothesis 1: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom interaction scores, as defined by CLASS.

Research Hypothesis 2: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom child engagement scores, as defined by inCLASS.

Research Hypothesis 3: Early childhood teachers with higher developmentally appropriate belief scores, as defined by the TBS, will demonstrate higher Head Start classroom interaction scores, as defined by CLASS.

Research Hypothesis 4: Children in early childhood classrooms with teachers who have higher developmentally appropriate belief scores, as defined by the TBS, will have higher classroom child engagement scores, as defined by inCLASS.

**Methods**

Focusing on Head Start classrooms, this researcher investigated the teacher’s use of students’ time in the classroom, through two independent variables: Evaluation of the Early Childhood Classroom Schedule (EECCS, Vartuli & Everett, 1993) and surveys of Head Start teachers developmentally appropriate beliefs about classroom practices (TBS,
Charlesworth, Hart & Burts, 1991). One dependent variable, teacher-child interactions in instructional, emotional, and organizational areas was measured by the Classroom Assessment Scoring System (CLASS, Pianta, LaParo, and Hamre, 2008). A second dependent variable, children’s engagement with peers, teachers, and materials was examined by the Individualized Classroom Assessment Scoring System (inCLASS, Downer, Booren, Hamre, Pianta & Williford, 2012) observational instrument.

Participants

The target or universal population for this study was all Head Start classrooms in large metropolitan areas. The accessible population, which could be realistically sampled, was Head Start preschool classrooms of Mid America Head Start (MAHS) in the greater Kansas City area in Missouri and Kansas. The actual sample collected was a group of 34 Head Start classroom teachers currently involved in a coaching study sponsored by MAHS. Head Start teachers are required by their programs to have coaching throughout the school year. The MAHS study examined the effect on child outcomes of different amounts of coaching of the Head Start teachers. The existing MAHS study was designed with all of the coaches asking for volunteers from the pool of all Head Start teachers at the start of each school year, so that every year of the coaching grant, the number and characteristics of teachers varied. The sample included 133 children in the fall and 135 in the spring who were chosen by systematic sampling from classroom lists.

Head Start was created in 1965 as a national school readiness program, a part of President Lyndon Johnson’s War on Poverty, and provides comprehensive education, health, nutrition, and parent involvement services to low-income children and their
families. The selected Head Start classrooms in this investigation were located in three
distinct areas of Kansas City, Missouri, a large Midwestern city, north of the Missouri
river and on both sides of the Missouri-Kansas state line. All are located in areas near to
the homes of the families served.

Procedures

All administrators and teachers in classrooms who had previously agreed to
participate in the MAHS study were contacted by the researcher in the fall of 2012. This
new study was described and permissions obtained. Because this study was non-
experimental, and because the children in the classrooms were only being observed
without interference, there was no need to gain child permissions. No invasive or
experimental techniques were involved. The grant for the existing MAHS coaching study
provided compensation for observers. Because the teachers were required to be part of the
coaching project as a Head Start job requirement, no additional compensation was granted
for teachers. Overall aggregated results of the study were provided to teachers in the form
of total teacher data and total child data.

After securing signed teacher consent forms, the researcher collected Teacher
Beliefs Scales (TBS) from all participating teachers in both the fall of 2012 and spring of
2013. The researcher also collected a detailed and annotated copy of teacher’s typical
daily classroom schedule in both the fall and spring. The MAHS project manager
randomly assigned observers to classrooms. Teachers chose several possible observation
dates which demonstrated the typical school day, and the observers chose convenient days
to observe two mornings in each classroom at each of the fall and spring data collection
times, completing two observational instruments to look for teacher–child relationships and child engagement. Morning was defined as start of the school day through lunchtime for the inCLASS, and start of the school day up to but not including lunchtime for the CLASS, according to the observation parameters of the CLASS and inCLASS instrument protocols. This researcher was one of six trained and reliable CLASS and inCLASS observers. With each instrument, observer training consisted of two full days working with official CLASS trainers, studying the dimensions, practicing observations, and then finally passing with a minimum score of 80% the online observation reliability video tests. This researcher also has had several years of experience using the CLASS observation format as teaching tool in university courses taught, and also a professional development tool with early childhood teacher candidates to improve teacher strategies.

Child selection for the inCLASS observation was by systematic sampling. The researcher chose every third child on each class list, progressing through the list until four children were chosen to be observed in the fall. When substitution was necessary due to attrition in the spring data collection period, the same selection procedure was followed. Only children who were present for observation in both fall and spring cycles were included in analysis.

Data regarding both teacher beliefs and teacher’s use of time, as well as CLASS and inCLASS observations, were collected in the fall of 2012 and the spring of 2013 to allow for pre-post comparison of changes in teacher’s use of time through the course of the school year, as well as examination of which types of schedule and activities promotes increased interactions and engagement. In addition, the pre-scores were used as a baseline
measure of children’s functioning in the classroom and entered into the regression equation as a controlling variable.

During each of the two observation periods in fall and spring, CLASS and inCLASS observations were scheduled on one morning for three child observations with the inCLASS, and a second morning for the remaining one inCLASS child observation and the CLASS teacher observation, for a total of three hours per morning.

Data for the completion of the Evaluation of the Early Childhood Classroom Schedule (EECCS) were gathered from the classroom schedules written by each of the participant teachers. For every 15-minute increment of time, teachers recorded activity, with specific requested details about each evaluation item, such as whether the child was moving or sitting, who had chosen the activity, if the child was free to leave the activity, and group size (see Appendix A). From this detailed schedule, the researcher added up minutes per day in specific activity settings, and calculated percentages of time for each. Finally these percentages were used to complete the evaluation. Scores from each of the eight items on the EECCS were tallied, and averaged, yielding one composite score per teacher.

In addition, the researcher examined teacher responses to the question of how much of the daily schedule is set by the teacher or the administrator. Teachers marked their answer on a four-point continuum from “complete flexibility – I set the schedule” to “No flexibility – the schedule is all set for me.”

There was no deception of participants. Participating teachers were told that the researcher was looking at teacher’s use of time in the classroom. Teachers were asked to
allow observers to be present in their rooms as they currently operated. During the observation, teachers were expected to carry out their daily classroom routine and activities as they normally did. Children and teachers were assigned a code, so that their information from the data could be linked, and the codes were known only to the project evaluator.

**Instrumentation**

For this study, quantitative data were collected. Teacher beliefs were gathered through a quantitative survey; teachers’ use of time was measured by counting minutes in each of the activity settings, and figuring percent of daily time in each setting as well as completing the Evaluation of the Early Childhood Classroom Schedule and averaging the scores. Observation can be a qualitative data gathering method. But because both the CLASS and inCLASS yield quantitative data as dimensions are scored and averaged, observation was used quantitatively in this study.

**Demographic Questionnaire.**

Through a brief teacher questionnaire, demographic information was collected, in spring of 2013, about teacher gender, education, experience, certification, age, and ethnic group. (See Appendix). Similarly, age, gender, and race was collected for child participants.

**Teacher Belief Scale (TBS).**

Teachers were asked to complete the Teacher Beliefs Scale (TBS, Charlesworth, et al., 1991), a 37-item measure with the following graded response scale points: 1 = Not
important at all; 2 = Not Very Important; 3 = Fairly Important; 4 = Very Important; and 5 = Extremely Important (see Appendix). Examples of developmentally appropriate items include “29. It is _____ for children to talk informally with adults; 32. It is ______ that math be integrated with all other curricula areas.” Examples of developmentally inappropriate items include: “11. It is_______for children to work silently and alone on seatwork; 23. It is ______ for children to follow directions to complete a class art project.

In the 1991 pilot of the TBS with 113 kindergarten teachers, item means ranged from 2.08 to 4.69, average SD = .82. Exploratory factor analysis found four reliable factors, two DIP and two DAP: I, appropriate beliefs; II, Inappropriate materials and management; III, appropriate, positive teacher-child relationships; and IV, Inappropriate literacy activities, accounting for 64% of item variance in total. Subscale reliability was assessed by Chronbach’s alpha. Moderate levels of internal consistency were obtained for items comprising the four factors (.85, .80, .68, .74). DAP beliefs were moderately correlated with DAP practices ($r = .63, p < .001$). A stronger relationship was found between DIP beliefs and practices ($r = .71, p < .001$).

Charlesworth et al. (1993) using the TBS with 204 kindergarten teachers and principal components analysis, produced two developmentally inappropriate factors (I, inappropriate activities and materials and VI, inappropriate structure) and four developmentally appropriate ones (II, appropriate social; III, appropriate individualization; IV appropriate literacy activities; and V, appropriate integrated curriculum beliefs), explaining 52.3 % of the variance in children’s scores. Item means ranged from 2.03 to 4.74 (average SD = .79). Internal consistency levels were moderate to
low for items in these six factors (.84, .77, .70, .60, .66, and .58). While potentially flawed methodology, for purposes of testing hypotheses of relationship of beliefs to practices in both the 1991 and 1993 studies, the researchers combined these factors into two, related to developmentally appropriate and inappropriate beliefs. DAP reported beliefs were strongly correlated with reported practices ($r = .53, p = .01$). Again an even stronger relationship was found between teachers’ DIP beliefs and inappropriate practices ($r = .66, p = .01$).

Wang et al. (2008) conducted a more recent study using the TBS. Principal components analysis was performed on data from 296 Chinese teachers and 146 American teachers. The TBS for both groups were found to have similar range and variability, and produced three factors accounting for 43.9% of the total item variance for American teachers: I, child-initiated curriculum, II, teacher-directed curriculum, and III, broad curriculum. Subscale reliabilities were .88, .88 and .45.

Similarly, Wen et al. (2011) conducted a confirmatory factor analysis on Wang et al.’s (2008) data and found through principal component analysis that items were grouped into the same three subscales as before with Chronbach’s alphas of .85 for child-initiated, .92 for teacher-directed, and .42 for broad curriculum beliefs. Only one low statistically significant correlation was found, ($r = -.22, p < .10$) for teacher directed beliefs and encouragement of children’s exploration. Wen et al.’s (2011) mean and standard deviation for the developmentally appropriate belief subscale was 4.57 (.36) out of a five-point scale, and the teacher-directed mean and standard deviation was much lower, 2.23 (.80). The two scales were not statistically significantly correlated.
Although previous researchers have found more than one factor in the Teacher Beliefs Scale, this study has utilized it as a singular scale. Because the developmentally appropriate (DAP) and developmentally inappropriate (DIP) constructs have been conceptualized as being in a continuum, instead of as two separate constructs, it is appropriate for the scale to be used as one continuum from DAP to DIP as well. Negative (developmentally inappropriate items) were reversed when totaling the belief scale scores.

**Evaluation of the Early Childhood Classroom schedule (EECCS).**

To analyze the use of time in the classroom, teachers were asked to provide a copy of their classroom schedule in 15 minute increments, indicating whether the child is moving / sitting, group size, source of the decision for the child to participate in the activity, and if the children are free to leave the activity, for each 15 minute segment of the school day. Additional open-ended questions on the scheduling form asked about children’s bathroom procedures, and the role of the teacher and administrators in setting the daily schedule, and any other comments they choose to add.

After receiving the classroom schedule from the teacher, the researcher coded the data by adding up minutes assigned by the teacher to each of the areas of interest, and then figuring the percentage of the school day schedule engaged in specific activities. These percentages were then transferred to the Evaluation of the Early Childhood Classroom Schedule (Vartuli & Everett, 1993), on a three point continuum, by assigning 100% - 66% a score of three, 65% - 34% a score of two, and 33% - 0% a score of one. The evaluation contained eight items regarding grouping and scheduling: 1. integrated scheduling vs. segmented subjects; 2. teacher makes all decisions vs. child makes 50% of the decisions;
3. children have a choice to leave the activity vs. do not have a choice; 4. activities are large group oriented vs. activities are balanced in different groupings; 5. children stay in large groups more or less than 20 minutes per day; 6. children stay in sedentary activities more or less than 50% of the day; 7. children have more or less than 20 minutes of outdoor play daily; and 8. bathroom times are whole group or individual as needed. In addition, schedules were coded regarding percent of time in the daily schedule that was dictated by administration, or planned by the individual classroom teacher. Item scores were aggregated to form one composite schedule score, along a developmentally appropriate or inappropriate continuum.

This instrument has not yet been used in published studies, however face validity of Evaluation of the Early Childhood Classroom Schedule was examined by Vartuli (n.d.) in an unpublished study by check of the literature at the time of implementation. Chronbach’s alpha of .68 was found for the eight items considered as one factor on the scoring sheet (Vartuli, n.d.). This value is slightly less than the recommended value of .70, however no other validity data is available for the Evaluation of the Early Childhood Classroom Schedule.

**Classroom Assessment Scoring System (CLASS).**

The CLASS observation instrument organizes teacher-student interactions into three broad domains and ten dimensions: Emotional support (Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspective), Classroom Organization (Behavior Management, Productivity, and Instructional Learning Formats), and Instructional Support (Concept Development, Quality of Feedback, and Language
Observers evaluated classroom quality using all three domains in this study. Observations with the CLASS typically last for two hours each, during the morning hours for consistency, not including outside play, meals, or assemblies. During the observations, observers coded interactions in the classroom according to the CLASS recommended procedure of four-20 minute observation - 10 minute scoring cycles.

The CLASS is known to be a reliable and valid instrument (Pianta, et al., 2008; Downer, et al. 2012). Training methodology and materials are rigorous. Inter-rater reliability with master codes for reliable observers must be 80%. Training of observers for this study was carried out by authorized representatives from Teachstone, who manages the CLASS observation tool. Quantitative research studies have been done across the country since 2002 in the attempt to increase generalizability of the data collected. The pilot study with pre-kindergarten children was done with the data from National Center for Early Development and Learning (NCEDL)'s Multi-State Study of Pre-Kindergarten and Study of Statewide Early Education Programs (SWEEP) with pre-kindergarten in eleven states (Early et al., 2005). Concurrent validity of .52 was found with the ECERS, the Early Childhood Environmental Rating Scale, and .40 with the Emerging Academics Snapshot (Ritchie et al., 2001), another established tool that examines the quality of the child environment. Although initially researchers found two factors in the CLASS, in subsequent studies three reliable factors have been consistently found (Curby, Grimm, & Pianta, 2010; Dobbs-Oates, Kaderavek, Guo, & Justice, 2011; LoCasale-Crouch et al., 2007).
**Individualized Classroom Assessment Scoring System (inCLASS).**

The inCLASS items are divided into three domains and ten dimensions: Teacher Interactions on the observation form (Positive Engagement, Teacher Communication, and Teacher Conflict), Peer Interactions (Peer Sociability, Peer Communication, Peer Assertiveness, and Peer Conflict), and Task Orientation (Engagement, Self-Reliance, and Behavior Control). However, for purposes of analysis, the pilot and follow up studies (Downer, 2010, 2012) utilized four factors instead of three domains: Teacher Interactions (Positive Engagement and Teacher Communication), Peer Interactions (Peer Sociability, Peer Communication, and Peer Assertiveness), Task Orientation (Engagement and Self-Reliance) and Conflict Interactions (Teacher Conflict, Peer Conflict, and Behavior Control).

Like the CLASS, the inCLASS (Downer et al., 2012) requires observers to have two full days of training and pass an inter-rater reliability test at 80% against the “gold standard” master raters to officially use this instrument. For this study, observers were trained in Kansas City by representatives from the Center for the Advanced Study of Teaching and Learning (CASTL) at the University of Virginia. Trained observers using this instrument looked at four children per classroom in a rotating schedule of four 10-minute observation – five minute scoring cycles, during the morning hours over two days. Child scores were recorded in relation to the activity setting at each cycle, so that the researcher could examine the relationship between setting and scores. An aggregate score of all four children in each class was used as the data, in addition to four separate scores. To initially choose the children who would be observed, the researcher chose every third
child on each class list, progressing through the list until four children were chosen to observe in the fall. When substitutions were necessary, the same procedure was followed. It was hoped that, due to attrition, both pre- and post-data would be collected on at least three children per classroom. The actual number of child participants was 133 for 34 teachers in the fall (3.9 children/teacher), 135 children for 34 teachers in the spring (4.0 children/teacher), and 89 children for 34 teachers who had both fall and spring observations (2.62 children/teacher).

For the InCLASS’ initial parametric testing, researchers began with three initial studies (Downer et al., 2010). Of 301 classrooms, 132 were non-Head Start Pre-K, 80 were Head Start and 89 were kindergarten, and gender was divided nearly evenly (379 boys and 408 girls). Appropriate age differences were found with four year olds scoring higher in Peer Sociability, Peer Assertiveness, Peer Communication, and Self-Reliance, than three-year-old children. One of the first four studies, the Early Childhood Hands-on Science Study (Downer et al., 2012) was conducted solely with children in Head Start classrooms. The children observed were predominantly (75%) African American, with an average child age of 3.7 years. This investigation also utilized Head Start classes of predominantly African American children. Of course geographic location and individual class composition will vary in any study, but grade level, teacher and child demographics, and Head Start program were similar. In every study, there is sampling error, but the researcher’s goal was that error would be minimal and within acceptable ranges.

The first pilot study for the inCLASS (Downer et al., 2010) found four solid factors, Teacher Interaction, Peer Interaction, and Task Orientation and an unexpected
factor of Conflict Interaction. This four-factor model accounted for 95.71 % of the variance in inCLASS observation. Factor loadings were moderate to high and each domain had adequate internal consistency. In the pilot study (Downer et al., 2010), inter-rater reliability was 87%. An intra-class correlation was calculated across all dimensions to be .84. Construct validity was assessed; no differences in inCLASS scores according to gender was found, however age was positively correlated with Peer Interaction ($r = .48$, $p < .001$) and Task Orientation ($r = .22$, $p < .01$) domains, but not with the Teacher or Conflict Interactions domains. In comparing the inCLASS with other established measures of teacher interactions, results supported the concurrent and discriminant validity of the inCLASS domains with small to moderate correlations. The participants were not a diverse group, mostly Caucasian children with moderate socioeconomic status, so this research with at-risk populations was needed.

A subsequent study described in the inCLASS technical manual, the Hands-on Science Study, also found four factors, with moderate to high internal consistency, 82, .90, .46 and .76 (Downer et al., 2012). The lowest of these scores was on the Task Orientation factor, and the technical manual indicated that this was under review. Researchers in this Science Study found that the model explained 75% of the variance in dependent variable scores. Researchers suspect that task related interactions may be more difficult to separate from children’s other interactions in the classroom, and recommended more research to separate task-oriented behaviors from peer interactions. There was not a sufficient sample in this study to perform a factor analysis.
For the Hands-on Science Study, inter-rater reliability was 86%, higher than the required 80%. Test–retest reliability scores indicated that teacher interactions and peer interactions were higher than the other two factors, task engagement and conflict behavior. Significant predictive validity was shown in both academic and social tests administered with children. Significant concurrent validity was shown in comparisons with teacher questionnaire items. Construct validity was also significant, but did show some areas of study for gender and age. It is to be expected that older preschool children will demonstrate more communication and cooperation, so this was to be expected. The study also found that boys score somewhat higher on peer conflict, which is also consistent with the literature. (Downer et al., 2012)

Factors of the Hands-on Science Study correlated significantly with the Preschool Learning Behaviors Scale (PLBS, McDermott, Leigh & Perry, 2002) and the Devereux Early Childhood Assessment (DECA, LeBuffe & Naglieri, 1999), most notably the Task orientation and Conflict Interactions factors ($r = .15-.40, p < .05$). In the Field Study, significant correlations with the Student Teacher Relationship Scale (STRS, Pianta, 1991), and the Teacher Child Rating Scale (TCRS, Hightower, Work, Cowen, Lotczewski, Spinnel, Guare et al., 1986) were low with Task Orientation and Conflict Interactions as well ($r = .12-.30, p < .001$). The Hands-on Science Study used a sample of pre-kindergarten classrooms with a large percentage of Head Start classrooms included, consistent with the sample in this proposed study.

For all three initial studies, inter-rater reliability ranged from 86% to 90%, with all studies having 20% of observations double coded. Significant correlations across
observation cycles ranged from .23 to .62, \( p < .001 \), however inCLASS designers cautioned that observers would be wise to not attempt to save time or money by reducing the number of cycles from the recommended four per child, because of the variability in child behavior. Consequently, four cycles per child of inCLASS observation was used in this study.

Instrument designers originally created and described the inCLASS as having three domains and 10 dimensions (Downer et al., 2010). The analysis in the pilot study (Downer et al., 2010) found a fourth factor, Conflict Interactions, emerged containing three dimensions pulled from the original ten. Since that time, other researchers (Bohlman et al., 2012; Vitiello et al., 2012) have begun describing the observation tool in terms of just ten dimensions (not mentioning domains) and four factors. Consequently, this present study utilized the four factors in analysis.

**Analysis**

**Preliminary analysis.**

With the exception of demographic data, all variables in this study were continuous. Teacher beliefs were collected using the TBS on a five point graded response scale from “Extremely important” to “Not at all Important.” The teacher’s use of time influence variable was computed as a percentage of time allotted to various activities in the daily schedule. A continuous numerical value based on a graded response scale scoring instrument, Evaluation of the Early Childhood Classroom Schedule, was collected.
The researcher reviewed the major variables to assure normality. Bi-variate scatterplots were run to demonstrate the linearity of the correlation between individual variables. Although the two influencing variables, teacher beliefs and teachers use of time, did not appear at first to be redundant, it was important to assess multicollinearity. With multiple pathways and opportunities being available to collect data from participants, there were very few missing values.

**Descriptive Analysis.**

For the Research Hypotheses, data were analyzed using hierarchical multiple regression; for Question 3, a hierarchical multiple regression design with moderation was used, to investigate how the two influencing variables worked in combination to predict higher classroom quality scores, and to what degree. Correlations were run between spring and fall data, and between all instruments. Descriptive analysis includes charts and tables of the demographics of the participant teachers and classrooms. Means and standard deviations are presented in table format.

**Regression and Correlational Analysis.**

It was predicted that teacher’s use of time would be a moderator in the beliefs / classroom interactions relationships for several reasons (Baron & Kenny, 1986). The relationships between the predictor variable teacher beliefs and the criterion variables CLASS or inCLASS scores were expected to have significant, but not large correlations. Use of time scores were predicted to differentially increase the relationship, so that when teacher beliefs about developmentally appropriate practices were very high, and CLASS scores were high, flexible time use in the classroom would be high, but when DAP beliefs
were low and CLASS scores were low, use of time score would also be smaller. Use of time scores were expected to have a larger differential effect on the relationship when teacher beliefs were high, than when they were low. If teachers had DAP beliefs but chose to not schedule time for children’s developmentally appropriate independent work in the classroom, or had an administrator who dictated part of the daily schedule and did not allow DAP practices, the congruency of beliefs and practice in the course of a typical day would be affected. Incongruent beliefs would also relate directly to inCLASS and CLASS outcome scores. This was not a mediation model, because time spent was not the only explanation for the how the relationship looked between beliefs and CLASS scores. Also, because this was a non-experimental study, lower correlations and higher error variance was expected, just due to the inability to control variables in a field study.

Because this investigation involved two variables predicting one outcome variable, hierarchical multiple regression was used as an inferential statistical test to find a predicted Y value of inCLASS and CLASS scores from the combination of independent variables of teacher beliefs, teacher’s use of time, and the pre-CLASS measure of child interactions. This was compared to the actual obtained inCLASS and CLASS scores. A coefficient of determination, $R^2$, represented the proportion of variance explained by the combination of variables. This study can only suggest relationships and correlations and not prove causality.

After conducting preliminary tests to assure that multiple regression assumptions had been met, such as looking for univariate and multivariate outliers, multicollinearity, normality, skew and kurtosis, correlations were run between all of the factors on my
instruments to see which ones were significant. Then, only those with significant
correlations on each independent variable – dependent variable pair were entered into
separate hierarchical multiple regressions.

One of the advantages of a regression model is the predictive ability associated
with it. It was an appropriate model because all of the variables were continuous, and
because this study design included moderation, allowing the ability to look at all three
variables at once. The main effects only model and the main effects PLUS interaction
model were examined to explore what best fit the data.

After running the models, the researcher looked to see the percent of variance
explained by the model. Next, it was important to look at the F scores and significance for
the two main effects, and examine $R^2$ for the main effects entered in step 1 of the
regression, between teacher beliefs and CLASS, and also teacher’s use of time and
CLASS. A separate series of regressions were run to look at relationships with the
inCLASS as well. Next was the examination of step two of the output, in which the
interaction between teacher beliefs * teacher’s use of time was entered, as well as $\Delta F$ and
the new significance number, and $\Delta R^2$, to see if adding the interaction to the model made
a difference. Then, the same statistics for the regression equations for the second
dependent variable inCLASS were calculated and examined.

Following the analysis of the research hypotheses and questions, additional
supplementary questions were asked and analyses run to further investigate the constructs
of teacher beliefs, the daily classroom schedule and teacher relationships.
Ethical Considerations

Approval from the University of Missouri at Kansas City Institutional Review Board (IRB) was obtained prior to the study being carried out. As expected, it fell into the “expedited” category, due to its low risk to participants, because existing programs were compared, without additional experimental treatments. While children, a vulnerable population, were involved in this study, they were not identified individually, nor were any changes made to them or their environment. While it is understood that the mere presence of an observer can create change in the environment, observers took care to avoid disrupting the classroom for both students and teacher. Because of this, the risk / benefit ratio was low.

Permission was also gained from program, district and building administrators to conduct a study in specific schools, as well as from participating teachers. The study’s premise, risks, and benefits were explained to the teachers. Researcher’s and research supervisor’s contact information was provided to participants. There were no penalties for teachers or students who decided not to participate in the study.

Confidentiality of all data collected through questionnaires, surveys, schedules and observations was maintained. No identifying name or other information was placed on observation forms, except for a non-identifying code for matching purposes.
CHAPTER FOUR
RESULTS

This chapter begins with the questions and hypotheses of this investigation. Following this are descriptions of the study participants and review of the results of this study. Results of each of the research questions follow. The chapter concludes with a review of supplemental analysis of the data. Throughout this chapter, references are made to tables and appendices to aid in understanding the information presented.

The purpose of the study was to explore (a) the relationship between teacher’s use of time (EECCS, The Evaluation of the Early Childhood Classroom Schedule, Vartuli & Everett, 1993) and Head Start classroom interactions, (CLASS, The Classroom Assessment Scoring System, Pianta, LaParo & Hamre, 2008) and child engagement (InCLASS; Downer, Booren, Hamre, Pianta & Williford, 2012); (b) the relationship between teacher beliefs (TBS, The Teacher Beliefs Scale, Charlesworth, et al., 1991) and Head Start classroom interactions and child engagement; and (c) the impact of time use in activity settings in the early childhood classroom daily schedule on the relationship between developmentally appropriate beliefs and Head Start classroom’s interactions and child engagement.

Multiple hierarchical regression and correlational analyses were used to address the research questions of:

1. How is teacher’s learner-centered use of time in the early childhood classroom, as evidenced by the EECCS, related to Head Start classroom interactions and child engagement, as defined by CLASS and InCLASS?
2. How are teacher beliefs, as defined by The Teacher Beliefs Scale, related to Head Start classroom teacher-child interactions as defined by CLASS, and Head Start classroom teacher-child, peer-peer, and child-material interactions, as defined by inCLASS?

3. How does the early childhood classroom schedule moderate the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions?

**Hypotheses**

Research Hypothesis 1: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom interaction scores, as defined by CLASS.

Research Hypothesis 2: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom child engagement scores, as defined by inCLASS.

Research Hypothesis 3: Early childhood teachers with higher developmentally appropriate belief scores, as defined by the TBS, will demonstrate higher Head Start classroom interaction scores, as defined by CLASS.

Research Hypothesis 4: Children in early childhood classrooms with teachers who have higher developmentally appropriate belief scores, as defined by the TBS, will have higher classroom child engagement scores, as defined by inCLASS.
Participants

Participants in this study included teachers recruited from Head Start classrooms, as a part of an ongoing coaching study administered by Mid-America Head Start, resulting in 34 Head Start teachers participating. The same teacher sample was used both fall and spring. All of the teachers were co-teachers in their classrooms of children. Eight (23.5%) teachers held certification, and of those, seven were early childhood certified, and one was elementary certified. The mean years in the field of early childhood education was M = 13.87 (SD = 7.92), with a range from nine months to 33.5 years. The largest group of teachers, 41.2% (14) have worked in the early childhood field for 10-20 years, but have been with their current employer less than three years. All of the 34 teachers worked full time hours, and most, 82.4% (28) served full day programs. Half of the teachers (17) were aged 30-47. All but two of the participants were female, 94.1% (32). Exactly half of the teacher participants were Black, 50% (17). Although more culturally appropriate terms for racial designations might be “Caucasian” and “African-American”, this study utilized the terms “White” and “Black”, to maintain consistency with the terminology of the demographic form completed by participants. See Table 1 for complete demographic information.
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(continued)
There were 133 children in the fall of 2012 and 135 children in the spring of 2013, selected by systematic sampling, who participated in the study by being observed. The researcher acquired an alphabetical list of children and chose every third name, progressing through the list until four children were chosen to be observed in the fall. When substitution was necessary due to attrition in the spring data collection period, the same systematic sampling procedure was followed, so that four children were observed for every teacher. However, only the children who had both pre- and post-observation scores were used in this analysis, so out of 540 children involved in the Mid-America Head Start coaching study, only data from 133 of them are referenced the fall data, 135 in
the spring data, and only data from the 89 who have complete fall and spring data are used in some analyses.

In the fall, all of the 133 children observed were between the ages of three and five years, as determined in the fall (M = 4.05, SD = .67). The children were Black (51.9%), White (15.8%), Asian (1.5%), Multiracial (7.5%), and other (23.3%). This large “other” category included Hispanics. The children were split almost exactly in half for gender (females = 48.9%; males = 51.1%). In the spring, the children were again between the ages of three and five years. The children were Black (53.3%), White (14.1%), Asian (1.5%), Multiracial (6.7%), and other (24.4%). This large “other” category again included Hispanics. There were slightly more males than females (females = 44.4%; males = 55.6%). These 135 children observed in the spring included 89 of the same group of children who had been observed in the fall. See Tables 2 and 3 for complete demographic characteristics of all three groups.
Table 2

*Demographic Characteristics of Child Participants Fall 2012 and Spring 2013*

| Characteristics     | Fall  |   |   |   | Spring |   |   |   |   |
|---------------------|-------|--|--|--|--|------|--|--|--|--|
|                     | n     | % | n | % | n     | % | n | % |   |   |
| Age                 |       |   |   |   |       |   |   |   |   |   |
| Three year olds     | 27    | 20.3 | 28 | 20.7 |   |   |   |   |   |   |
| Four year olds      | 73    | 54.9 | 69 | 51.1 |   |   |   |   |   |   |
| Five year olds      | 33    | 24.8 | 38 | 28.1 |   |   |   |   |   |   |
| Race                |       |   |   |   |       |   |   |   |   |   |
| Black               | 69    | 51.9 | 72 | 53.3 |   |   |   |   |   |   |
| Other               | 31    | 23.3 | 33 | 24.4 |   |   |   |   |   |   |
| White               | 21    | 15.8 | 19 | 14.1 |   |   |   |   |   |   |
| Multiracial         | 10    | 7.5 | 9 | 6.7 |   |   |   |   |   |   |
| Asian               | 2     | 1.5 | 2 | 1.5 |   |   |   |   |   |   |
| Gender              |       |   |   |   |       |   |   |   |   |   |
| Male                | 68    | 51.1 | 75 | 55.6 |   |   |   |   |   |   |
| Female              | 65    | 48.9 | 60 | 44.4 |   |   |   |   |   |   |

*Note: M (SD) for child age (n = 133), fall sample = 4.05 (.67)*

*M (SD) for child age (n = 135), spring sample = 4.07 (.698)*
Table 3

*Demographic Characteristics of Child Participants with both Fall and Spring data*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three year olds</td>
<td>13</td>
<td>14.6</td>
</tr>
<tr>
<td>Four year olds</td>
<td>49</td>
<td>55.1</td>
</tr>
<tr>
<td>Five year olds</td>
<td>27</td>
<td>30.3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>44</td>
<td>49.4</td>
</tr>
<tr>
<td>Other</td>
<td>26</td>
<td>29.2</td>
</tr>
<tr>
<td>White</td>
<td>12</td>
<td>13.5</td>
</tr>
<tr>
<td>Multiracial</td>
<td>6</td>
<td>6.7</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>48</td>
<td>53.9</td>
</tr>
<tr>
<td>Female</td>
<td>41</td>
<td>46.1</td>
</tr>
</tbody>
</table>

*Note: M (SD) for children (n = 89) with both fall and spring data = 4.16 (.66)*

The characteristics of the 89 children who were included in the analysis are generally similar to those in the fall and spring groups. In addition, the relative order in terms of frequency of groups is the same in fall, spring, and selected groups.

There were 44 children from the fall and 46 children from the spring who were not included in the grouping of 89 children with both fall and spring scores. Possible reasons for these children’s not being in the sample of 89 are many, but it could be due to family relocation, change to another school, prolonged illness, or removal of the children from the program by the administration. Table 4 presents the demographic characteristics of the excluded children.
Table 4

Demographic Characteristics of Excluded Child Participants in Fall and Spring

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Fall</th>
<th></th>
<th>Spring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three year olds</td>
<td>14</td>
<td>31.8</td>
<td>9</td>
<td>19.6</td>
</tr>
<tr>
<td>Four year olds</td>
<td>24</td>
<td>54.5</td>
<td>19</td>
<td>41.3</td>
</tr>
<tr>
<td>Five year olds</td>
<td>6</td>
<td>13.6</td>
<td>10</td>
<td>21.7</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>25</td>
<td>56.8</td>
<td>24</td>
<td>52.2</td>
</tr>
<tr>
<td>White</td>
<td>9</td>
<td>20.5</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>2.3</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Multiracial</td>
<td>5</td>
<td>11.4</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>9.1</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>45.5</td>
<td>22</td>
<td>47.8</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>54.5</td>
<td>16</td>
<td>34.8</td>
</tr>
</tbody>
</table>

Note: Missing data for spring group (n= 8; 17.4 %)

M (SD) age for fall (n = 44) = 3.82 (.657)
M (SD) age for spring (n = 46) = 4.03 (.716)

Independent t-tests were run to examine the mean age differences between the 89 observed children with both fall and spring scores and each of the excluded groups, because they were continuous variables. In the fall, t(131) = 370.52, p< .001, r = .99, a large effect; in the spring, t(133) = 348.50, p< .001, r = .99, again a very large effect. So, there were significant age differences between these children. Both the fall group and the spring excluded groups were both statistically significantly younger than the 89 children
with both scores who were used in the primary analyses. Since the age was calculated at the beginning of the year and remained the same for both data collection periods, maturation is not a factor in this large statistically significant difference. Data being collected on an older group of children would lead to some restriction of range of possible ages of the sample, thereby reducing the power and possibly preventing the detection of relationships between variables.

Fisher’s Exact Test was run to examine the mean differences in the categorical variables gender and race between the fall, spring, and selected group of 89 children, because some cells contained fewer than five. No statistically significant results were found for gender or race between any of the groups. Fisher’s exact test with 8 degrees of freedom yielded 8.886, p = .311 for race. Fisher’s exact test with 2 degrees of freedom = 1.389, p = .505 for gender.

**Preliminary Analysis**

Descriptive statistics were run to assure the normality of all major variables. Bivariate scatterplots were used to check the linearity of correlations. Upon visual inspection, there were no univariate or multivariate outliers; however there were several missing values, due to participants leaving an item blank on the Teacher Beliefs Scale. Scale means were substituted for these blank items. Between instruments, multicollinearity was not found to be a problem, as none of the predictors was a perfect linear combination of any other.
Instrumentation Results

In addition to a demographics questionnaire, study participants submitted a detailed classroom daily schedule, and completed the Teacher Beliefs Scale (TBS, Charlesworth, et al., 1991). Observers completed observations using the Classroom Assessment Scoring System (CLASS, Pianta, LaParo & Hamre, 2008), and the Individualized Classroom Assessment Scoring System (inCLASS, Downer, Booren, Hamre, Pianta & Williford, 2012). All instruments are included in Appendix A.

The Evaluation of the Early Childhood Classroom Schedule (EECCS).

In both fall and spring, teachers were asked to write their daily classroom schedule in fifteen minute increments, which were then coded onto the Evaluation of the Early Childhood Classroom Schedule (EECCS, Vartuli & Everett, 1993). There were eight items which were scored along a 3-point continuum (3 is positive; 2 was neutral; 1 was negative) regarding grouping and scheduling: 1. integrated scheduling vs. segmented subjects; 2. Children make 50% of the decisions vs. teacher makes all decisions; 3. children have a choice to leave the activity vs. do not have a choice; 4. activities are balanced in different groupings vs. large group oriented; 5. children stay in large groups less than 20 minutes per day or more than 20 minutes; 6. children stay in sedentary activities less than 50% of the day or more than 50%; 7. children have more than 20 minutes of outdoor play daily or less than 20 minutes of outdoor play; and 8. bathroom times are individual as needed or whole group. Descriptive statistics for both fall 2012 and spring 2013 are given in Table 5.
Table 5

*Evaluation of the Early Childhood Classroom Schedule: Means and Standard Deviations of Individual Scales Fall 2012 and Spring 2013 (n = 34)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  sd</td>
<td>M  sd</td>
</tr>
<tr>
<td>Integrated subjects</td>
<td>2.50 .51</td>
<td>2.79 .41</td>
</tr>
<tr>
<td>Child makes 50% of decisions</td>
<td>2.18 .80</td>
<td>2.65 .65</td>
</tr>
<tr>
<td>Child choice to leave activity</td>
<td>2.26 .86</td>
<td>2.71 .58</td>
</tr>
<tr>
<td>Balanced Groupings</td>
<td>2.65 .69</td>
<td>2.82 .46</td>
</tr>
<tr>
<td>Large groups less than 20 minutes</td>
<td>2.32 .81</td>
<td>2.50 .66</td>
</tr>
<tr>
<td>Sedentary less than 50% of day</td>
<td>1.82 .58</td>
<td>2.44 .71</td>
</tr>
<tr>
<td>At least 20 min outdoor daily</td>
<td>2.97 .17</td>
<td>2.97 .17</td>
</tr>
<tr>
<td>Child may use bathroom as needed</td>
<td>2.26 .93</td>
<td>2.29 .84</td>
</tr>
<tr>
<td>Means</td>
<td>2.37 .34</td>
<td>2.65 .22</td>
</tr>
<tr>
<td>Total Means (possible 24)</td>
<td>18.97 2.78</td>
<td>21.18 2.55</td>
</tr>
</tbody>
</table>

Vartuli & Everett (1993) used the Evaluation of the Early Childhood Classroom Schedule (EECCS) with Head Start through primary aged children. They reported the highest 45% of teacher scores had a mean and standard deviation of 15.15 (2.71); these were labeled “high DAP teachers” (p. 22). The lowest 45% of teachers had a mean and
standard deviation of 12.23 (2.71), and were labeled ‘low DAP teachers (p. 22). The middle 10% of scores were dropped. These DAP scores were then compared to those teachers scores on the classroom schedule. In this present study, the EECCS data was maintained as a continuous variable, instead of using a median split dichotomizing into high and low categories. Both the fall and spring total means were greater than Vartuli & Everett’s (1993) “high DAP teacher” scores, indicating that the teachers in this study in general claim to believe in developmentally appropriate practices for the classroom. It is also possible that the scores in this current study were higher because of the younger grade level of the participants.

A paired-samples t-test was conducted to compare dependent variable classroom schedule means in both fall and spring data collection periods. There was a statistically significant difference in scores for fall ($M = 18.76, SD = 2.81$) and spring ($M = 21.08, SD = 2.47$); $t(88) = -7.95, p < .001, r = .65$, a large effect. The 95% confidence interval is between -2.89 and -1.74, indicating that these teachers reported a more developmentally appropriate classroom schedule in their classroom later in the year.

Interrater reliability was checked for the EECCS by double coding 6 of the 34 teachers (18%), and was found to be 93.8% in this fall and 90% in the spring. Regarding instrument reliability, Chronbach’s alpha was found to be .57 in the fall and .54 in the spring.

In addition, teachers were asked to rate the percentage of time that they were in charge of setting the classroom schedule in the classroom, ranging from (1) teacher sets the entire classroom schedule, (2) teacher sets 50-75% of the schedule, (3), teacher sets 25
– 50% of the schedule, and (4), teacher sets none of the classroom schedule. In the fall, a majority (58.8%) of teachers reported that they set 50-75% of the classroom schedule, commenting that the parts set for them mostly included timing of breakfast, lunch, nap and outdoors. Then nature and timing of large group time, reading, projects, small group, breaks, work times, individual times, centers, story, and library were mostly flexible according to teacher planning. In the spring, 50.0% of teachers said that they only set 25-50% of the schedule. Table 6 reflects detailed data about the percentage of the classroom schedule set by teachers.

Table 6

*Percentage of the Classroom Schedule set by Teachers Fall 2012 and Spring 2013 (n = 34)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Fall 2012</th>
<th></th>
<th>Spring 2013</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>All of it</td>
<td>5</td>
<td>14.7</td>
<td>1</td>
<td>2.9</td>
</tr>
<tr>
<td>75-100%</td>
<td>1</td>
<td>2.9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>50-75%</td>
<td>20</td>
<td>58.8</td>
<td>5</td>
<td>14.7</td>
</tr>
<tr>
<td>50%</td>
<td>1</td>
<td>2.9</td>
<td>4</td>
<td>11.8</td>
</tr>
<tr>
<td>25-50%</td>
<td>5</td>
<td>14.7</td>
<td>17</td>
<td>50.0</td>
</tr>
<tr>
<td>0 – 25%</td>
<td>1</td>
<td>2.9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>None of it</td>
<td>1</td>
<td>2.9</td>
<td>7</td>
<td>20.6</td>
</tr>
</tbody>
</table>
Seventy-five percent of the teachers reported control over the majority of the classroom schedule in the fall, and 70% reported having less than half of the schedule under their control. A paired samples t-test was conducted to compare dependent variable of the means of teacher control of the classroom schedule in both fall and spring data collection periods. There was a statistically significant difference in scores for fall (M = 2.10, SD = .71) and spring (M = 2.94, SD = .72); \( t(33) = -4.17, p < .001, r = .59 \), a large effect. The 95% confidence interval is between -1.25 to -.41, indicating that teachers perceived that they had less control of the schedule in the spring, than in the fall.

**The Classroom Assessment Scoring System (CLASS).**

In both fall and spring, The CLASS (Pianta, LaParo & Hamre, 2008) was used to observe 34 teachers, in four alternating 20 minute observation – 10 minute scoring cycles. Teachers’ scores were averaged across their four cycles. Table 7 lists means and standard deviations for the three CLASS domains and their dimensions.
<table>
<thead>
<tr>
<th>Item</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>M</td>
<td>sd</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>5.01</td>
<td>.84</td>
</tr>
<tr>
<td>Positive climate</td>
<td>4.71</td>
<td>1.09</td>
</tr>
<tr>
<td>Negative Climate</td>
<td>6.49</td>
<td>.58</td>
</tr>
<tr>
<td>Teacher Sensitivity</td>
<td>4.52</td>
<td>1.07</td>
</tr>
<tr>
<td>Regard for Student Perspectives</td>
<td>4.31</td>
<td>1.05</td>
</tr>
<tr>
<td>Classroom Organization</td>
<td>4.88</td>
<td>.89</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>4.84</td>
<td>.99</td>
</tr>
<tr>
<td>Productivity</td>
<td>5.35</td>
<td>.97</td>
</tr>
<tr>
<td>Instructional Learning Formats</td>
<td>4.48</td>
<td>1.09</td>
</tr>
<tr>
<td>Instructional Support</td>
<td>2.31</td>
<td>.77</td>
</tr>
<tr>
<td>Concept Development</td>
<td>1.76</td>
<td>.88</td>
</tr>
<tr>
<td>Quality of Feedback</td>
<td>2.64</td>
<td>.97</td>
</tr>
<tr>
<td>Language Modeling</td>
<td>2.53</td>
<td>.89</td>
</tr>
</tbody>
</table>

*Note: 7 point scale*
These scores are typical of CLASS scores in previous studies. LaParo et al. (2004) found the following means and standard deviations: Positive Climate 5.06 (.95); Negative Climate 1.83 (.78); Teacher sensitivity 4.46 (1.02); Behavior Management 4.76 (1.10); Productivity 4.38 (1.02); Concept Development 2.90 (1.23); Quality of feedback 2.06 (1.13). Similarly, LoCasale-Crouch et al. (2007) found total sample means and standard deviations of 5.31 (.83) for Positive Climate, 1.51 (.60) for Negative Climate, 4.73 (.92) for Teacher Sensitivity, 5.00 (.94) for Behavior Management, 4.51 (.88) for Productivity, 2.09 (.89) for Concept Development and 2.03 (.95) for Quality of Feedback. Both of these studies used an earlier version of CLASS, which did not contain Regard for Student Perspectives or Language Modeling as dimensions as we use in research today. Curby, Grimm, & Pianta (2010) and Dobbs-Oates, Kaderavek, Guo, & Justice (2011) used the current version, but do not describe means in their analysis.

It is also typical in the literature that the Instructional Support domain is significantly lower than the other two (Pianta, 2005). For example, LoCasale-Crouch et al. (2008), in a national study, found only 14% of state pre-k programs were found to have high quality emotional and instructional interactions, and 19% were considered low quality. This is especially problematic because the low quality classrooms contained more children from low SES families, who can benefit most from consistent exposure to positive effective interactions. While it has not been shown that there are thresholds or cut off scores to correlate with positive academic outcomes for children, this Instructional Support domain has been found to be related to positive outcomes in expressive and receptive language and math skills (Burchinal et al., 2008)
For the spring CLASS observation data, which will be utilized in further analysis, the Emotional Support domain had a low negative skew, -1.28 (SE = .403), and kurtosis of 2.79 (SE = .788). This is consistent with research findings that most classrooms across the United States in general have moderately high positive emotional climates. The Classroom Organization domain was negatively skewed, -1.53 (SE = .403) and kurtosis of 3.64 (SE = .788), indicating that it also has moderate to high scores on average in these dimensions. Instructional Support was just negligibly skewed, -.04 (SE = .403), kurtosis of -1.02 (SE = .788), supporting the research findings nationally that teachers may not be making the most of learning opportunities in the classrooms, although they maintain a positive climate and organized instruction.

The spring Teacher Beliefs Scale showed low negative skew, -.913 (SE = .337) and low positive kurtosis, .681 (SE -.662), indicating nearly symmetrical distributions in their scores. The spring Evaluation of the Early Childhood Classroom Schedule was negligibly skewed, -.674 (SE = .403) and kurtosis of -.403 (SE = .788), indicating almost symmetrical distributions as well.

Within the instrument, several correlations between domains were highly statistically significant in the fall data, indicating some collinearity: Emotional Support with Classroom Organization (r = .81, p < .01) and Instructional Support (r = .71, p < .01); and between Classroom Organization and Instructional Support (r = .55, p < .01). These were slightly but not statistically significantly elevated in the spring collection period.
Interrater reliability was assured in this study by double coding four (12%) of 34 teachers in the fall and five (15%) in the spring, as described in the instrument coding protocol. One hundred percent of the double coded instruments were in agreement within one point of each other. Internal consistency reliability, Chronbach’s alpha, was found to be .93 in both the fall and spring.

A paired-samples t-test was conducted to compare dependent variable CLASS total means in both fall and spring data collection periods. There was a statistically significant difference in scores for fall (M = 11.88, SD = 2.35) and spring (M = 14.23, SD = 2.05); \( t(88) = -8.42, p < .001, r = .67 \), a large. The 95% confidence interval is between -2.90 and -1.79, indicating that observers rated classrooms to be higher in developmentally appropriate teacher–child interactions in the spring, as compared to the fall.

**The Individualized Classroom Assessment Scoring System (inCLASS).**

The inCLASS was used to observe the children in this study. Four children per classroom were observed in four rotating 10 minute observation / 5 minute scoring cycles. Three children were observed on one day, and one child on a second day, along with the teachers’ CLASS observation. Children’s observations were split up due to time constraints. All observations were done in the morning hours before lunch, according to specifications which accompany the instrument. Teachers were unaware as to which children were being observed at any given 10 minute observation cycle.

The inCLASS is divided into three domains as the instrument is actually used in practice. However, for statistical purposes, factors rather than domains will be used in further analyses to be consistent with how results are typically reported in the literature.
(Downer, 2010, 2012). Means and standard deviations for factors and their dimensions are shown in Table 8.

Table 8

*inCLASS Means and Standard Deviations for Four Factors and Ten Dimensions*

<table>
<thead>
<tr>
<th>Item</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>sd</td>
</tr>
<tr>
<td>Teacher Interactions</td>
<td>2.31</td>
<td>.86</td>
</tr>
<tr>
<td>Positive Teacher Engagement</td>
<td>2.59</td>
<td>.99</td>
</tr>
<tr>
<td>Teacher Communication</td>
<td>2.03</td>
<td>.87</td>
</tr>
<tr>
<td>Peer Interactions</td>
<td>2.45</td>
<td>.86</td>
</tr>
<tr>
<td>Peer Sociability</td>
<td>3.08</td>
<td>1.04</td>
</tr>
<tr>
<td>Peer Communication</td>
<td>2.28</td>
<td>.92</td>
</tr>
<tr>
<td>Peer Assertiveness</td>
<td>1.99</td>
<td>.84</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>3.96</td>
<td>.81</td>
</tr>
<tr>
<td>Engagement within Tasks</td>
<td>4.57</td>
<td>.92</td>
</tr>
<tr>
<td>Self-Reliance</td>
<td>3.35</td>
<td>.93</td>
</tr>
<tr>
<td>Conflict Interaction</td>
<td>5.73</td>
<td>1.58</td>
</tr>
<tr>
<td>Teacher Conflict</td>
<td>1.36</td>
<td>.74</td>
</tr>
<tr>
<td>Peer Conflict</td>
<td>1.34</td>
<td>.51</td>
</tr>
<tr>
<td>Behavior Control</td>
<td>5.32</td>
<td>1.39</td>
</tr>
</tbody>
</table>

*Note: Fall 2012 (n = 133 children) and spring 2013 (n = 135)*
These means for inCLASS dimensions in the fall and spring collections are similar to those found in the pilot study (Downer et al., 2010). Means and standard deviations for that study were Teacher Positive Engagement 3.61 (.86), Teacher Communication 2.78 (1.00), Teacher Conflict, 1.19 (.27), Peer Sociability, 4.26(.86), Peer Communication, 3.18, (1.12), Peer Assertiveness, 2.82 (1.00), Peer Conflict, 1.36 (.38), Engagement within Tasks, 5.12 (.68), and Self-Reliance, 4.15 (.76). Behavior Control is not listed as a dimension in this first version of the instrument in Downer et al.’s analysis.

The spring inCLASS scores showed no evidence of extreme skew or kurtosis in any of the four factors: Teacher Interactions, skew = .239 (.255), kurtosis = -.695 (.506); Peer Interactions, skew = .363 (.255), kurtosis = -.543 (.506); Task Organization, skew = -.076 (.255), kurtosis = -.592 (.506); and Conflict Interactions, skew = -.920 (.255); kurtosis = .337 (.506).

Designers of the inCLASS tool (Downer, 2010) created an observation document with three domains for use in the classroom, however upon analysis they found four factors in their research instead of three domains. In addition, this study found high statistically significant correlations between domains and factors, indicating multicollinearity. In subsequent research (Bohlman et al., 2012; Williford et al., 2013) results have also confirmed four factors and researchers have stopped using the domain terminology in favor of only referring to ten domains and four factors. See tables 9 and 10 for detailed analysis.
Table 9

*Fall 2012 Pearson Correlations of inCLASS Domain and Factor Totals (n = 133)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domains</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Teacher Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Peer Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Task Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Teacher Interactions</td>
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<td></td>
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<td>5. Peer Interactions</td>
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<tr>
<td>6. Task Orientation</td>
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<td></td>
</tr>
<tr>
<td>7. Conflict Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Domains**

1. Teacher Interactions
2. Peer Interactions
3. Task Orientation

**Factors**

4. Teacher Interactions
5. Peer Interactions
6. Task Orientation
7. Conflict Interactions

** p< .01.

In the fall, high statistically significant positive correlations were found between items on the inCLASS: Between the Teacher Interactions factor and domain ($r = .92$, $p<.01$); the Peer Interactions factor and domain ($r = .98$, $p<.01$); and the Task Orientation factor and domain ($r = .90$, $p<.01$). This collinearity is reasonable because two of the three dimensions in each domain are included in the factor. Also, the Task Orientation factor is moderately positively correlated with the Peer Interaction domain ($r = .31$, $p<.01$) and the Peer Interaction factor ($r = .33$, $p<.01$); the Conflict Interactions factor is
positively statistically significantly correlated with the Task Orientation domain \((r = .85, p < .01)\), and also with the Task Orientation factor. \((r = .54, p < .01)\). This may be due to children’s frequent engagement in tasks in social situations with peers during the observations.

Table 10

*Spring 2013 Pearson Correlations of inCLASS Domain and Factor Totals \((n = 135)\)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domains</strong></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>1. Teacher Interactions</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Peer Interactions</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Task Orientation</td>
<td>.13</td>
<td>.48**</td>
<td></td>
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</tr>
<tr>
<td><strong>Factors</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Teacher Interactions</td>
<td>.98**</td>
<td>.03</td>
<td>.22**</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Peer Interactions</td>
<td>.00</td>
<td>.99**</td>
<td>.53**</td>
<td>.03</td>
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<td></td>
</tr>
<tr>
<td>6. Task Orientation</td>
<td>.17*</td>
<td>.58**</td>
<td>.95**</td>
<td>.24**</td>
<td>.61**</td>
<td></td>
</tr>
<tr>
<td>7. Conflict Interactions</td>
<td>.07</td>
<td>.17</td>
<td>.81**</td>
<td>.16</td>
<td>.23**</td>
<td>.60**</td>
</tr>
</tbody>
</table>

\*p<.05. \**p<.01.

In the spring, all of the related factors and domains were again computed to show very strong positive statistically significant correlations between the Teacher Interactions factor and domain \((r = .98, p < .01)\), Peer Interactions factor and domain \((r = .99, p < .01)\)
and the Task Orientation factor and domain ($r = .95, p < .01$). In addition, nine new items showed statistically significant positive correlations. The Task Orientation factor is correlated with every other factor and variable: Teacher Interaction domain ($r = .17, p < .01$), Peer interaction domain ($r = .58, p < .01$), Teacher Interactions factor ($r = .24, p < .01$), Peer Interactions factor ($r = .61, p < .01$), and Conflict Interactions factor ($r = .60, p < .01$). Further, the Task Orientation domain and Peer Interactions domain are statistically significantly positively correlated ($r = .48, p < .01$), as is the Teacher Interactions factor with Task Orientation domain ($r = .22, p < .01$). The Peer Interactions factor is positively statistically significantly correlated with Task Orientation domain ($r = .53, p < .01$).

Finally the Conflict Interaction factor is positively significantly correlated with the Task Orientation domain ($r = .81, p < .01$) and the Peer Interactions factor ($r = .23, p < .01$).

Due to the complexity of child engagement with tasks, materials, and peers, and the consistency of dimensions from domain to factors, it is not surprising that many positive correlations were found. Consequently, after demonstrating this strong collinear relationship between factors and domains in tables 9 and 10, this study focused on the factors alone in further analysis.

Interrater reliability was assured for the inCLASS observation by double coding 31 single observations (6%) of children (out of a total number of 532 single observations of 133 children) resulting in a rating of 94% for scores within one point of each other. Internal instrument reliability was measured with Chronbach’s alpha for the inCLASS and was found to be .60 for the fall and .62 in the spring.
Paired-samples t-tests were conducted to compare dependent variable inCLASS factor means in both fall and spring data collection periods. For the Peer Interaction factor, there was a statistically significant difference in scores for fall (M = 2.54, SD = .90) and spring (M = 3.04, SD = 1.11); t(88) = -3.68, p < .001, r = .37, a medium effect. The 95% confidence interval is between .137 and -.77, indicating that these observers scored peer interactions as higher in the spring than in the fall. For the Task Orientation factor, there was a statistically significant difference in scores for fall (M = 3.99, SD = .80) and spring (M = 4.93, SD = .89); t(88) = -8.11, p < .001, r = .65, a medium effect. The 95% confidence interval is between -1.16 and -.71, indicating that these observers scored children as higher in task orientation in the spring than in the fall. For the Teacher Interaction factor, there was also a statistically significant difference in scores for fall (M = 2.26, SD = .91) and spring (M = 2.55, SD = .86); t(88) = -2.31, p < .05, r = .24, a low medium effect. The 95% confidence interval is between -.54 and -.04, indicating that these observers scored teacher interactions as higher in the spring than in the fall. Finally, for the Conflict Interaction factor, there was not a statistically significant difference in scores for fall (M = 5.77, SD = 1.60) and spring (M = 5.37, SD = 1.17); t(88) = 1.97, p = .052. The 95% confidence interval is between -.00 and .81, indicating that these observers’ rated no statistically different scores in the spring than in the fall.

**Teacher Beliefs Scale (TBS).**

The mean total score and standard deviation on the TBS for this study was 159.48 (11.36) in the fall and 162.01 (12.28) in the spring. When computing the means for this instrument, negative items were reversed. Possible total scores for the TBS have a range
of 137-185, with higher scores indicating more developmentally appropriate beliefs. The mean for this study were approximately equal to means for three other studies: Head Start teachers in Vartuli’s (1999) study (M = 174.44, SD = 7.64), McMullen and Alat’s (2002) study (M = 154.41, SD = 15.78, and Rohs’ (2007) study (M = 160.05, SD = 14.57). This present study utilized the Teacher Beliefs Scale as a whole, without dividing it into two subscales because the sample size was small and because the construct of developmentally appropriate practice is typically viewed as one continuum, as opposed to two separate constructs. Chronbach’s alpha was computed to be .82 in the fall and .70 in the spring.

A paired-sample t-test was conducted to compare dependent variable Teacher Beliefs Scale mean totals in both fall and spring data collection periods. There was a statistically significant difference in scores for fall (M = 159.48, SD = 11.36) and spring (M = 162.01, SD = 12.27); t(88) = -3.40, p = .001. r = .34, a medium effect. The 95% confidence interval is between -4.01 and -1.05, indicating that teacher rated themselves as having more developmentally appropriate beliefs in the spring than in the fall.

There was a low moderate statistically significant correlation between Teacher Belief Scale scores and the EECCS scores in both fall (r = .44, p < .01) and spring (r = .36, p < .01). There was a low statistically significant positive correlation between Teacher Belief Scale scores and the inCLASS Task Orientation factor (r = .18, p < .05) in the fall and with Teacher Interactions factor (r = .17, p < .05) in the spring. The Teacher Belief Scale scores are also moderately positive statistically significantly correlated with CLASS in the fall (r = .29, p < .01), but not in the spring. Table 11 shows complete correlation data for fall. Table 12 shows complete correlation data for spring.
Table 11

_Fall 2012 Pearson Correlations of inCLASS Factors, TBS, EECCS and CLASS (n = 133)_

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>inCLASS Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1. Teacher Interactions</td>
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<td></td>
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<tr>
<td>2. Peer Interactions</td>
<td>-.00</td>
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</tr>
<tr>
<td>3. Task Orientation</td>
<td>.09</td>
<td>.33**</td>
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</tr>
<tr>
<td>4. Conflict Interactions</td>
<td>.06</td>
<td>-.05</td>
<td>.54</td>
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</tr>
<tr>
<td><strong>Other Scales</strong></td>
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<tr>
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<td>.12</td>
<td>.18*</td>
<td>.10</td>
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<tr>
<td>6. EECCS</td>
<td>-.01</td>
<td>.05</td>
<td>.11</td>
<td>.23</td>
<td>.44**</td>
<td></td>
</tr>
<tr>
<td>7. CLASS</td>
<td>.17</td>
<td>-.07</td>
<td>.27**</td>
<td>-.05</td>
<td>.29**</td>
<td>.13</td>
</tr>
</tbody>
</table>

* *p<.05. ** p<.01.
Table 12

*Spring 2013 Pearson Correlations of inCLASS Factors, TBS, EECCS and CLASS (n = 135)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>inCLASS Factors</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Teacher Interactions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2. Peer Interactions</td>
<td>.03</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. Task Orientation</td>
<td>.24*</td>
<td>.61**</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Conflict Interactions</td>
<td>-.06</td>
<td>-.11</td>
<td>-.63**</td>
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<tr>
<td>Other Scales</td>
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</tr>
<tr>
<td>5. Teacher Belief Scale</td>
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<td>.17*</td>
<td>-.01</td>
<td>-.14</td>
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<td></td>
</tr>
<tr>
<td>6. EECCS</td>
<td>.17*</td>
<td>-.06</td>
<td>.08</td>
<td>-.01</td>
<td>.36**</td>
<td></td>
</tr>
<tr>
<td>7. CLASS</td>
<td>.27**</td>
<td>.28**</td>
<td>.40**</td>
<td>.26**</td>
<td>.01</td>
<td>-.07</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.

Descriptive Analysis

Research hypothesis one results.

Research Hypothesis 1: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom interaction scores, as defined by CLASS.

To examine the relationship between the classroom schedule (EECCS) and teacher-child interactions in Head Start classrooms (CLASS), a hierarchical multiple regression analysis was performed with the 34 teacher participant data. Variables that
explain the interactions were entered in two steps. In step 1, CLASS scores were the
dependent variable; the EECCS Spring score was the independent variable. In step 2, the
EECCS Fall score was entered into the step 1 equation. The independent variables were
examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2,
1.219) and collinearity tolerance (model 1, 1.00; model 2, .821) suggest that the estimated
\( \beta \)s are well established in the following regression model.

Table 13

Hierarchical Linear Regression of CLASS Teacher – Child Classroom Interactions
Controlling for Fall EECCS (N = 34)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.223 (1.088)**</td>
<td>4.693 (1.183)**</td>
</tr>
<tr>
<td>EECCS (Spring)</td>
<td>-0.022 (0.051)</td>
<td>-0.049 (0.056)</td>
</tr>
<tr>
<td>EECCS (Fall)</td>
<td>0.058 (0.052)</td>
<td>0.058 (0.052)</td>
</tr>
</tbody>
</table>

Adjusted \( R^2 \) = -.025 and the regression is not significant \( F(1,32) = .186 \).
Block 2: \( \Delta R^2 = .039, F(2,31) = .720, p = .495 \).

The results of step one indicated that the variance accounted for \( (R^2) \) with the first
independent variable, classroom schedule scores (EECCS) equaled .006 (adjusted \( R^2 = --
.025, which was not significantly different from zero (\( F(1,32) = .186, p = .669 \)). In step 2,
Fall EECCS scores were entered into the regression equation. The change in variance
accounted for \( (\Delta R^2) \) was equal to .039, which was also not significantly different from
zero \((F_{2,31} = .720, p = .495)\). The unstandardized regression coefficients \((B)\) and intercept, the standardized regression coefficients \((\beta)\), for the full model are reported in Table 13. Controlling for the fall classroom schedule, the spring EECCS did not contribute statistically significantly to the explanation of teacher-child classroom interactions (CLASS).

**Research hypothesis two results.**

Research Hypothesis 2: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom child engagement scores, as defined by inCLASS.

To examine the relationship between the classroom schedule (EECCS) and child interactions with teachers, peers and materials (inCLASS), four separate hierarchical multiple regression analyses were performed, one for each of the inCLASS factors, using data from the group of 89 children with both fall and spring scores. For each analysis, variables that explain the interactions were entered in two steps. In step 1 in each analysis, inCLASS factors scores were each separately the dependent variable (Teacher Interactions, Peer Interactions, Task Organization, and Conflict Interactions); the EECCS Spring score was the independent variable. In step 2, the EECCS Fall score was entered into the step 1 equation. The independent variables were examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2, 1.276) and collinearity tolerance (model 1, 1.00; model 2, .784) suggest that the estimated \(\beta\)s are well established in the following regression model.
### Table 14

**Hierarchical Linear Regression of inCLASS Factors Controlling for Fall EECCS**  
(*N = 89*)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE)</td>
<td>β</td>
</tr>
<tr>
<td>Teacher Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.826 (0.789)*</td>
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</tr>
<tr>
<td>EECCS (Spring)</td>
<td>0.034 (0.037)</td>
<td>0.099</td>
</tr>
<tr>
<td>EECCS (Fall)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.002</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.860 (1.87)</td>
<td></td>
</tr>
<tr>
<td>Peer Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.433 (1.022)***</td>
<td></td>
</tr>
<tr>
<td>EECCS (Spring)</td>
<td>-0.018 (0.048)</td>
<td>-0.041</td>
</tr>
<tr>
<td>EECCS (Fall)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.010</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.147 (1.87)</td>
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</tr>
<tr>
<td>Task Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>4.041 (0.812)***</td>
<td></td>
</tr>
<tr>
<td>EECCS (Spring)</td>
<td>0.042 (0.038)</td>
<td>0.117</td>
</tr>
<tr>
<td>EECCS (Fall)</td>
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<tr>
<td>Adjusted $R^2$</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>1.205 (1.87)</td>
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</tr>
<tr>
<td>Conflict Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>5.678 (1.079)***</td>
<td></td>
</tr>
<tr>
<td>EECCS (Spring)</td>
<td>0.015 (0.051)</td>
<td>-0.031</td>
</tr>
<tr>
<td>EECCS (Fall)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.011</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.084 (1.87)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Teacher Interactions Block 2: $\Delta R^2 = .001$.  
Peer Interactions Block 2: $\Delta R^2 = .006$.  
Task Organization Block 2: $\Delta R^2 = .010$.  
Conflict Interactions Block 2: $\Delta R^2 = .002$.  
*p < .05. **p < .01. ***p < .001*
For the dependent variable, inCLASS Teacher Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring classroom schedule scores (EECCS) equaled .010 (adjusted $R^2 = .002$, which was not significantly different from zero ($F_{(1,87)} = .860, p = .356$). In step 2, Fall EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .001, which was not significantly different from zero ($F_{(2,86)} = .462, p = .632$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 14. Controlling for the fall classroom schedule, the EECCS did not contribute statistically significantly to the explanation of inCLASS Teacher Interactions.

For the dependent variable, inCLASS Peer Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring classroom schedule scores (EECCS) equaled .002 (adjusted $R^2 = -.010$, which was not significantly different from zero ($F_{(1,87)} = .147, p = .703$). In step 2, Fall EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .006, which was not significantly different from zero ($F_{(2,86)} = .332, p = .726$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 15. Controlling for the fall classroom schedule, the EECCS did not contribute statistically significantly to the explanation of inCLASS Peer Interactions.

For the dependent variable, inCLASS Task Organization: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring
classroom schedule scores (EECCS) equaled .014 (adjusted $R^2 = .002$, which was not significantly different from zero ($F_{(1,87)} = 1.205, p = .275$). In step 2, Fall EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .010, which was not significantly different from zero ($F_{(2,86)} = 1.054, p = .353$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 16. Controlling for the fall classroom schedule, the EECCS did not contribute statistically significantly to the explanation of inCLASS Task Organization.

For the dependent variable, inCLASS Conflict Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring classroom schedule scores (EECCS) equaled .001 (adjusted $R^2 = -.011$, which was not significantly different from zero ($F_{(1,87)} = .084, p = .773$). In step 2, Fall EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .002 which was not significantly different from zero ($F_{(2,86)} = .134, p = .874$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 17. Controlling for the fall classroom schedule, the EECCS did not contribute statistically significantly to the explanation of inCLASS Conflict Interactions.

Controlling for the fall classroom schedule, the EECCS did not contribute statistically significantly to the explanation of any of the inCLASS factors.
To further explore the inCLASS data, the relationship between the EECCS and the activity settings of each of the observations was examined. See the supplementary analysis section for results.

**Research hypothesis three results.**

Research Hypothesis 3: Early childhood teachers with higher developmentally appropriate belief scores, as defined by the TBS, will demonstrate higher Head Start classroom interaction scores, as defined by CLASS.

To examine the relationship between the Teacher Beliefs Scale (TBS) and teacher–child interactions (CLASS), a hierarchical multiple regression analysis were performed with data from the 34 teachers. Variables that explain the interactions were entered in two steps. In step 1, CLASS was the dependent variable; the TBS Spring score was the independent variable. In step 2, the TBS Fall score was entered into the step 1 equation. The independent variables were examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2, 2.645) and collinearity tolerance (model 1, 1.00; model 2, .378) suggest that the estimated βs are well established in the following regression model.
Table 15

*Hierarchical Linear Regression of CLASS Controlling for Fall TBS (N = 34)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE)</td>
<td>β</td>
</tr>
<tr>
<td>(Constant)</td>
<td>4.802 (1.719)**</td>
<td>3.848 (1.918)</td>
</tr>
<tr>
<td>TBS (Spring)</td>
<td>0.000 (0.011)</td>
<td>0.005</td>
</tr>
<tr>
<td>TBS (Fall)</td>
<td>0.021 (0.019)</td>
<td>0.317</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-.031</td>
<td>-.024</td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>.001 (1.32)</td>
<td>.613 (2.31)</td>
</tr>
</tbody>
</table>

*Note.* Block 2: $\Delta R^2 = .038$.

**p < .01.

For the dependent variable, CLASS: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, classroom schedule scores (EECCS) equaled .000 (adjusted $R^2 = -.031$, which was not significantly different from zero ($F(1,32) = .001, p = .980$). In step 2, Fall EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .038 which was not significantly different from zero ($F(2,31) = .613, p = .548$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 15. Controlling for the fall belief scores, the TBS did not contribute statistically significantly to the explanation of CLASS teacher-child interactions.
Research hypothesis four results.

Research Hypothesis 4: Children in early childhood classrooms with teachers who have higher developmentally appropriate belief scores, as defined by the TBS, will have higher classroom child engagement scores, as defined by inCLASS.

To examine the relationship between the Teacher Beliefs Scale (TBS) and child interactions with teachers, peers, and materials (inCLASS), four separate hierarchical multiple regression analyses were performed, one for each of the inCLASS factors, using data from the 89 children with both fall and spring scores. For each analysis, variables that explain the interactions were entered in two steps. In step 1 in each analysis, inCLASS factors scores were each separately the dependent variable (Teacher Interactions, Peer Interactions, Task Organization, and Conflict Interactions); the TBS Spring score was the independent variable. In step 2, the TBS Fall score was entered into the step 1 equation. The independent variables were examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2, 3.157) and collinearity tolerance (model 1, 1.00; model 2, .317) suggest that the estimated $\beta$s are well established in the following regression model.
### Table 16

**Hierarchical Linear Regression of inCLASS Factors Controlling for Fall TBS**

(N = 89)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE)</td>
<td>β</td>
</tr>
<tr>
<td>Teacher Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.005 (1.220)**</td>
<td>-0.040</td>
</tr>
<tr>
<td>TBS (Spring)</td>
<td>-0.003 (0.008)</td>
<td>-0.011 (0.013)</td>
</tr>
<tr>
<td>TBS (Fall)</td>
<td>0.010 (0.014)</td>
<td>0.137</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.010</td>
<td>-0.016</td>
</tr>
<tr>
<td>$F(df_1, df_2)$</td>
<td>0.137 (1.87)</td>
<td></td>
</tr>
<tr>
<td>Peer Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.338 (1.564)</td>
<td></td>
</tr>
<tr>
<td>TBS (Spring)</td>
<td>0.011 (0.010)</td>
<td>0.019 (0.017)</td>
</tr>
<tr>
<td>TBS (Fall)</td>
<td>-0.012 (0.019)</td>
<td>-0.118</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>$F(df_1, df_2)$</td>
<td>1.196 (1.87)</td>
<td></td>
</tr>
<tr>
<td>Task Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>4.161 (1.256)***</td>
<td>4.226 (1.370)**</td>
</tr>
<tr>
<td>TBS (Spring)</td>
<td>0.005 (0.008)</td>
<td>0.006 (0.014)</td>
</tr>
<tr>
<td>TBS (Fall)</td>
<td>-0.002 (0.015)</td>
<td>-0.023</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>$F(df_1, df_2)$</td>
<td>0.373 (1.87)</td>
<td></td>
</tr>
<tr>
<td>Conflict Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>5.850 (1.661)***</td>
<td>5.559 (1.811)**</td>
</tr>
<tr>
<td>TBS (Spring)</td>
<td>-0.003 (0.010)</td>
<td>-0.009 (0.018)</td>
</tr>
<tr>
<td>TBS (Fall)</td>
<td>0.008 (0.020)</td>
<td>0.079</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.011</td>
<td></td>
</tr>
<tr>
<td>$F(df_1, df_2)$</td>
<td>0.085 (1.87)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Teacher Interactions Block 2: $\Delta R^2 = .006$. Peer Interactions Block 2: $\Delta R^2 = .004$. Task Organization Block 2: $\Delta R^2 = .000$. Conflict Interactions Block 2: $\Delta R^2 = .002$. 

*p < .05. **p < .01. ***p < .001*
For the dependent variable, inCLASS Teacher Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring TBS scores equaled .002 (adjusted $R^2 = -.010$), which was not significantly different from zero ($F_{(1,87)} = .137, p = .712$). In step 2, Fall TBS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .006, which was not significantly different from zero ($F_{(2,86)} = .326, p = .723$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 16. Controlling for the fall belief scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Teacher Interactions.

For the dependent variable, inCLASS Peer Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable spring TBS scores equaled .014 (adjusted $R^2 = .002$), which was not significantly different from zero ($F_{(1,87)} = 1.196, p = .277$). In step 2, Fall TBS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .004, which was not significantly different from zero ($F_{(2,86)} = .787, p = .458$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 16. Controlling for the fall belief scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Peer Interactions.

For the dependent variable, inCLASS Task Organization: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, spring TBS scores equaled .004 (adjusted $R^2 = -.007$, which was not significantly different from
zero \((F_{1,87} = .373, p = .543)\). In step 2, Fall TBS scores were entered into the regression equation. The change in variance accounted for \((\Delta R^2)\) was equal to .000, which was not significantly different from zero \((F_{2,86} = .192, p= .826)\). The unstandardized regression coefficients \((B)\) and intercept, the standardized regression coefficients \((\beta)\), for the full model are reported in Table 16. Controlling for the fall belief scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Task Organization.

For the dependent variable, inCLASS Conflict Interactions: The results of step one indicated that the variance accounted for \((R^2)\) with the first independent variable, spring TBS scores equaled .001 (adjusted \(R^2 = -.011\), which was not significantly different from zero \((F_{1,87} = .085, p = .771)\). In step 2, Fall TBS scores were entered into the regression equation. The change in variance accounted for \((\Delta R^2)\) was equal to .002 which was not significantly different from zero \((F_{2,86} = .128, p= .880)\). The unstandardized regression coefficients \((B)\) and intercept, the standardized regression coefficients \((\beta)\), for the full model are reported in Table 16. Controlling for the fall belief scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Conflict Interactions.

**Moderation by Beliefs on Classroom Schedule-CLASS relationship**

Question 3: How does the early childhood classroom schedule moderate the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions, as evidenced through CLASS and inCLASS?

First for CLASS, to answer research question 3 and examine the unique contribution of the classroom schedule (EECCS) in the explanation of the relationship between developmentally appropriate teacher beliefs (TBS) and teacher-child interactions...
in Head Start classrooms (CLASS), a hierarchical multiple regression analysis with moderation was performed using spring data from the 34 teachers. Variables that explain the interactions were entered in three steps. In step 1, CLASS scores were the dependent variable; the TBS was the independent variable. In step 2, the belief scale scores (TBS) were entered into the step 1 equation. In step three, an interaction term of centered variables TBS and EECCS was entered. The independent variables were examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2, 1.167; model 3, 1.097) and collinearity tolerance (model 1, 1.00; model 2, .857; model 3, .911) suggest that the estimated $\beta$s are well established in the following regression model.

The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, classroom schedule scores (EECCS) equaled .015 (adjusted $R^2 = .003$), which was not significantly different from zero ($F_{(1,87)} = 1.296, p=.258$). In step 2, belief scale scores (TBS) were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .004, which was not significantly different from zero ($F_{(2,86)} = .811, p = .448$). In step 3, the centered interaction term between EECCS and TBS was entered. The change in variance accounted for ($\Delta R^2$) was equal to .048, which was not significantly different from zero ($F_{(2,86)} = 2.006, p = .119$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 17. The classroom schedule (EECCS) did not contribute statistically significantly to the explanation of teacher-child classroom interactions (CLASS).
### Table 17

**Hierarchical Linear Regression of Spring CLASS with Moderation by TBS (N = 89)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE)</td>
<td>β</td>
<td>B(SE)</td>
</tr>
<tr>
<td><strong>(Constant)</strong></td>
<td>14.231 (0.217)***</td>
<td>14.231 (0.218)***</td>
<td>14.044 (0.232)</td>
</tr>
<tr>
<td>TBS</td>
<td>.020 (0.018)</td>
<td>0.121</td>
<td>0.025 (0.019)</td>
</tr>
<tr>
<td>EECCS</td>
<td>-.056 (.096)</td>
<td>-.067</td>
<td>-.048 (.094)</td>
</tr>
<tr>
<td>TBS X EECCS</td>
<td>.017 (.008)</td>
<td>.229</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.003</td>
<td>-.004</td>
<td></td>
</tr>
<tr>
<td>$F(df_{1},df_{2})$</td>
<td>1.296 (1,87)</td>
<td>.811 (2,86)</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Block 1: Adjusted $R^2 = .003$ and the regression is not significant $F(1,87) = 1.296$.  
Block 2: $\Delta R^2 = .004$, $F(2,86) = .811$, $p = .448$.  
Block 3: $\Delta R^2 = .048$, $F(3,85) = 2.006$, $p = .119$.  
***$p < .001$
Then, for inCLASS spring scores, to examine the unique contribution of the classroom schedule (EECCS) in the explanation of the relationship between developmentally appropriate teacher beliefs (TBS) and child interactions with teacher, peers, and materials in Head Start classrooms (inCLASS), four separate hierarchical multiple regression analyses were performed, one for each of the inCLASS factors. For each analysis, variables that explain the interactions were entered in two steps. In step 1 in each analysis, inCLASS factor scores were each separately the dependent variable; the TBS was the independent variable. In step 2, the EECCS schedule scores were entered into the step 1 equation. The independent variables were examined for collinearity. Results of the variance inflation factor (model 1, 1.0; model 2, .857) and collinearity tolerance (model 1, 1.00; model 2, 1.167) suggest that the estimated $\beta$s are well established in the following regression model.
Table 18

*Hierarchical Linear Regression of Spring inCLASS Factors with moderation by EECCS (N = 89)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th>Block 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE)</td>
<td>β</td>
</tr>
<tr>
<td><strong>Teacher Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.005 (1.220)*</td>
<td></td>
</tr>
<tr>
<td>TBS</td>
<td>-0.003 (0.008)</td>
<td>-0.040</td>
</tr>
<tr>
<td>EECCS</td>
<td>0.046 (0.040)</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.010</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.137 (1.87)</td>
<td></td>
</tr>
<tr>
<td><strong>Peer Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.338 (1.564)</td>
<td></td>
</tr>
<tr>
<td>TBS</td>
<td>0.011 (0.010)</td>
<td>0.116</td>
</tr>
<tr>
<td>EECCS</td>
<td>-0.045 (0.052)</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>1.196 (1.87)</td>
<td></td>
</tr>
<tr>
<td><strong>Task Organization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>4.161 (1.256)***</td>
<td></td>
</tr>
<tr>
<td>TBS</td>
<td>0.005 (0.008)</td>
<td>0.065</td>
</tr>
<tr>
<td>EECCS</td>
<td>0.039 (0.042)</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.373 (1.87)</td>
<td></td>
</tr>
<tr>
<td><strong>Conflict Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>5.850 (1.661)***</td>
<td></td>
</tr>
<tr>
<td>TBS</td>
<td>-0.003 (0.010)</td>
<td>-0.031</td>
</tr>
<tr>
<td>EECCS</td>
<td>0.011 (0.055)</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>-0.011</td>
<td></td>
</tr>
<tr>
<td>$F(df_1,df_2)$</td>
<td>0.085 (1.87)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Teacher Interactions Block 2: $\Delta R^2 = .006$.
Peer Interactions Block 2: $\Delta R^2 = .008$.
Task Organization Block 2: $\Delta R^2 = .010$.
Conflict Interactions Block 2: $\Delta R^2 = .000$.

*p < .05. **p < .01. ***p < .001
For the dependent variable, inCLASS Teacher Interactions: The results of step one indicated that the variance accounted for \( (R^2) \) with the first independent variable, TBS scores equaled .002 (adjusted \( R^2 = -0.010 \)), which was not significantly different from zero \( (F_{(1,87)} = .137, p = .712) \). In step 2, the EECCS scores were entered into the regression equation. The change in variance accounted for \( (\Delta R^2) \) was equal to -.006, which was not significantly different from zero \( (F_{(2,86)} = .731, p = .484) \). The unstandardized regression coefficients \( (B) \) and intercept, the standardized regression coefficients \( (\beta) \), for the full model are reported in Table 18. Controlling for the classroom schedule with EECCS, the TBS did not contribute statistically significantly to the explanation of inCLASS Teacher Interactions.

For the dependent variable, inCLASS Peer Interactions: The results of step one indicated that the variance accounted for \( (R^2) \) with the first independent variable, classroom schedule scores (EECCS) equaled .014 (adjusted \( R^2 = .002 \)), which was not significantly different from zero \( (F_{(1,87)} = 1.196, p = .277) \). In step 2, EECCS scores were entered into the regression equation. The change in variance accounted for \( (\Delta R^2) \) was equal to .008, which was not significantly different from zero \( (F_{(2,86)} = .967, p = .384) \). The unstandardized regression coefficients \( (B) \) and intercept, the standardized regression coefficients \( (\beta) \), for the full model are reported in Table 18. Controlling for EECCS schedule scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Peer Interactions.

For the dependent variable, inCLASS Task Organization: The results of step one indicated that the variance accounted for \( (R^2) \) with the first independent variable, TBS
scores equaled .004 (adjusted $R^2 = .007$, which was not significantly different from zero ($F_{(1,87)} = .373, p = .543$). In step 2, EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .010, which was not significantly different from zero ($F_{(2,86)} = .619, p = .541$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 18. Controlling for the EECCS schedule scores, the TBS did not contribute statistically significantly to the explanation of inCLASS Task Organization.

For the dependent variable, inCLASS Conflict Interactions: The results of step one indicated that the variance accounted for ($R^2$) with the first independent variable, TBS scores equaled .001 (adjusted $R^2 = -.011$, which was not significantly different from zero ($F_{(1,87)} = .085, p = .771$). In step 2, EECCS scores were entered into the regression equation. The change in variance accounted for ($\Delta R^2$) was equal to .000 which was not significantly different from zero ($F_{(2,86)} = .061, p = .941$). The unstandardized regression coefficients ($B$) and intercept, the standardized regression coefficients ($\beta$), for the full model are reported in Table 18. Controlling for the EECCS classroom schedule, the TBS did not contribute statistically significantly to the explanation of inCLASS Conflict Interactions. The EECCS scores did not have a moderating effect on any of the inCLASS factor scores.

**Supplementary Analysis**

In addition to testing the hypotheses of this study, analyses were run to investigate the relationship between the activity settings, teacher involvement, and inCLASS child
engagement scores with teachers, peers, and materials, to probe more deeply into the data collected from the inCLASS observation tool.

Correlations were run between the activity settings, teacher presence and teacher-directed settings, the factors for the fall and spring groups, and the group which had both fall and spring scores. The small group and individual activity settings were dropped from the analysis because of low numbers of children in these settings. Results are shown in Tables 19, 20 and 21.

On Table 19, which shows the correlation between activity settings and inCLASS factor totals for fall 2012, there are statistically significant correlations between Teacher Presence and Teacher Interaction \( (r = .44, p < .001) \), Peer Interaction \( (r = -.18, p < .05) \) and Task Orientation \( (r = -.28, p < .01) \). The teacher-directed setting is positively correlated with teacher presence \( (r = .19, p < .05) \) and whole group \( (r = .41, p < .001) \). Whole group is correlated with teacher presence as well \( (r = .20, p < .05) \). There are moderate negative correlations between free choice and the other three activity settings, teacher presence \( (r = -.42, p < .001) \), teacher-directed \( (r = -.60, p < .001) \), and whole group, \( (r = -.37, p < .001) \), as expected based on the nature of the activities. There are positive correlations between the free choice setting and the Task Orientation factor \( (r = .22, p < .01) \). Transitions are positively statistically significantly correlated with teacher presence \( (r = .23, p < .01) \), and negatively correlated with whole group \( (r = -.24, p < .01) \) and free choice \( (r = -.37, p < .001) \). Meals are statistically significantly negatively correlated with whole group \( (r = -.30, p < .001) \), free choice \( (r = -.20, p < .05) \) and transitions \( (r = -.26, p < .01) \).
On Table 20, the correlation for the spring 2013, the teacher presence activity setting is moderately statistically significantly correlated with every inCLASS factor: Teacher Interaction \((r = .25, p < .05)\), Peer Interaction \((r = -.36, p < .001)\), Task Orientation \((r = -.39, p < .001)\) Conflict Interaction \((r = -.28, p < .001)\). Teacher-directed setting is positively statistically significantly correlated with Teacher Interactions factor \((r = .28, p < .01)\) and teacher presence setting \((r = .35, p < .001)\). Whole group setting is moderately correlated with teacher presence \((r = .46, p < .001)\) and teacher-directed \((r = .58, p < .001)\) activity settings. Free choice activity setting is correlated with every other variable except the Teacher Interaction factor: Peer Interaction factor \((r = .30 p < .001)\), Task Orientation factor \((r = .37, p < .001)\), Conflict Interaction factor \((r = .19, p < .05)\), teacher presence setting \((r = -.36, p < .001)\), teacher-directed setting \((r = -.55, p < .001)\), whole group setting \((r = -.52, p < .001)\), transitions \((r = -.25, p < .01)\) and meals \((r = -.29, p < .01)\).

Table 21 displays the correlation between activity settings, including teacher presence and teacher-directed, and inCLASS factors for the group of children who have both fall and spring scores. Teacher presence is positively correlated with the Teacher Interactions factor \((r = .24, p < .05)\), moderately negatively statistically significantly correlated with Peer Interactions factor \((r = -.40, p < .001)\), Task Orientation factor \((r = -.44, p < .001)\), and Conflict Interactions factor \((r = -.29, p < .001)\). Teacher-directed is moderately positively correlated with both Teacher Interactions factor \((r = .39, p < .001)\), and teacher presence setting \((r = .29, p < .01)\). Whole group is correlated with Teacher Interactions factor \((r = .28, p < .01)\), Task Orientations factor \((r = -.21, p < .05)\), teacher
presence \((r = .45, p < .01)\), and teacher-directed settings \((r = .58, p < .01)\). Free choice is positively correlated with Peer Interactions factor \((r = .31, p < .01)\), and Task Orientation factor \((r = .38, p < .001)\), and negatively correlated with teacher presence \((r = -.36, p < .01)\), teacher-directed \((r = -.54, p < .001)\), and whole group \((r = -.49, p < .001)\) settings. Transitions are negatively correlated with Task Orientation factor \((r = -.24, p < .05)\), Conflict Interactions factor \((r = -.30, p < .01)\), and free choice \((r = -.33, p < .01)\). Finally, meals are negatively correlated with the free choice setting \((r = -.32, p < .001)\).
Table 19

*Fall 2012 - Pearson Correlations of inCLASS Factors and Activity Settings (n = 133)*

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* p < .05.  ** p < .01.  *** p < .001
### Table 20

**Spring 2013 - Pearson Correlations of inCLASS Factors and Activity Settings (n = 135)**

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* *p < .05. **p < .01. ***p < .001
Table 21
*Children with both Fall 2012 and Spring 2013 data - Pearson Correlations of Spring inCLASS Factors and Activity Settings (n = 89)*

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* * p < .05; ** p < .01; *** p < .001; n = 133

Paired sample t-tests were run between all variable totals fall to spring to check for mean differences. Table 22 shows the results.
Table 22

*Paired Sample t-tests between fall and spring variables (n= 89)*

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<td>11.88 (2.35)</td>
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* p < .05.  ** p< .001

High statistically significant differences, with moderate to high effect sizes, were found in all but one variable, the Conflict Interactions factor. In addition all of the statistically significant mean differences are positive, indicating that the spring scores were higher than the fall scores. However, because there was not a control group, it is not certain as to the cause of these significant differences.

Correlations were run to explore the relationship between the total CLASS scores, activity settings, EECCS and TBS. See Table 23 for details.
Table 23

Pearson Correlations of Total Spring CLASS Scores, Activity Settings and the EECCS (n = 89)

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*p < .05; **p < .01; ***p < .001; n = 89
Statistically significant findings regarding CLASS include: CLASS was positively statistically significantly correlated with free choice \((r = .32, p < .001)\) and negatively with transitions \((r = -.46, p < .001)\). The EECCS instrument scores were positively significantly statistically correlated with TBS scores.

**Conclusion**

In Chapter 4, characteristics of the sample of teachers and children were discovered, results of analysis were described, research hypotheses were analyzed, and supplementary analysis was performed.

Regarding research hypotheses, the first research hypothesis about the relationship of the EECCS and the CLASS found that there was no statistical significance, when controlling for the fall EECCS. The second hypothesis about the relationship of the EECCS and the inCLASS domains was found to have no statistically significant predictors. Further analysis was done to investigate the role of the activity setting portion of the inCLASS instrument in child ratings. Research Hypothesis 3, the relationship between the TBS and the CLASS, showed no statistical significance. Finally, Research Hypothesis 4, the relationship between the TBS and the inCLASS, again demonstrated that the spring TBS is not statistically significant predictor of inCLASS scores. Regarding question 3 about the effect of the EECCS as a moderator in the relationship between the TBS and CLASS, and between the TBS and inCLASS, no statistically significant results were found.

Significant changes were found from fall to spring. There were more developmentally appropriate teacher beliefs and daily schedules, more positive
teacher/child interactions on the CLASS, and more positive peer interactions and more positive engagement with tasks / materials on the inCLASS.

For the Evaluation of the Early Childhood Classroom Schedule (EECCS), statistically significant mean differences were found between fall and spring data, with a shift towards more developmentally appropriate scheduling. The fall/spring difference of the percentage of the classroom schedule set by teachers trended towards teacher perception that more of the classroom schedule was set by administrators, however it was found not statistically significant. A positive statistically significant relationship was found between the EECCS and teacher beliefs (TBS), both fall and spring. An examination of the inCLASS and the EECCS demonstrated low statistically significant associations. Analysis of the CLASS and the EECCS revealed no significant findings.

For the Teacher Belief Scale, no statistically significant results were found between the Teacher Belief Scale and the CLASS. With respect to the inCLASS, there were low statistically significant positive correlations between Teacher Belief Scale scores and the Task Orientation Factor in the fall, and the Peer Interactions factor in the spring.

When correlations were run in supplementary analysis between activity settings, including teacher-directed and teacher presence settings, and the factors of the inCLASS observation tool, and also of the CLASS domains, results revealed numerous statistically significant interactions. Free choice was positively related to Task Orientation, Peer Interaction, and Peer Conflict. Free choice was negatively related to teacher presence and teacher-directed settings, as well as whole group. Whole group was positively related to the teacher-directed activity setting.
Chapter 5 will provide further discussion of the study results, limitations of this study, as well as recommendations for future investigations.
Chapter Four provided the results of the analysis on hypotheses and supplemental questions. The four sections of this chapter provide conclusions, discussion, limitations and suggestions for future research based on these results.

Study participants with complete data consisted of 34 teachers and 89 children in Head Start classrooms in Kansas City, Missouri, a large Midwestern city. Teachers completed demographics and beliefs questionnaires, submitted their classroom schedule, and allowed observers into their classrooms to observe and record teacher-child and peer interactions and child task engagement on two mornings.

To examine the relationships between teacher beliefs, the daily schedule and teacher–child interactions, child engagement, and activity settings, both regressions and correlational analyses were run. A discussion of the conclusions and implications of these analyses is presented next.

Conclusions

Research Hypotheses Conclusions.

Research Hypothesis 1: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom interaction scores, as defined by CLASS.

To examine the relationship between the EECCS and CLASS scores, hierarchical multiple regressions were calculated. When controlling for fall schedule scores, the EECCS did not statistically significantly predict CLASS scores. EECCS only explained 8.3% of the variance in CLASS scores. CLASS is defined as being based on
developmentally appropriate practices (Copple & Bredekamp, 2009), as well as general quality, which has been related to learner centered practices (Curby, Grimm, Pianta, 2010; Downer, Lopez, Grimm, Hamagami, Pianta & Howes, 2012; Early et al., 2006; LoCasale-Crouch et al., 2007; Pianta et al., 2005, 2008), so it is surprising that this study did not find some statistical significance. It is possible that the sample size lowered the power to find an effect. Also, because the EECCS is a self-report instrument, it is subject to the same limitations as any instrument in which participant responses cannot be confirmed directly, which leads to data which can be difficult to interpret. Further study or replication is recommended to investigate why the coefficient of determination was not statistically significant.

Research Hypothesis 2: Early childhood teachers with higher scores of learner-centered use of time, as evidenced by the EECCS, will have higher Head Start classroom child engagement scores, as defined by inCLASS.

Multiple regression analysis with all four factors of the inCLASS (Teacher Interactions, Peer Interactions, Task Orientation, and Conflict Interactions) did not show any statistically significant predictors. There have been no studies found in the literature that have examined this exact interaction, which was the impetus for this investigation. Logic would suggest that teachers who set and follow a daily schedule which is based on developmentally appropriate practices would also have higher inCLASS scores, because the inCLASS measures engagement and interactions, which are features of DAP (Copple & Bredekamp, 2009). It is possible that the sample size in this study limited the power to detect an effect, or that the self-report EECCS generated data that was difficult to
interpret. Consequently, much more research is needed in this important area, because it is crucial that teachers become aware of the specific variables which can impact positive child engagement and interactions, so that they can maximize the children’s time in the classroom.

Research Hypothesis 3: Early childhood teachers with higher developmentally appropriate belief scores, as defined by the TBS, will demonstrate higher Head Start classroom interaction scores, as defined by CLASS.

Results of hierarchical multiple regression indicated that the TBS did not statistically significantly predict CLASS scores. The literature supports there being a relationship between teacher beliefs and CLASS scores in areas of conflict (Hamre, Pianta, Downer & Mashburn, 2008), teacher strategies (Rimm-Kaufman et al., 2006) and teacher–child relationships (Hamre et al., 2012). It is possible that the sample size restricted the power to find significance, or that the researcher’s decision to utilize the TBS as one continuous scale score instead of separating it into dichotomous and opposing scales of developmentally appropriate practice and inappropriate practice, lead to the lack of significant findings. If it is true that beliefs are often seen in teacher’s practice, and because both belief scores and CLASS are based on NAEYC’s developmentally appropriate principles, it is logical that higher DAP belief scores would result in higher CLASS scores. More analysis of belief scale factors and items might also contribute to clearer understanding of this instrument.
Research Hypothesis 4: Children in early childhood classrooms with teachers who have higher developmentally appropriate belief scores, as defined by the TBS, will have higher classroom child engagement scores, as defined by inCLASS.

Statistically significant but very low correlations were found between belief scores and inCLASS Task Orientation factor in the fall, and the Peer Interactions factor in the spring. The Task Orientation factor contains the dimensions of engagement and self-reliance. This significant relationship with teacher beliefs may mean that teachers who value children’s independent work in the classroom set up a daily schedule and routine that fosters this behavior in children, consistent with Oakes & Caruso (1990) investigation into authority sharing. Regarding the relationship of teacher beliefs to the Peer Interactions, it may be possible that teachers who believe that children learn best through social settings, set up the environment in ways to encourage peers to interact, socialize, and converse.

A hierarchical multiple regression analysis was run to examine whether beliefs scores predicted inCLASS scores, with no significant predictors found. It would be reasonable to expect that teacher beliefs impact the inCLASS factors because beliefs have been found to impact teacher practices in general (Hamre, Pianta, Downer & Mashburn, 2008; Rimm-Kaufman et al., 2006 Hamre et al., 2012). Teacher beliefs have been found to be related to learning opportunities, such as interactions with materials and peers (Lara-Cinisomo, Fuligni, Daugherty, Howes, & Karoly, 2009), and the importance of prosocial skills and friendships (Hollingsworth & Winter, 2013). It is unclear as to why correlation results varied fall to spring. Perhaps the very low correlation and the lack of statistically
significant hierarchical multiple regression results indicate that there really was no relationship between the TBS and these inCLASS factors. Further research is needed in these areas to see if perhaps the sample size prevented significant regression results in this area, and to explain the low significant correlation results which varied fall to spring. Investigations into children’s perceptions of school, engagement and relationships would add depth to the literature.

Research Question 3: How does the early childhood classroom schedule moderate the relationship between developmentally appropriate teacher beliefs and Head Start Classroom interactions?

Research Questions 1 and 2 were answered through the four Research Hypotheses above. Research Question 3, however, asked how the classroom schedule (EECCS) moderated the relationship between teacher beliefs (TBS) and teacher interactions (CLASS), and then child interactions with teachers, peers and engagement with materials and tasks (inCLASS).

First, a hierarchical multiple regression analysis was performed with CLASS as the dependent variable. Results showed that the EECCS did not contribute statistically significantly to the explanation of teacher-child interactions (CLASS). Next, a hierarchical multiple regression analysis was performed with inCLASS as the dependent variable. Results showed that the EECCS did not contribute statistically significantly to the explanation of child interactions with teacher, peers, and materials. It is logical that there might have been a relationship between the classroom schedule which is learner-centered and CLASS scores which are based on developmentally appropriate practice, which is
also learner-centered. DAP is an interactive, constructivist view of learning (Copple & Bredekamp, 2009) in which the child is seen as intrinsically motivated and self-directed, constructing his own knowledge through interactions with the social and physical environment. Effective teachers plan activities in their daily schedule to capture the child’s interest and motivation.

**Supplementary analysis conclusions.**

**Fall and Spring.**

Supplementary analyses were done to examine relationships between fall and spring data. Teacher reported beliefs became more developmentally appropriate, as did the classroom schedule. Teacher-child interactions and peer interactions became more positive, and there was more positive engagement by children with tasks and materials. These are very positive gratifying results, which may be the result of the positive coaching the teachers received. Because coaches encouraged teachers to use inquiry-based teaching and projects to enhance children’s engagement and learning, the daily schedule could have changed to include more time for child-centered, inquiry-based activities. Other potential explanations for growth throughout the year include teacher growth throughout the school year, and child maturation. It is a source of encouragement for the field of early childhood education that as teachers and children build relationships throughout the year, the environment becomes more positive and engaging in general. Strong positive relationships and emotional support are essential for lowering stress, as evidenced by cortisol levels, in students, which facilitates greater learning. Hatfield, Hestenes, Kintner-
Duffy, & O’Brien (2013) found that students in classrooms which exhibited higher emotional support displayed a greater decline in cortisol from morning to afternoon. Classroom schedule means were statistically significantly more developmentally appropriate in the spring. This could be due to the positive effect of the coaching teachers received, increased teaching experience, or general knowledge. Also, the teacher may have changed the classroom schedule based on the increased maturity of the children. More research is needed however as to what the possible causal factors might be leading to all of these positive changes. The shift in teacher’s perception of the percentage of the daily schedule that teachers are allowed to set is challenging to interpret. The teachers perceived that they set a clear majority of it in the fall, but not in the spring. Was this a matter of teacher perception only? Was it related to the project and inquiry coaching that teachers received? Or did administrators take over more control of it in actual practice? It is possible that administrators start out the year letting teachers set the schedule in an effort to try them out and grant as much freedom as possible with the schedule. Then, if it becomes apparent that the schedule is not as DAP as it should be, the director steps in and sets stricter guidelines along more DAP lines for the classroom schedule. It is possible that this is a positive result. In other words, despite teacher perceptions, the administration allowed the teachers to manage most of their own school day schedule and activity settings in the beginning, and did not interfere with the teacher’s beliefs regarding enactment of developmentally appropriate practice in the classroom, unless it became necessary. Or that both the teachers and administrators have generally developmentally
appropriate beliefs. More study, with perhaps interviews of teachers and administrators added to provide more detailed data, would help clarify answers to these questions.

Teacher beliefs were found to be statistically significantly related to the classroom schedule score in both fall and spring. The higher the teacher’s developmentally appropriate belief score, the higher classroom schedule score the teacher had. In other words, teachers seemed to demonstrate in this study that they were consistent between their beliefs and their practice. This supports those researchers who have also found that pedagogical beliefs can be seen in practice in the teacher’s classroom (Fang, 1996; Kagan, 1992; McMullen et al., 2006; Pajares, 1992; Vartuli, 1999).

**CLASS and inCLASS.**

This present study was one of the early studies to examine the relationship between the CLASS and the inCLASS observation tools. Williford et al. (2013a) investigated children’s individual patterns of engagement and teachers’ classroom-level interactions, using a multilevel modeling analysis. In the Williford et al. (2013a) study, statistically significant relations between the quality of teacher interactions on the CLASS and increases in school readiness were reported, even when accounting for individual engagement patterns.

In this study’s analysis, statistically significant correlations were found between the CLASS and inCLASS Task Orientation factor in both fall and spring, and with the other three factors, Teacher Interactions, Peer Interactions, and Conflict Interactions in the spring data collection period. These data would suggest that there is a relationship between positive developmentally appropriate teacher-child interactions and individual engagement.
child experiences in the classroom. Multilevel analysis would contribute additional important insights into the nature of these relationships.

*Activity Settings.*

Correlational analyses were performed to see how the activity settings of teacher presence, teacher-directed, whole group, free choice, transitions and meals related to inCLASS factor data. Separate analyses were done for fall, spring and selected 89 children groupings. From fall to spring, many more correlations were evident, and the selected group of 89 children displayed almost identical results with the spring data collection group.

Free choice was consistently seen to be positively correlated with the Task Orientation factor, possibly suggesting that children demonstrate higher levels of engagement when in play situations, than in other activity settings. Free choice was also positively correlated with the Peer Interactions. These data indicate the possibility that free choice type settings foster more peer engagement and the ability to have more task engagement.

The setting of teacher presence, whether or not the teacher was in the area of the activity setting with the child, was significantly related to all four inCLASS factors: Teacher Interactions, Peer Interactions, Task Orientation, and Conflict Interactions. It is important to note that teacher presence was negatively related to Peer Interactions and Task Orientation, but positively related to Teacher Interactions and Conflict Interactions. It would appear that teachers’ presence may inhibit peer interactions, or that teachers would benefit from training in how to enter into peer interactions without disturbing the
flow or stopping them. It is logical that teacher presence was highly correlated with Teacher Interactions, however Conflict Interactions includes conflicts with peers as well as with teachers and Behavior Control, which is a measure of the child’s independent abilities. Possibly teachers move to become more present with children when conflicts occur, or possibly children are better behaved when teachers are present.

In this study, the teacher-directed setting was significantly related only to the Teacher Interactions factor and to teacher presence activity setting. Rimm-Kaufman et al. (2005) found that children’s on-task and off-task behavior, as well as peer aggression varied as a function of the teachers’ choice of classroom setting. In that study, children were more likely to be off-task in less teacher-directed settings such as centers, but also more off-task in whole group than small group. Rimm-Kaufman’s (2005) study suggests that perhaps whole group and teacher-directed teaching places more demands on teacher skills and takes more effort. Cabell, DeCoster, LoCasale-Crouch, Hamre and Pianta (2013) found teachers’ instructional interactions were generally more frequent in large group setting than in free choice meals or routines.

Whole group was positively related to the Teacher Interactions factor and teacher presence and teacher-directed activity settings, and negatively correlated with Task Orientation. This is concerning because if teachers are mostly interacting with children in teacher-directed ways, and that is occurring mostly in whole group settings, and not free choice, then teachers are missing out on valuable relationship building opportunities as well as teaching moments. Teachers who use only whole group instruction, who do not plan for scaffolded instruction (Bodrova & Leong, 2007; Chien et al., 2010; Early et al.,
2010), and who do not take children’s individual needs into account when planning activities, will be less effective in addressing specific growth areas, both academic and social, of each child.

In addition, some significant results were found related to correlations between inCLASS activity settings and CLASS. Free choice and transitions were moderately positively correlated with CLASS scores. This could suggest that developmentally appropriate practices as measured through CLASS are also seen in how teachers empower their children to be independent learners through free choice and in managing transitions.

Discussion

Central to this current investigation are several constructs which have been outlined: Teacher-child relationships, teacher pedagogical beliefs, teachers’ use of time, and classroom activity settings. In addition, several theorists’ work has been highlighted: John Carroll, Lev Vygotsky, Robert Pianta.

Foundational to all classroom work is the importance of relationship building between teachers and children. Because relationships take time to develop, and because they are so important, it is imperative that teachers give sufficient time, energy, and focus to their development from the first day of school. An empathetic, insightful teacher is a large part of creating a relationship with children which supports them in stressful situations and helps them become more effective learners academically (Birch & Ladd, 1997; Curby, 2009; Hamre & Pianta, 2005; Howes, Burchinal, Pianta, Bryant, Early, Clifford & Barbarin, 2008; Howes et al., 2013; Maldonado-Carreno & Votruba-Drzal, 2011; Mashburn et al., 2008; Pianta, LaParo, Cox & Bradley, 2002). A reciprocal
supportive relationship encourages children to do more higher order thinking (Cadima, Leal & Burchinal, 2010), helps children acquire the skills necessary for school success (Pianta & Stuhlman, 2004), and allows them to enjoy more positive school adjustment during elementary school (Baker, 2006; Pianta, Hamre & Stuhlman, 2003).

Pianta’s Contextual Systems Theory (Pianta & Walsh, 1998) supports the importance of a young child’s relationships in context. In his School System, the primary influence is the classroom, which in turn is influenced by the school as a larger entity, and then beyond to the neighborhood, community, jobs, regulatory agency, culture, ethnicity, location, and finances. The implications of Pianta’s system are that there are many influences on a child, and that greater learning will take place in natural settings, when it is culturally relevant. Specifically related to this study, the reciprocal interactions between students and their environment of the classroom, including the teacher, serve as proximal processes, which are the mechanism of development. (Bronfenbrenner & Morris, 2006). These occur in every moment of a child’s daily classroom experience, and are experienced uniquely by every individual child, not as an average rating, so it is crucial that researchers aim to get as close to that singular experience as possible.

In a positive outcome of this study, positive results on the Emotional Support domain of the CLASS and the Teacher Interactions domain of the inCLASS indicate that there was essentially a positive supportive climate for children in the observed classrooms, consistent with national findings on these domains.

Teachers’ pedagogical beliefs, specifically related to developmentally appropriate practice (DAP) in this study, were found to be moderately related to practice, in terms of
positive correlations with the classroom schedule teachers created, and also with generally positive CLASS and inCLASS observations. The more DAP teachers’ beliefs, the more DAP interactions were seen in the classrooms. This is consistent with those researchers like McMullen et al. (2006) who found that child-directed choice time, emergent literacy, and language development activities were related to more DAP beliefs. Conversely when consistent routines, organized classroom arrangements, and preplanned curriculum and teacher directed learning were the dominant behaviors in the classroom, the teacher reported more traditional or academic oriented beliefs.

How early childhood teachers choose to use their time in the classroom reflects the values teachers hold (Gettinger, 1995) and affects the quality of their interactions (Chien et al., 2010; Mitchell, Foulger, Wetzel & Rathkey, 2009; Pianta, Howes, Burchinal, Bryant, Clifford, Early, & Barbarin, 2005; Wien, 1996), as well as the quality of the overall learning experience (Downer, Rimm-Kaufman & Pianta, 2007; Early et al., 2010). In this study, the Evaluation of the Early Childhood Classroom Schedule (EECCS) was found to be positively correlated with teacher beliefs, in both fall and spring, and had low positive statistically significant correlations with the inCLASS factors. The more developmentally appropriate the classroom schedule, the more developmentally appropriate teacher beliefs were professed by teachers, and the more engagement and interactions shown with inCLASS observations in the classroom. When controlling for fall EECCS scores, a small positive statistically significant relationship was observed between the EECCS and teacher-child interactions on the CLASS.
Carroll’s (1963) Model of School Learning described three interactive variables which can be expressed in terms of time: Aptitude, which determines the amount of time a student needs to learn; opportunity to learn, the amount of time allowed by the teacher and the classroom schedule; and perseverance, the amount of time a student is willing to spend on a task. Carroll’s model suggests that teacher behaviors, such as planning, management and instruction, lead to the student behaviors of involvement, coverage, and success, which in turn lead to student achievement (Squires, Huiit & Segars, 1981). This study investigated Carroll’s (1963) “opportunity to learn” variable, in terms of the impact of the classroom schedule on observations of engagement and interactions. Because it is the classroom teacher who ultimately is in control of the learning environment and time schedule of the day, it is the teacher who is a major factor in a child’s opportunity to learn and subsequent learning.

According to Vygotsky (1978), learning is a self-directed activity or a co-constructed one with teachers and students, as contrasted with solely being a teacher-directed activity. So, children who are able to learn more in social contexts, interacting and using language with their peers, and being supported by teachers with questions to extend learning, will be able to draw on past experience to facilitate their cognitive construction (Trawick-Smith & Dziurgot, 2011). In this study, observers reported very few small group or individual activity settings occurring, so much so that they were dropped from the analysis. Is it that teachers are only scheduling large group and free choice time, to the apparent exclusion of individual and small group activities settings in the classroom? Or is it that some of the settings commonly addressed in classrooms and in
recent research overlap. For example, teachers sometimes use free choice time to bring together a small group, or work individually with children. Is the individual setting necessary if free choice time is offered? So perhaps definitions of the activity settings need to be written in such a way as to be clear and mutually exclusive. More discussion in the field is needed as well.

In addition, the teacher presence and teacher directed activity settings showed a negative correlation with free play, and a positive correlation with whole group. Optimal learning happens in social situations with peers and adults, with intentional mediation and support (Bodrova, 2008). Were teachers intentionally avoiding free play situations, and focusing only on whole group times? Were they aware of the benefits of “scaffolded” interactions (Wood, Bruner and Ross, 1976)? Winsler & Carlton (2003) cautioned that teachers need to be intentional in becoming directly involved in children’s activities.

Vygotsky’s followers believed that the most effective learning occurs with supported differentiated instruction in social situations in the classroom, (Bodrova & Leong, 2007; Winsler & Carlton, 2003) Teachers who use only whole group instruction, who do not plan for scaffolded instruction (Bodrova & Leong, 2007; Chien et al., 2010; Early et al., 2010) and who do not take children’s individual needs into account when planning activities, will be less effective in addressing specific growth areas, both academic and social, of each child. Teachers may be missing rich opportunities for co-constructing learning by scheduling the majority of the classroom day in whole group and centers.
Bodrova & Leong’s (2007) *Tools of the Mind* curriculum, based on Vygotskian principles, focuses on self-regulation, a skill which the teacher can foster. It is the role of the teacher to help children become masters of their own behavior, transforming their impulsive behavior into self-controlled actions, as well as to help them adjust to the social situation of school. These impulsive or controlled behaviors have been shown to affect the teacher-child relationship in many ways (O’Connor & McCartney, 2007). In this study, the Self-Reliance dimension of the inCLASS is part of the Task Orientation domain and factor. Very low statistically significant positive correlations were found between teacher interactions and the Task Orientation domain. So, it would appear that as children became more engaged in tasks and were able to work more on their own in the classroom, interactions with teachers were observed to be more positive as well. Analysis of the Evaluation of the Early Childhood Classroom Schedule (EECCS) also showed some significant related findings. There were low positive statistically significant correlations between the EECCS and both the factor and domain of Teacher Interactions of the inCLASS. The more developmentally appropriate the classroom schedule, the more positive the teacher-child interactions. The EECCS items which form part of the basis of developmentally appropriate practices include more child decision making and self-reliance.

The supplemental analysis in this study provided some solid insights into understanding of how activity settings might function as promoters or inhibitors of child engagement in the classroom. It was expected and it was found that there might be significant correlations between specific individual activity settings and inCLASS factors.
In previous research, the quality of children’s interactions or learning have been found to differ depending upon the activity setting that children experience (Cameron, Connor & Morrison, 2005; Chien et al., 2010; Fuligni, Howes, Huang, Hong & Lara-Cinisomo, 2012; Piasta & Wagner, 2010). Booren, et al.’s (2012) results showed interactions with teachers were higher in more structured settings, but interactions with peers and tasks were more frequent in more child-directed settings. Early et al. (2010) found that a balance is needed between teacher-directed and child-initiated activities. Williford, et al. (2013a) found that when teachers engage in highly responsive interactions across the children in their classrooms, children may develop more equitable school readiness skills, regardless of individual engagement patterns. Activity settings have been related to child engagement (Ling & Barnett, 2013; Williford et al., 2013b), teacher-child relationships (Howes, Fuligni, Hong, Huang & Lara-Cinisomo, 2013), small groupings (Justice, McGinty, Zucker, Cabell, Piasta & Wagner, 2013), “orient-organize” time (Cameron, Connor & Morrison, 2005, p. 61), and outdoor time (Tandon, Saelens, Zhou, Kerr & Christakis, 2013). Each provides specific learning opportunities for children. This study found similar results that activity settings do matter in engagement and interaction outcomes for children.

Rimm-Kaufman’s (2005) findings along with the results of this present study raise questions about the definition of child engagement in the classroom. Children’s on-task behavior is not necessarily an indicator of quality learning. Children can be fully engaged and observed as being on-task, but minimal learning is occurring, because the task is rote
or not developmentally appropriate for that individual child. Careful examination of this construct is advised.

**Limitations**

Several factors limited this investigation, including, number of study participants, child attrition, and observational methods. This study utilized hierarchical multiple regression and correlation analyses to yield results. To more accurately represent the presence of children nested in classrooms with teachers, a multilevel model would need to be applied to the analysis. However, this was limited due to the researcher’s knowledge of statistics. A larger number of participants would have enabled a factor analysis of the instruments, which would have contributed to understanding of results.

There was significant attrition from fall to spring among child participants. Of the 135 children who were observed in the fall, only 89 remained to be observed in the spring. In addition, there were 46 children, who were not selected for observations in the fall, but who were observed in the spring. These missing 44 children from the fall observation period and 46 children from the spring observation were either just not selected, were no longer enrolled in the center, or were in other supplementary programs during the morning visits. There was a statistically significant difference found between the age groups of the excluded children, with the fall and spring excluded children being younger than the final group of 89 children who were part of the full analysis. Speculation as to what the effects of using a somewhat older group for the analysis could include that perhaps the scores might have been lower if the excluded younger children had been part of the final sample, just due to maturity of children. There were no controls available in this study for
minimizing this attrition. Initial study design goals were set with the intent that 75% (3) of the originally observed four children in the fall would be in attendance at the spring observation cycle. In actuality, only 67% of the children remained. Future researchers would be cautioned to expect large attrition rates in some low-income populations.

The study design did not include a control group, so any mean differences and changes, whether for whole instruments or specific items or dimensions, reported from fall to spring cannot be attributed for certain to any specific causal relationship. Possible reasons for this growth could include teacher factors such as the effect of project approach coaching, or other unknown new ideas the teachers might have put into place in the classroom. In addition, child maturation or increased comfort with the classroom setting and the teacher over the course of the school year or other unknown child factors may also have contributed to an increase in mean scores from fall to spring.

Four short ten-minute inCLASS and four twenty-minute CLASS observations represent the limits of what the total possibilities are for teacher-child interactions and child engagement. Snapshot-style observations encompass just small segments of time and do not fully represent the fluidity of the school day. Future researchers might consider a more continuous look at the whole morning or class day or more frequent observations.

Finally, this study used a teacher report belief survey. Reported beliefs, actual practice, and actual child engaged practice are each incomplete ways of looking at teacher practices, but in combination provide a richer picture of children’s experiences in the classroom. However, as many researchers have found, the self-report nature of the Teacher Belief Survey does not tell the whole story. Teachers may have interpreted the
items in different ways or marked items which were, for unknown reasons, inconsistent with their intent (Dobbs & Arnold, 2009; Northrup, 1996). With self-report instruments, it is always possible that the teachers may create cover stories and answer items in ways that they expect the researcher wants to hear, based on understandings of current concepts in the early childhood education field. Teachers may be unclear in their beliefs or unaware of some beliefs. In addition to expected individual differences between teachers, they will also have a variety of educational backgrounds and experience, possible different motivations and abilities in completing the beliefs scale, and potentially differing interpretations of questionnaire items. A teacher interview would have helped support this survey.

**Suggestions for Future Research**

In addition to the suggestions above that future studies include a larger initial sample, a control group, and some check on the teacher self-report type belief survey, other recommendations come to mind. The roles of teacher experience, age, race, and gender were not fully explored in this investigation; neither were other context variables, such as group size or school ethnographic variables. How do these important context variables relate to the daily schedule and to child outcomes? How do results differ with more diverse populations of both teachers and children regarding personal characteristics and SES? Needed specifically is a comparison of Head Start low SES population with others, to see how the developmentally appropriate beliefs, as well as the daily schedule, differentially impact these populations.
This was a mixed methods study. The TBS and the EECCS are quantitative instruments. Although the CLASS and inCLASS yield quantitative data, observation is fundamentally a qualitative, subjective process. The addition of other qualitative elements, including interviews of participating teachers or the collection of field notes and artifacts, would have added much to the richness of this, or any, investigation. Interviews personalize and humanize otherwise impersonal quantitative data (Lincoln & Denzin, 2003). Qualitative investigations would have allowed the researcher to look beyond numbers into the hearts and minds of participants, in rich, flexible, focused ways. What additional insights could interviews or discussions with teachers have added into why changes were occurring in the daily schedule? How can researchers clarify the role of administrators? How could follow up questions asked of teachers following the collection of quantitative data supplement the learning regarding classroom relationships and child engagement?

However, qualitative studies are not without limitations, such as the often small number of participants, the inability to generalize data to other settings, or to come to definitive conclusions. So, it is suggested that future research be mixed methods and include teacher and even perhaps child interviews to provide additional sources of data and clarify perceptions of concepts and data collection.

Because of time limitations, this study did not include any academic outcomes for children, such as assessments of math or language arts, nor did it utilize any authentic measures of assessment, such as portfolios, but instead relied on the previous research to make the connection between high CLASS scores and high academic outcomes.
Operationalizing Carroll’s theories, Gettinger (1984a) investigated reading and spelling in elementary students and found that time needed for learning directly accounted for 91% of the explained variance in student learning. Gettinger (1984a) found that reducing opportunity to learn negatively impacted achievement. The field would benefit from research that is able to correlate authentic outcomes measures of children’s learning with the daily schedule and teacher beliefs.

Does experience change teachers’ implementation of their beliefs longitudinally? It would be recommended that researchers compare teachers at a variety of points along their teaching career regarding beliefs and their impacts on child learning, and examine the impacts of outside pressures and changing settings on practice.

What are the upper limits of the capabilities of the children in a research study? A limitation of the inCLASS observation tool in telling the whole story of child engagement and involvement with teachers, peers, and materials, is that the child is only able to do what the teacher offers or makes available. So, the inCLASS is contingent on the teacher’s planning, scheduling, and providing rich materials for possible interaction. If one of these is not in place, then the children will be limited in the choices available. Consequently a child may not be able to exhibit the highest possible engagement or interaction because of lack of teacher contact or sufficient materials. But it is crucial that children be supported and encouraged to be their best and learn as much as they can in any situation. It is equally important to ensure that any research is painting an accurate picture of authentic experiences in the classroom, and capturing the diversity and range of learning. So, what
variables, environmental features, or additional teacher information should be collected in future studies to assure this is happening?

Although it was found that the activity setting of the classroom was correlated with several dimensions of the inCLASS observation tool, much more research is needed in this area, especially in the activity setting of free choice and peer interactions, or the characteristics and ramifications of children spending long sessions in whole group. Because the teacher has such an effect on the interactions and engagement in the classroom, it would be important to keep investigating both the CLASS and inCLASS tools in tandem, and the free choice and whole group settings in particular.

Educational Significance

The educational significance of this study is to supplement the literature in the field of early childhood education on the impact of teacher beliefs and use of time on teacher-child relationships and child engagement with adults, peers, and tasks in classrooms. This study sought to enhance understanding of how the teacher’s use of time, as demonstrated through the daily classroom schedule, moderates the relationship between teacher beliefs in developmentally appropriate practice and teacher–child interactions and child engagement. In addition it is hoped that the significant results from this study will have ramifications beyond contributions to the literature. Some researchers (Marcon, 1999; Stipek & Byler, 1997) have found that children in urban schools often experience a more teacher-directed learning environment due to administrative accountability or parental pressures. With the population in this study, these data appear to show a tendency that a learner-centered classroom can lead to higher engagement and interaction outcomes.
for children. If teachers’ more developmentally appropriate beliefs can be shown to be predictive of more positive teacher-child interactions and engagement, and if a learner-centered classroom schedule enhances this effect, as was found in this study, then these practices can have implications for other early childhood classrooms in addition to Head Start classrooms.
APPENDIX A

INSTRUMENT COPIES
Demographic information

1) What is the highest educational level you have completed?

☐ H.S. or GED
☐ Some early childhood college courses
☐ Some college courses
☐ CDA
☐ BA/BS in early childhood
☐ BA/BS other
☐ MA/MS in early childhood
☐ MA/MS other
☐ Ed. Sp. in early childhood
☐ Ed. Sp. other
☐ Ph.D./Ed.D. in early childhood
☐ Ph.D./Ed.D. other
☐ Other: (please specify)

________________________

2) Do you currently hold certification?  ☐ Yes  ☐ No

2a) If yes, please mark all certifications that are held

☐ Early Childhood
☐ Early Childhood/Elem.
☐ Other (please specify) ________________________

Elementary
Secondary

3) How long have you been a kindergarten teacher? _____ years _____ months

4) Your Age

☐ 18-23  ☐ 36-41  ☐ 54-59
☐ 24-29  ☐ 42-47  ☐ 60+
☐ 30-35  ☐ 48-53

5) Gender

☐ Male  ☐ Female

6) Race

☐ Native American  ☐ Asian
☐ Black  ☐ Hispanic
☐ White  ☐ Other: _______________________

7) In what kindergarten transition practices did your school participate? Please mark all that apply:

☐ a. Information about kindergarten program is phoned or sent home to parents.
☐ b. Preschool children spend time in kindergarten classrooms.
☐ c. School days are shortened at the beginning of the school year.
☐ d. Parents and children visit kindergarten prior to the start of the school year.
☐ e. Teachers visit student’s homes at the beginning of the school year.
☐ f. Parents attend an orientation session prior to the school year.
☐ g. Other (please indicate practice).

Thank You

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### Evaluation of the Early Childhood Classroom Schedule

<table>
<thead>
<tr>
<th><strong>Integrated Curriculum / Sufficient Activity Time</strong></th>
<th><strong>Code</strong>: _____ _____ _____</th>
<th>There is an AM and PM block of time for subject areas to be integrated through children’s activities. (At least 30 minutes allotted for center time / free choice time).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time segments are divided by Subject matter</td>
<td></td>
<td><strong>Independent Learning Strategies</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teacher makes all the decisions on how time is used.</td>
</tr>
<tr>
<td></td>
<td><strong>Independent Learning Strategies</strong></td>
<td>Children do not have a choice to leave the activity.</td>
</tr>
<tr>
<td></td>
<td><strong>Flexible Grouping Practices</strong></td>
<td>More than 50% of the activities are large group oriented.</td>
</tr>
<tr>
<td></td>
<td><strong>Flexible Grouping Practices / Engaged Learning Time</strong></td>
<td>Children stay in large groups one or more times a day for longer than 20 minutes Pre-K 30 minutes K &amp; 1 40 minutes 2 &amp; 3.</td>
</tr>
<tr>
<td></td>
<td><strong>Active Participation</strong></td>
<td>Children stay in sedentary activities more than 50% of the school day.</td>
</tr>
<tr>
<td></td>
<td><strong>Physical Needs</strong></td>
<td>Children have at least 20 minutes of outdoor / large muscle play daily.</td>
</tr>
<tr>
<td></td>
<td><strong>Physical Needs</strong></td>
<td>Bathroom times are whole group.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children go to the bathroom when they need to.</td>
</tr>
</tbody>
</table>

Vartuli and Everett, 1992, Revised 2/9/93, 2012
**TYPICAL CLASSROOM ACTIVITY SCHEDULE**

Think back to the most typical day in the last week. Use this form to fill in your schedule for that day, noting major activities/materials available in each time block. Feel free to divide or overlap time periods as appropriate to your classroom schedule. If you teach separate morning and afternoons sessions, you only need to list one.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity Description</th>
<th>Are children moving or sitting? M or S</th>
<th>Individual, small group or large group? IN, SG or LG</th>
<th>Teacher or child makes decision to participate? T or C</th>
<th>Are children free to leave the activity? YES or NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td></td>
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</tr>
<tr>
<td>8:15</td>
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<td>8:30</td>
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<td>8:45</td>
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<td>11:00</td>
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<td>3:45</td>
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<tr>
<td>4:00</td>
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</table>
How much flexibility do you have in setting your daily schedule? (Circle one)

<table>
<thead>
<tr>
<th>Complete flexibility</th>
<th>Considerable flexibility</th>
<th>Some flexibility</th>
<th>No flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>I set the schedule</td>
<td>I set 50 - 75% of the schedule</td>
<td>I set 25 - 50% of the schedule</td>
<td>The schedule is all set for me</td>
</tr>
</tbody>
</table>

---X---X---X---X---

What parts of the daily schedule are set for you?

What parts of the daily schedule do you set?

Please explain your procedures for daily routines of bathroom:

____________________________________________________________________________________

____________________________________________________________________________________
<table>
<thead>
<tr>
<th>Positive Climate</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships</td>
<td></td>
</tr>
<tr>
<td>Positive affect</td>
<td></td>
</tr>
<tr>
<td>Positive communication</td>
<td></td>
</tr>
<tr>
<td>Respect</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative Climate</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative affect</td>
<td></td>
</tr>
<tr>
<td>Punitive control</td>
<td></td>
</tr>
<tr>
<td>Sarcasm/disrespect</td>
<td></td>
</tr>
<tr>
<td>Severe negativity</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher Sensitivity</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td></td>
</tr>
<tr>
<td>Addresses problems</td>
<td></td>
</tr>
<tr>
<td>Student comfort</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regard for Student Perspectives</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility and student focus</td>
<td></td>
</tr>
<tr>
<td>Support for autonomy and leadership</td>
<td></td>
</tr>
<tr>
<td>Student expression</td>
<td></td>
</tr>
<tr>
<td>Restriction of movement</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior Management</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear behavior expectations</td>
<td></td>
</tr>
<tr>
<td>Proactive</td>
<td></td>
</tr>
<tr>
<td>Redirection of misbehavior</td>
<td></td>
</tr>
<tr>
<td>Student behavior</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Productivity</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximizing learning time</td>
<td></td>
</tr>
<tr>
<td>Routines</td>
<td></td>
</tr>
<tr>
<td>Transitions</td>
<td></td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructional Learning Formats</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective facilitation</td>
<td></td>
</tr>
<tr>
<td>Variety of modalities and materials</td>
<td></td>
</tr>
<tr>
<td>Student interest</td>
<td></td>
</tr>
<tr>
<td>Clarity of learning objectives</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concept Development</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis and reasoning</td>
<td></td>
</tr>
<tr>
<td>Creating</td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td></td>
</tr>
<tr>
<td>Connections to the real world</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality of Feedback</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaffolding</td>
<td></td>
</tr>
<tr>
<td>Feedback loops</td>
<td></td>
</tr>
<tr>
<td>Prompting thought processes</td>
<td></td>
</tr>
<tr>
<td>Providing information</td>
<td></td>
</tr>
<tr>
<td>Encouragement and affirmation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language Modeling</th>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent conversation</td>
<td></td>
</tr>
<tr>
<td>Open-ended questions</td>
<td></td>
</tr>
<tr>
<td>Repetition and extension</td>
<td></td>
</tr>
<tr>
<td>Self- and parallel talk</td>
<td></td>
</tr>
<tr>
<td>Advanced language</td>
<td></td>
</tr>
</tbody>
</table>
Name: __________________________________
ID # __________________________________
Date: __________________________________

# EARLY CHILDHOOD TEACHER BELIEFS SCALE  
Developed by Diane Burts  
School of Human Ecology, Louisiana State University  

Please respond to the following items by checking the number that most nearly represents YOUR PERSONAL BELIEFS about the importance of that item in an early childhood classroom.

<table>
<thead>
<tr>
<th></th>
<th>Not at all Important</th>
<th>Not very Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
<th>Extremely Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. As an evaluation technique in an early childhood classroom, standardized tests are ________________.

2. As an evaluation technique in an early childhood classroom, teacher observation is ________________.

3. As an evaluation technique in an early childhood classroom, performance on worksheets and workbooks is ________________.

4. It is ______________ for early childhood classroom activities to be responsive to individual differences in interest.

5. It is ______________ for early childhood classroom activities to be responsive to individual differences in development.

6. It is ______________ that each curriculum be taught as separate subjects at separate times.
7. It is ___________ for teacher-pupil interaction in an early childhood classroom to help develop children’s self-esteem and positive feeling toward learning.  

8. It is ___________ for children to be allowed to select many of their own activities from a variety of learning areas that the teacher prepared (writing, science center etc).  

9. It is ___________ for children to be allowed to cut their own shapes, perform their own steps in an experiment, and plan their own creative drama, art, and writing activities.  

10. It is ___________ for children to work silently and alone on seatwork.  

11. It is ___________ for children in early childhood classrooms to learn through active exploration.  

12. It is ___________ for children in early childhood classrooms to learn through interaction with other children.  

13. Workbooks and/or ditto sheets are _________ to early childhood classrooms.  

14. Flashcards (words, basic facts) are _________ to an early childhood classroom for instructional purposes.  

15. The basal reader is ___________ to the early childhood reading program.
<table>
<thead>
<tr>
<th></th>
<th>Not at all Important</th>
<th>2 Not very Important</th>
<th>3 Fairly Important</th>
<th>4 Very Important</th>
<th>5 Extremely Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>In terms of effectiveness, it is _________ for the teacher to talk to the whole group and make sure everyone participates in the same activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>In terms of effectiveness, it is _________ for the teacher to move among groups and individuals, offering suggestions, asking questions, and facilitating children's involvement with materials and activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>It is _________ for teachers to use their authority through treats, stickers, and/or stars to encourage appropriate behavior.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>It is _________ for teachers to use their authority through punishments and/or reprimands to encourage appropriate behavior.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>It is _________ for children to be involved in establishing rules for the classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>It is _________ for the children to be instructed in recognizing the single letters of the alphabet, isolated from words.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>It is _________ for children to follow directions to complete a class art project.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>It is _________ for children in early childhood classrooms to form letters words, and numbers correctly on a printed page.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>It is _________ for children to have stories read to them individually and/or on a group basis, read silently or read with peers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td>Not at all Important</td>
<td>Not very Important</td>
<td>Fairly Important</td>
<td>Very Important</td>
<td>Extremely Important</td>
<td></td>
</tr>
</tbody>
</table>

25. It is ____________ for children to write their own stories.

26. It is ____________ for children to see and use functional print (telephone, dictionary, books, magazines, etc.) and environmental print (class graphs and charts, etc.) in early childhood.

27. It is ____________ for children to participate in drama and creative dramatics.

28. It is ____________ for children to talk informally with adults.

29. It is ____________ for children to write using inventive spellings.

30. It is ____________ to provide many opportunities to develop social skills with peers in the classroom.

31. It is ____________ that math be integrated with all other curricula areas.

32. In teaching health and safety, it is ____________ to include a variety of activities throughout the school year.

33. In the classroom setting, it is ____________ for the child to be exposed to multicultural and nonsexist activities.
34. It is ____________ that outdoor time has planned activities.

35. Input from parents is _______________.

36. It is _____________ for children to know their sight words as they learn to read.

37. It is _____________ for children to spell correctly before they are allowed to create a story.

August 2012
### Individualized Classroom Assessment Scoring System (inCLASS)

**Observer:** Double? Y/N  Lead? Y/N  Visit: Cycle: Date: / / Start Time: End: __

<table>
<thead>
<tr>
<th>Activity Setting (check all that occur; circle primary):</th>
<th>Physical Setting: (check all that occur; circle primary):</th>
<th>Number Present (count at end of cycle # in the room):</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Whole</td>
<td>☐ Classroom</td>
<td>Adults:__</td>
</tr>
<tr>
<td>☐ Small</td>
<td>☐ Outside</td>
<td>Children:__</td>
</tr>
<tr>
<td>☐ Individual</td>
<td>☐ Other:</td>
<td>Teacher behaviors:</td>
</tr>
<tr>
<td>☐ Free Play</td>
<td></td>
<td>Teacher is part of activity ☐ YES ☐ NO</td>
</tr>
<tr>
<td>☐ Routines/Transitions</td>
<td></td>
<td>Activity is teacher-directed ☐ YES ☐ NO</td>
</tr>
<tr>
<td>☐ Meals/Snacks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions:**

<table>
<thead>
<tr>
<th><strong>TEACHER INTERACTIONS</strong></th>
<th><strong>Description:</strong></th>
<th><strong>Code</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Engagement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Attunement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Proximity-Seeking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Shared Positive Affect</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initiates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Sustains</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Varied Purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conflict</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Aggression</td>
<td></td>
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</tr>
<tr>
<td>- Neg. Affect</td>
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</tr>
<tr>
<td>- Attention-seeking</td>
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<tr>
<td>- Noncompliance</td>
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</table>

**SOCIAL INTERACTIONS**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>- Proximity-Seeking</td>
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<tr>
<td>- Shared Positive Affect</td>
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</tr>
<tr>
<td>- Cooperation</td>
<td></td>
</tr>
<tr>
<td>- Popularity</td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>- Initiates</td>
<td></td>
</tr>
<tr>
<td>- Sustains</td>
<td></td>
</tr>
<tr>
<td>- Varied Purposes</td>
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**Assertiveness**

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<thead>
<tr>
<th><strong>Description:</strong></th>
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</thead>
<tbody>
<tr>
<td>- Initiation</td>
<td></td>
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<tr>
<td>- Leadership</td>
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**Conflict**

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<td>- Attention-seeking</td>
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**Engagement**

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<td>- Active Engagement</td>
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**Self-Reliance**

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**Behavior Control**

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<td>- Matches Expectations</td>
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<td>- Physical Awareness</td>
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APPENDIX B

SSIRB APPROVAL
Teacher Consent for Participation in a Research Study  
**Head Start Coaching Project**

- **Investigators**
  You are being asked to participate in the Head Start Coaching Project research study conducted by Sue Vartuli Associate Professor and Maggie Holley Doctoral Candidate in Curriculum and Instruction at the University of Missouri-Kansas City.

- **Participants**
  The participants in this study will consist of teachers and coaches working in Head Start classrooms in the Kansas City metropolitan area.

- **Purpose**
  The purpose of this research study is to investigate the effectiveness of coaching strategies on teacher-child interactions and child outcomes in Head Start Classrooms.

- **Methods/Procedures**
  Teachers will be recruited for the coaching project. Participation in this study involves completing each item of the following surveys and forms September 2012 and May 2013: Teacher Belief Scale; Stages of Concern Questionnaire (Online); Curriculum Fidelity Form; **Typical Classroom Schedule** and the demographic information form. The completion of the paperwork will take approximately 30 minutes. Teachers will complete two portfolio items and continuums per classroom for inter-rater agreement on child assessment measures fall and spring. **Four of the children in your classroom will be randomly selected to be observed using the inCLASS observation tool.** Participants will also be observed using the Classroom Assessment Scoring System (CLASS).

- **Voluntary Participation**
  Participation in this study is voluntary at all times. You may choose to not participate or to withdraw your participation at any time. Deciding not to participate or choosing to leave the study will not result in any penalty or loss of benefits to which you are entitled.

- **Fees and Expenses**
  You are not responsible for any of the expenses associated with this study.

- **Compensation**
  There will be no compensation for participation in this study.

- **Risks**
  There are no known risks associated with your participation in this study. Should you feel uncomfortable participating at any time you may discontinue your participation at any time. Data collected prior to discontinuation will be included in the research.

- **Benefits**
  The information that is gathered as a result of this research study will benefit the Head Start Programs as a whole as they reflect upon professional development opportunities for teachers. The study will also improve the understanding of how instructional interactions affect the outcomes of the children. Findings from this study may assist in the creation of professional development opportunities that will target skills needed by teachers to effectively increase the outcomes of children in Head Start and other early education and care programs.

- **Alternatives to Study Participation**
The alternative to participating in this study is to not participate.

- Confidentiality
All the information gathered for this study will remain confidential. All of the surveys, forms and observation records will be kept in a locked cabinet in a locked office. Although the information gathered during this study may be utilized during professional presentations or may be published in professional journals, the identity of the participants will remain confidential.

"While every effort will be made to keep confidential all of the information you complete and share, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study for quality improvement and regulatory functions."

- In Case of Injury
"The University of Missouri-Kansas City appreciates the participation of people who help it carry out its function of developing knowledge through research. If you have any questions about the study that you are participating in you are encouraged to call Sue Vartuli, the investigator, at 816 235 2470

"Although it is not the University’s policy to compensate or provide medical treatment for persons who participate in studies, if you think you have been injured as a result of participating in this study, please call the IRB Administrator of UMKC’s Social Sciences Institutional Review Board at 816-235-1764.

- Questions
At any time you have questions about this research, please contact Sue Vartuli at the University of Missouri-Kansas City, Room 309 School of Education, 615 E 52nd Street, Kansas City, MO 64110 or you may call her at 816 235 2470 or e-mail at vartulis@umkc.edu.

- Consent to Participate
By signing your name below you are indicating that you have read this form and you agree to participate in this study. You will receive a copy of this form.

Printed name of Participant: ______________________________________

Signature of Participant: ______________________________________

Date: ______________

Signature of Researcher: ______________________________________
RESEARCH PROGRESS REPORT

PROTOCOL #: TRB Protocol # SS10-33 DATE OF LAST APPROVAL:

TITLE OF STUDY: Head Start Coaching Project Year Five

Principal Investigator: Sue Vartuli, Ph. D.
Associate Professor Curriculum and Instructional Leadership
Room 309 School of Education 615 East 52nd Street UMKC KC, MO. 64110
816 235 2470
vartulis@umkc.edu
FAX: 816 235 270

Student Investigator: Maggie Holley Doctoral Candidate
Room 309 School of Education 615 East 52nd Street UMKC KC, MO. 64110

Faculty Supervisor(s) (If PI is Student): (Name, campus address, phone #, email & fax)

Consider this report: ☑ Final Report ☑ Request for Amendment ☑ Request for Continuing Review (Check all that apply)

For SSIRB Use Only – Please Leave Blank

Committee Action: ( ) Approved ( ) Approved with Restrictions
Level of Review: ( ) Exempt ( ) Expedited ( ) Full Review

****************************************************************************************************************************

1. Date Study Began: October 10, 2010 If Completed, Date:

2. Current Status of the Research: (check only one of a-f below):
   a. ☐ Still in Proposal Stage (no research participants enrolled, no research initiated)
   b. ☑ On-going

Form Revision Date: 5/25/11
Are research participants still being enrolled in the study? ☑ Yes ☐ No
Have all enrolled research participants completed study participation? ☐ Yes ☑ No
Is the research active only for long-term follow-up of enrolled participants? ☐ Yes ☑ No
We will add new teachers and continue to work with the teachers and coaches already in the project for the fifth year of the study.

c. ☑ Data analysis only

Please Note if you do not plan to collect additional data and the data that you are analyzing has no links to identifiable information (identifiable information includes videotapes, photographs, code lists, etc.) you may submit this form as a Final Report.

☐ Data has link to identifiers ☑ Data has no link to identifiers

d. ☐ Completed Date of Completion:

e. ☐ Withdrawn Date of Withdrawal:

f. ☐ Other (explain)

3. If you are requesting a continuing review describe the research activities of the preceding year. See attached preliminary report. A full report for the 2011 – 2012 year will be submitted in August.

4. If you are requesting a continuing review explain why you are requesting time to complete this research project. We will be continuing the project and increasing the number of teachers and coaches in the project. We are moving the project to scale.

5. Has the study been modified from the original protocol? ☑ Yes ☐ No (If Yes, list in detail all the changes/amendments approved since the initial protocol was submitted.)

6. Has approval for this study expired ☐ Yes ☑ No (If Yes, answer the questions below.)

a. Why did approval lapse?

b. What will you do differently in the future to prevent this from happening again?
c. Were any additional research participants enrolled or data collected after the expiration date? □ Yes □ No (If Yes, describe all activities that continued including number of participants involved and any adverse event or incidents that occurred after expiration of approval.)

NOTE: If renewal of the study does not occur before the expiration date of study approval ALL enrollment of participants and DATA COLLECTION must stop at the expiration date. Procedures and treatment needed for the safety of participants should continue but data collected during this time period CANNOT be used for research purposes.

7. Amendments

Are you requesting a further modification with this submission? (X) Yes ( ) No (If yes describe the changes/amendments you wish to make. If applicable, provide a copy of all updated research procedures and any revised document such as application, surveys, questionnaires, consent and assent forms, etc. In addition to submitting the revised version, include a copy showing changes by underlining and bolding the additional text and striking out deletions.)

1. Project Summary

(Provide a brief summary of the scope of work of this project, using non-technical terms that would be understood by a non-scientific reader. This summary should be no more than 200 words.)

This project is a study examining the effectiveness of coaching strategies on teacher-child interactions in Head Start Classrooms. The researcher will gather and analyze pedagogical teacher beliefs, Stages of Concern Questionnaire, schedule of classrooms, fidelity of curriculum measures, teacher-child interactions thru observations, and child outcomes using child observations and child portfolio scores to compare coaches and teachers pre and post test scores. Teachers and coaches will receive on-going support and supervision using the Classroom Assessment Scoring System (CLASS) framework to define classroom interactions.

2. Purpose and/or Rationale for Proposed Research

(Describe the purpose and background rationale for the proposed project as well as the hypotheses/research questions to be examined.)

Recent research has demonstrated that when teachers intentionally focus on how they are interacting with children, child outcomes improve (Mashburn, et al, 2008). Teacher’s effective implementation of instruction that emphasizes the quality of their interactions with children will improve children’s competence, behavioral regulations and academic and cognitive competencies. Direct efforts such as coaching, with monitoring and feedback, based on interactions that are theoretically and empirically associated with children’s development may be the most effective and direct avenue to improve the outcomes of children (Mashburn, 2008) and the intentionality of teachers. Ponticell (1995) found the site-based intervention with direct observation, and follow-up improved self-analysis of teaching, enabling teachers to learn new ways of collaboratively discussing each other’s teaching and fostered
learning and experimenting with new teaching strategies. This study will explore if increasing the teacher’s intentionality through intensive coaching strategies in the classroom improves child outcomes and teacher interactions. The research questions to be examined follow.

1. Do the project approach curriculum fidelity scores relate to higher CLASS scores and higher child outcomes as measured by portfolio assessments?
2. Does participation in a coaching project impact effective curriculum implementation, more effective teacher/child interactions and higher child outcomes as measured by portfolio assessments?
3. Does the classroom allocation of time to activities correlate with teacher beliefs and practice?

3. Methodology/Procedures
(Describe sequentially and in detail, all procedures in which the research participants will be involved, e.g., paper and pencil tasks, interviews, observations, surveys, questionnaires, reviewing private records/files, physical assessments, audiotaping and/or videotaping, time requirement including number of sessions, amount of time per session, and duration or period of time over which the research will take place, etc. For school-based research where class time is used, describe in detail the activities planned for nonparticipants and explain where both participants and nonparticipants will be located during the research activities. Include a concise description of procedures, locations, time commitments, and alternate activities on the relevant consent and assent forms.)

1. Teachers and coaches from the Mid-America Head Start Program will volunteer to participate in this research project. Letters of consent will be signed prior to completion of paperwork.
2. Prior to the beginning October 2012 and at the end April 2013 of the study, teachers and coaches will complete the following paperwork; Teacher Belief Survey, Stages of Concern Questionnaire, a curriculum fidelity form, Typical Classroom Activity Schedule, and a demographic information form. Teachers and coaches will take approximately 30 minutes to complete the forms. Forms will be administered at training or staff sessions. The primary investigator will assign an ID to each teacher and coach so names will not be used for identification purposes.
3. Prior to the beginning and at the end of the study, teachers will be observed using the Classroom Assessment Scoring System to measure teacher-child interactions. The CLASS will also be used as a guide for feedback and support to teachers.
4. The coaches and teachers will participate in repeated opportunities for individualized feedback and effectiveness-enhancing support related to the teacher’s interactions with children and the coaches’ interactions with teachers.
5. The participants will be involved in support sessions to build a community of practice with two or more teachers and document the contacts and interactions.
6. Participating teacher’s child outcomes (specific assessments from the child portfolios) will be gathered at the beginning and the end of the year and consolidated into growth scores per classroom for analysis. Four children per class will be randomly selected to be observed using the inCLASS observation form. Child’s scores will be reported by class and not by individual child. The primary investigator will receive class scores from the Mid-America Head Start Office. Inter-rater forms of 20% of children’s assessment forms will be gathered.

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7. The participants will be compared (pre/post) using t-tests and regression analysis or HLM. Variables will be compared using correlations. Demographic information comparisons will be made.

4. Measures
(List all questionnaires, surveys, interviews, psychological measures, or other measures, that participants will be asked to complete. Submit labeled copies as an attachment to the application and indicate that the instrument is in the public domain or provide appropriate documentation of permission to use each scale.)
- Teacher Beliefs Scale (Charlesworth, Hart, Burts, Thomasson, Mosley, & Fleege, 1993)
- Stages of Concern Questionnaire (SoCQ Online (George, A. A., Hall, G. H., Stiegelbauer, S. M., and Litke, B., 2008). This instrument is in the public domain.
- Classroom Assessment Scoring System (Pianta, LaParo, & Hamre, 2007).
- Fidelity of Curriculum Form (Vartuli, 2008, 2009)
- Demographic Information Form
- Investigative Report Form
- Typical Classroom Activity Schedule (Vartuli and Everett, 1992; Vartuli, Everett, and Holley, 2012)

5. Location of Research
(List all locations where data collection will take place. Be as specific as possible. If you are collecting data in a location where it would be customary to ask permission to conduct the research project [e.g., schools, community centers, businesses, etc.], a letter stating the sites willingness to grant the researcher access is required. This letter must be submitted before IRB approval can be given. In addition provide a copy of IRB approval from those sites having Institutional Review Boards or another research review process.)
Participants for this study will be teachers and coaches recruited from Head Start classrooms that serve preschool children in Jackson, Clay, and Platte counties in Missouri. The programs in all three counties are overseen by Mid-America Head Start, an organization formed by the Mid-America Regional Council. Direct services to children in these counties are provided by four agencies: The Family Conservancy; Independence School District; Kansas City Public Schools; and the YMCA of Greater Kansas City.

Describe the effects of the requested amendment on risks, benefits and consent procedures. The only change will be the addition of another instrument (Typical Classroom Activity Schedule) and an observation of four children selected randomly from each class. The change was made to give more information to inform the coaching process. No risks are involved. Only benefits will be achieved.
8. Is the Principal Investigator/Project Director (and CO-Principal Investigator or Project Director, if Applicable) same as the Original PI/Project Director? (X) Yes ( ) No If No, List the changes:

9. Participant Information

Number of participants entered into the project:
7 since last progress report
41 since initial approval

Number of participants who have completed participation:
Ongoing since last progress report
Ongoing since initial approval

Number of solicited individuals who declined to participate in this project:
0 since last progress report
2 since initial approval

Number of participants who withdrew from the project (provide reason, if known):
3 since last progress report (1 changed jobs, 1 moved out of town, and 1 had a baby)
4 since initial approval (2 withdrew due to work overload; 2 took new jobs)

10. Adverse Events

Were there any adverse events or unanticipated problems involving research participants?
Yes ( ) No (X) If yes, Explain:

Were there any complaints from participants about any aspect of the research?
Yes ( ) No (X) If yes, Explain:
11. Is this a funded study? Yes (X) No ( ). If yes, Please provide the following:
   a. Type of funding:
      - Contract/Grant
      - Subcontract
      - Gift
      - Student Project
      - Other
   b. Source of funding:
      - Federal Government
      - Other Gov. (i.e., State, local)
      - Foundation
      - Other Private
      - Campus/MU System Wide program
      - Other
   c. Name of Funding Agency: Mid-America Regional Council (MARC)
      (Metropolitan Council on Early Learning (MCEL) Mid-America Head Start)
   d. Period of Funding: September 1, 2012 to August 31, 2013
   e. Have there been any changes to the funding for this study since the last approval? (X) Yes  
      No (If Yes, please identify new funding and any that has been terminated. Note: you must attach
      a copy of the new scope of work and contractual obligations if any. We will be receiving a new
      contractual agreement from Mid-America Regional Council (MARC) (Metropolitan Council on Early
      Learning (MCEL) Mid-America Head Start). This agreement is being processed now.

12. Provide a brief summary of the results: (use additional pages if necessary).
    (See attached preliminary report. The full report will be ready at the end of August.)

13. Informed Consent:
   a. Does this study use a consent form? X Yes  No (If Yes, attach a copy of the
      “stamped” IRB approved consent form used during the previous year as well as a clean copy if
      there are no modifications. If there are modifications, follow the instructions under # 7
      “Amendments”.)
b. Is this study closed to recruitment and therefore does not require a newly stamped consent form? ☐ Yes ☑ No (If No, provide a copy of the consent document you plan to use during the extension if you plan to recruit participants, collect human subject data and/or will have access to identifiable information during the renewal period.)

14. Other Enclosures:

☐ If study was reviewed by another Institutional Review Board submit an updated approval letter.

15. Authorized Personnel: Please update the list of authorized personnel on this project; deleting those who have left and adding the names of new persons working on the project.

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<tr>
<th>NAME</th>
<th>Research Role (PI, Co-PI, Student Investigator, Faculty Advisor, Collaborator, Data Manager, Research Assistant, etc.)</th>
<th>Dept/Affiliation</th>
<th>Completion Date Of Required Protection of Human Subjects Training</th>
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<td>Sue Vartuli</td>
<td>PI</td>
<td>Curriculum and Instructional Leadership</td>
<td>May 2011</td>
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<tr>
<td>Carol Bolz</td>
<td>Collaborator</td>
<td>Mid-America Head Start – Education Specialist</td>
<td>August 2011</td>
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<tr>
<td>Maggie Holley</td>
<td>Student Investigator</td>
<td>Curriculum and Instructional Leadership</td>
<td>September 2010?</td>
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Form Revision Date: 5/25/11
References


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Hammond, J., & Gibbons, P. (2005). What is Scaffolding? In Burns, A. & de Silva Joyce, H. (Eds.), *Teachers’ Voices 8: Explicitly supporting reading and writing in the Classroom* (pp. 8-16). National Centre for English Language Teaching and Research, Macquarie University, Sydney, Australia.


Hollingsworth, H. L., & Winter, M. K. (2013). Teacher beliefs and practices relating to development in preschool: Importance placed on social-emotional behaviors and...


National institute of Child Health and Human Development (NICHD) Early Child Care Research Network. (2005). A day in third grade: A large scale study of classroom


Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: Conceptualizing, measuring, and improving the capacity of classroom interactions. In S. L. Christenson et al. (Eds.), *Handbook of Research on Student Engagement* (pp. 365-386). Springer US.


VITA

Margaret McMann Holley was born June 16, 1952 in Chicago, Illinois. After attending Loretto in Kansas City for 13 years, she graduated from Rockhurst College in Kansas City, MO with a BA in Psychology in 1973. She then received a MA in Children’s Theatre from KU in 1981, where she also was the company manager for KU Theatre for Young People (KU-TYP), touring plays for children over the Midwest four state area. Her master’s thesis was entitled *Children’s Theatre at the University of Kansas: 1954-1978.*

Ms. Holley was director of Central Early Childhood Center at Central United Methodist Church from 1985 to 2008, leading the program through national accreditation with the National Association for the Education of Young People (NAEYC). As she was encouraging her teachers to continue their education, she decided it was time to go back to school as well. She began a second master’s degree at UMKC and received a MA in Early Childhood Education in 2008, with a culminating project of writing a *Quality Early Learning* training for The Family Conservancy. She began work on her IPh.D. in 2008. She is a member of NAEYC, Mid-America AEYC and NAECTE.

Upon completion of her degree, Ms. Holley is looking forward to pursuing her early childhood research interests of teacher beliefs, play, teacher resilience and program administration.