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Allison Q. Osborn

University of Nebraska-Lincoln, aqosborn@gmail.com

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THE RELATION BETWEEN HIGH-QUALITY PREKINDERGARTEN
CLASSROOM ENVIRONMENTS AND LITERACY OUTCOMES FOR STUDENTS
LEARNING ENGLISH AS A SECOND LANGUAGE

by

Allison Q. Osborn

A DISSERTATION

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(School Psychology)

Under the Supervision of Professor Beth Doll

Lincoln, NE

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THE RELATION BETWEEN HIGH-QUALITY PREKINDERGARTEN
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Allison Osborn, Ph.D.

University of Nebraska, 2012

U. S. students' early English literacy skills are critical for their later reading and subsequent school success (e.g., Badian, 2000; Collins, 2010; Molfese et al., 2001; Storch & Whitehurst, 2002). Children's literacy skills are stronger when they attend high-quality prekindergarten classrooms, especially classrooms with strong instructional supports (Hamre & Pianta, 2005). Moreover, some research has suggested that students who enter school with the weakest skills and with higher risk of academic difficulty (including students who speak English as a second language) benefit the most from high-quality instruction and interactions in early literacy and reading (Connor, Morrison, & Petrella, 2004; Downer et al., 2007; Hamre & Pianta, 2005; Hamre et al., 2010; Morrison & Connor, 2002). This study examined (a) the relation between classroom quality and English early literacy skills of prekindergarten students; (b) how this relation differs for English- and Spanish-speaking students; and (c) the relation between classroom quality and Spanish early literacy skills for Spanish-speaking students. Participants included 225 students within nine classrooms in a Midwestern, rural town. Data collected included domain scores of classroom quality (the *CLASS Pre-K*; Pianta et al., 2008), measures of students' early language and literacy skills (the *PPVT-III*; Dunn & Dunn, 1997 and the *PALS-PreK*; Invernizzi et al., 2004), and measures of Spanish early literacy for Spanish-speaking students (*WMLS-R*; Woodcock, Munoz-Sandoval, Ruef, & Alvarado, 2005).

Multilevel modeling analyses were used to examine the relations between classroom quality and students' English and Spanish early language and literacy scores, including analyses with students' home language (Spanish or English) as a moderator. Results showed a more positive relationship between the domains of classroom quality and English early literacy skills for Spanish-speaking students as compared to English-speaking students. The results were non-significant for the relation between classroom quality and prekindergarten students' English literacy skills and for the relation between classroom quality and Spanish-speaking prekindergarten students' Spanish early literacy skills. Future research directions and implications for practice are discussed.

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Chapter One: Introduction

In 2009, 18.5% of students entering kindergarten in the U.S. came from a home in which a primary language other than English was spoken (NCES, 2009). A large majority of these students were from Spanish-speaking families (Espinosa, 2007). In the U.S. education system, students whose primary language is not English are often underserved, underachieving, and more at-risk for academic problems, especially in reading and literacy, compared to their English-speaking peers (Espinosa, 2007). In U.S. schools, students' early English literacy skills (i.e., phonological awareness and oral language) are critical for later reading and subsequent school success (e.g., Badian, 2000; Collins, 2010; Molfese et al., 2001; Storch & Whitehurst, 2002).

Children who attend high-quality prekindergarten classrooms, especially classrooms with strong instructional supports, are more competent in early literacy skills than children in classrooms with less adequate support (Hamre & Pianta, 2005). Moreover, some research has suggested that students who enter school with the weakest skills benefit the most from high-quality instruction and interactions in early literacy and reading (Connor, Morrison, & Petrella, 2004; Morrison & Connor, 2002). For example, students who speak English as a second language sometimes benefit more from explicit language and literacy instruction than students who speak English as their primary language (Hamre et al., 2010). However, what is relatively unexamined is the additional benefit for students' early literacy skills when the explicit instruction occurs within high-quality prekindergarten classroom environments, and whether these additional benefits differ for Spanish-speaking students versus English speaking students.

Classroom environments shape students' academic learning, social learning, and social relationships in and out of the immediate classroom context. High-quality classrooms are those that are warm, sensitive, and stimulating with low staff-to-student ratios and in which highly-qualified staff use developmentally appropriate strategies (Pianta et al., 2005). Central to effective prekindergarten classrooms are the learning opportunities that occur within teacher-student interactions that are (a) instructionally supportive, (b) emotionally supportive, and (c) occur in well-planned learning environments (Hamre & Pianta, 2007). The important link between classroom quality and short- and long-term student engagement justifies paying more attention to creating and sustaining healthy classroom environments in addition to providing intensified high-quality curriculum and instruction (Downer, Rimm-Kaufman, & Pianta, 2007; Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009). In particular, high-quality prekindergarten classrooms are especially important for children's literacy success and their school readiness and can remediate some problems often faced by students at-risk for academic failure as they move through school (Pianta et al., 2005).

Early childhood programs focus largely on strengthening children's pre-academic skills. Prekindergarten programs focus particularly on children's early literacy competence because these skills hold strong predictive validity for later school success (La Paro & Pianta, 2000). Specifically, the early literacy skills of print and alphabet knowledge (knowledge of letter names and sounds), phonological awareness (detection and manipulation of words, syllables or phonemes), and oral language (vocabulary knowledge, syntax, grammar) are predictive of later reading success in formal schooling (Lonigan, 2006a; NELP, 2008; Whitehurst & Lonigan, 1998). This study will examine

the impact of classroom quality on these three early literacy skills because these are at least moderately predictive of later reading success. These skills will be discussed in further detail in Chapter 2.

Increasing attention is being paid to classroom experiences of children who primarily speak a language other than English. The U.S. Census predicted a 34% growth in the population of Hispanic origin/Latino students between the years of 2000 and 2010 (U.S. Bureau of the Census, 2004). Recent data show that that this population actually grew by 43% and that more than half of the population growth between 2000 and 2010 was due to the increase in individuals of Hispanic/Latino origin (Humes, Jackson, & Ramirez, 2011). Although many languages are spoken in U.S. school systems, 75% of students learning English as a second language speak Spanish as their first language (U.S. Department of Commerce, Census Bureau, American Community Survey [ACS], 2007). In Nebraska, where this study will be conducted, the Latino population increased by 155% between 1990 and 2000 (Gouveia, Carranza, & Cogua, 2005), and many Latino families are concentrated in rural areas where resources are limited. Recent studies indicate that Spanish-speaking students are often at greatest risk academically, as they often achieve at lower rates than their English-speaking peers and eventually face a higher risk for school drop-out (Martinez, DeGarmo, & Eddy, 2004; National Center for Education Statistics, 2003). Importantly, recent research suggests that found that similar to non-ELL students, alphabet knowledge, oral language, and phonological awareness were significant predictors of students' first grade reading skills (Yesil-Dagli, 2011). In addition, Downer et al. (2011) recently found significant relations between domains of classroom quality and a number of student developmental outcomes, including early

literacy, early math, and social competence for ELL students, signifying the importance of classroom quality for English Language Learners as well as non-ELL students.

Students at-risk of academic difficulty may benefit more from high-quality relationships and learning environments than their peers because they have more room to grow in their skills in order to be “ready for school” (Downer et al., 2007; Hamre & Pianta, 2005). Although high-quality prekindergarten classrooms are the goal for all students, they may be especially important for at-risk students.

Purpose of Study

The goal of this study was to examine the relations between prekindergarten classroom quality and early literacy skills for English and Spanish-speaking students. The purposes were to examine (a) the relation between classroom quality and English early literacy skills of prekindergarten students; (b) how this relation differs for English- and Spanish-speaking students; and (c) the relation between classroom quality and Spanish early literacy skills for Spanish-speaking students. Specifically, this study was designed to answer the following questions:

1. To what degree is classroom quality related to English early literacy skills for prekindergarten students?
2. To what degree does the relation between classroom quality and English early literacy skills differ depending on students’ first language of Spanish or English?
3. To what degree is classroom quality related to Spanish early literacy skills for Spanish-speaking prekindergarten students?

Chapter Two: Literature Review

The purpose of this study was to extend the research on the relations between classroom quality and early literacy skills of prekindergarten students, and investigate a novel hypothesis that the relation may differ for English- and Spanish-speaking students. This chapter reviews the literature on the construct and measurement of preschool classroom quality. Then, early literacy skills and their appropriate measurement will be reviewed. Third, the development of early literacy in Spanish-speaking children will be discussed. Finally, the chapter will discuss the relations between preschool classroom quality and in early literacy skills, and the impact of high quality classrooms on high-risk populations.

Preschool Classroom Quality

This section will discuss two frameworks for preschool classroom quality, and provide a rationale for this study's focus on interactions between and among students and teachers in preschool classrooms. Then, important domains of classroom quality and their relations to developmental outcomes for children will be reviewed. Third, the assessment of preschool classroom quality will be reviewed. Finally, a summary of the existing research and gaps in the literature will be presented.

Early childhood classrooms are often discussed as systems, and the interactions within and between systems in which children develop strongly influence their development (Bronfenbrenner, 1979). A child is influenced by and exerts influence on these ever-changing, dynamic systems in the ecological environment. The microsystem represents children's experiences in and relationship with their immediate contexts, such as home and school environments. Immediate relationships within the microsystem

include a child's relationship with his or her parents, teacher, friends, or others with whom the child has regular contact over an extended period of time (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998). The mesosystem represents interrelationships among the microsystems in which a child actively participates, and whose relationships affect the child. For example, the relationship between a child's classroom teacher and parent represents a relationship in a child's mesosystem, or the family-school mesosystem (Clarke, Sheridan, & Woods, 2010). An exosystem is a contextual system that represents larger ecological influences, such as a school district school board or a parent's workplace, that affect the child but in which the child does not actively participate. Important examples of the exosystem include school culture and leadership, which are critical variables in constructing effective family-school partnerships (Clarke, Sheridan, & Woods). The largest ecological system, the macrosystem, represents overall cultural attitudes, legislation, and lifestyles that underlie and influence all other sub-systems.

Within these systems, proximal processes are interactions that occur between children and their immediate environment (mesosystem) over time (Bronfenbrenner & Morris, 1998). Proximal processes include reciprocal interactions between children and a caregiver at home over time, or interactions between children and their teachers in a classroom. These proximal processes are the primary mechanisms for development (Bronfenbrenner & Morris). Proximal processes differ from distal processes, which are actions of macro- or exosystems on children's development. For example, distal processes in educational contexts include school climate or curriculum. Although these distal processes are also important for children's learning, Hamre and Pianta (2007)

contend that children are more affected by and reliant on proximal processes in their classrooms and particularly by classroom interactions with teachers and peers.

Proximal processes in schools and classrooms are particularly critical for understanding and supporting the opportunities that children have to learn and develop in classrooms (Pianta, 2006). Learning opportunities are defined as “a set of theoretically driven dimensions of interactions between adults and children with empirically supported links to children’s social, emotional, and academic development” (Hamre & Pianta, 2007, p.50). Classroom learning opportunities are critical and represent more than simply the behavior of teachers, availability of materials, or an established curriculum. Learning opportunities are based on the reciprocal proximal process of teacher-student and student-student relationships, and focus on what teachers do with the materials they have. The importance of learning opportunities is evident in their inclusion in some definitions of classroom quality.

Frameworks for understanding preschool classroom quality. Two frameworks have been used to understand preschool classroom quality. The *structural framework* of preschool classroom quality focuses on structural characteristics of available materials, safety, and agency credentials as a measure of classroom quality (Mashburn et al., 2008). An example of a structural characteristic of classroom quality is the ratio of the number of adults present in the classroom to the number of students, or the adult to student ratio. Alternatively, the *process framework* of preschool classroom quality (based on the CLASS framework described by Hamre & Pianta, 2007; Pianta, 2006) focuses on the learning opportunities embedded in the daily classroom experiences of children, and their interactions with each other and their teachers. An example of a learning opportunity is a

conversation between a teacher and student during which the teacher uses scaffolding (e.g., hints and assistance) to help a student write a letter correctly. Hamre and Pianta describe this framework as the *process framework* because it parallels an assessment system (*Classroom Assessment Scoring System*, Pianta, La Paro, & Hamre, 2007) that will be discussed further on pages 29 to 38 of this dissertation.

Structural frameworks of preschool classroom quality. The *structural framework* for understanding classroom quality includes important aspects of preschool classroom environments, such as the availability of developmentally appropriate materials, the structure of settings and routines, and other programmatic variables. Variables within a structural framework have also been called regulable variables (NICHD, 1999), because they are easily observed and regulated. Examples of regulable variables include adult to child ratios, children's group sizes and teacher education. These regulable variables are built into regulations and standards set by professional organizations and accrediting agencies as working on definitions of minimal quality (e.g., the National Association for the Education of Young Children (NAEYC)).

Structural variables are theoretically- and empirically-based, as studies show that structural variables in early child care modestly predict important developmental competencies of children as they enter kindergarten and beyond (NICHD, 1999). Indeed, structural characteristics of high-quality early childhood care have been linked to higher cognitive and language skills, as well as decreased problem behaviors in young children (NICHD, 2000a). For example, a National Institute of Child Health and Human Development (NICHD, 2000a) study found that certain structural characteristics of caregiving environments were related to more positive caregiving behavior and better

developmental outcomes for children. Positive caregiving was defined slightly differently over three data collection periods (when children were 15, 24, and 36 months) but included measures of the caregiver's positive talk and behavior, responsiveness, and stimulation of cognitive and academic skills. The researchers found that positive caregiving was higher when adult-to-child ratios were lower, when groups of children were smaller, when teachers had higher levels of education, and when teachers held more child-centered beliefs about caregiving. In addition, the overall quality of care (including process variables of positive caregiver responsiveness and affect) and language stimulation were predictive of children's language scores at 15, 24, and 36 months. Interestingly, the authors' outcome in this study, positive caregiving, included key aspects of *process frameworks*, indicating the importance of these aspects for children's development. Despite the importance of structural characteristics, the *structural framework* is limited by its lack of focus on the proximal processes children experience, including the behavior and interactions of adults and children within classrooms.

Process framework for preschool classroom quality. The *process framework* differs in important ways from the *structural framework*. The *process framework* includes important interactions between and among teachers and students in classrooms. *Process frameworks* are focused on *process variables* of early childhood classrooms (NICHD, 1996, 2000a). *Process variables* include sensitive, warm, and responsive teacher behaviors and teacher-student relationships (NICHD, 2006). One specific, empirically validated *process framework* is the *CLASS framework*, which has been described by Pianta and colleagues (2006). The *CLASS framework* is constituted by the learning opportunities that occur within interactions between and among children and

teachers in classrooms. The *CLASS framework*, as described by Pianta (2006) and Hamre and Pianta (2007), is based on the aspects of classroom quality that occur during children's proximal experiences in classrooms. In addition, the *CLASS framework* extends to the multiple dimensions of learning opportunities that occur *within* the teacher-student and student-student interactions that support children's development in preschool (Hamre & Pianta, 2007). These dimensions include the extent to which the teacher and classroom are emotionally supportive, instructionally supportive, and well-organized.

Recent research has examined the degree to which characteristics of the *CLASS framework* predict prekindergarten children's developmental outcomes. For example, Howes et al. (2008) investigated the relations of high-quality instruction, close teacher-student relationships, and teacher-student interactions with children's academic, language, and social skills. Howes and colleagues analyzed data from two large, prospective studies of prekindergarten quality from 11 states that had well-established, state-funded prekindergarten programs. The authors conducted gain score analyses to detect whether or not the gains across the year were reliably different from zero. In addition, a series of hierarchical linear modeling analyses were conducted to describe significant effects while addressing the nesting of students within classrooms and classrooms within schools (Howes et al., 2008). Results showed that students' gains across the year were reliably different from zero, with the largest gains evident in students' language and literacy scores. Furthermore, analyses indicated that instructional support was the strongest predictor of students' gains in receptive ($d=.06$) and expressive language ($d=.07$). No structural variables (e.g., adult-child ratio, length of program day) significantly predicted student gains on language or literacy outcomes.

Using the data from the same prospective studies as Howes et al. (2008), Mashburn et al. (2008) analyzed the degree to which two different frameworks of classroom quality predicted prekindergarten students' academic, language, and social outcomes. Through this analysis, Mashburn and colleagues empirically investigated the impact of the *structural framework* and the *process framework*, specifically the *CLASS framework*, on student outcomes. Assessment of classroom quality included measures of program infrastructure and design set by the National Institute for Early Education Research (NIEER, Barnett, Hustedt, Robin, & Schulman, 2004), overall classroom environmental quality measured by the Early Childhood Environmental Rating Scales-Revised (ECERS-R; Harms, Clifford, & Cryer, 1998), and quality of teacher-child interactions as measured by the CLASS (Pianta, La Paro, & Hamre, 2008). Results indicated that the presence of more instructionally supportive interactions between teachers and students, as measured by the CLASS instructional support domain, was the most consistent and robust predictor of children's growth in language, literacy, and math skills over time (Mashburn et al., 2008). In addition, stronger emotional support in classrooms predicted higher teacher-reported social skills of students and decreases in students' behavior problems. Mashburn et al. concluded that the interactions and learning opportunities measured by *process frameworks*, and the *CLASS framework* specifically, were more salient for children's early language and literacy skills.

The *process framework* is limited by its lack of attention to the physical quality and safety of classroom environments, and does not attend to teacher education. However, the *process framework* addresses the limitations of the *structural framework* by taking account of the important experiences of children in classrooms, across time. For

the remainder of this dissertation, the process framework will be discussed more specifically as the *CLASS framework* because the CLASS is the only measure of the *process framework* discussed. The *CLASS framework* is theoretically and empirically-supported (Hamre & Pianta, 2007), and recent research suggests that this framework is more strongly associated with children's developmental outcomes than structural variables (e.g., Mashburn et al., 2008). The domains and dimensions of the *CLASS framework* are reviewed in the following sections: Emotional Support, Classroom Organization, and Instructional Support.

Emotional Support

Emotional competence is defined as “children’s knowledge of emotion and their efforts to regulate their emotional experiences in their social exchanges with others” (Saarni, 1988; as cited in Raver, Garner, & Smith-Donald, 2007, p. 121). Young children’s emotional competence has been linked to their cognitive achievement (Gershoff, Aber, Raver, & Lennon, 2007) and is linked to children’s success in first grade (Agostin & Bain, 1997). Children’s emotional regulation and emotional knowledge can be either a support or an obstacle to learning (see Raver et al., 2007 for a more detailed review). Specifically, children with stronger emotional regulation demonstrate higher engagement and motivation in classrooms. However, a lack of emotional regulation can lead to behavioral and academic struggles for children in classrooms.

Emotional competence is critical for young children’s readiness for school. Blair (2002) asserts that emotionality in young children is closely associated with their ability to be engaged and self-regulated learners. Additionally, teachers consistently rate children’s emotional self-regulation as a key indicator of readiness for kindergarten

(Bronson, 2000; Lewit & Baker, 1995). Classroom teachers' behavior and emotions, whether positive or negative, can support or provide obstacles for children's emotional competence. As a result, the emotionally-supportive interactions between and among students and teachers are important for building children's emotional competence in prekindergarten. The effects of these interactions persist as children transition to kindergarten. The following sections discuss dimensions of emotional support in classrooms.

Classroom climate. Proximal processes in student-teacher relationships occur within the social environment of classrooms. The degree to which the social environment is positive or negative can have a profound impact on children's social development and academic learning (Hamre & Pianta, 2007; Pianta & Walsh, 1996). Classroom climate is defined by overall positive and negative aspects of the social atmosphere, and frequently has been described in the context of teacher-student relationships (Hamre & Pianta, 2007). Positive classroom climates are characterized by caring, supportive teacher-student relationships. Supportive, warm relationships are indicated by physical proximity between teachers and students, shared activities, peer assistance, and social conversation. Positive affect, including smiling, laughing, and enthusiasm, is also important for positive climate. Positive classroom climate includes consistent demonstrations of respect between teachers and students, and positive communication (verbal and physical affection, positive expectations). In contrast, negative classroom climates are characterized by yelling, irritation, and punitive interactions between and among teachers and students. Negative climates include negative affect, evidenced by anger, negativity,

and peer aggression. Punitive control (e.g., yelling, threats, physical control, harsh punishment), sarcasm, and disrespect are evident in negative classroom climates.

Teacher sensitivity. Teachers who are sensitive, warm, and responsive are critical to high-quality, positive prekindergarten classroom environments. Teacher sensitivity is marked by evidence that teachers are aware of and attuned to the individual academic and emotional needs of students (Hamre & Pianta, 2007). Highly sensitive teachers notice cues that students may be having difficulties staying engaged, behaving appropriately, or understanding material. Through their responsive interactions, sensitive teachers provide a classroom environment that encourages students to freely explore and to trust teachers as a resource for help and assistance (Hamre & Pianta; Pianta et al., 2008).

Regard for students' perspectives. The degree to which teachers focus on student interests, follow students' lead in activities, and emphasize students' points of view can be defined as a teachers regard for students' perspectives (Hamre & Pianta, 2007; Pianta et al., 2008). Teachers who demonstrate a high regard for students' perspectives allow student movement in the classroom, encourage student expression, and allow students leadership and responsibility in their classrooms.

Research on emotional support in prekindergarten classrooms. Emotional support is evidenced by strong relationships between and among teachers and students, teachers' sensitivity, and teachers' regard for student perspectives (Pianta et al., 2008). Emotionally supportive classrooms are related to children's social and emotional competence. For instance, in a study of 671 classrooms across 11 states, Mashburn et al. (2008) found that classrooms with high observed emotional support were positively

associated with high teacher ratings of children's social competence and fewer problem behaviors. Similarly, in the National Institute of Child Health and Human Development Study of Early Child Care (NICHD SECC), Hamre and Pianta (2005) analyzed early risk factors, current academic and social functioning, and classroom quality for 910 children. They found that children who were previously at-risk based on demographic and behavioral indices, and whose first grade classrooms were emotionally supportive, had academic skills and teacher-student relationships that were equivalent to those of their low-risk peers at the end of first grade. These findings describe the power of emotionally supportive classrooms to remediate negative social and academic outcomes for children at-risk of social, behavioral, and academic problems.

Positive and negative relationships between and among teachers and students impact the social, emotional, and academic functioning of students across time (e.g., Hamre & Pianta, 2001; Howes, 2000; Ladd, 2006; Ladd, Herald-Brown, & Reiser, 2008; Pianta, Hamre, & Stuhlman, 2003). Positive student-teacher relationships can enhance children's social and academic competence (Pianta et al., 2003) whereas negative classroom relationships can have a detrimental impact on children's functioning. Ladd (2006) found that chronic peer rejection was associated with minimal or no gains in independent and cooperative classroom participations. Importantly, these results held regardless of the grade at which the child experienced chronic rejection (e.g., early or late elementary school), and students' participation increased during periods when they were not rejected. Negative peer relationships in preschool and kindergarten classrooms are related to more aggressive and disruptive behavior (Howes, 2000) and internalizing behaviors (Ladd, 2006) in early elementary school.

Hamre and Pianta (2001) investigated the longitudinal effects of teacher-student relationships on children's social, behavioral, and academic outcomes. Across kindergarten to 8th grade, the authors found that kindergarten teachers' ratings of their relationships with students predicted long-term behavioral outcomes in upper-elementary school. The effects of negative relationships were particularly persistent. The presence of relational negativity (a composite of teachers' reports of conflict and dependency) in kindergarten predicted later behavioral problems through upper elementary school. Relational negativity also accounted for a small, but significant amount of variance in students' standardized academic scores, lending support to hypotheses that the quality of teacher-student relationships significantly affects students' academic achievement. However, as previously discussed, Hamre and Pianta (2005) found that when children with substantial behavior problems in kindergarten were able to develop a strong, positive relationship with their teacher in first grade, they were less likely to demonstrate significantly higher behavior problems than their peers. Thus, although negative relationships within classrooms are particularly salient for students' academic, social, and emotional outcomes, the presence of positive relationships between and among students and teachers is also powerful and can lessen some of the detrimental effects of earlier negative relationships.

Studies have also shown that classrooms with high teacher sensitivity promote students' developmental competence in important ways. The NICHD ECCRN (1998, 2002) demonstrated that classrooms marked by sensitive, responsive, and cognitively-stimulating teacher-student interactions had children with higher cognitive and social outcomes. In another study by the NICHD ECCRN (2003), investigators found that

children who experience higher levels of teacher sensitivity and emotional support in their first grade classrooms had fewer mother-reported internalizing symptoms in first grade.

Rimm-Kaufman et al. (2002) investigated the interaction between children's early behavioral attributes and teacher sensitivity. Using data from the NICHD SECC study, the authors investigated children's patterns of behavioral style (e.g., *bold* or *wary*) at 15 months and the interactions of behavioral style with teacher sensitivity to predict first grade behavior. The children's behavioral styles were coded using video tapes of children's participation in a modified Ainsworth Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978; as cited in Rimm-Kaufman, et al.). The video clips did not include any separation from parents in order to distinguish between social wariness/boldness and attachment. They did include behavioral ratings of three segments including (1) a parent and child playing together, (2) a stranger entering the room, remaining silent for ten seconds, then engaging in conversation with the parent, and (3) the stranger attempting to engage with the child. *Bold* children were those who approached the stranger, offered a toy to the stranger, or vocalized to the stranger prior to the stranger engaging with the child. *Wary* children had a tense body posture and distressed facial expression, clung to their mother, and cried during segments two and three. The authors found that children's behavioral styles contributed to differences in their behavior in kindergarten. In particular, the *bold* children were more likely to be off-task and more difficult for teachers to manage than *wary* children. Importantly, the degree of teacher sensitivity experienced by children significantly interacted with children's behavioral style. Children who were socially bold were found to be more self-reliant and have fewer problem

behaviors with sensitive teachers than with less sensitive teachers (Rimm-Kauffman et al., 2002). These results demonstrated the importance of conceptualizing emotionally supportive classrooms as an *interaction* between student behavioral styles and the sensitive behaviors of teachers. Taken together, these research findings illustrate the important role that prekindergarten teacher sensitivity has on children's social and academic outcomes.

Classroom Organization

Classroom organization refers to teachers' overall management and organization of students, activities, and time within the classroom (Emmer & Stough, 2001; Pianta et al., 2008). Aspects of classroom organization have been included in various theoretical and empirical conceptualizations of classroom quality (e.g., La Paro, Pianta, & Stuhlman, 2004; NICHD, 1999, 2000a; Pianta et al., 2008). In the *process framework*, well organized classrooms have teachers who use effective strategies that are behaviorally proactive and well-managed, students who are engaged and on-task, and a variety of materials and activities.

Hamre and Pianta (2007) consider classroom organization to be theoretically important for classroom quality largely because of the impact these processes have on children's self-regulatory skills. Self-regulatory skills refer to children's regulation of emotionality in social situations, and their regulation of attention and cognitive responding (Blair, 2002; Raver, 2004). The self-regulatory skills necessary for students' success in classrooms are described as *self-regulated learning* (e.g., Schunk, 2005). They include student's planning, goal-setting, motivation, and self-monitoring in classrooms. Self-regulated learning has been implicated in students' academic achievement, as studies

have shown that self-regulation explains some of the variance in achievement that student ability does not explain (Zimmerman, 2002). In later elementary school, self-regulated learning is related to motivation, task value beliefs, and metacognition (Metallidou & Vlachou, 2010).

Self-regulated learning is particularly important as children transition into kindergarten and elementary school (Blair, 2002), making the development of these skills a priority in prekindergarten. In prekindergarten, children are beginning to develop cognitive self-regulation, or the strategies necessary for problem-solving, goal-setting, and monitoring their progress toward goals (Bronson, 2000). Although prekindergarten children may not consciously plan their actions, during this time period they begin to develop the executive skills necessary to control their learning. Cognitive self-regulation is greatly influenced by classroom environments in prekindergarten. Bronson notes that the presence of engaging and challenging materials and opportunities to engage in supportive interactions with adults are essential for the development of self-regulated learning in prekindergarten children.

Indeed, highly organized classrooms promote the development of students' self-regulated learning as well as students' academic and behavioral engagement. The dimensions in the classroom organization domain are important because of their focus on strategies and practices that foster these skills in preschool children. These dimensions include the quality of behavior management, productivity, and formats for instructional learning (Pianta et al., 2008).

Behavior management. Effective behavior management is paramount to high quality classrooms. Pianta et al. (2008) describe behavior management in the context of

prekindergarten classroom quality as teachers' effective use of clear behavior expectations, proactive strategies to avoid student misbehavior, attention to positive, prosocial behavior, and anticipation and redirection of students' misbehavior in the classroom. Although behavior management is defined broadly across different literatures, the proactive anticipation and prevention of problem behavior in classrooms is central to the classroom organization domain. Proactive strategies may include clear, consistent expectations of the classroom rules, frequent monitoring, and low reactivity on the part of the teacher. As a result, classrooms with effective behavior management have students who frequently comply and exhibit low levels of aggression and defiance (Pianta et al., 2008).

Productivity. Classrooms are organized when they have effective routines, organized activities, and clear rules and expectations for activities (Pianta et al., 2008). Productivity is measured by these characteristics in classrooms, and the degree to which teachers spend as little time as possible on managerial tasks and the preparation of materials, and as much time as possible providing learning activities for their students.

Instructional learning formats. Developmentally-appropriate learning opportunities in classrooms are critical for children's academic and social development (NICHD, 2002; Pianta et al., 2008). Teachers in highly organized classrooms provide a variety of engaging and interesting activities in an effort to ensure that students are active participants in their learning. High-quality instructional learning formats, in turn, promote teachers' facilitation of learning activities through their effective questioning and ongoing expansion of children's involvement. Classrooms with effective instructional learning formats have students who are active participants in classroom activities, and students

who demonstrate interest and focused attention. Additionally, learning objectives are clear, and teachers use multiple teaching modalities (e.g., whole group, small group) and a variety of materials to accomplish these learning objectives (Pianta et al.).

Research on classroom organization in prekindergarten classrooms.

Classroom organization refers to the quality of behavior management, productivity, and instructional learning formats in classrooms. In a recent study, Dobbs-Oates, Kaderavek, Guo, & Justice (2011) found that teachers' effective behavior management significantly predicted students' early literacy skills in the spring when controlling for fall scores.

Classrooms with effective behavior management are also more likely to have students who are more engaged, have higher levels of self-regulation, and progress academically (e.g., Bear, 2005; Emmer & Stough, 2001; Soar & Soar, 1979). Self-regulation in prekindergarten refers to children's regulation of their emotionality, attention, and cognitive responding (Blair, 2002; Raver, 2004). Self-regulated learning in classrooms includes student's planning, goal-setting, motivation, and self-monitoring in classrooms (e.g., Schunk, 2005).

The development of children's early self-regulation has implications for their entry into formal schooling. Recently, Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock (2009) investigated the relations between children's self-regulation at kindergarten entry and end of year, children's adaptive classroom behaviors, and classroom organization. In a study of 172 kindergarten children, the researchers found that kindergarten classrooms with more effective classroom management had students with stronger self-regulatory behaviors. In this study, students in classrooms with stronger classroom organization were reported by their teachers to have higher behavioral self-

control, positive work habits, and cognitive self-control. Students in these classrooms were also significantly more engaged in learning and spent significantly less time off-task. In addition, recent research by Dominguez, Vitiello, Maier, and Greenfield (2010) found that classrooms with higher classroom organization had students whose learning behavior improved at a faster rate throughout a preschool year than students in less organized classrooms.

Teachers who maximize the learning time for their students, through productivity and effective instructional formats, have more engaged students (Hamre & Pianta, 2007). Students' behavioral engagement can be defined as their active participation in activities, attention to their teacher, and sustained attention on an assignment (Downer et al., 2007). Downer et al. investigated the relations between dimensions of classroom quality and students' behavioral engagement in 888 third-grade classrooms. The researchers assessed classroom quality using a composite that averaged ratings on the following scales: overcontrol (reverse scored), chaos (reverse scored), positive emotional climate, negative emotional climate (reverse scored), detachment of the teacher (reverse scored), teacher sensitivity, productive use of instructional time, and richness of instructional methods. Using these definitions, Downer et al. argued that classrooms are ideal settings for "frequent and sustained opportunities for behavioral engagement in learning" (p. 414). Results showed that classroom quality was significantly associated with students' behavioral engagement, and that the type of instructional format was significantly associated with behavioral engagement. Specifically, when teachers actively interacted in small groups with children, children exhibited higher levels of behavioral engagement. These findings are important given that students' active engagement in learning has long

been identified as a key ingredient for school success (Fredericks, Blumenfeld, & Paris, 2004).

Instructional Support

The quality of instructional interactions, or Instructional Support, in classrooms represents the main, critical dimension of high-quality prekindergarten classrooms (Hamre & Pianta, 2007). Whereas the Emotional Support and Classroom Organization domains set an important stage for effective instructional learning opportunities in classrooms, Instructional Support within teacher-student interactions focuses on the importance of children's cognitive and language development (Pianta et al., 2008). The Instructional Support Domain focuses on the ways teachers use the curriculum and activities to specifically foster students' cognitive and language development.

Instructionally-supportive interactions in prekindergarten classrooms are particularly critical for developing children's usable knowledge through meaningful learning (Mayer, 2002) and their metacognitive skills (Pianta et al., 2008). These skills refer to "the awareness and understanding of one's thinking processes" (Pianta et al., p. 5). Metacognitive skills are developed when children experience modeling, scaffolding, and feedback from adults (e.g., Pianta et al.) and are developed through teachers instructionally-supportive interactions in prekindergarten.

Concept development. Concept development refers to teachers' stimulation of higher-order thinking in children through interactions in the classroom, including discussions and activities (Hamre & Pianta, 2007; Pianta et al., 2008). Mayer (2002) explains that higher-order thinking and learning requires students to move past merely *retaining* knowledge to *applying* and *transferring* their knowledge to new situations.

Teachers prompt concept development when they ask analysis and reasoning questions, particularly those that require problem solving, prediction, classification, comparison, and evaluation. Concept development occurs when teachers brainstorm, plan, and produce with students in their classrooms. Also, *transfer* skills are stressed in concept development, as teachers connect concepts and integrate new concepts with previously learned material, and make connections to the real world and students' lives (Pianta et al., 2008).

Quality of feedback. As students are learning and responding to questions and activities in classrooms, the quality of feedback that teachers provide is critical to children's cognitive and language development (Hamre & Pianta, 2007). Quality of feedback refers to teachers' behavior after students first respond to the learning opportunities provided in a *process framework*. Feedback on student performance goes beyond praise or behavioral feedback to include information about whether students are correct, and scaffolding (e.g., hints and assistance) to help them get to the correct answer (Brophy & Good, 1986). Quality of feedback also includes teachers' use of feedback loops, which are persistent, teacher-led, back-and-forth exchanges during conversations with students. Using feedback loops, teachers pose questions and continued follow-up questions that challenge students' thinking and analysis. An important indicator of quality feedback is the degree to which teachers prompt students to explain their thought processes and responses; and provide specific feedback, expansion and clarification of student answers. Finally, quality feedback includes teachers' use of encouragement and affirmation, including reinforcement and recognition for student performance, and students' persistence with difficulties during learning activities.

Language modeling. Instructionally-supportive learning opportunities occur within conversations and discussions between teachers and students. Language modeling refers to teachers' frequent conversations with and among students that enhance the students' language development (Hamre & Pianta, 2007). Language modeling is strong when classrooms have frequent conversations in which teachers ask open-ended questions, and repeat and extend student responses. Teachers' use of self-talk and parallel-talk is also a key component of language modeling whereby teachers use language to describe their own actions and student actions. The use of advanced language, comprised of a variety of words and connected words and ideas, is also important for high-quality language modeling (Pianta et al., 2008).

Research on instructional support in prekindergarten classrooms. Of the three domains within the *process framework*, the Instructional Support domain has been most strongly related to students' academic outcomes and progress (e.g., Burchinal et al., 2008; Howes et al., 2008). In a longitudinal study of 227 classrooms and between 622 and 759 children, Burchinal et al. found that instructional climate (in this study a composite of concept development and quality of feedback) was significantly related to children's reading and language scores. Specifically, children who attended prekindergarten classrooms with a stronger instructional climate had significantly higher reading and language scores at the end of their kindergarten year.

Similarly, Howes et al. (2008) investigated the relations between academic gains and classroom quality in approximately 3000 students within 700 classrooms. The authors found that children in prekindergarten classrooms with strong instructional support had higher receptive and expressive language scores. In another analysis of the

same sample (Mashburn et al., 2008), instructional support was significantly and positively associated with all five academic measures in the study, including expressive vocabulary, receptive vocabulary, rhyming, applied problems, and letter naming (Mashburn, et al., 2008).

Children are often more behaviorally engaged in classrooms with high-quality instructional interactions. In particular, Downer et al. (2007) found that classroom quality was significantly related to student behavioral engagement, regardless of the instructional activity occurring in the classroom (e.g., basic skill or analysis and inference). Interestingly, students were more engaged when they were interacting with teachers who were teaching higher-level skills, such as analysis and inference. These findings suggest that classrooms with teachers who use highly supportive instructional strategies will have students who are more engaged in classroom activities.

Taken together, these three domains (Emotional Support, Classroom Organization, and Instructional Support) fit together to provide a cohesive framework for classroom quality. Classrooms with stronger quality in these domains have been empirically shown to benefit students' developmental outcomes (e.g., Downer et al., 2007; Howes et al., 2008; Mashburn et al., 2008).

Measurement of Classroom Quality

The use of multiple broad definitions of classroom quality could be partially to blame for small effect sizes that have been found for the impact of classroom quality on children's academic and social outcomes (NICHD, 2000b). Studies examining *structural frameworks* of classroom quality often fail to assess the interactions that teachers and students experience within class environments. Studies examining the *process framework*

include these critical measures of students' relationships with each other and the adults in classrooms (Hamre & Pianta, 2007), but these CLASS studies rarely include measures of structural characteristics of classrooms.

Varying methods of assessment are used in classroom quality assessment tools (Meisels, 2007; Mashburn et al., 2008). First, rating scales and checklists have often been used to assess the quality of classrooms according to both *structural* and *process frameworks*. For example, the *Assessment Profile for Early Childhood Programs* (Abbott-Shim & Sibley, 1992) documents the classroom schedule and the quality of the teaching practices using a yes/no format. Alternatively, the *Student-Teacher Relationship Scale* (STRS, Pianta, 2001) assesses teachers' perceptions of the quality of their relationship with students using Likert scale ratings. Rating scales are useful for assessing classroom environments because they allow assessors with little training to rate and evaluate several different aspects of classroom environments. Additionally, rating scales are usually quick, efficient, and easy for teachers or observers to use. However, disadvantages of rating scales include their potential to be subjective, biased, and to require retroactive assessment.

Second, standards checklists may be used to document structural classroom quality. Checklists of program standards can describe minimal classroom quality as set by professional organizations and accrediting bodies (e.g., NAEYC; Mashburn et al., 2008). Minimal standards can include structural features such as adult to child ratio, teachers' educational credentials, and the provision of family support service. Checklists are frequently summarized as percentage compliance with the standards. This form of classroom quality measure can be helpful for assessing compliance with preset standards

and curriculum, and establishes effective regulatory measurement for minimal program quality. However, this form of assessment reinforces a simplistic structural view of classroom quality, and does not capture the quality of learning opportunities within teacher-student interactions.

Finally, observational protocols can be used to assess the presence of appropriate materials, safety of environment, and student-teacher interactions (Harms et al., 1998). These dimensions of classroom environments can be averaged to form a composite score of structural classroom quality. Observations of classroom quality can also describe the instructional and emotional interactions between children and teachers (Pianta et al., 2008). Observations of classroom quality are limited because they do not offer percentage compliance with program standards, and fail to provide specific indications of teacher perspectives. However, observational assessments offer an objective measurement of events that occur in the classroom and what teachers do in their classrooms with the materials that they have. In the interest of being objective, observational protocols provide an outsider's perspective of the classroom.

Ultimately, observational tools were chosen for this study because they provided objective assessments of the constructs most critical to classroom quality (emotional support, instructional support, and classroom organization) and because they predict important cognitive and social outcomes for children. Observational tools provide an objective measurement of events in the classroom and what teachers do with the materials they have. Also, such tools assess present conditions in classrooms across multiple activities, rather than relying on retrospective assessment. Finally, observational

tools can provide indices of student-teacher relationships through the assessment of the interactions observed to occur in classrooms.

Observational measures of prekindergarten classroom quality were reviewed in preparation for the current study, using the following criteria: (1) measures must have been validated for use in prekindergarten classroom settings; (2) measures must have been used in valid research with samples of low-income, diverse children in classrooms; (3) measures must have demonstrated adequate technical properties, including adequate validity, reliability, and standardization procedures; and (4) measures must have assessed interactions between teachers and students, because these strongly predict later academic and social competence (Hamre & Pianta, 2007; Pianta et al., 2008). The following sections discuss two measures that came closest to meeting the criteria for review. Ultimately, the CLASS Pre-K (Pianta et al., 2008) was chosen for use in this study because it best met the prescribed criteria.

Early Childhood Environmental Ratings Scale-Revised (ECERS-R; Harms et al., 1998). The ECERS-R is an observational tool designed to assess prekindergarten classroom quality by describing space and furnishings, language reasoning, learning activities, teacher-student interactions, and program schedules and routines. The measure includes 36 items within these dimensions, and each item is rated on a 1 to 7 scale, with 1 indicating *inadequate* quality, 3 indicating *minimal* quality, and 7 indicating excellent quality. Within the items, written descriptions of criteria (called indicators) guide raters in selecting the appropriate numerical score. An overall quality composite is computed from these dimensions.

The ECERS-R met the first and second criteria for inclusion in this study because it has been validated and widely used in prekindergarten samples, including diverse, low-income children (Harms et al., 1998). The technical properties of the ECERS-R were also adequate, meeting the third inclusion criterion. Specifically, classroom quality as measured by the ECERS-R has adequate validity, including predictive validity (e.g., Peisner-Feinberg & Burchinal, 1997; as cited in Harms et al., 1998). Research using the previous edition of the ECERS established a well-developed conceptual framework that was further refined during the ECERS-R revision using content analysis and user feedback (Harms et al., 1998). Specific validity analyses were not reported in the revised manual. The ECERS-R revision also established adequate reliability. Interrater reliability across indicators of the whole scale was 86.1%, and across the items was 48% for exact agreement and 71% for agreement within one point. Correlations between observers were generally high, including $r=.921$ (Pearson product moment correlation), and $r=.865$ (Spearman rank order). Internal consistency was also established for the ECERS-R revision. Intra-class correlations for the ECERS-R ranged from $r=.71$ to $r=.88$, with an overall internal consistency for the ECERS-R scale of $r=.92$.

The fourth criterion for inclusion in this study was that the measure assesses teacher-student interactions in the classroom. The *interactions* subscale of the ECERS-R includes items that measure the level and quality of adult supervision of various activities, use of appropriate discipline, staff-child interactions, and interactions among children. Although these items broadly address interactions in classrooms, only a handful of items specifically assess relationships between and among students and staff. Overall, the ECERS-R is focused on the materials and safety of the environment and teacher-

student interactions are insufficiently measured. As a result, the ECERS-R was not chosen for use in this study.

Classroom Assessment Scoring System, Pre-K (CLASS Pre-K; Pianta, La Paro, & Hamre, 2008). The CLASS Pre-K is an observation procedure that assesses the quality of teacher-student interactions that occur in early childhood classrooms. The CLASS Pre-K met the first two criteria for inclusion in this study because it was developed and validated for use in prekindergarten samples, and has been used widely in research with low-income, diverse children (e.g., Hamre, 2007; Pianta et al., 2008). The technical properties, including validity, reliability, and organizational structure, of the CLASS Pre-K were established to be adequate through the analysis of data from six studies that collected classroom observation data across prekindergarten through fifth grade samples (Hamre et al., 2007; Pianta et al., 2008). These are described in greater detail in the next eight pages. The fourth criterion for inclusion, the measurement of teacher-student interactions, was met with the CLASS Pre-K because it uniquely assesses classroom quality through learning opportunities within teacher-student interactions. The CLASS Pre-K was chosen for use in this study because it met all the prescribed inclusion criteria, and will be discussed in more detail in the following sections.

Table 1 describes the CLASS Pre-K domains, dimensions, and behavioral indicators:

- emotional support (which includes the dimensions of positive climate, negative climate, teacher sensitivity, and regard for student perspectives);
- classroom organization (which includes the dimensions of behavior management, productivity, and instructional learning formats); and

- instructional support (which includes the dimensions of concept development, quality of feedback, language modeling, and literacy focus).

Observations are completed by observing classrooms in consecutive 20-minute cycles. For one observation, a classroom is observed for between four and six consecutive cycles. By completing multiple independent cycles in one observation, the CLASS Pre-K samples several different activities (e.g., whole group, small group, meals, etc.). The CLASS Pre-K's assessment of the observed interactions between teachers and students is distinct from other assessments of classroom quality because it takes into account what teachers do with the fixed and relatively organized curriculum and materials they have (Pianta et al., 2008).

Scores on each CLASS Pre-K domain and dimension range from one (lowest) to seven (highest). Scores are anchored to three differing levels of quality, *low* (one, two), *mid* (three through five), and *high* (six, seven). To score these anchors, the observation protocol provides definitions of the corresponding construct, indicators related to the construct, and specific examples of teacher and student behavior (La Paro, Pianta, & Stuhlman, 2004; Pianta et al., 2008). For example, within the Instructional Support domain, one dimension is Concept Development. Specific indicators that should be observed and rated under Concept Development include “scaffolding,” “feedback loops,” “prompting thought processes,” “providing information,” and “encouragement and affirmation” (Pianta et al., 2008, p. 69). Within each of these indicators, examples of teacher behavior are given (e.g., hints and assistance under “scaffolding”) as well as explanations of low, mid, and high scores.

Table 1

CLASS Pre-K Domains, Dimensions, and Behavioral Indicators

Domain	Dimension	Behavioral Indicators
Emotional Support	Positive Climate	Presence of relationships, positive affect, positive communication, and respect
	Negative Climate	Presence of negative affect, punitive control, sarcasm and/or disrespect, and/or severe negativity
	Teacher Sensitivity	The degree of a teacher's awareness, responsiveness, effective addressing of problems, and students' seeking comfort and support
	Regard for Student Perspectives	Flexibility and student focus, support for autonomy and leadership, student expression, and restriction of movement
Classroom Organization	Behavior Management	Clear behavior expectations, proactive with potential behavior problems, redirection of misbehavior, and degree of student compliance and misbehavior
	Productivity	Maximizing learning time, routines, transitions, and preparation
	Instructional Learning Formats	Effective facilitation, use of variety of modalities and materials, student interest in activities, and clarity of learning objectives
Instructional Support	Concept Development	Analysis and reasoning, creating, integration, and connections to the real world
	Quality of Feedback	Scaffolding, feedback loops, prompting thought processes, providing information, and encouragement and affirmation
	Language Modeling	Frequent conversations, open-ended questions, repetition and extension, self- and parallel talk, advanced language

Technical properties. The validity and reliability of the CLASS Pre-K has been established and confirmed before and after its publication (Pianta et al., 2008). The CLASS Pre-K authors empirically validated the CLASS theoretical framework using a series of classroom observation studies in prekindergarten through fifth grade across the United States. The domains remain consistent across Pre-K and elementary school

versions of the CLASS, although the behavioral indicators vary between levels to accommodate developmental differences across grades. These studies validated the structure of the unpublished CLASS Pre-K (Hamre et al., 2007) and its current published version (Pianta et al., 2008). Data from six studies across prekindergarten through fifth grade samples were analyzed using the CLASS organizational structure, validity, and reliability. Hamre et al. analyzed data from the following studies:

- *My Teaching Partner (MTP)*; Pianta, Mashburn, Downer, Hamre, & Justice, 2008): a professional development project developed to provide professional development for pre-kindergarten teachers to improve classroom interactions with students. The study included 152 teachers, located in the state of Virginia, who provided videotapes of their classrooms.
- *National Center for Early Development and Learning Multi-State Study of Prekindergarten (NCDEL-MS)*; Early et al., 2005, as cited in Hamre et al., 2007; Pianta et al., 2005): a study of 240 classrooms in state-funded preschools across six states. As part of this study, the children in these classrooms were followed into kindergarten, and the 737 kindergarten classrooms were also observed using the Elementary scale and included in analysis (La Paro et al., 2009).
- *NCEDL State-Wide Early Education Programs Study (NCEDL SWEEP)*; Early et al., 2005, as cited in Hamre et al., 2007): a project that was developed to complement the diversity and funding of NCDEL-MS and included 454 classrooms across five states.

- National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD; NICHD ECCRN, 2002, 2005a; Pianta, Belsky, Vandergrift, Routs, Morrison, & the NICHD ECCRN, in press; as cited in Hamre et al., 2007): a large, prospective study that follows children across their developmental contexts and time in ten sites around the country. For the purposes of the CLASS validation studies, only the classroom observations using the elementary scale at grades one (N = 834), three (N = 827), and five (N = 791) were included in analyses.

The CLASS Pre-K manual's technical appendix (Pianta et al., 2008) also includes the following studies in the validation of the theoretical framework and technical adequacy:

- *4Rs program*: a study investigating the effects of social-emotional learning and literacy development. As part of the study, 82 classrooms across 18 schools participated and were observed.
- *Responsive Classroom Approach*: a three-year study of an integrated approach to teaching academic and social learning that included observations of 88 classrooms, grades one through five, in the Northeast United States.

Although the data were not intended to be nationally representative, the large number of classrooms in the prospective studies, especially in prekindergarten, provided a geographically representative sample (Pianta et al., 2008). Although each study did not use an identical version of the observation tool, the observational methods were consistent as were the global ratings of CLASS dimensions and domains. The observational methods included the CLASS and the Classroom Observation System (COS; NICHD, 2002), which was an earlier version of the CLASS that was designed for

first, third, and fifth grades in the NICHD SECCYD project (see above). The following sections will describe, in detail, the validated organizational structure, validity, and reliability established in these studies.

Organizational structure. Across the studies, the theoretical structure of the CLASS was subjected to empirical validation (Hamre et al., 2007; Pianta et al., 2008). First, a confirmatory factor analysis was conducted. For each study, experts used the theoretical foundation of the *process framework* to assign classroom observation ratings to the relevant CLASS domain (instructional support, emotional support, or classroom organization). This process yielded 100% agreement across experts. Then, a measurement model was developed for each study's data set to test the association of each scale to its corresponding factor, and the overall fit of a CLASS three-factor model. The three-factor model was also compared to a two-factor model that included only instructional and emotional support, and a one-factor model that represented overall classroom interactions (Hamre et al., 2007). For the purposes of the current study, the reported analyses from the CLASS Pre-K Technical Appendix will be reviewed, because it represents the specific validation sample used for the published measure.

For each of the one-, two-, and three-factor models, Hamre et al. (2007) and Pianta et al. (2008) reported the standardized regression weights, which indicate the magnitude of the relationship between a scale and its corresponding factor, and several fit indices that indicate the overall fit of the observed data to the hypothesized model. Factor loadings (standardized regression coefficients) on each domain were within the moderate to high range. Specifically, factor loadings for the emotional support factor ranged from 0.85-0.98, classroom organization ranged from 0.56 to 0.92, and instructional support

ranged from 0.79 to 0.95. “Goodness of fit” indices included the Goodness of Fit Index (GFI), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI). Other fit indices included the Root Mean Square Error of Approximation (RMSEA), the Adjusted Goodness of Fit Index (AGFI), and the Chi-Square divided by degrees of freedom. All fit indices were within an acceptable range, except the RMSEA and Chi-Square fit indices. The RMSEA indices were inflated above normally acceptable levels, although it was noted that this could be due to smaller numbers of variables in the models. Additionally, Chi-Square fit indices were higher than generally acceptable for good fit, which is likely due to the large sample size and large distributions within variables (Hamre et al., 2007).

Estimates of internal consistency were also provided for each factor in all of the studies. Internal consistency, measured by coefficient alphas, was consistently adequate across preschool studies (Pianta et al., 2008), but lower in elementary samples (Hamre et al., 2007). For the studies in prekindergarten samples, coefficient alphas ranged across from $\alpha=0.85$ to $\alpha=0.94$ for emotional support, $\alpha=0.81$ to $\alpha=0.86$ for instructional support, and $\alpha=0.76$ to $\alpha=0.89$ for classroom organization. Despite the somewhat lower internal consistency and fit indices for classroom organization, the authors suggested that the strong theoretical basis and internal consistency across domains lends support for its use, along with the use of the other two factors, as composite domains (Pianta et al., 2008).

Reliability. Several estimates of reliability have been established for the CLASS Pre-K (Pianta et al., 2008). In order to assess interobserver agreement, investigators across studies used 30-minute videotaped and live recording observation sessions. Two observers independently coded each videotape, and their scores were compared. The observers had acceptable accuracy in their agreement if their ratings were within one

point (on the one to seven point CLASS scale). Across studies, the average interobserver agreement was 87% and ranged from 78.8% (instructional learning formats dimension) to 96.9% (productivity dimension; Pianta et al., 2008).

The stability of scores across cycles was also assessed as a measure of CLASS reliability. The CLASS is based on multiple cycles, so determining the necessary number of cycles to ensure a reliable observation is critical to the adequacy of the measure. To determine the necessary number of cycles in the preschool samples, Pianta et al. (2008) examined the correlation between the first four observation cycles and the final score which was derived from 15.7 cycles over two to three days on average. Results indicated that four cycles provided moderate to high correlations (range of $r=0.84$ to $r=0.91$) with the final score. The stability of CLASS scores across cycles was also assessed by examining the internal consistency across cycles. Specifically, the coefficient alphas were examined across two, three, and four cycles. Results showed that the internal consistency of CLASS dimensions and domains remains consistent across cycles, though the coefficient alphas are highest across four cycles. Finally, means scores across cycles in the school day were analyzed for significant differences across the school day. Results for the preschool sample indicated that for the Emotional Support domain, scores decreased significantly across consecutive cycles in a day (Pianta et al., 2008).

The stability of CLASS Pre-K scores across days in the week and across the school year were also moderate to high (Pianta et al., 2008). To examine the stability of scores across days, classrooms were observed on 2 days during a spring semester, usually on two consecutive days. The scores were correlated, and results demonstrated high stability across days (range $r=0.73$ to $r=0.85$). Across the year, scores on CLASS

dimensions and domains remained stable, though the Instructional Support domain decreased slightly across the year.

Validity. Validity of the CLASS Pre-K has been examined through face validity, construct validity, criterion validity, and predictive validity. Construct validity was established through extensive literature reviews on effective teaching practices and classroom climate, as well as focus groups with key stakeholders such as educators, administrators, and parents. In addition, face validity was achieved by consulting experts on classroom quality and teaching effectiveness throughout the development of the scale to ensure their agreement with the importance of the CLASS measures for student performance (Pianta et al., 2008).

To examine criterion validity, correlations were computed between the CLASS Pre-K and associated measures of similar constructs (Pianta et al., 2005), including the Early Childhood Rating Scales, Revised Edition (ECERS-R; Harms et al., 1998) and the Emerging Academics Snapshot (Ritchie, et al., unpublished measure; as cited in Pianta et al., 2008). The ECERS-R measures the availability of appropriate materials, the presence of safety practices, and some indices of teacher and student interactions. To assess the criterion validity of the CLASS Pre-K with the widely used ECERS-R, correlations were conducted to determine the relation between CLASS Pre-K domains and ECERS-R factors. Significant correlations were found between the ECERS-R interactions factor, which focuses on the promotion of positive teacher-student interactions, and the provisions factor, which focuses on the availability of appropriate materials. Results showed that classrooms with higher scores on the Interactions and Provisions factors also had higher scores on all three CLASS Pre-K domains (Pianta et al., 2005). Significant

correlations between the CLASS Pre-K domains and the ECERS-R ranged from $r=0.45$ to $r=0.63$ for Interactions, and $r=0.33$ to $r=0.36$ for Provisions.

To establish additional criterion validity, Pianta et al. (2005) correlated the CLASS Pre-K with the Emerging Academics Snapshot (Ritchie, et al., unpublished measure; as cited in Pianta et al., 2008), a time-sampling observational method that assesses the amount of time spent on activities in the classroom. Analyses indicated significant positive correlations between all three CLASS Pre-K domains and the percentage of time spent in literacy and language activities (range of $r=0.17$ to $r=0.22$). Also, the percentage of time spent in adult-elaborated interactions was highly correlated with CLASS Pre-K domains ($r=0.23$ to $r=0.43$). The Emotional Support and Classroom Organization domains were significantly and positively correlated with the percentage of time spent in math ($r=0.13$ and $r=0.14$, respectively). Results from this study also demonstrated negative correlations between all three CLASS Pre-K domains and the percentage of time not engaged. As a result, the CLASS Pre-K has established validity with other scales, making the observation of student-teacher interactions a valid tool for assessing classroom quality.

Finally, the degree to which ratings on CLASS Pre-K domains correlate with student academic and social outcomes is critical for establishing its validity as a tool that intends to “assess classroom-level processes that are directly associated with children’s performance” (p. 104, Pianta et al., 2008). The predictive validity of the CLASS Pre-K domains with children’s cognitive and social outcomes has been measured in various studies (Howes et al., 2008, Mashburn et al., 2008).

Mashburn et al. (2008) analyzed the degree to which several indicators of classroom quality predicted students' academic, language, and social outcomes in prekindergarten. Measures of classroom quality included measures of program infrastructure and design set by the National Institute for Early Education Research (NIEER), overall classroom environmental quality measured by the ECERS-R overall quality (Harms et al., 1998), and quality of teacher-child interactions (Pianta et al., 2007). Results indicated that the presence of higher instructionally supportive interactions between teachers and students, as measured by the CLASS instructional support domain, was the most consistent and robust predictor of children's growth in language, literacy, and math skills over time (Mashburn et al.). In addition, the higher degrees of emotional support in classrooms predicted higher teacher-reported social skills of students and decreases in students' behavior problems.

Taken together, findings from large-scale studies that investigated the impact of classroom quality on student cognitive, language, and social competence have strong implications for practice and further research. Yet, gaps are also evident in these studies. For example, although many of the well-accepted studies are geographically representative, they include a relatively low number of minority children. As part of feasibility restrictions, many studies excluded children whose parents could not speak fluent English, and children who did not pass English fluency assessments required for inclusion in the study (e.g., Mashburn et al., 2008). Given the sharp demographic shifts in recent years across the United States, the exclusion of these children is troubling. One recent study was identified that explicitly focuses on dual-language learners (e.g., Downer et al., 2011); this study will be discussed later in this chapter. Still, the impact of

classroom quality on the achievement of Spanish-speaking students in prekindergarten classrooms is still relatively unexamined.

Early Literacy in Prekindergarten

This study focuses on the following key early literacy skills, because they are most highly predictive of later reading and academic skills (Lonigan, 2006a; NELP, 2008; Whitehurst & Lonigan, 1998): oral language (vocabulary), phonological awareness (letter sounds, initial word sounds, rhyme awareness) and print knowledge (letter identification, book knowledge). The following section will discuss these skills in more detail and explain why they were selected as variables in this study.

In early childhood settings, school success is often based on students' physical, emotional, social, and cognitive readiness for formal schooling. Formal school settings emphasize cognitive skills and academic achievement, so school success in early childhood is often measured by assessing a child's competence in the domains of cognition, language, and pre-academic skills (La Paro & Pianta, 2000; NICHD, 1998). The focus of early childhood programs on children's pre-academic skills is largely based on these skills' predictive validity for later school success (e.g., La Paro & Pianta, 2000).

Two frequently used terms describe children's pre-reading skills and are often used interchangeably: *early literacy* and *emergent literacy* (Justice et al., 2005). Justice and colleagues note that these terms are also interchangeable with *pre-literacy* and *emerging literacy*, and represent the earliest knowledge, concepts and skills that precede conventional literacy. The term *emergent literacy* is widely used to specifically describe "the skills, knowledge, and attitudes that are developmental precursors to reading and

writing” (Sulzby & Teale, 1991; Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998). Emergent literacy has been separated from a “reading readiness” approach which presumes that a boundary exists between children’s pre-reading and the actual reading that occurs when students are exposed to formal reading instruction in school. Instead, an emergent literacy approach views literacy development as occurring on a developmental continuum. Within this view, emergent literacy skills are those that develop early in children’s experiences before they have received explicit reading instruction and that are critical for later reading (NELP, 2008; Whitehurst & Lonigan, 1998).

Although the terms are often used interchangeably, some broad definitions of *early literacy* have included any contact children have with written or spoken language (Whitehurst & Lonigan, 1998). The National Early Literacy Panel (NELP, 2008) describes *early literacy* skills in a broader way than definitions of *emergent literacy*. NELP refers to emergent skills as the early developing precursors to conventional literacy skills (reading, writing, spelling) and refers to *early literacy skills* as encompassing both emergent skills, those that are precursors to later conventional literacy skills (reading, writing, and spelling), and conventional literacy skills that may be developing during preschool and kindergarten. The current dissertation will use the more encompassing term *early literacy* to refer to the early language and literacy skills that develop prior to and during prekindergarten that are precursors for later literacy success.

Early literacy skills have been divided into two domains of *inside-out* and *outside-in* skills (Whitehurst & Lonigan, 1998). Figure 1 describes these early literacy skills in detail. Inside-out skills are the code-related components of language, including children’s ability to produce and link letters (graphemes) or word parts (phonemes) into meaningful

sounds. Inside-out skills include decoding letters into phonemes, translating graphemes or phonemes to written print, and rhyming. Letter knowledge and phonological awareness are two important early literacy skills that fall into the inside-out domain (Whitehurst & Lonigan, 1998). Inside-out skills are significantly predictive of early literacy and reading success in kindergarten and first grade as children are learning how to decode words and begin formal reading (Dickinson et al., 2003; NICHD, 2005b; Lonigan, Burgess, & Anthony, 2000; Whitehurst & Lonigan, 2002).

Outside-in skills refer to children's understanding of the context of the text, including knowledge of the world, semantic knowledge (word meaning), and vocabulary. Oral language, including vocabulary and semantic knowledge, are important early literacy skills in the outside-in domain (Whitehurst & Lonigan, 1998). Whitehurst and Lonigan assert that both inside-out and outside-in domains develop simultaneously and a competence in both domains is necessary for children's reading. Outside-in skills become more important during elementary school when reading comprehension skills are required (Storch & Whitehurst, 2002).

NELP (2008) conducted a meta-analysis of 500 published studies that discussed effective early literacy interventions and the degree to which early literacy skills predict later conventional literacy achievement in kindergarten and elementary school. Relations were classified as either strong (average correlation across studies of $r \geq 0.50$), moderate (average correlation across studies between $r = 0.30$ and 0.49), or weak (average correlation across studies of $r < 0.30$). Conventional literacy skills measured in preschool and kindergarten (such as decoding words and non-words, spelling, and comprehension) were the strongest predictors of later literacy achievement. Of the early literacy skills, the

strongest predictor of the literacy skills of decoding and spelling was alphabet knowledge. The early literacy skill that correlated most strongly with later reading comprehension was concepts about print. These relations will be discussed further in the following sections.

The three early language and literacy skills that were chosen for this study were at least moderately or strongly predictive of later reading success (decoding, comprehension, spelling). These early literacy skills are print and alphabet knowledge (knowledge of letter names and sounds, understanding of book and print conventions), phonological awareness (detection and manipulation of words, syllables or phonemes), and oral language (Lonigan, 2006a; NELP, 2008; Snow, Burns, & Griffin, 1998; Whitehurst & Lonigan, 1998). These skills are shaded in Figure 1. Each of these skills, as well as the development of these skills in English Language Learners, will be discussed in further detail in following sections.

Print and alphabet knowledge. The term *print knowledge* refers broadly to children's understanding of conventions of books and print (Zucker, Ward, & Justice, 2009). Four domains of print knowledge are emphasized in the research on early literacy (Justice & Ezell, 2002, 2004), including "(1) Print as an object of meaning, (2) Book organization and print conventions, (3) Alphabet knowledge, and (4) Concept of word" (p. 63, Zucker et al., 2009). Children's performance in these domains of print knowledge significantly predicts later reading skills, including decoding, reading comprehension, and spelling (NELP, 2008).

Figure 1. *Early Literacy Skills*

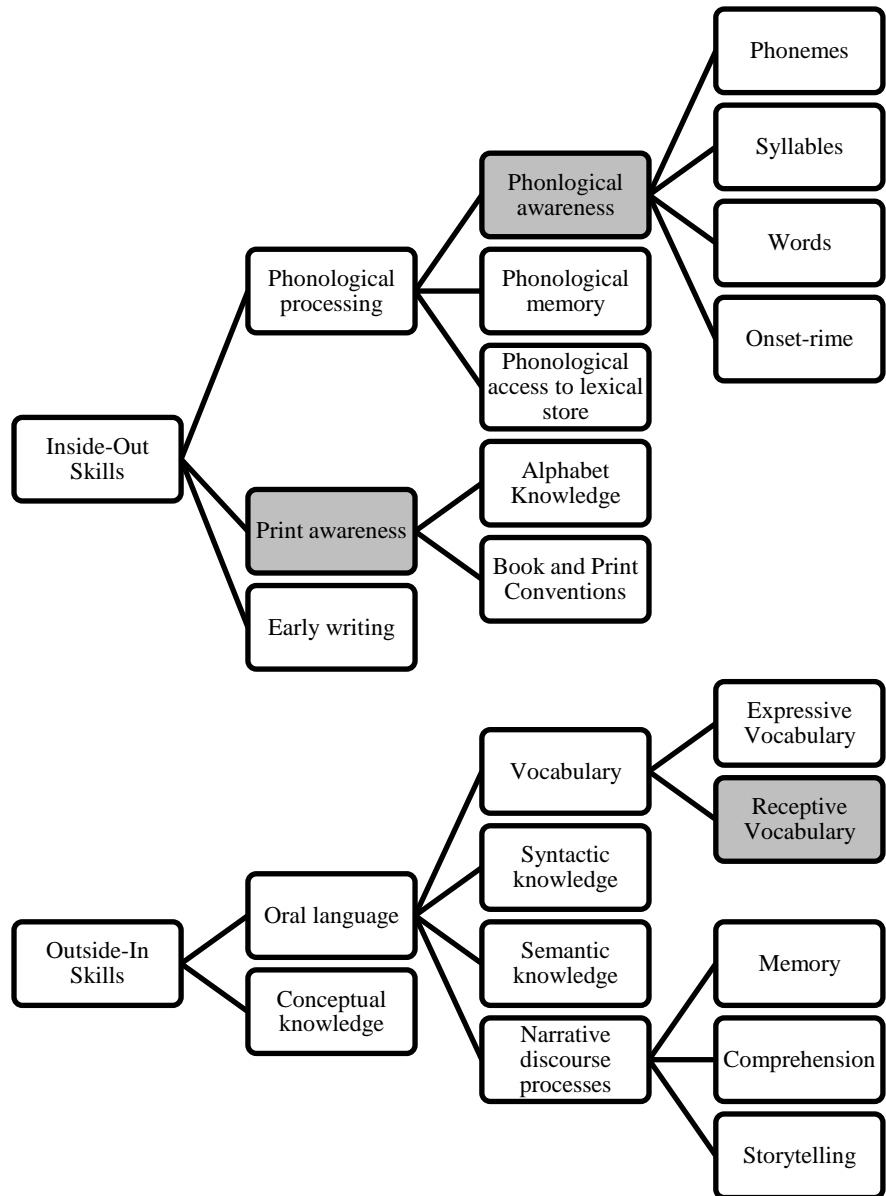


Figure based on: Adams (1990); Anthony et al. (2003); Justice et al. (2005); Lonigan (2006a); Lonigan et al. (2000); NELP (2008); NICHD (2005); Snow, Burns, & Griffin (1998); Storch & Whitehurst (2002); Whitehurst & Lonigan (1998); Zucker et al. (2009).

Alphabet knowledge refers to a student's knowledge of letter names and the sounds associated with letters (NELP, 2008). Alphabet knowledge in prekindergarten is an important predictor of short- and long-term reading competence (Adams, 1990; NELP, 2008). The recent NELP (2008) meta-analyses indicated that alphabet knowledge in prekindergarten had strong correlations with conventional literacy skills in elementary school. Specifically, alphabet knowledge had a strong average correlation with decoding ($r = 0.50$) and spelling ($r = 0.54$) and a moderate correlation with reading comprehension ($r = 0.48$). In addition, Scarborough (1998) conducted a meta-analysis to investigate the relations between early literacy skills in kindergarten and later reading. Importantly, Scarborough's review of 61 studies included 24 studies that investigated letter identification. The average correlation between letter identification in these studies and later reading scores was $r = .52$. Similarly, in a recent study that analyzed the Head Start Family and Child Experiences Survey (FACES; Hammer, Farkas, & Maczuga, 2010), researchers found that among children's alphabet knowledge in Head Start predicted their early reading skills in kindergarten (Hammer et al., 2010).

Knowledge about print concepts and book conventions are increasingly recognized as critical early literacy skills in prekindergarten. The NELP (2008) meta-analysis indicated that on average, children's measured print concepts knowledge in kindergarten or earlier was moderately correlated with decoding in ($r = .34$) and strongly correlated with reading comprehension ($r = .54$) elementary school. Measures of print awareness were also strongly correlated with reading comprehension ($r = .48$). Similarly, Scarborough (1998) found that children's print knowledge in kindergarten was a strong predictor of reading in elementary school (average correlation across studies $r = .53$).

Phonological awareness. Phonological awareness is “the ability to detect or manipulate the sound structure of oral language” (p. 78, Lonigan, 2006a). Phonological awareness is one of three skills involved in phonological processing; the other skills are phonological access to lexical store and phonological memory. Of the three skills, phonological awareness is the most predictive of later decoding and reading comprehension (Lonigan, 2006a; NELP, 2008) and is most relevant for the current dissertation.

Phonological awareness, also described as *phonological sensitivity* (e.g., Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003) includes the detection and manipulation of units of sound in language. Units of sound include phonemes (the smallest unit of language), onset-rimes (an onset represents the initial consonant in a syllable, while rime represents the remaining vowel and consonant sounds), syllables (a sequence of sounds), and words. Research indicates that these phonological abilities develop along a continuum, as children master larger units of sound (e.g., words) before learning how to detect and manipulate smaller units of sound (e.g., phonemes; e.g., Adams, 1990; Anthony et al., 2003). These skills build upon each other and become more complex as children grow increasingly more competent with language.

Importantly, the complex development of phonological awareness skills has led some researchers to argue that these skills represent distinct constructs that develop independently (e.g., phonemic awareness, onset-rime) whereas other researchers consider phonological awareness to be one global ability that develops over time (Anthony et al., 2003; Lonigan, Burgess, & Anthony, 2000). Recent research has suggested that regardless of the type of phonological awareness task (onset-rime, phonemic awareness)

and its linguistic or operational complexity, the same underlying phonological awareness ability is measured (e.g., Anthony & Lonigan, 2004; Lonigan et al., 2000; Schatschneider, Francis, Foorman, Fletcher, & Mehta, 1999). For example, Lonigan et al. (2000) conducted a series of confirmatory factor analyses to determine the best model fit for the construct of phonological sensitivity. He used multiple phonological awareness tasks (e.g., rhyme detection, alliteration, blending syllables, elision) as well as measurements of letter knowledge, environmental print, and oral language. Analyses revealed that across samples of three- and four-year-old preschool children, phonological sensitivity was best represented as a unitary construct, broadly defined to include measures of sensitivity to words, syllables, onset-rime, and phonemes. This unitary construct of phonological awareness was, in turn, significantly predictive of later phonological sensitivity and decoding skills (Lonigan et al., 2000).

Children's phonological awareness is predictive of other early literacy skills in prekindergarten and first grade, as well as reading skills in later elementary grades (Adams, 1990, Dickinson et al., 2003; Lonigan et al., 2000; NELP, 2008; NICHD, 2005b). The NICHD Early Child Care Research Network (NICHD) investigated the predictive role of phonological awareness on reading competence in a large, geographically representative sample of 1,137 children. The authors used structural equation modeling to analyze the impact of phonological processing skills in prekindergarten and kindergarten on reading skills (letter and word identification, reading comprehension) in first and third grade. The authors found significant direct pathways between phonological skills during prekindergarten (at 54 months) and coding skills (letter and word identification) in first grade ($B=.10$, $p<.01$). These results parallel other

studies that found that phonological awareness significantly predicted decoding in kindergarten and first grade (e.g., Dickinson et al., 2003; Lonigan et al., 2000). Taken together, these findings provide an empirical basis for phonological awareness as a critical early literacy skill.

Oral language skills. Oral language is defined as the number and variety of words that children understand, and their ability to accurately use words to convey meaning (Biemiller, 2006; Wilson & Lonigan, 2010). Narrow definitions describe oral language as comprised of only vocabulary skills, but broader definitions also include concepts of narrative, semantic knowledge, and syntax (NICHD, 2005b). Vocabulary is a critical early literacy skill because children with larger vocabularies are more competent in later reading (Adams, 1990; Storch & Whitehurst, 2002). Oral language skills also significantly influence reading comprehension later in elementary school (e.g., Storch & Whitehurst, 2002). Some research suggests that oral language positively affects phonological processing (Lonigan, 2003) and independently predicts decoding in elementary school (NICHD, 2005b).

Although oral language skills in prekindergarten are established to be predictive of reading comprehension in later elementary school, the role of oral language on the development early code-based literacy skills has been debated (e.g., NICHD, 2005b). Oral language may serve as a “platform from which phonemic awareness is ‘launched’” (p. 476, Dickinson et al., 2003). This implies that the only reason that oral language is important for later reading skills is its relation to code-based skills, such as phonological awareness. If this were the case, the short-term impact of children’s oral language skills during prekindergarten could be overlooked (Biemiller, 2006). However, the relation

between oral language and phonological awareness is more complex than that. Lonigan (2003) investigated specific questions regarding the nature of the relations between oral language and phonological awareness. He re-analyzed the results of an early literacy intervention that randomly assigned children to two separate interventions targeting specific early literacy skills: one targeting phonological awareness, and a second targeting oral language. The oral language intervention produced significantly positive effects on measures of oral language, and the phonological awareness intervention produced significantly positive effects on measures of phonological awareness. Interestingly, results also indicated that children in the oral language intervention had significant positive gains on measures of phonological awareness, and specifically rhyme and blending skills, even though they received no direct training in these skills. However, children receiving the phonological awareness intervention showed no gains in oral language skills. Lonigan suggested that the results support the hypothesis that children's oral language skills are important for the development of phonological awareness skills.

Questions regarding the short-term influence of oral language in prekindergarten have led other researchers to investigate whether oral language uniquely predicts reading in early elementary school. Some have suggested that earlier use of the narrow definition of oral language as vocabulary skills is the cause of the modest to weak effects found in some studies (NELP, 2008). The NICHD (2005b) study found that when oral language was measured comprehensively (including vocabulary, semantics and grammar), oral language predicted first grade decoding skills and third grade reading comprehension. However, Dickinson et al. (2003) investigated the predictive role of oral language on literacy in kindergarten and first grade when oral language was defined narrowly and

measured by receptive vocabulary. Through hierarchical linear regression analyses using data from 533 Head Start children, Dickinson et al. found that receptive vocabulary and phonological sensitivity were equally significant, independent predictors of literacy. Taken together, these research findings suggest that oral language can be conceptualized narrowly as including vocabulary, or more broadly, including expressive and receptive vocabulary, semantics and grammar. Whether defined broadly or narrowly, oral language is a critical early literacy skill for prekindergarten children's later reading.

Assessment of early literacy skills. Six specific criteria were used to select measures of early literacy for inclusion in the current study. First, the measures needed to assess at least one of the three key early literacy skills: oral language, phonological awareness, or alphabet knowledge. These three early literacy skills were included based on their predictive relations with later reading skills. Second, assessment measures must have demonstrated adequate technical properties (e.g., validity, reliability, and standardization procedures). Third, the measures must have been used in previous empirical studies with prekindergarten English and Spanish-speaking students. Fourth, measures were included only if they were practical for use. Finally, measures were selected that allowed scores to be compared across children (norm-referenced) or within a child over time (criterion-referenced).

Several different assessment methods have been used to gather information on a child's early literacy skills: informal assessments, screening measures, and diagnostic assessments. Lonigan (2006b) describes each method and its associated benefits and limitations. Informal assessments, including anecdotal notes or teacher checklists, are

convenient and easy to use, but do not provide diagnostic information and do not compare children's skills to their peers or across time.

Screening measures provide a global picture of children's skills in a particular area, such as early literacy. Screening measures are often brief and easy to administer, and can be administered on many children in a short period of time. These measures are also useful for identifying children who may need more extensive assessment and intervention. However, screening measures do not provide in-depth information about key early literacy skills, and few screening measures have been validated for use in early childhood settings (Lonigan, 2006b).

Diagnostic assessments are assessments that provide detailed information on the strengths and weaknesses of children's early literacy skills (Lonigan, 2006b). Most diagnostic assessments are also standardized assessment measures, tools that have common items and procedures and are often standardized on a normative sample. Standardized assessments are useful because they allow the assessor to make comparisons among children or within the same child over time. With standardized diagnostic assessments, users can have increased confidence in the consistent validity and reliability of scores. Although some diagnostic assessments can be time-consuming and may not be feasible for assessing all children at-risk for academic difficulties, diagnostic assessment is often considered the gold standard for identifying children who are not performing at developmentally age-appropriate skill levels (Wilson & Lonigan, 2010).

Increasingly, criterion-referenced assessment is used as diagnostic assessments of early literacy skills in prekindergarten classrooms (Wortham, 2008). Criterion-referenced assessments can also be standardized so that the scores for an individual student are

compared to an objective or criterion, although not to other students. Criterion-referenced assessment is regarded as a best practice in early childhood assessment (Slentz & Hyatt, 2008). The following sections will discuss commonly used assessment measures of early literacy skills that were reviewed for inclusion in the current study. All of these measures were either diagnostic or criterion-referenced assessments.

Phonological awareness and print knowledge assessment tools. Many assessment tools have proven to be useful for evaluating children's competence in phonological awareness (Lonigan, 2006b). Three assessment tools closely matched the criteria for this targeted early literacy skill: the *Woodcock Johnson III Tests of Achievement (WJ-III)*; Woodcock, McGrew, & Mather, 2001); the *Test of Preschool Early Literacy (TOPEL)*; Lonigan, Wagner, Torgesen, & Rashotte, 2007); and the *Phonological Awareness Literacy Screenings-Preschool (PALS-PreK)*; Invernizzi, Sullivan, Meier, & Swank, 2004). The PALS-PreK was selected for the study because it provided the best fit to the established criteria.

The *Woodcock Johnson III Test of Achievement (WJ-III)*; Woodcock, McGrew, & Mather, 2001) met the first criterion for use as it is frequently used to assess phonological awareness. The normative sample of the WJ-III was geographically, socioeconomically, ethnically representative of the population, and included Spanish-speaking individuals (Woodcock et al., 2001). The *WJ-III Tests of Achievement* demonstrated adequate technical properties, meeting the second criteria. Specifically, reliability estimates included median reliability coefficients (r_{11} , split half reliability procedure) ranging from .79 to .94 for non-speeded tests (i.e., those that are not timed), and median reliability coefficients (r_{cc} ; rasch analysis procedure) ranging from .85 to .98 for speed tests (i.e.,

those that are timed). The *WJ-III* also demonstrated strong content validity through an extensive theoretical basis, and is based on the Cattell-Horn-Carroll theory of cognitive abilities (CHC theory). Construct validity was demonstrated through confirmatory factor analysis, and correlations for the achievement tests ranged from $r=0.50$ to $r=0.70$.

Criterion validity was established through moderate to strong correlations (range of $r=0.31$ to $r=0.79$ across measures) with several related achievement batteries.

Limitations of the *WJ-III* for the purposes of the current study include its comprehensive nature; the full battery can require 60 to 90 minutes to administer. Also, although individual subtests can be used and interpreted in isolation, the technical adequacy is negatively affected. This limitation makes the *WJ-III* less feasible for use.

The *Test of Preschool Early Literacy (TOPEL)* (Lonigan, Wagner, Torgesen, & Rashotte, 2007) measures phonological awareness, print knowledge, concepts of alphabet knowledge and print concepts, as well as oral language through expressive and definitional vocabulary. The normative sample of the *TOPEL* was established using a sample of 842 children that approximated the 2004 census data and was analyzed by geographic region, race and ethnicity, language spoken, and socioeconomic status variables (Madle, Owens, & Lenz, 2010). The *TOPEL* demonstrated adequate internal consistency, with coefficient alphas ranging from $\alpha=0.87$ to $\alpha=0.96$ across subtests, and test-retest reliability estimates ranged from $r=0.81$ to $r=0.89$. Additionally, the *TOPEL* demonstrated adequate construct validity and criterion validity (see Lonigan et al., 2007). Construct validity was investigated As a result, the *TOPEL* met several criteria for use in the current study. However, limitations of the *TOPEL* include its fairly recent

development. Specifically, at the beginning of the larger study from which the current study was developed, the *TOPEL* was not yet published.

The *Phonological Awareness and Literacy Screenings-PreK (PALS-PreK;* Invernizzi et al., 2004) is a criterion-referenced tool used to assess phonological awareness through letter sound, initial sound, and rhyming subtests. Although the original normative sample included predominately English-speaking students, additional studies have used the *PALS-PreK* in more ethnically diverse populations (e.g., Justice et al., 2005). The *PALS-PreK* is a criterion-referenced tool, wherein students provide their own point of reference and scores can be compared on students across time. Reliability was adequate for the *PALS-PreK*, including internal consistency (Cronbach's alpha estimates range from $\alpha= 0.77$ to $\alpha=0.93$), Guttman split-half reliability (estimates ranged from $r=0.71$ to 0.94), and inter-rater reliability (correlations average $r= 0.99$). Adequate validity estimates were reported, including content validity, construct validity, and concurrent validity. See pages 74 through 75 of this proposal, for a more specific description of these studies.

The *PALS-PreK* assesses alphabet knowledge, letter sounds, beginning sounds, rhyming, print awareness, and name writing. The *PALS-PreK* was chosen for use in the current dissertation because it met the required standards of technical adequacy, and demonstrated correlations with important measures of later reading. The *PALS-PreK* also included familiar tasks to teachers and students, making the tool more acceptable and feasible for use. The *PALS-PreK* also measured all but one (oral language) of the English early literacy skills of interest in the current study, in one assessment tool, increasing its feasibility for use.

Oral language assessment tools. Standardized measures of oral language include expressive vocabulary, receptive vocabulary, syntax, and listening comprehension (Lonigan, 2006b). Three assessment tools closely matched the inclusion criteria for this study: The *Expressive One-Word Picture Vocabulary Tests–Third Edition (EOWPVT-3;* Gardner & Brownell, 2000), the *Preschool Language Scales-Fourth Edition (PLS-IV,* Zimmerman, Steiner, & Pond, 2002), and the *Peabody Picture Vocabulary Test-Third Edition (PPVT-III;* Dunn & Dunn, 1997). The PPVT-III was selected for the study because it provided the best fit to the established criteria.

The *Expressive One-Word Picture Vocabulary Tests–Third Edition (EOWPVT-3;* Gardner & Brownell, 2000) is an assessment designed to briefly assess expressive vocabulary. The EOWPVT-3 was standardized on a normative sample that reflected “broad demographic characteristics” (Longo, 2003). The EOWPVT-3 demonstrated adequate reliability. For instance, the internal consistency was high ($\alpha=.93$ to $.98$) and split-half reliabilities had a median of $r=.98$. Validity measures included adequate measures of construct and criterion validity. Yet, concurrent validity correlations with other vocabulary tests yielded a median $r=.79$, which reviewers have noted was somewhat low (Longo, 2003). As a result, the EOWPVT-3 closely matches the criteria for use based on its use in broad demographic samples, assessment of expressive vocabulary, and adequate reliability. However, limitations include relatively low concurrent validity, and so the EOWPVT-3 was not used in the current study.

The *Preschool Language Scale-Fourth Edition (PLS-IV;* Zimmerman, Steiner, & Pond, 2002) is a measure that assesses expressive communication along with auditory comprehension in children from birth to seven years of age. The PLS-IV was

standardized on a diverse normative sample, including approximately 30% children of non-majority race or ethnicity. Procedures were established to ensure the cultural appropriateness of items, making it useful in minority populations. Still, the standardization sample included only 3.4% non-English-speaking children (Flowerday, 2005). The technical properties are adequate, including reported estimates of test-retest reliability, internal consistency, construct and concurrent validity. Test-retest estimates ranged from $r=.82$ to $r=.95$ for the subscale scores and from $r=.90$ to $r=.97$ for the Total Language Score composite. Internal consistency estimates were reported to be adequate for the subscales (Auditory Comprehension (AC), $\alpha=.86$; Expressive Communication (EC), $\alpha=.91$) and the composite ($\alpha=.93$). In addition, validity estimates were reported, including content validity that was established through extensive literature reviews, user surveys, and task reviews. Convergent validity was established with the PLS-III (correlations ranged between $r=.65$ for AC and $r=.79$ for EC) and other relevant scales (i.e., children administered the Denver III scale scored within one standard deviation of the mean for the PLS-IV). However, for the purposes of the current study, the PLS-IV is long to administer (20-30 minutes), making the feasibility of assessment more difficult for educators, especially with large numbers of students.

The *Peabody Picture Vocabulary Test-Third Edition* (PPVT-III; Dunn & Dunn, 1997) is a frequently used test of oral language that measures receptive vocabulary. The PPVT-III is a brief assessment tool that takes approximately 15 to 20 minutes to administer. The PPVT-III normative sample was nationally representative, and ethnically and racially proportionate to the population. Research has demonstrated the adequate reliability of the PPVT-III, including adequate internal consistency (range of coefficient

$\alpha = 0.92-0.98$), split-half correlation (estimates range from $r = .86$ to $r = .97$), alternative forms correlation ($r = .88$ to $r = .96$), and test-retest correlation ($r = .91$ to $r = .94$). Construct and criterion validity estimates were also strong. Based on the criteria for inclusion in this study, the PPVT-III is developmentally appropriate for preschool children, with an age range beginning at three and one half years old, and extending to age 90. The *PPVT-III* is widely used in early literacy research as a measure of receptive vocabulary that represents oral language (e.g., Dickinson et al., 2003; Lonigan et al., 2000) and in empirical studies with English and Spanish-speaking students (Ryan et al., 2009). As a result, the PPVT-III was chosen for use in this study because it met all of the specified inclusion criteria.

Spanish early literacy assessment tools. Spanish early literacy assessments that measured oral language, phonological awareness, and alphabet knowledge, were also reviewed for this study. Two Spanish early literacy assessments closely matched the criteria for inclusion in this study: The *Vocabulario en Imágenes Peabody (TVIP)*; Dunn, Padilla, Lugo, & Dunn, 1986), and The *Woodcock-Munoz Language Survey Revised, Spanish Form (WMLS-R)*; Woodcock, Munoz-Sandoval, Ruef, & Alvarado, 2005). The WMLS-R was chosen for inclusion in this study because it provided the best fit to the prescribed criteria.

The *Vocabulario en Imágenes Peabody (TVIP)*; Dunn, Padilla, Lugo, & Dunn., 1986). is a Spanish-language adaptation of the Peabody Picture Vocabulary Test-Revised Version (PPVT-R; Dunn & Dunn, 1987) designed to measure Spanish receptive vocabulary in individuals from 2 ½ to 18 years of age. The TVIP met the first criteria for use in this study because it measures Spanish receptive vocabulary in young children.

Items from the PPVT-R (Dunn & Dunn, 1987) were translated into Spanish and field tested in Mexico. The TVIP was then standardized in populations in Mexico and Puerto Rico. As a result, normative information is provided for Mexico, Puerto Rico, and a composite group. In addition, the TVIP has demonstrated adequate technical properties, including validity and reliability (see Dunn et al., 1986). However, the measure was published in 1986, making outdated for use in the current study. As a result, the TVIP was not included in the current study.

The *Woodcock-Munoz Language Survey Revised, Spanish Form* (WMLS-R; Woodcock et al., 2005) is a measure of early language and literacy skills in Spanish-speaking children that met the criteria for inclusion in this study. The WMLS-R Spanish Form is an adaptation of the WMLS-R English Form, which is a representative, standardized measure of language, language comprehension, reading, and writing. The WMLS-R is comprised of seven tests; two measure the relevant early literacy Spanish skills of students in the current study, including *Vocabulario Sobre Dibujos* (picture vocabulary), and *Identificación de Letras y Palabras* (letter-word identification). The *Vocabulario Sobre Dibujos* test requires students to point to some items and name others that are presented visually on the picture template. The *Identificación de Letras y Palabras* test requires students point to the correct letter or word on some items and to verbally pronounce words and letters on other items (Woodcock et al., 2005).

The WMLS-R Spanish Form was adapted from the WMLS-R English form, which was standardized on a nationally and geographically representative population of children in the United States (Woodcock et al., 2005). Items on the WMLS-R Spanish Form were developed from parallel English tests and then Spanish calibration data were

used to equate the scores to the English norms. The Spanish version calibration sample was drawn from 1,157 native Spanish-speaking participants from the United States, Puerto Rico, and several Latin and South American Spanish-speaking countries. The WMLS-R has demonstrated adequate technical properties (Woodcock et al., 2005). See pages 75 through 77 in this proposal for a more specific description of this study.

Demographics and Early Literacy Development of Spanish-Speaking Children in Classrooms

Increasing attention is being paid to classroom experiences of children who primarily speak a language other than English. Indeed, the number of immigrants to the U.S. increases each year and many of those students are at the highest risk for later school failure. The increases in immigration also brought about an increase in the diversity of languages spoken in the United States. Although many languages are spoken in the U.S. school systems, 75% of students learning English as a second language speak Spanish as their first language (U.S. Department of Commerce Census Bureau, 2007). The U.S. Census predicted a 34% growth in the population of Hispanic origin/Latino students between the years of 2000 and 2010 (U.S. Bureau of the Census, 2004). Recent data show that that this population actually grew by 43% and that more than half of the population growth between 2000 and 2010 was due to the increase in individuals of Hispanic/Latino origin (Humes, Jackson, & Ramirez, 2011).

In prekindergarten programs, enrollment numbers are paralleling this demographic shift. The Early Childhood Longitudinal Study-Birth Cohort (ECLS-B, NCES, 2009) reported that minority children comprised 42% of public prekindergarten

programs. Of these minority children, Hispanic/Latino children represent the largest minority group. The ECLS-B study also reported, that 18.5% of students entering Kindergarten come from a home where a primary language other than English is spoken. In Nebraska, where this study is being conducted, the Latino population increased by 155% between 1990 and 2000 (Gouveia, Carranza, & Cogua, 2005). From 2000 to 2010, the Latino population increased by 77.9%, with the greatest increase occurring in the population of Latino youth (Cantrell, 2011). Latino youth in Nebraska increased by 85.9% between 2000 and 2010 and now comprise 23% of all youth in Nebraska, similar to the rest of the United States population as a whole. Although the highest percentage change occurred in metropolitan areas between 2000 and 2010, many Latino families continue to be concentrated in largely rural areas where resources are especially limited compared to less rural communities.

The development of language for Spanish-speaking students. Students who enter school predominately speaking a language other than English are often referred to as *English Language Learners*. The term *English Language Learner (ELL)* can be used broadly to identify students “whose home language is not English or who primarily speak a language other than English in the home” (p. 176, Espinosa, 2007). Spanish-speaking students represent the largest population (76%) of ELL students (U.S. Department of Commerce Census Bureau, 2007).

As a group, ELL students tend to score lower on tests of English literacy (e.g., National Assessment of Educational Progress, 2007). Findings of *The Nation's Report Card* (National Assessment of Educational Progress) indicated that as a group, students from culturally and linguistically diverse backgrounds achieve at lower rates than their

white, English-speaking peers. In particular, reading scores were lower for black and Hispanic students than their white peers, and a similar gap existed between ELL and non-ELL students. Though the scores in all groups were higher in 2007 than 2005, the achievement gap between white students and students of other ethnicities (with the exception of Asian American/Pacific Islander students) and between ELL and non-ELL students did not decrease in the past decade. Importantly, research has shown that ELL children are more likely to have weaker early literacy skills at school entry than their non-ELL peers (Hutchinson, Whiteley, Smith, & Connors, 2004).

Recent studies indicate that Spanish-speaking students are often at greatest risk academically, as they often achieve at lower rates and eventually face a higher risk for school drop-out than their English-speaking peers from other minority groups (Martinez, DeGarmo, & Eddy, 2004; National Center for Education Statistics, 2003). Martinez et al. (2004) surveyed 564 Latino and non-Latino adolescent students about their experiences in school, and surveyed their parents about predictors of adolescents' academic success and school completion. Latino adolescents reported significant barriers to education, and 50% of Latino adolescents reported experiencing discrimination in school. Latino adolescents and their parents reported they were more likely to drop out of school than non-Latino adolescents. Results from this study lend further support to the educational struggles that Latino students face throughout their school years.

ELL students' development and acquisition of home language and English language is important to their competence in early literacy and beyond. Children who learn English as a second language develop through multiple stages of language acquisition, either simultaneously or sequentially (Espinosa, 2007; Tabor, 2008).

Students who learn English and at least one other language, simultaneously and before the age of three, acquire their second language similarly to monolingual students.

However, children who learn a second language sequentially, or after three years of age, acquire their second language differently and proceed through stages that are highly influenced by ecological factors such as their home and school environments (McLaughlin, Blanchard, & Osanai, 1995).

At first, children developing a second language sequentially will continue to speak their home language in second language situations, such as the classroom, even when others may not understand them. Second, children usually enter into a nonverbal period, as they realize that individuals in their new language situation do not understand them. During the non-verbal stage children may experiment with some sounds. Then, they enter a third stage, during which they try out second-language words and simple phrases publically using telegraphic and formulaic speech. Fourth and finally, children produce phrases and then sentences in their new, second language (Espinosa, 2007; Tabors, 2008).

The development of early literacy skills of English Language Learners is a fairly understudied area. Much of the research on the important predictive validity of print knowledge, phonological awareness, and oral language (discussed earlier in this chapter) has been conducted with native English-speaking students. However, a recent study by Yesil-Dagli (2011) investigated the development of these English early literacy skills in ELL students. The study examined how English phonological awareness, oral language, and alphabet knowledge in kindergarten predict reading skills in first-grade ELL students. In a sample of 2481 students (80% Hispanic), Yesil-Dagli found that similar to non-ELL

students, alphabet knowledge, oral language, and phonological awareness were significant predictors of students' first grade reading skills. Alphabet knowledge was the leading predictor of reading in first grade for ELL students, the second leading predictor was English vocabulary skills in kindergarten, and phonological awareness was the third leading predictor. These findings were somewhat different than non-ELL students for whom phonological awareness has been shown to be the second strongest predictor of later reading, and vocabulary to be the third (NELP, 2008; Yesil-Dagli). Yet, the findings corroborate the importance of these early literacy skills as important predictors for later reading success for ELL students.

Theories of cross-linguistic transfer (Cummins, 1979) and script-dependent hypothesis have been posited to explain the development and acquisition of a second language. Cross-linguistic transfer theory suggests that the more proficient a child is in their native language, the more easily they acquire second-language skills (Cummins). The script-dependent hypothesis suggests that second languages that are similar in structure to their native language are acquired by children more easily than those dissimilar in structure. Both theories support the measurement of both native and English language skills in early literacy and reading, because of the hypothesized relation between skills in the two languages.

Research on cross-linguistic transfer provides evidence for the script-dependent hypothesis. For instance, Manis, Lindsey, and Bailey (2004) investigated the development of English and Spanish language and literacy skills in kindergarten through second grade students. In a study of 251 Spanish-speaking, ELL students, the researchers found strong, significant correlations between measures of Spanish and English early

literacy skills, including print awareness, phonological awareness, and vocabulary. In a hierarchical regression analysis, the researchers found that the Spanish to English language transfer was significant for all early literacy skills, that all four kindergarten variables were significant predictors of second grade reading, and that they accounted for almost 21% of the variance in the model. Print awareness was the single best predictor of second grade reading, leading the researchers to conclude that children's exposure to printed Spanish language is key for acquiring competence in English early literacy skills. Importantly, the authors also investigated the impact of Spanish language early literacy skills in kindergarten on English literacy skills in first and second grade. Results indicated that children's English phonological awareness skills were most predictive of later Spanish reading skills. The results from Manis et al. provide some evidence for cross-linguistic transfer in early literacy and early reading, and suggest that early literacy skills may play key roles in the development of both languages.

The experiences of Spanish-speaking students in prekindergarten

classrooms. Some recent evidence indicates that the *process framework* may be useful for assessing classrooms with differing proportions of Spanish-speaking students. Downer et al. (2011) investigated the adequacy of the CLASS Pre-K factor structure in classrooms with Spanish-speaking students. In a sample of 721 classrooms from the NCEDL and SWEEP studies, the authors investigated the relations between observed classroom quality and student developmental outcomes for 2,983 children. (See pp. 32-34 for a review of the sample characteristics.) Specifically, the authors examined the relations of instructional support, emotional support, and classroom organization with (a) direct student outcomes in applied problem solving and letter naming in English and

Spanish; and (b) teacher-reported social competence, problem behaviors, and language and literacy competence. In the states where this study was conducted, ELL students were referred to as Dual Language Learners (DLLs). The Spanish-speaking students were categorized into no DLL classrooms, mid-DLL classrooms (between 0-50% DLL students), and high-DLL (more than 50% DLL students). Results from this study confirmed the CLASS Pre-K factor structure across all categories of DLL classrooms. The authors also found significant relations between domains of classroom quality and a number of student developmental outcomes, including early literacy, early math, and social competence. Specifically, classroom organization was associated with significant positive gains across all of the student outcomes, instructional support was associated with significant gains in teacher-reported language and literacy, and emotional support was associated with significant gains in language and literacy, applied problems, letter naming, and social competence. Downer et al. suggested that future research needed to directly assess children using multiple, standardized measures in English and Spanish, especially using English and Spanish expressive and receptive vocabulary. The authors suggest that Spanish-speaking students should be assessed in Spanish as well as English, because it is a widely held best practice for a valid assessment profile (e.g., Espinosa, 2007) and Spanish early literacy is developmentally important for prekindergarten students.

Indeed, one recommendation from Downer et al. (2011) was that future research should assess the development and trajectory of Spanish early literacy skills in Spanish-speaking prekindergarten students. Given the current research, the development of Spanish early literacy skills in prekindergarten classrooms is difficult to ascertain for a

number of reasons. Many studies only assessed children's early literacy skills in Spanish when children did not pass an English proficiency test necessary for taking the English measure (Mashburn et al., 2008). Yet, the theories of cross-linguistic transfer (Cummins, 1979) suggest that children who are more proficient in their native language more successfully acquire second-language skills.

However, there is some evidence to suggest that the quality of classroom environments may also have an impact on the Spanish language and literacy skills of children. Mashburn et al. (2008) analyzed classroom quality and early literacy for 283 students who were not eligible for English language assessments and were administered Spanish-language assessments. The authors correlated domains of classroom quality, including instructionally and emotionally supportive teacher-student interactions, with students' Spanish receptive vocabulary, applied problem solving, and letter naming. Although standardized and unstandardized coefficients were not provided, the authors reported that their results mirrored the direction of influence found English-speaking children; classrooms with higher instructionally supportive interactions were associated with students who were more competent in receptive vocabulary and early reading and writing skills. Still, the study's sample size was small and their analyses were underpowered. Their results were not significantly different from zero.

Recently, Gormley (2008) investigated the effects of the Universal Oklahoma Prekindergarten Program on the achievement of Hispanic students, particularly those who spoke primarily Spanish at home. Gormley found that Hispanic students who participated in the prekindergarten program had significantly higher scores post-program on letter-word identification, spelling, and applied problem-solving tests than they had at program

entry (after controlling for age at the time of assessment). In addition, Hispanic students whose primary language spoken at home was Spanish benefited more than Hispanic students whose primary language in the home was English; these benefits were statistically significant for applied problems. These results point to the benefit of a universal prekindergarten intervention program for both English-speaking and Spanish-speaking students. Importantly, Gormley's results also suggest that there may be a differential impact of prekindergarten for students from Spanish-speaking homes relative to students from English-speaking homes. The possibility of differential impact of prekindergarten intervention and high-quality classrooms will be discussed in the next section.

Differential Impact of Classroom Quality for Students At-Risk for Negative Social and Academic Outcomes

Strong theoretical bases exist for the importance of students' learning opportunities in prekindergarten classrooms, especially for their academic and social development. As discussed, student-teacher interactions are theoretically and empirically important to quality in classrooms, particularly for language and literacy student outcomes (Hamre & Pianta, 2007). Without intervention, early literacy skills (phonological awareness, print knowledge, and oral language) remain stable through preschool, kindergarten, and into first and second grades. For children who enter prekindergarten with substantially lower than average early literacy skills, stable but low early literacy skills are problematic for their academic and social success in kindergarten and beyond.

There is good evidence that high-quality prekindergarten programs remediate risk and significantly increase social and academic competence of children at-risk for negative social and academic outcomes over short- and long-term periods of time (e.g., Pungello et al., 2010; Ramey & Campbell, 1984; Ramey et al., 2000). As one example, the well-known Carolina Abecedarian Project (e.g., Ramey & Campbell; Ramey et al.) investigated the effects of early intervention for high-risk children and families, including the effectiveness of high-quality early childhood education on children's school readiness and life outcomes. The Abecedarian Project was longitudinal and experimental in design, and consisted of four cohorts and 111 children (57 in treatment, 54 in control) enrolled at birth. The study boasted low attrition, even at eight year follow up (Ramey et al.). Findings indicated that for students involved in the intervention, high quality early learning environments made a substantial difference for their cognitive and social outcomes. In fact, positive effects were found across time in adolescence (Campbell & Ramey) and into adulthood (Pungello et al.). This seminal study is often referenced as important evidence for the impact high-quality learning environments can have for disadvantaged children.

There is also literature suggesting that students who are at-risk for later academic and social difficulties may differentially benefit more than their peers from early intervention with high-quality relationships and environments (Downer et al., 2007; Hamre & Pianta, 2005). In fact, students who enter a school year with the weakest skills benefit the most from high-quality instruction and interactions in emergent literacy and reading (Connor, Morrison, & Petrella, 2004; Hamre et al., 2010; Morrison & Connor,

2002). These students enter prekindergarten with lower skills have a larger gap in skills necessary to be “ready for school” than their peers.

Hamre and Pianta (2005) investigated the relations between instructional and emotional support in classrooms and children’s academic and social competence in first grade. As previously discussed, the authors found significant associations between classroom quality and children’s social and academic functioning. Interestingly, the authors also investigated interactions of these relations with students’ functional risk. Functional risk was measured using earlier estimations of academic and social competence, levels of measured sustained attention on a continuous performance task (i.e., the number of omission errors), and teacher reported externalizing behaviors. Students were divided into groups of *low functional risk* and *high functional risk*; students in the *high functional risk* group had more than one of the following risk factors: scores of at least one standard deviation below average on academic and social competence, and/or one standard deviation above average for omission errors and externalizing behaviors. First grade students with high functional risk performed more poorly at the end of the year and displayed more conflict with teachers than their low-risk peers. However, first grade students who were at high-functional risk and who were in classrooms with high emotional support progressed similarly to their low-risk peers and were no more likely to experience conflict with teachers than their low-risk peers. Findings from this study suggest that students’ experiences in high-quality classrooms may compensate for the students’ functional risks.

Instructional support in classrooms has also been shown to be differentially important for students at-risk for academic problems. Downer et al. (2007) investigated

the impact on students' engagement in classroom learning of teacher-led classroom activities (e.g., teaching of basic skills versus analysis and reasoning) and instructional quality in classrooms. They also examined the interaction of these relations with student risk, as determined by previous achievement scores, teacher report of student-teacher conflict, and teacher-report of externalizing behaviors. Children who were at high-risk were less engaged across contexts. However, for large group activities and basic skills instruction, instructional quality made a bigger difference for students who were at-risk than their low-risk peers. In particular, at-risk children were significantly more engaged during these basic skills activities than other activities, such as analysis and inference (Downer et al.). These results aid in understanding the potential interaction of classroom quality and risk and suggest that children who are more functionally at-risk benefit more from high-quality classroom environments.

There is also emerging evidence that students who speak English as a second language may benefit more from explicit language and literacy instruction than students who speak English as their primary language (Hamre et al., 2010). Students who primarily speak languages other than English at home often enter school with lower language and literacy skills and as a result, are at-risk for later academic problems (Espinosa, 2007). Hamre and colleagues studied the implementation of a language and literacy curriculum and the resulting observed classroom quality and outcomes for English and ELL students. The authors found that students who came from homes where languages other than English were primarily spoken benefited more from higher quality language modeling on measures of English emergent literacy than primarily English-speaking students. However, this study used observed classroom quality as an indicator

of implementation fidelity and as a result, did not investigate these findings in more detail.

The differential impact of classroom quality on Spanish-speaking children has been difficult to ascertain in the current research. Mashburn et al. (2008) found that the strongest predictor of children's academic and language skills in prekindergarten was the degree of instructionally supportive teacher-student interactions; the strongest predictor of children's teacher-reported social skills was the degree of emotionally-supportive interactions. However, as the authors note, their study was limited by the consent process; the two studies involved had a 55% and 61% consent rate and the demographics of non-consenting children were unknown. Moreover, many of the non-consenting families may have been higher risk and harder to reach for reasons of poverty or limited English ability. In addition, the Mashburn et al. study excluded children who did not pass English proficiency assessments from their English language and literacy measures. As a result, it is difficult to ascertain the possible effects of high-quality teacher-student interactions on children who speak a language other than English. As previously noted, this question is particularly important, given that these children are often considered to be at higher-risk for poor academic outcomes and as a result, may benefit more than their low-risk peers from high-quality prekindergarten environments. The current study purports to extend previous research (e.g., Downer et al., 2011; Hamre et al., 2010) by explicitly examining the potential differential impact of classroom quality on Spanish-speaking students. Whereas previous research examined these relations using teacher report of academic and social competence, the current study directly assessed students' English and Spanish

early language and literacy skills with a variety of measures. In addition, the current study assesses all students within a classroom, rather than selecting a sample of students.

Research Questions

The purposes of this study were to examine (a) the relation between classroom quality and English early literacy skills of PreK students; (b) how this relation differs for English- and Spanish-speaking students; and (c) the relation between classroom quality and Spanish early literacy skills for Spanish-speaking students. Specifically, this study was designed to answer the following questions:

1. To what degree are aspects of classroom quality (as measured by the instructional support, emotional support, and classroom organization domains of the Classroom Assessment Scoring System) related to English early literacy skills (as measured by the Phonological Awareness Literacy Screening, Pre-K and the Peabody Picture Vocabulary Tests, Third Edition) for English- and Spanish-speaking prekindergarten students?
2. To what degree does the relation between classroom quality (as measured by the instructional support, emotional support, and classroom organization domains of the Classroom Assessment Scoring System) and English early literacy skills (as measured by the Phonological Awareness Literacy Screening, Pre-K and the Peabody Picture Vocabulary Tests, Third Edition) differ depending on students' first language of Spanish or English?
3. To what degree are aspects of classroom quality (as measured by the instructional support, emotional support, and classroom organization domains of the Classroom Assessment Scoring System) related to Spanish early literacy skills (as measured

by the Woodcock Munoz Language Survey-Revised) for Spanish-speaking prekindergarten students?

It was hypothesized that:

1. A significant relation would exist between classroom quality and English early literacy scores for English- and Spanish-speaking students.
2. The relation between classroom quality and English early literacy scores would be stronger for Spanish-speaking students as compared to English-speaking students.
3. Classroom quality would be significantly related to Spanish early literacy skills for Spanish-speaking students.

Chapter Three: Method

The purpose of this study was to examine the relations between prekindergarten classroom quality and early literacy skills for English and Spanish-speaking students. First, the relation between classroom quality and English early literacy skills of prekindergarten students was examined. Second, the study examined whether this relation differed for English- and Spanish-speaking students. Third, the relation between classroom quality and Spanish early literacy skills for Spanish-speaking students was examined. Data for this study included (a) domain and dimension raw scores from classroom observations; (b) student standard and raw scores on measures of English oral language (specifically, receptive vocabulary), alphabet knowledge, and phonological awareness; and (c) student standard scores on measures of Spanish oral language and Spanish letter-word identification for Spanish-speaking students.

Aspects of classroom quality were group level variables (instead of person level variables) and were the units of analysis in this study. Classroom quality in this study was defined as the three domains of classrooms (Instructional Support, Emotional Support, and Classroom Organization; Pianta, La Paro, & Hamre, 2008). These domains of classrooms were predictor variables that were measured at the classroom level. Two other predictor variables were examined at the individual student level: students' language status, and students' incoming fall early literacy scores. In this study, the dependent variables were students' early language and literacy scores, which were examined at the individual student level.

The current study was part of a larger research study ("Rural LLC") investigating the impact of an evidence-based early literacy intervention on the early literacy skills of

rural, Midwestern prekindergarten students. The current study was a separate contribution to Rural LLC; it offered a line of investigation that was not part of the original study, contributing an added investigation of the relations between classroom quality (emotional support, instructional support, and classroom organization) and student literacy outcomes. Thus, the current study was a secondary data analysis conducted with supplementary data; additional data collection on the quality of prekindergarten classrooms was necessary in order to answer the specific research questions of this study.

Setting

Classrooms participating in this study were part of the Grand Island, Nebraska community. Grand Island was selected for the Rural LLC study because it is a rural, agricultural community that would benefit from an intense, literacy-based intervention in preschools. The community was also selected because of the high proportion of students who were English Language Learners (23%) and had special needs (30%) (Raikes, Knoche, & Davis, 2008).

Nine classrooms participated in the study, and all nine were participants in the Rural LLC study. Classrooms were selected because they were a Grand Island Public School District-Early Childhood Program (GIPS-EC) or part of Head Start Child and Family Development Program (HSCFDP) in central Nebraska. Of the participating classrooms, seven were located in one building (Grand Island Public Schools Early Learning Center), and two were located in a separate building (Head Start Child and Family Development, Inc.). The seven Early Learning Center classrooms offered three-and-one-half hours of service, with morning and afternoon sessions, for one academic year. The two Head Start classrooms offered full-day, eight-hour services for one full

calendar year. Classrooms in GIPS and HSCFDP agencies were also selected because they demonstrated sufficient classroom quality, based on Environmental Rating Scales (ERS, Harms et al., 1998) and so were qualified to participate in a systematic, intensive early literacy intervention.

The Rural LLC intervention was designed and grounded in strong preschool and Head Start classroom curriculum instruction and scientifically-based reading curricula. Specifically, the Rural LLC intervention integrated evidence-based environmental supports in home, school, and daycare settings in literacy and language, to enhance children's early language and literacy skills (e.g., oral language, phonological awareness, print awareness, and alphabet knowledge). Along with the implementation of evidence-based curricula (i.e., OWL; Schickedanz & Dickinson, 2005) and Dialogic Reading (Lonigan & Whitehurst, 1998), Rural LLC integrated intensive and systematic professional development programming for staff and administration and provided additional supplemental literacy opportunities (e.g., family literacy events, materials) to families. At the onset of the Rural LLC project, eleven classrooms had been chosen at random to participate from all eligible classrooms in the agencies; nine classrooms were still participants at Year Three of the overall Rural LLC study (Fall 2009-Spring 2010). Attrition of classrooms was a result of building changes and staff turnover.

Participants

Descriptive statistics on relevant participant variables are presented Table 2. Within the nine classrooms, nine teachers were participants in this study. Teachers were all female, 91% white, and English-speaking. Para-professionals also served as staff in all classrooms. Fifty-seven percent of the 23 para-professionals were White, 35% were

Hispanic/Latino, and 8% were Other ethnicities. Teachers were on average 34-years-old and all self-reported as White or Caucasian. Teachers were selected for this study if they were providing services in classrooms in eligible Rural LLC classrooms, and consented to participate.

In the nine classrooms, 225 students were participants in this study. Of the 225 children included in the analyses, the average age was 57 months with a range of 42 to 70 months. Thirty-seven percent of students were of White ethnicity, 51% were Hispanic/Latino ethnicity, 5% were Black/African American ethnicity, and 7% were other ethnicities. Of these, 58 (26%) students were identified as Spanish-speaking and 167 were non Spanish-speaking (74%). Students were identified as *Spanish-speaking* if Spanish language was indicated on their agency demographic report, by the parent or guardian in the Rural LLC demographic report, or by the teacher based on classroom observations. The number of Spanish-speaking students was comparable across classrooms. All other students who did not report the use of Spanish language by home or school and reported English as a primary language were referred to in this study as *English-speaking* students. Students who reported a primary language other than English or Spanish were referred to as *Other* (n=4; 1.6%) and were excluded from the analyses. The sample of students was 47% male and 53% female.

Measures

Four instruments were used in this study: (a) the *Classroom Assessment Scoring System, Pre-K (CLASS Pre-K; Pianta et al., 2008)* as a measure of prekindergarten classroom quality; (b) the *Peabody Picture Vocabulary Test, Third Edition (PPVT-III; Dunn & Dunn, 1997)* as a measure of English oral language, specifically, receptive

vocabulary; (c) the *Phonological Awareness Literacy Screening- Preschool (PALS-PreK;* Invernizzi et al., 2004) as a measure of alphabet knowledge and phonological awareness; and (d) the *Woodcock-Munoz Language Survey Revised (WMLS-R;* Woodcock, Munoz-Sandoval, Ruef, & Alvarado, 2005) as a measure of Spanish oral language and Spanish letter-word identification. See Table 3 for a more detailed description of measures.

Descriptive statistics, including means, standard deviations, and ranges for student language and literacy outcome scores are in Table 4. Means of the student language and literacy scores all were in the middle of the range of values indicating that few floor or ceiling problems were encountered. Descriptive statistics for classroom quality domains across the nine classrooms are presented in Table 5. Classroom quality means were in the high-mid quality range for Emotional Support and Classroom Organization, and in the low to low-mid quality range for Instructional Support, similar to surveys of classrooms described in the validation of the CLASS measure (Pianta et al., 2008).

Classroom Assessment Scoring System, Pre-K (CLASS Pre-K; Pianta et al., 2008). The CLASS Pre-K is an observational measure that assesses classroom quality by describing teacher-student interactions in early childhood classrooms. The CLASS Pre-K includes three important domains of classroom quality: emotional support, classroom organization, and instructional support. CLASS Pre-K observers complete observations in consecutive 20 minute cycles, completing between 4 and 6 cycles for each classroom in one observation. By completing multiple independent cycles in one observation, CLASS Pre-K is able to sample different activities (e.g., whole group, small group, meals, etc.).

Table 2

Student and Teacher Frequency and Descriptive Characteristics

	Children (N=225)	Teachers (N=9)	Aides (N=23)
Age (mean)	57 months (range 42-70)	34.78 (range 23-49)	36.40 (range 22-59)
Ethnicity	37% White/Caucasian 51% Hispanic/Latino 5% African-American/Black 7% Other	91% White/Caucasian 9% Hispanic/Latino	56.5% White/Caucasian 34.8% Hispanic/Latino 4.3% African-American/Black 4.3% Native Hawaiian/Other Pacific Islander
Language	74% English 26% Spanish	100% English	83% English 17% Spanish
Returner Status	73% Non-Returner 27% Returner	N/A	N/A
K-Bound	71% K-Bound 29% Non K-Bound	N/A	N/A
Gender	53% Female 47% Male	100% Female	100% Female
Years of Education	N/A	44.4% Some graduate work 33.3% 4 year degree 11.1% 2 year degree 11.1% graduate degree	30.4% Some training beyond high school 21.7% 2 year degree 17.4% 4 year degree 17.4% High School diploma 4.3% Some graduate work 4.3% 1 year vocational degree 4.3% GED

Table 3

Variables, Measures, and the Nature of the Data

Variable	Measure	Nature of Data	Range of Scores
Oral language (receptive vocabulary)	Peabody Picture Vocabulary-III Test (PPVT-III)	Standard Scores	25-145 Mean=100 SD=15
Alphabet Knowledge	Phonological Awareness Literacy Screening-Preschool (PALS-PreK)	Raw scores	0-26
Phonological Awareness (Print and Rhyme)	PALS-PreK	Raw scores	0-10
Letter Sounds	PALS-PreK	Raw scores	0-26
Beginning Sounds	PALS-PreK	Raw scores	0-10
Classroom Quality: Instructional support	CLASS Pre-K	Raw scores	1-7
Classroom Quality: Emotional Support	CLASS Pre-K	Raw scores	1-7
Classroom Quality: Classroom Organization	CLASS Pre-K	Raw scores	1-7
Spanish oral language (picture vocabulary)	Woodcock-Munoz Language Survey Revised (WMLS-R)	Standard scores	25-145 Mean=100 SD=15
Spanish letter-word identification	WMLS-R	Standard scores	25-145 Mean=100 SD=15

Table 4

Student Language and Literacy Outcomes, Fall 2009 and Spring 2010, Descriptive Statistics

	N		Mean (SD)		Range	
	Fall	Spring	Fall	Spring	Fall	Spring
PALS Uppercase Letters						
Overall	216	218	5.93 (8.12)	13.71 (9.35)	0-26	0-26
English	162	162	6.28 (8.39)	13.72 (9.17)	0-26	0-26
Spanish	54	56	4.85 (7.19)	13.66 (9.91)	0-25	0-26
PALS Lowercase Letters						
Overall	36	102	15.69 (6.87)	18.82 (4.97)	0-26	8-26
English	30	74	16.13 (6.49)	18.61 (5.07)	0-26	8-26
Spanish	6	28	13.50 (8.94)	19.39 (4.74)	0-24	10-26
PALS Letter Sounds						
Overall	29	97	8.41 (6.36)	8.83 (6.57)	0-21	0-23
English	25	70	8.32 (6.45)	8.87 (6.97)	0-21	0-23
Spanish	4	27	9.00 (6.63)	6.93 (5.24)	0-14	0-18
PALS Beginning Sounds						
Overall	151	152	2.79 (3.13)	5.80 (3.82)	0-10	0-10
English	116	115	3.07 (3.17)	6.05 (3.79)	0-10	0-10
Spanish	35	37	1.86 (2.82)	5.03 (3.86)	0-10	0-10
PALS Print Awareness						
Overall	153	152	4.90(2.51)	6.74 (1.98)	0-10	0-10
English	117	115	5.11 (2.44)	7.08 (1.94)	0-10	0-10
Spanish	36	37	4.22 (2.66)	5.68 (1.71)	0-8	2-8
PALS Rhyme Awareness						
Overall	152	152	4.52 (2.32)	6.16 (2.76)	0-10	0-10
English	117	115	4.65 (2.46)	6.50 (2.86)	0-10	0-10
Spanish	35	37	4.09 (1.76)	5.11 (2.12)	0-8	2-10
PPVT English Receptive Vocabulary						
Overall	214	218	85.52 (17.86)	92.61 (15.57)	40-124	40-139
English	163	162	89.88 (16.26)	96.74 (12.37)	40-124	55-139
Spanish	51	56	71.59 (15.56)	80.68 (17.70)	40-102	40-113
WMLS Spanish Letter Identification						
Overall	47	50	105.21 (15.29)	107.48 (16.62)	75-141	74-147
WMLS Spanish Vocabulary						
Overall	47	50	79.28 (16.83)	78.90 (19.52)	42-111	23-111

Table 5

Group level descriptive statistics, classroom quality, Spring 2010

	N	Mean	Standard Deviation	Range
CLASS Emotional Support	225	5.84	0.72	4.19-6.63
CLASS Classroom Organization	225	5.38	0.85	3.75-6.50
CLASS Instructional Support	225	2.88	0.83	1.67-4.33

Scores on each CLASS Pre-K dimension range from 1 to 7, and are anchored by differing levels of quality: 1-2 (Low), 3-5 (Mid), and 6-7 (High). Adequate psychometric properties have been reported for the CLASS Pre-K, including the organizational structure, confirmatory factor analysis, reliability, construct and predictive validity (Pianta et al., 2008). The number of cycles needed for each CLASS Pre-K observation was validated through correlational analyses between the first three cycles and the final cycle, and showed that at least four cycles provided moderate to high correlations (Pianta, La Paro, & Hamre, 2008). Internal consistency of CLASS Pre-K scores across days in the week and across the school year were also moderate to high.

The CLASS Pre-K retains strong face and construct validity, based on the extensive literature review, focus groups, piloting, and expert consultants on classroom quality and teaching effectiveness that were used throughout the development of the scale (Pianta et al., 2008). Criterion validity was assessed by conducting correlational analyses with empirically associated measures of similar constructs (Pianta et al., 2005), including the Early Childhood Rating Scales, Revised Edition (ECERS-R; Harms et al., 1998), and the Emerging Academics Snapshot (Ritchie et al., unpublished measure; as cited in Pianta et al., 2008). See Chapter Two for a more in-depth discussion of the CLASS Pre-K.

Peabody Picture Vocabulary Test-III (PPVT-III; Dunn & Dunn, 1997). The PPVT-III is a standardized measure of receptive vocabulary in children. For each PPVT-III item, the examiner presents four pictures on a page and asks children to point to the picture that corresponds to a vocabulary word spoken by the examiner. The number of correct items are summed into a raw score, which is then converted to a standardized score with a mean of 100 and a standard deviation of 15.

The PPVT-III was developed for children, adolescents and adults ages two years, six months to 90 (Dunn & Dunn, 1997). In the validation of the PPVT-III, the norm sample was nationally representative, and ethnically and racially proportionate to the population. Item analysis using classical and Rasch item analysis showed that all 408 items in the scale were good fits to the model and showed good discrimination between items. Two parallel forms (A and B) of the PPVT-III were then created, with 204 items on each tool; Forms A and B were analyzed for equivalency between parallel forms and with the previous version (PPVT-Revised), and demonstrated high correlations (range of $r=.88$ to $r=.96$). The parallel forms were also verified to sample equivalent content categories (e.g., actions, adjectives, foods; Dunn & Dunn, 1997).

Internal reliability estimates of the PPVT-III include coefficient alphas (range $\alpha=.92-.98$), split-half correlations (range $r=.86$ to $.97$), correlations between alternative forms ($r=.88$ to $.96$), and test-retest correlations ($r=.91$ to $.94$). Ryan, Glass, Sullivan, Gibson, and Bartels (2009) compared alternative forms reliability for English and Bilingual (English- and Spanish-speaking) children grades 3-5 in an inner-city school district demonstrated adequate reliability (English sample, $r=.72$, Bilingual sample, $r=.83$). Evidence for content validity for the PPVT-III included careful item development

based on 20 common content areas and words drawn from a pool of standard English words that related to important life skills (Dunn & Dunn, 1997). Construct validity for the PPVT-III is based on the premise that vocabulary knowledge is a measure of verbal ability, which has been repeatedly shown in empirical studies (Dunn & Dunn). Criterion validity was established by correlating the PPVT-III with measures of cognitive ability, including the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1991), the Kaufman Adolescent and Adult Intelligence Test (KAIT; Kaufman & Kaufman, 1993), and the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990). Correlations with measures of verbal ability for the PPVT-III Forms A and B are higher than those of non-verbal ability on the same measures. Correlations for Forms A and B, respectively, are: $r=0.91$ and $r=0.92$ with the WISC-III Verbal IQ scale; $r=0.87$ and $r=0.91$ with the KAIT crystallized IQ scale; $r=0.82$ and $r=0.80$ with the K-BIT vocabulary score (Dunn & Dunn).

Phonological Awareness Literacy Screening-Preschool (PALS-PreK; Invernizzi et al., 2004). The PALS Pre-K is a criterion-based measure that includes subscales assessing phonological awareness, oral language, and print knowledge through subscales including name writing, upper and lowercase letter identification, letter sounds, beginning sounds, rhyming, and print and book awareness. The PALS Pre-K was developed by selecting tasks based on empirically supported early literacy skills, as well as expert advisory panels to evaluate the importance of each skill's inclusion. The administration of the PALS Pre-K is approximately 20 to 25 minutes. Each subscale yields a raw score that is uniquely interpreted based on the number of items available (e.g., uppercase letters total of 26 letters possible, rhyme awareness total of 10 possible

items). Scores from subtests are not converted into standard scores. For the Rural LLC project, spring targets for children who were kindergarten-bound for the following fall were: Uppercase Letters (12-21), Lowercase Letters, (9-17), Letter sounds (4-8), Beginning sound (5-8), Print awareness (7-9), Rhyme awareness (5-7).

Reliability estimates from the PALS Pre-K demonstrated adequate Cronbach's alpha estimates (range of $\alpha=0.77-0.93$) as well as adequate Guttman split-half reliability estimates ($r=0.71-0.94$; Invernizzi et al., 2004). Inter-rater reliability correlations were also adequate and high, with all subtests yielding an average correlation of $r=0.99$. Content validity was established with thorough literature reviews to establish an empirical basis for including each early literacy skill measured using the PALS Pre-K. The authors also used expert panels in the selection of skills to be measured as well as the assessment subscales and items. Pilot studies were also conducted, and construct validity was determined through factor analysis of pilot data which yielded one factor (eigenvalue of 2.9) indicating a single trait of early literacy.

Concurrent validity of the PALS Pre-k was analyzed through correlational analyses with theoretically related measures. Correlations between the PALS Pre-K and the *Test of Awareness of Language Segments (TALS; Sawyer, 1987)* were low to moderate but significant ($r=0.41, p<.01$). The PALS Pre-K was also correlated with the *Child Observation Record (COR; COR, High/Scope, 1992)*, yielding a moderate to high and significant correlation ($r=0.71, p<.01$). Finally, correlations between the PALS Pre-K and the *Test of Early Reading Ability (TERA-3; Reid, Hresko, & Hammill, 2001)* also yielded a correlation that was moderate to high and significant ($r=0.67, p<.01$). The predictive validity of the PALS Pre-K was also assessed using regression analyses, which

showed that the PALS Pre-K significantly predicts performance on the early grades PALS 1-3 version in first grade (Invernizzi, Juel, Swank, & Meier, 2003).

Woodcock-Munoz Language Survey-Revised, Spanish Form (WMLS-R; Woodcock, Munoz-Sandoval, Ruef, & Alvarado, 2005). The WMLS-R Spanish Form is a measure of early language and literacy skills in Spanish-speaking children that met the criteria for inclusion in this study. The WMLS-R Spanish Form is an adaptation of the WMLS-R English Form, which is a representative, standardized measure of language, language comprehension, reading, and writing. The WMLS-R is comprised of seven tests. All together, the subtests make up 9 clusters: oral language, reading-writing, broad Spanish ability, listening, oral expression, reading, writing, language comprehension, applied language proficiency, as well as the Oral Language-Total and the Broad Spanish Ability-Total clusters. Two subtests will be used to assess the early literacy Spanish skills of students in the current study: Vocabulario Sobre Dibujos (Picture Vocabulary), and Identificación de Letras y Palabras (Letter-Word Identification). The Vocabulario Sobre Dibujos test requires students to point to some items and name others that are presented visually on the picture template. The Identificación de Letras y Palabras test requires students point to the correct letter or word on some items and to verbally pronounce words and letters on other items (Woodcock et al., 2005). The administration of the two tests requires approximately 10 to 15 minutes.

The WMLS-R Spanish Form was adapted from the WMLS-R English form, which was standardized on a nationally and geographically representative population of children in the United States (Woodcock et al., 2005). Items were developed from parallel English tests and then Spanish calibration data were used to equate the scores to

the English norms. The Spanish version calibration sample was drawn from 1,157 native Spanish-speaking participants from the United States, Puerto Rico, and several Latin and South American Spanish-speaking countries. In order to calibrate items, test developers selected items from the final version of the English test and then translated the items into Spanish; a subset of items that were labeled “easy” to ‘difficult’, and each item in English was required to have a reasonably direct counterpart in Spanish. Spanish test calibration data was then collected on the items from populations of native Spanish speakers across several regions outside the United States, and monolingual or near monolingual Spanish speakers within the United States (Woodcock et al., 2005).

Reliability data for the WMLS-R included internal consistency analyses that indicated a range of coefficient alphas across tests of .76 to .97 and .88 to .98 for the clusters. Validity estimates were computed using Rasch-based item analysis, which demonstrated adequate item fit. Content validity was established through the use of expert opinion for the theoretical importance and basis for measuring the targeted skills. Criterion validity was estimated in correlational analyses with the *Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989)*; correlations ranged from 0.21 to 0.69 for Verbal IQ and 0.22 to 0.60 for Performance IQ. The WMLS-R was also correlated with the *Differential Abilities Scale (DAS; Elliott, 1990)*, yielding correlations ranging from 0.30 to 0.67 with Verbal Ability and 0.20 to 0.58 with Nonverbal Ability.

Demographic survey. Demographic information was also collected from parents’ self-report and agency report. Specifically, families completed the demographic survey in the fall of 2009 at the beginning of the year of the current study. Surveys included

information on the characteristics of families, income, languages spoken in the home, level of educational attainment, and other risk variables (e.g., family members imprisoned, drug or substance abuse, etc.). Demographic surveys were collected from 67% of families involved in the study. Copies of the demographic survey are located in Appendix B.

Procedures

The proposed study was part of larger, federally-funded study, Rural LLC, investigating the effects of evidence-based literacy programming in early childhood classrooms. Informed consent was obtained from teachers for participation in Rural LLC at the inception of the project or their hiring during the project. Children and families were recruited for participation in Rural LLC at prekindergarten orientation; informed consent was obtained from each family who agreed to participate. Families were recruited in their home language of English or Spanish by bilingual staff. As part of the current study, agency administrators recruited teachers to participate in classroom observations at the onset of the study. The current study occurred in Year Three (Fall 2009 through Spring 2010) of the Rural LLC study.

As part of Rural LLC study, student language and literacy outcomes and demographic surveys were collected in Fall 2009 and Spring 2010. Student language and literacy outcomes were collected by trained data collectors who served as research assistants for the parent study. Data collection for the early language and literacy outcomes occurred in small rooms near the classrooms (e.g., a teacher break room, a nurse's office) during data collection periods of two months in the Fall and Spring

semesters. Most students required two, 30 to 45 minute sessions to complete all of the early language and literacy measures with data collectors.

For this study, observational data describing classroom quality were collected within 6 weeks of the collection of the Rural LLC students' literacy outcomes in Spring 2010. Institutional Review Board (IRB) approval was obtained to collect additional measures in April, 2010, and approval to conduct a secondary data analysis with this and other Rural LLC data was obtained in April, 2011. All teachers led either morning and afternoon sessions or one full-day session. Classroom observations were randomized to each teacher to occur in either the morning (approximately 9:00am through 11:15am) or in the afternoon (1:00pm-3:15pm) Classroom observations were collected by two, trained observers who were graduate research assistants on the Rural LLC project.

CLASS Observer training. Classroom observation data were collected by two trained, reliable observers. Observers were graduate research assistants on the parent project, one of whom was the primary author in this study. Observers were trained following the recommended procedures of the CLASS Pre-K authors. First, observers attended an in-depth, two day training conducted by an expert trainer to learn how to accurately observe and code classrooms according to the CLASS. During the training, the observers studied the observational system dimensions, and discussed use of the CLASS. The observers then viewed, coded, and discussed training videos with the expert trainer. All observers achieved the required 80% agreement with the anchor scores on training videos. The anchor scores for training videos had been set by the scale's authors after expert coding of the videos by teachers, administrators, researchers, and other personnel likely to use the class (e.g., school psychologists, school counselors). A criterion of 80%

agreement within one of the expert anchor codes was set by the CLASS Pre-K authors as evidence that an observer could reliably conduct classroom observations for a period of one year before requiring re-reliability training (Pianta et al., 2008).

Observers for this study also co-observed two classrooms before the data collection period in Fall 2009 and during the data collection period in Spring 2010. The additional co-observations served to check agreement between observers and to control for observer drift. The observers gained permission from the University of Nebraska-Lincoln daycare to observe for approximately 3 hours in a classroom. Both observers observed, coded, scored, and debriefed after each of the 20 minute cycles; at least three 20 minute cycles were observed across the fall and spring training sessions. The observers achieved acceptable accuracy in their agreement if their ratings were within one point (on the one to seven point CLASS scale) on at least 80% of the ratings during this training (Pianta et al., 2008).

Data Analysis

For this study, the data gathered derived from the assessments included raw scores (e.g., PALS number of letters correctly identified) and standard scores (e.g., PPVT-III receptive vocabulary) for all student measures and domain scores from the CLASS Pre-K. Multi-level modeling analyses were used to assess the relation of and interaction between the three domains of classroom quality (Emotional Support, Classroom Organization, Instructional Support), two variables of student language status (Spanish or English), and seven post-student literacy outcomes (PALS Uppercase Letters, PALS Lowercase Letters, PALS Letter sounds, PALS Rhyme Awareness, PALS Print Awareness). A two-level model is appropriate because students were nested within

classrooms. Within the model, the students' Fall 2009 English and Spanish early language and literacy scores for each of the post-literacy outcomes were used as a covariate to control for students' entering skill level. In addition, moderator analyses were conducted to investigate possible differences in the relation between classroom quality and English early language and literacy for students who were in their second year of prekindergarten ("Returners") versus students who were in their first year of prekindergarten ("Non-returners"). Preliminary t-tests were conducted to determine whether the standardized means of separate cohorts (e.g., K-bound versus non K-bound, Returner versus non-Returner) and across settings (e.g., part-day, full day classrooms) are significantly different.

The relations between classroom quality and children's language and literacy for children in both language groups were assessed using multiple two-level multi-level modeling analyses using SPSS 18.0, with Spring 2010 language and literacy scores as the dependent variables. Within each of the 21 models, classroom quality was entered as a level two predictor, pre-scores of student language and literacy outcomes and student language status (English or Spanish) were entered as level one predictors. Entering fall scores as covariates removed variability in outcome scores attributable to baseline differences.

The equations for each research question are as follows:

Research Question 1:

Fixed Effects model:

$$ELS_{\text{Spring}} = \beta_0 + \beta_1 ELS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}}$$

Level 2

Random Effects model:

$$ELS_{\text{Spring}} = \beta_0 + \beta_1 ELS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}} + e + u$$

Research Question 2:

Fixed effects model:

$$ELS_{\text{Spring}} = \beta_0 + \beta_1 ELS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}} + \beta_5 \text{Language} + \beta_6 \text{Language} * CQ_{\text{IS}} + \beta_7 \text{Language} * CQ_{\text{ES}} + \beta_8 \text{Language} * CQ_{\text{CO}}$$

Random effects model:

$$ELS_{\text{Spring}} = \beta_0 + \beta_1 ELS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}} + \beta_5 \text{Language} + \beta_6 \text{Language} * CQ_{\text{IS}} + \beta_7 \text{Language} * CQ_{\text{ES}} + \beta_8 \text{Language} * CQ_{\text{CO}} + e + u$$

Research Question 3:

Fixed Effects model:

$$SLS_{\text{Spring}} = \beta_0 + \beta_1 SLS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}}$$

Random Effects model:

$$SLS_{\text{Spring}} = \beta_0 + \beta_1 SLS_{\text{Fall}} + \beta_2 CQ_{\text{IS}} + \beta_3 CQ_{\text{ES}} + \beta_4 CQ_{\text{CO}} + e + u$$

Power analysis. A conditional power analysis was conducted using Optimal Design (Spybrook, Raudenbush, Congdon, & Martinez, 2009), for cluster randomized trials with individual outcomes, in order to estimate the effect size necessary given a fixed sample size and level of power. Following a pilot test with a similar data set (that used similar measures with a similar population) and PPVT scores, an intraclass coefficient (ICC) of .05 was observed using an unconditional means model for PPVT scores, and thus was used in the analysis. Also, using the pilot data from the similar data set to regress Spring PPVT scores on Fall scores suggests that $R^2=48\%$ of the variability

in outcomes is explained by pre-scores. This value was entered into the power analysis in Optimal Design (as a proportion). The analysis entered a total of 9 clusters (classrooms), conservatively estimating 26 students per classroom, and an 80% level of power. The analysis demonstrated that this study would have sufficient power to detect an effect size of $\delta=.56$.

Hypotheses.

Research question 1. To what degree are aspects of classroom quality (instructional support (CQIS), emotional support (CQES), and classroom organization (CQCO) related to English early literacy skills (ELS) (phonological awareness, alphabet knowledge, and receptive vocabulary) for prekindergarten students?

Hypothesis 1: It was hypothesized that a significant relation would exist between the domains of classroom quality and early literacy scores for English and Spanish-speaking students. This hypothesis was based on the work of Burchinal et al. (2008), Howes et al. (2008), and Mashburn et al. (2008) who showed that children who attend high-quality prekindergarten classrooms, especially classrooms with strong instructional supports, are more competent in early literacy skills than children in classrooms with less adequate support (pp. 28-29). Hypothesis 1 would have been confirmed if a significant relation was observed between any or all of the Classroom Quality (CQ) regression coefficients and spring early English literacy outcomes (ELSSpring).

Research question 2. To what degree does the relation between classroom quality (instructional support (CQIS), emotional support (CQES), and classroom organization (CQCO) domains and English early literacy skills (ELS) (phonological awareness,

alphabet knowledge, and receptive vocabulary) differ depending on students' home language of Spanish or English?

Hypothesis 2. It was hypothesized that the relation between classroom quality and English early literacy scores would be stronger for Spanish-speaking students as compared to English-speaking students. This hypothesis was based on the work of Connor, Morrison, and Petrella (2004), Downer et al. (2007), Hamre and Pianta (2005), Hamre et al. (2010), and Morrison and Connor (2002) which suggested that students who are at-risk for later academic and social difficulties may differentially benefit more than their peers from early intervention with high-quality relationships and environments (pp. 70-73). Hypothesis 2 would have been confirmed if the interaction regression coefficients were positive and significantly related to the English early literacy outcomes, meaning that the relation between the domain(s) of classroom quality and English early literacy skills varies significantly across languages.

Research question 3. To what degree are aspects of classroom quality (instructional support, emotional support, and classroom organization) related to Spanish early literacy skills (letter-word identification and picture vocabulary) for Spanish-speaking prekindergarten students?

Hypothesis 3. It was hypothesized that classroom quality would be significantly related to Spanish early literacy skills for Spanish-speaking students. This hypothesis was based on the work of Downer et al. (2011), Gormley (2008), and Manis, Lindsey, and Bailey (2004) which suggested that high quality prekindergarten classroom environments rich in early English Language and Literacy have the potential to significantly impact the development of English Language Learners' native language skills (pp.67-69).

Hypothesis 3 would have been confirmed if a significant relation was observed between any or all of the Classroom Quality (CQIS, CQES, CQCO) regression coefficients and spring Spanish early literacy outcomes (SLSSpring).

Chapter Four: Results

The following sections discuss the results in this study. First, preliminary analyses to examine the differences between groups will be discussed. Then, the results of each research question will be described and discussed. Finally, the results of further exploratory analyses will be discussed.

Preliminary Analyses

Preliminary *t*-test analyses were conducted to justify including multiple cohorts and groups of students in the analyses. Students who were four-years-old by October and would therefore attend Kindergarten the following year were labeled *Kindergarten Bound (K-Bound)*. The decision was made to include K-Bound and Non K-Bound students in the analyses, as well as students who were in their second (Returner) and first (non-Returner) years of Prekindergarten. Preliminary *t*-test analyses were conducted to examine differences between K-Bound and Non K-Bound students' Fall 2009 measures of oral language. Standardized PPVT-III scores were used for the analyses because these are age adjusted. Non-standardized scores on the PALS subscales were not used because they are criterion referenced and older students would developmentally be expected to have higher scores. No significant differences were found in K-Bound and Non-K Bound students' PPVT-III standard scores ($t=-1.73, p=0.085$). In addition, preliminary *t*-test analyses were also conducted to examine differences between students who had one versus two years of prekindergarten (e.g., Returners and Non-Returners). No significant differences were found between Returner and Non-Returner groups on the standardized PPVT-III in Fall 2009 ($t=0.19, p=0.85$). Thus, no significant differences existed at

baseline (Fall 2009) between groups and therefore all K-Bound, Non K-Bound, Returner, and Non-Returner students were included in the full analyses.

Preliminary *t*-test analyses were also conducted to examine differences between students from both part- and full-day classroom sessions. No significant differences in Oral Language standard scores existed between students who attended part and full day classrooms ($t=-0.05$, $p=0.96$) in fall 2009, part- and full-day classrooms were equivalent and could be used in the analyses.

Preliminary analyses of the data were then conducted to ensure that the assumptions of multilevel modeling (e.g., normality of distribution and normality of residuals) were met. Spring English and Spanish early language and literacy outcome scores were analyzed for normal distributions by assessing the skewness and kurtosis of the dependent variables. Data are normally distributed if the skewness and kurtosis are less than three. All dependent variables with the exception of Spanish Oral Language met these criteria and therefore met the assumptions of multilevel modeling. Results from the Spanish Oral Language analyses should be interpreted cautiously due to this limitation.

Research Question 1 Results

The first research question investigated the degree to which aspects of classroom quality (instructional support, emotional support, and classroom organization) were related to English early literacy skills (phonological awareness, alphabet knowledge, and receptive vocabulary) for prekindergarten students. Twenty-one multilevel model analyses were conducted to investigate the first research question. Within the models, classroom quality was entered as a level two predictor and Fall 2009 pre-scores were entered as level one predictors. Though 21 analyses were conducted, it is not as

customary to adjust for family-wise error in multilevel models as it is in ANOVA and group comparison analyses (Feise, 2002).

Results are displayed in Table 6. The coefficient estimate, β , is reported for each analysis in the table, along with the number of cases (N), standard error, degrees of freedom, t -value, and p -value. The β value provides an estimate of the expected change in the dependent variable for every unit increase in the predictor variable. The estimate is significant if the p -value is less than or equal to 0.05. The analyses failed to detect any significant relation between domains of classroom quality (Emotional Support, Classroom Organization, Instructional Support) and English literacy outcomes for students in this sample. Pearson correlational analyses were conducted to determine the strength of the relations between variables. As Table 7 shows, all three domains of classroom quality were strongly and positively correlated. In addition, many of the English early language and literacy variables were moderately and positively correlated, and many of the English and Spanish early literacy measures were moderately or highly positively correlated. The only classroom quality domains that were significantly and positively related to early language and literacy outcomes were the relations between PALS lowercase letter identification and Emotional Support ($r=.20$) and Instructional support ($r=.27$).

Table 6

Relations between classroom quality domains and student English literacy outcomes, Spring 2010

Fixed Effect	N	β (Standard Error)	Degrees of Freedom	t-Value	p-Value
PALS Upper					
Emotional Support	218	0.91 (1.00)	7.80	0.91	0.39
Classroom Organization	218	1.21 (0.85)	6.98	1.44	0.19
Instructional Support	218	1.07 (0.91)	6.63	1.17	0.28
PALS Lower					
Emotional Support	102	0.42 (0.96)	32	0.44	0.66
Classroom Organization	102	0.77 (0.85)	32	0.90	0.38
Instructional Support	102	1.19 (0.85)	32	1.39	0.17
PALS Letter Sounds					
Emotional Support	97	-0.001 (1.75)	7.66	.00	1.00
Classroom Organization	97	-0.60 (1.55)	8.00	-0.39	0.71
Instructional Support	97	-0.18 (1.60)	7.37	-0.11	0.91
PALS Beginning Sounds					
Emotional Support	152	0.08 (0.62)	7.76	0.13	0.90
Classroom Organization	152	0.06 (0.54)	7.76	0.10	0.92
Instructional Support	152	-0.10 (0.56)	7.36	-0.17	0.87
PALS Rhyme					
Emotional Support	152	-0.22 (0.33)	7.72	-0.65	0.53
Classroom Organization	152	-0.23 (0.28)	7.66	-0.81	0.45
Instructional Support	152	-0.28 (0.29)	7.24	-0.98	0.36
PALS Print Awareness					
Emotional Support	152	0.15 (0.21)	8.61	0.74	0.48
Classroom Organization	152	0.16 (0.18)	8.73	0.87	0.41
Instructional Support	152	0.08 (0.19)	7.55	0.40	0.70
PPVT English Receptive Vocabulary					
Emotional Support	218	0.92 (1.06)	208	0.87	0.39
Classroom Organization	218	0.87 (0.91)	208	0.96	0.34
Instructional Support	218	0.90 (0.93)	208	0.97	0.34

Table 7

Bivariate Correlations between variables, Spring 2010

	1	2	3	4	5	6	7	8	9	10	11	12
1 Emotional Support [†]	1	0.87**	0.82**	0.11	0.20*	-0.01	0.05	0.07	-0.05	0.10	0.04	-0.12
2 Classroom Organization [†]		1	0.86**	0.14*	0.19	-0.04	0.07	0.10	-0.06	0.12	-0.09	-0.05
3 Instructional Support [†]			1	0.14*	0.27*	0.02	0.03	0.07	-0.05	0.10	-0.14	-0.03
4 PALS Upper				1	0.78**	0.52**	0.47**	0.42**	0.36**	0.35**	0.05	0.68**
5 PALS Lower					1	0.58**	0.37**	0.32**	0.14	0.13	0.22	0.13
6 PALS Letter Sounds						1	0.60**	0.41**	0.22*	0.22*	-0.25	0.18
7 PALS Begin. Sounds							1	0.52**	0.46**	0.39**	0.30	0.60**
8 PALS Print								1	0.40**	0.57**	0.15	0.39*
9 PALS Rhyme									1	0.44**	0.14	0.47**
10 PPVT Oral Language										1	0.14	0.31*
11 WMLS Vocab											1	-0.20
12 WMLS Letter												1

[†] As measured by the *CLASS Pre-K* (Pianta, La Paro, & Hamre, 2008)* $p \leq .05$ ** $p \leq .01$

Research Question 2 Results

The second research question investigated the degree to which the relation between classroom quality (instructional support, emotional support, and classroom organization domains) and English early literacy skills (phonological awareness, alphabet knowledge, and receptive vocabulary) differed depending on students' home language of Spanish or English. A series of 21 multilevel model analyses were conducted to answer the second research question. Within the models, classroom quality was entered as a level two predictor. Student language status (Spanish or English) and Fall 2009 pre-scores were entered as level one predictors.

Results are found in Table 8. Moderator analyses indicated that Language was a significant moderator in the model. The interaction estimate was significant for the relation between Emotional Support and English Receptive Vocabulary ($\beta = 5.66, p = .02$), Classroom Organization and English Receptive Vocabulary ($\beta = 4.40, p = .04$), and Instructional Support and English Receptive Vocabulary ($\beta = 6.31, p = .006$), indicating that all three relations were significant and more positive for Spanish-speaking children. The beta value for the relation between Emotional Support and receptive vocabulary indicates that when language of Spanish or English is accounted for in the moderator analyses, Spanish-speaking students have a 5.66 unit higher increase in the outcome per unit increase in the predictor, as compared to English speakers. For Classroom Organization and English Receptive Vocabulary, the significant beta value indicates that Spanish-speaking students had a 4.40 higher increase in the outcome per unit increase in the predictor, and a 6.31 unit higher increase in the outcome per unit increase in the

predictor for the relation between Instructional Support and English Receptive Vocabulary.

Scatterplot graphs (see Figures 2, 3 and 4) demonstrate pictorially the interaction effects for English-speaking students and the interaction effects for Spanish-speaking students, indicating that the relation between classroom quality and English Receptive Vocabulary (PPVT-III) was more positive and linear for Spanish-speaking students than the interaction for English-speaking students. Table 9 shows the Pearson correlational analyses for English-speaking students, whereas Table 10 shows the Pearson correlational analyses for Spanish-speaking students. For English-speaking students, correlational analyses indicate that the only significant correlation between domains of classroom quality and early language and literacy skills was the relation between Instructional Support and PALS lowercase letter identification ($r=.29$). For Spanish-speaking students, English Receptive Vocabulary was positively and significantly related to Classroom Organization ($r=.26$) and Instructional Support ($r=.28$).

Table 8

Relation between domains of classroom quality and English early literacy, Language Moderator Analyses

Fixed Effect	N	β (Standard Error)	Degrees of Freedom	t-Value	p-Value
PALS Upper					
Emotional Support*Spanish	218	1.53 (1.45)	206.37	1.06	0.29
Classroom Organization*Spanish	218	0.74 (1.23)	205.56	.60	0.55
Instructional Support*Spanish	218	0.69 (1.33)	206.72	.52	0.60
PALS Lower					
Emotional Support*Spanish	102	-0.21 (2.34)	30	-.09	0.93
Classroom Organization*Spanish	102	-0.51 (2.32)	30	-.22	0.83
Instructional Support*Spanish	102	-0.21 (2.40)	30	-.09	0.93
PALS Letter Sounds					
Emotional Support*Spanish	97	-4.71 (3.69)	20	-1.28	0.22
Classroom Organization*Spanish	97	-3.42 (3.72)	21	-0.92	0.37
Instructional Support*Spanish	97	-0.51 (1.92)	23	-0.27	0.80
PALS Beginning Sounds					
Emotional Support*Spanish	152	-0.46 (0.90)	135	-0.51	0.61
Classroom Organization*Spanish	152	-0.27 (0.59)	135	-0.34	0.73
Instructional Support*Spanish	152	-0.60 (0.65)	137	-0.98	0.33
PALS Rhyme					
Emotional Support*Spanish	152	0.55 (0.67)	137	0.82	0.42
Classroom Organization*Spanish	152	0.32 (0.59)	137	0.53	0.60
Instructional Support*Spanish	152	0.60 (0.65)	139	0.93	0.36
PALS Print Awareness					
Emotional Support*Spanish	152	-0.08 (0.42)	138	-0.18	0.86
Classroom Organization*Spanish	152	0.23(0.37)	139	0.61	0.54
Instructional Support*Spanish	152	0.06 (0.41)	139	0.15	0.88
PPVT English Receptive Vocabulary					
Emotional Support*Spanish	218	5.66 (2.41)	206	2.35	0.02*
Classroom Organization*Spanish	218	4.40 (2.09)	206	2.10	0.04*
Instructional Support*Spanish	218	6.31 (2.28)	206	2.76	0.01**

* *p*-Value is significant, less than .05

***p*-Value is significant, less than .01

Table 9

Bivariate Correlations between variables for English-speaking students, Spring 2010

	1	2	3	4	5	6	7	8	9	10
1 Emotional Support [†]	1	0.87**	0.81**	0.11	0.20	0.01	0.09	0.07	-0.07	0.04
2 Classroom Organization [†]		1	0.86**	0.14	0.20	-0.04	0.09	0.05	-0.10	0.04
3 Instructional Support [†]			1	0.15	0.29*	0.03	0.08	0.06	-0.07	0.03
4 PALS Upper				1	0.78**	0.49**	0.37**	0.36**	0.28**	0.32**
5 PALS Lower					1	0.57**	0.39**	0.33**	0.18	0.04
6 PALS Letter Sounds						1	0.62**	0.41**	0.22	0.13
7 PALS Begin. Sounds							1	0.52**	0.46**	0.41**
8 PALS Print								1	0.37**	0.48**
9 PALS Rhyme									1	0.41**
10 PPVT Oral Language										1

[†] As measured by the *CLASS Pre-K* (Pianta, La Paro, & Hamre, 2008)

* $p \leq .05$

** $p \leq .01$

Table 10

Bivariate Correlations between variables for Spanish-speaking students, Spring 2010

	1	2	3	4	5	6	7	8	9	10	11	12
1 Emotional Support [†]	1	0.87**	0.84**	0.13	0.22	-0.08	-0.08	0.06	0.04	0.24	0.08	-0.17
2 Classroom Organization [†]		1	0.87**	0.16	0.17	-0.13	-0.01	0.29	0.04	0.26*	.01	-0.11
3 Instructional Support [†]			1	0.13	0.26	-0.07	-0.15	0.16	0.05	0.28*	-0.09	-0.09
4 PALS Upper				1	0.75**	0.65**	0.73**	0.58**	0.61**	0.56**	0.19	0.67**
5 PALS Lower					1	0.56**	0.40	0.54*	-0.04	0.47*	0.21	0.02
6 PALS Letter Sounds						1	0.54**	0.34	0.17	0.38	-0.26	0.16
7 PALS Begin. Sounds							1	0.49**	0.44**	0.36*	0.29	0.60**
8 PALS Print								1	0.35*	0.63**	0.11	0.37*
9 PALS Rhyme									1	0.42**	0.16	0.45**
10 PPVT Oral Language										1	0.12	0.32*
11 WMLS Vocab											1	-0.09
12 WMLS Letter												1

[†] As measured by the *CLASS Pre-K* (Pianta, La Paro, & Hamre, 2008)

* $p \leq .05$

** $p \leq$

Figure 2. Scatterplot Graph, Classroom Quality: Emotional Support and English Receptive Vocabulary by Language

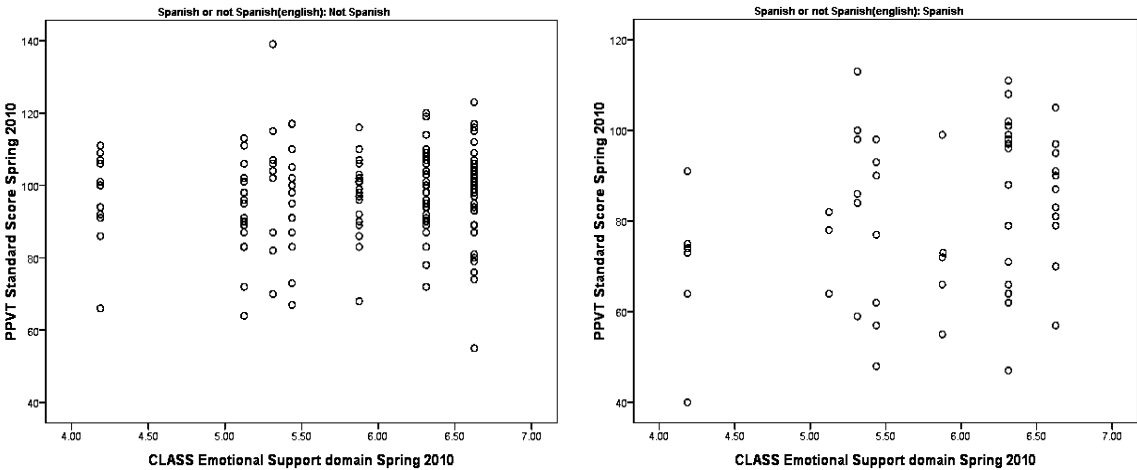


Figure 3. Scatterplot Graph, Classroom Quality: Classroom Organization and English Receptive Vocabulary by Language

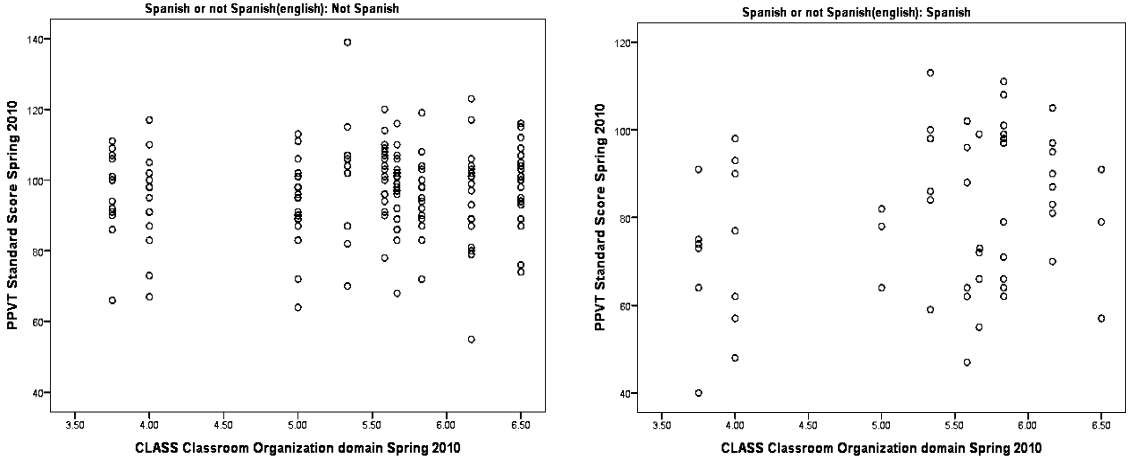
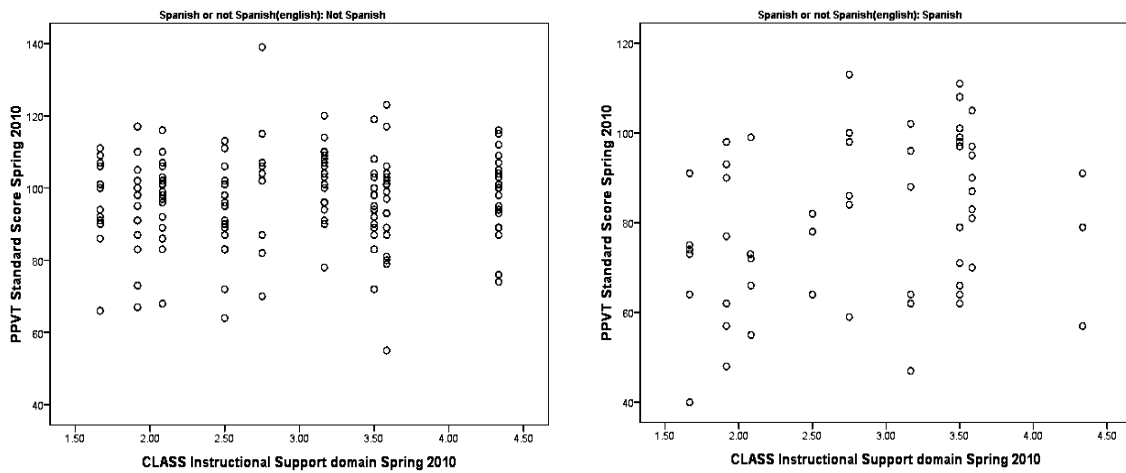


Figure 4. Scatterplot Graph, Classroom Quality: Classroom Organization and English Receptive Vocabulary by Language



Research Question 3 Results

The third research question investigated the degree to which domains of classroom quality were related to Spanish early literacy skills for Spanish-speaking prekindergarten students. A series of six multilevel modeling analyses were conducted to investigate the third research question. Within the models, classroom quality was entered as a level two predictor and Fall 2009 pre-scores were entered as level one predictors. The results are displayed in Table 11. No significant relations were detected between domains of Classroom Quality (e.g., Emotional Support, Classroom Organization, and Instructional Support) and Spanish early literacy skills for Spanish-Speaking students.

Table 11

Relations between domains of classroom quality and Spanish literacy skills for Spanish-speaking students

Fixed Effect	N	β (Standard Error)	Degrees of Freedom	<i>t</i> -Value	<i>p</i> -Value
WMLS Spanish Oral Language					
Emotional Support	57	2.27 (2.28)	8.51	0.99	0.35
Classroom Organization	57	1.86 (1.99)	8.51	0.94	0.38
Instructional Support	57	6.78 (2.21)	6.97	0.36	0.73
WMLS Spanish Letter Identification					
Emotional Support	54	-4.36 (2.75)	44	-1.59	0.12
Classroom Organization	54	-2.84 (2.43)	44	-1.17	0.25
Instructional Support	54	-3.25 (2.67)	44	-1.21	0.23

Exploratory Analyses

In addition to the original research questions, additional exploratory analyses were conducted to investigate conceptually related questions. Specifically, moderator analyses were conducted to investigate the possible differential impact of Returner status on the relation between domains of Classroom Quality and English early literacy. Returner status indicated whether or not students were in their first (Non-Returner) or second (Returner) years of the Prekindergarten program. Given the significant results of the moderator analyses that included home language of English or Spanish, it was hypothesized that students who were in their first year of prekindergarten (e.g., Non-Returners) may benefit more from high-quality classroom environments than students in their second year of prekindergarten (e.g., Returners). Descriptive statistics for Returner versus non-Returner students are presented in Table 12. Results indicated a significant interaction estimate for the interaction between Returner status and CLASS Emotional

Support and PALS Uppercase, ($\beta = -2.80, p=.04$). These results indicated that the Non-Returner students had a 2.80 higher increase in the outcome (letter identification) per unit increase in the predictor (Emotional Support) than Returner, students. However, these results should be interpreted cautiously due to the fact that non-Returner students include both three and four year olds in their first year of preschool.

Table 12

Descriptive statistics, Spring 2010, Returner versus Non-Returner

	N	Mean	Standard Deviation	Range
PALS Uppercase Letters				
Overall	218	13.71	9.35	0-26
Returner	57	17.53	8.79	0-26
Non-returner	161	12.35	9.19	0-26
PALS Lowercase Letters				
Overall	102	18.82	4.97	8-26
Returner	37	20.46	5.26	8-26
Non-returner	65	17.89	4.58	8-26
PALS Letter Sounds				
Overall	97	8.83	6.57	0-23
Returner	34	11.44	6.34	0-23
Non-returner	63	6.65	6.04	0-21
PALS Beginning Sounds				
Overall	152	5.80	3.82	0-10
Returner	55	6.42	3.94	0-10
Non-returner	97	5.45	3.73	0-10
PALS Print Awareness				
Overall	152	6.74	1.98	0-10
Returner	55	6.78	2.23	0-10
Non-returner	97	6.71	1.83	1-10
PALS Rhyme Awareness				
Overall	152	6.16	2.76	0-10
Returner	55	6.33	2.84	0-10
Non-returner	97	6.06	2.72	2-10
PPVT English Receptive Vocabulary				
Overall	218	92.61	15.57	40-139
Returner	57	94.26	13.67	64-123
Non-returner	161	92.03	16.19	40-139
WMLS Spanish Letter Identification				
Spanish	50	107.48	16.62	74-147
Returner	13	110.15	14.39	76-126
Non-returner	41	105.07	17.26	74-147
WMLS Spanish Vocabulary				
Spanish	50	78.90	19.52	23-111
Returner	13	85.15	19.15	35-11
Non-returner	40	76.28	19.76	23-103

Chapter 5: Discussion

This study investigated the relation between Classroom Quality (e.g., Emotional Support, Classroom Organization, and Instructional Support) and Early Literacy scores for English- and Spanish-speaking prekindergarten students. The specific research questions were as follows:

Research question 1. To what degree are aspects of classroom quality (instructional support, emotional support, and classroom organization) related to English early literacy skills (phonological awareness, alphabet knowledge, and receptive vocabulary) for prekindergarten students?

Research question 2. To what degree does the relation between classroom quality (instructional support, emotional support, and classroom organization domains) and English early literacy skills (phonological awareness, alphabet knowledge, and receptive vocabulary) differ depending on students' home language of Spanish or English?

Research question 3. To what degree are aspects of classroom quality (instructional support, emotional support, and classroom organization) related to Spanish early literacy skills (letter-word identification and picture vocabulary) for Spanish-speaking prekindergarten students?

Results showed that students' early language and literacy scores fell within the average range for Spring 2010. Spanish-speaking students scored lower on most English early language and literacy outcomes, with the exception of PALS Lowercase Letter Identification. As discussed during Chapter 3, spring target scores were set for kindergarten-bound students for PALS subscales. All English- and Spanish-speaking students scored in or above the target ranges for PALS subscales except for Spanish-

speaking students' scores on the PALS Print Awareness subscale which fell just below the target range.

Research Question One

This study failed to detect a significant relation between aspects of classroom quality and English early literacy skills. These results were surprising in light of previous research that indicates that classrooms with stronger emotional support, classroom organization, and instructional support have children with more competent English early literacy skills (Downer et al., 2011; Mashburn, et al., 2008). For example, recent research by Downer and colleagues demonstrated the validity of the CLASS framework and assessment system in various compositions of English Language and Dual Language Learning classrooms. In their study, Downer and colleagues assessed classroom environments in 721 state-funded prekindergarten classrooms and randomly chose three to four students from each classroom on which teachers completed early language and literacy, as well as social-emotional, child outcome data. Although the populations in the two studies were similar, Downer et. al investigated classroom quality in a substantially larger number of classrooms across multiple states, whereas this study examined nine classrooms in one district. The current study also included all students who spoke English or Spanish within a classroom as participants whereas Downer et al. selected three to four students per class. Mashburn et al. (2008) also detected significant relations between domains of classroom quality and early language and social skills of selected few students in a sample of four randomly selected students within 671 classrooms. Thus, unlike the results of this study, previous research of large-scale studies across many

classrooms has indicated the presence of a relation between classroom quality and English early language and literacy skills.

The most likely reason that a relation between classroom quality and early literacy was not detected in this study is that the sample size may not have provided sufficient power to detect the relation. In this study, sample sizes varied across the dependent measures and some variables had smaller sample sizes, particularly for phonological awareness measures that required students to meet certain criteria in order to advance to further subscales. For example, a total of 19 uppercase letters was necessary for students to be administered the lower case letter identification subtest. As discussed in Chapter 3, power analyses indicated that this study would have sufficient power to detect an effect size of $d=.56$. A smaller effect size would not have been detected. As a result, the small sample sizes and fluctuations in sample sizes for certain dependent variables likely contributed to this study's failure to detect a significant relation for Research Question One.

In addition, due to the high-quality, intensive early literacy intervention (e.g., the parent project, Rural LLC), participating classrooms in this study were required to meet minimal standards of quality based on structural characteristics. Descriptive statistics described in Chapter 3 (see Table 5, pp.) indicated that the mean quality scores for Emotional Support and Classroom Organization were at the top of the mid-quality with small ranges, leaving less variability between classrooms (e.g., a the mid-range for CLASS observational quality is 3-5). With less variability in the independent, predictor variable, it becomes more difficult to detect significant relations between that variable and outcome measures. It is possible that the current study failed to detect a significant

relation between the domains of classroom quality and early English language and literacy skills because the classrooms were all higher quality.

Research Question Two

Research Question Two investigated the degree to which the relation between classroom quality domains and English early literacy skills differed depending on students' primary home language of English or Spanish. Results from these moderator analyses indicated that the relation between all three domains of classroom quality (Emotional Support, Classroom Organization, and Instructional Support) and English Receptive Vocabulary were more positive for Spanish-speaking students than for English-speaking students. These results support the stated hypothesis for Research Question Two that the relation will be stronger for Spanish-speaking students than English-speaking students. However, the relations between domains of Classroom Quality and other early literacy skills were not significant.

Students who speak English as a second language often enter school with lower language and literacy skills and are more "at-risk" for poorer pre-academic outcomes than their English-speaking counterparts (Espinosa, 2007). As a result, Spanish-speaking students in this study were conceptualized to be more "at-risk" for poor academic outcomes based on their primary language status. Previous research suggests that students who are most at-risk for academic failure based on language (Hamre et al., 2010), and academic or behavioral indicators (Downer et al., 2007) may benefit the most from high-quality curriculum and classroom environments. Hamre et al. (2010) found that on measures of English early literacy, students who came from homes where languages other than English were spoken primarily benefited more from higher quality language

modeling than primarily English-speaking students. Though the current study only found a significant relation between domains of Classroom Quality and English Receptive Vocabulary, the current study supports this previous research and furthers the line of research by supporting the hypothesis that classrooms with stronger emotional support, organization, and instructional support seem to make a bigger difference in the early oral language development of prekindergarten students who speak Spanish as their primary language.

Although multiple language and literacy measures were used as dependent measures in this study, the only significant relation between domains of classroom quality and these measures was the relation between classroom quality and English receptive vocabulary for Spanish-speaking students. Oral language, (which includes receptive vocabulary more specifically), has been classified as an *outside-in* early literacy skill (Whitehurst & Lonigan, 1998). *Outside-in* skills refer to children's understanding to the context of text, semantic knowledge, knowledge of the world, and vocabulary, whereas *inside-out* skills refer to the code-related components of language, including children's ability to produce and link letters (graphemes) or word parts (phonemes) into meaningful sounds. Interestingly, receptive vocabulary was the only *outside-in* skill measured in this study and had the only significant relation with the three domains of Classroom Quality. These results could suggest that classrooms with a higher frequency of high-quality teacher-student interactions, a large proportion of which include verbal interactions, seem to particularly support the English language development of Spanish-speaking students. As discussed in Chapter 3, the current study was conducted within the context of the Rural LLC project, which provided evidence-based reading curricula

designed to enhance early language and literacy skills. However, these same high-quality teacher-student interactions do not seem to make a significant impact for the *inside-out* skills (i.e., print awareness, phonological awareness) of Spanish-speaking students based on the results of this study. The failure to detect significant relations between classroom quality and early literacy measures in this study may have been due to the definition and measurement of classroom quality, which was focused on high-quality interactions and not specific instructional strategies or the availability of high-quality materials that may impact *inside-out skills*. In addition, apart from uppercase letter identification, the sample sizes for some of the early literacy skills (e.g., lowercase letter identification, letter sounds) were smaller and varied across subscales, which may have made a significant relation more difficult to detect.

Research Question Three

The third research question investigated the degree to which aspects of classroom quality were related to Spanish early literacy skills for Spanish-speaking students. The current study failed to detect a significant relation between classroom quality and Spanish early literacy for Spanish-speaking students. Although previous research has established a relation between domains of classroom quality and English early literacy skills in prekindergarten students, few studies have investigated the relation between classroom quality and Spanish early literacy skills (specifically Spanish oral language and letter identification) in primarily English-speaking classrooms. As discussed in Chapter 2, theories of cross-linguistic transfer (e.g., Cummins, 2008) have been empirically tested to show high correlations between students' Spanish and English early literacy skills (Manis, Lindsey, and Bailey, 2004). Manis et al. found strong correlations between

measures of English and Spanish early literacy skills. Correlations between measures of English and Spanish early literacy skills were moderate and significant between Spanish letter identification and PALS print awareness ($r=0.37$), PALS rhyme awareness ($r=0.45$), and PPVT English Receptive Vocabulary ($r=0.32$), and strong, significant positive correlations between Spanish letter identification and PALS beginning sounds ($r=0.60$) and PALS uppercase letter identification ($r=0.67$). However, Manis et al. differed from the current study in that the authors analyzed a sample of slightly older students (e.g., kindergarten and first grade) who received bilingual curriculum and instruction. Teachers and teacher's aides in the Manis et al. study were native Spanish-speakers, whereas all teachers in the current study were native English-speakers and only 27% of paraprofessionals reported Spanish as their primary language. In the current study, Spanish-speaking students received explicit instruction in English only, though supports for Spanish language were present in the classroom (e.g., objects labeled in both languages) and through home visit programming and supports. It is plausible that students in the Manis et al. study showed more significant cross-linguistic transfer because Spanish was a more prominent presence in the classroom.

The failure to detect a significant relation could also be due to the fact that no relation actually exists, or that the relatively small sample size did not have sufficient power to detect a relation if one existed. Compared to Manis et al.'s study of 330 Spanish-speaking students, the current study examined the relation between classroom quality and early Spanish language and literacy for only 54 students on WMLS Letter Identification and for 57 students on WMLS Vocabulary. Most likely, the current study failed to detect a significant relation due to a combination of the small sample size and

differences between the current study and previous research in student population, language of instruction, and staff.

Exploratory Analyses

As discussed in the data analysis section in Chapter 3, further analyses were conducted to determine the effects of specific moderators on the overall model. In light of the fact that one of the moderator analyses for Language status was significant and the relation was more positive for Spanish-speaking students, these further analyses were conducted to determine possible differences in the relation for groups. Specifically, moderator analyses were conducted to identify potential interaction effects of Returner status based on the fact that students who are in their first year of prekindergarten (i.e., “non-Returners”) could be said to be more “at-risk” for academic difficulties than their peers who were in their second year of kindergarten (i.e., “Returners”). These moderator analyses indicated that compared to Returners, or students who were in their second year of prekindergarten, Non-Returners (children in their first year of prekindergarten) seemed to benefit more from classrooms with stronger Emotional Support. These results further confirm the findings from Research Question Two and support previous risk and resilience research that has indicated children who are more at-risk for poor social and academic outcomes benefit more from high-quality instruction and early intervention (e.g., Downer, 2007; Hamre & Pianta, 2005; Pungello et al., 2010). However, these results should be interpreted cautiously due to the fact that “non-Returners” included both three and four year old students in their first year of preschool. As a result, future research should more closely examine the potential differential impact of classroom quality on younger versus older children in prekindergarten classrooms.

Limitations of the Study

Several limitations of this study were identified. First, the classroom settings included a strong intervention and curriculum prior to the current study's implementation. As a result, most of the classrooms received relatively high scores in the three domains of classroom quality, with the exception of the Instructional Support domain. It is difficult to ascertain the impact of "low" versus "high" classroom quality when the range of quality is limited. In addition, the sample size of nine classrooms may have been too small for this study to detect a relation if it existed. Similarly, the sample sizes between English- and Spanish-speaking students were not equal and fewer Spanish-speaking students were included in this study. Unequal sample sizes make it more difficult to find significant relations between variables. In addition, the experimental design and analyses did not account for possible differences between students who are highly competent in Spanish and English and students who are low in competence in both languages.

Although this study's measures were carefully selected, the measurement of classroom quality and early language and literacy in this study may also have limitations. The *CLASS Pre-K* is an empirically-supported measure of classroom quality; it does not provide information related to the safety, availability of materials, or specific evidence-based curriculum strategies. In addition, since the beginning of this study, other tools for assessing the early language and literacy of prekindergarten students (e.g., an updated version of the PPVT) have become available. The measures in the current study are also limited in that they did not include other important factors related to language and literacy development, especially home literacy practices.

This study was limited by the use of an extant data set (with supplemental data collected for classroom quality), and was cross-sectional. A longitudinal design may have offered more information regarding the relation of classroom quality and language and literacy outcomes for students over time. In addition, the current study was conducted in one community and only two sites; a multi-site design may have provided more variability and improved the generalization of this study's findings.

Future Research and Implications for Practice

Results of the current study suggest that Spanish-speaking students may differentially benefit from classrooms that are emotionally-supportive, instructionally-supportive, and well organized in terms of their English receptive vocabulary skills. Future research should address the limitations of this study (e.g., small sample size, limited measures, conducted in one community) and replicate the procedures with a larger, more diverse sample. Specifically, large-scale intervention research with many classrooms could provide more information about the relation between classroom quality and students' early language and literacy development. Recent research has investigated the effects of professional development programs that support instructionally-supportive, well-organized, and emotionally-supportive classrooms in the areas of language and literacy (e.g., investigations of "My Teaching Partner;" see Pianta et al., 2008). Future large-scale intervention studies could investigate the aspects of classroom quality that are key in supporting the early language and literacy development of Spanish-speaking students. In addition, future research should investigate the short- and long-term impact of classroom quality for Spanish-speaking students as they transition to kindergarten. Recent research has examined the CLASS framework in multiple compositions of Dual

Language Learner (DLL) and English Language Learner (ELL) classrooms (e.g., Downer, et al., 2011). However, future directions should also investigate the relation of classroom quality on Spanish early literacy outcomes as well as on English early literacy outcomes. Though the current study did not find a significant relation between classroom quality and Spanish early language and literacy outcomes, this could have been an artifact of the small sample.

The results of this study have several implications for practice. The results of this study indicate that students who enter prekindergarten with greater risk based on language status may be particularly sensitive to classroom quality (e.g., high-quality interactions) and may benefit more in their receptive vocabulary development from high quality classroom environments than students who have less risk. In addition, results from this study give further evidence of the usefulness of the CLASS and of process frameworks for understanding key elements of classroom quality in prekindergarten that support Spanish-speaking students.

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Appendix A: IRB Approval Letter

Sent By: IRB NUgrant System
Sent On: 04/22/2011 10:40 am
Reference: Workflow - 10890
Subject: Official Approval Letter for IRB project #11709
Message: April 22, 2011

Allison Osborn
Department of Educational Psychology
246 Teachers College Hall, UNL, 68588-0345

Lisa Knoche
Nebraska Center for Research on Children, Youth, Families and
Schools
238 TEAC, UNL, 68588-0345

IRB Number: 20110411709 EX
Project ID: 11709
Project Title: The Relationship between High-Quality Prekindergarten
Classroom Environments and Literacy Outcomes for Students
Learning English as a Second Language

Dear Allison:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as Exempt Category 4.

You are authorized to implement this study as of the Date of Final Approval: 04/22/2011.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- * Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- * Any serious accidental or unintentional change to the IRB-approved

protocol that involves risk or has the potential to recur;

* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;

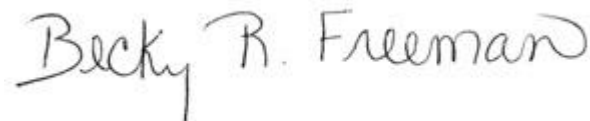
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or

* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 472-6965.

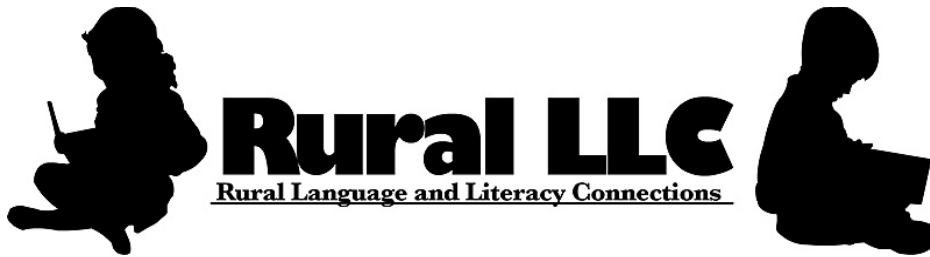
Sincerely,

A handwritten signature in black ink that reads "Becky R. Freeman". The signature is written in a cursive style with a large, prominent "B" and "F".

Becky R. Freeman, CIP
for the IRB



Appendix B: Demographic Surveys



PARENT PACKET

Please answer the following questions. All information you provide will be kept confidential. There are no right or wrong answers to questions. The information you provide will help us better understand you and your child. Any information provided on this form will be kept private.

CHILD NAME _____

ID # _____

CHILD BIRTHDATE _____

AGE _____

PARENT NAME _____
(the one completing the survey)

DATE _____

TEACHER NAME _____

SCHOOL _____

SESSION (AM, PM or FULL) _____

Rev. 09/07

Section A. Your Child and Family

A1. Are you the primary caregiver for the child? (please circle one) 1=Yes 0=No*

***A1a. If no**, who is the primary caregiver and what is his/her relationship to the child?

A2. What is the child's birth date? ____ / ____ / ____ (month/ day/ year)

A3. How old is the child? ____ years ____ months

A4. What is the child's gender? (please circle one) 1=Male 2=Female

A5. What do you consider the child's ethnicity? (please check one)

____ a) Hispanic

____ b) Non-Hispanic

A6. What do you consider the child's race? (please check one)

____ a) White, non-Hispanic

____ b) Black/African American

____ c) White, Hispanic or Latino

____ d) American Indian/ Alaska Native

____ e) Asian American

____ f) Native Hawaiian or other Pacific Islander

____ g) Other: Please specify _____

A7. Was your child born in the United States? 1=Yes 0=No*

***A7a. If no**, where was your child born?

_____ (Province/ Country)

***A7b.** At what age did your child move to the United States? ____ years ____ months

A8. Does your child speak English? 1=Yes 0=No

A9. Does your child speak any other language? 1=Yes* 0=No

A9a. If Yes, what language? _____

A9b. If Yes, at what age did you (or anyone) start speaking English to your child?

____ years ____ months OR ____ do not speak to child in English

Section B. Children with Special Needs

If you answer Yes* to any question in this section, please answer the follow-up questions.

B1. Does the child have an identified disability, such as physical, emotional, learning, language, hearing difficulty or other special needs? 1=Yes* 0=No

B1a. If yes,

B2. Has the child been referred for evaluation for developmental delays through the public school Multi Disciplinary Team (MDT)?

1=Yes* 0=No

B2a. If Yes*, does child have an Individualized Family Service Plan? 1=Yes* 0=No

B2b. If Yes*, does child have an Individualized Educational Plan? 1=Yes* 0=No

Section C. You and Your Family

C1. What is your relationship to the child? (please check one)

- a) Mother
- b) Father
- c) Grandmother
- d) Grandfather
- e) Stepmother
- f) Stepfather
- g) Foster mother
- h) Foster father
- i) Other: Please specify _____

C2. What is your age? _____

D2a. What is your birth date? ____ / ____ / ____ (month/ day/ year)

C3. What is your gender? (circle one) 1=Male 2=Female

C4. What do you consider your ethnicity? (please check one)

- a) Hispanic
- b) Non-Hispanic

C5. What do you consider your race? (please check one)

- a) White, non-Hispanic
 b) Black/African American
 c) White, Hispanic or Latino
 d) American Indian/ Alaska Native
 e) Asian American
 f) Native Hawaiian or other Pacific Islander
 g) Other: Please specify _____

C6. Were you born in the United States? 1=Yes 0=No

D6a. If no, where were you born?

_____ (Province/ Country)

D6b. How long have you lived in the United States?

_____ years _____ months

C7. What language is spoken most frequently in your child's home?

C8. How old were you at the birth of your first child? _____ years old

C9. How old were you at the birth of **THIS** child? _____ years old

C10. What is your current marital status? (please check only one)

- a) married
 b) divorced
 c) single, never married
 d) separated
 e) widowed
 f) with partner/ not married

C11. What is the highest level of education you have *completed*? (please check only one)

- a) no formal schooling i) some training beyond high school but not a degree
 b) less than 8th grade j) one year vocational training certificate
 c) 9th grade k) two year college degree
 d) 10th grade l) four year college degree
 e) 11th grade m) some graduate college coursework
 f) 12th grade n) graduate college degree
 g) High school diploma
 h) GED

C12. Who lives in your home?

a. How many people over 18 years of age live in your household? _____

b. How many people 12 to 18 years of age live in your household? _____

c. How many people under the age of 12 live in your household? _____

C13. Is there a father figure living in the home? 1=Yes 0=No
(*may be biological or other person who is like a father to the child*)

C13a. If so, who is it? (please check one)

___a) Biological father

___b) Step father

___c) Uncle

___d) Grandfather

___e) Mother's boyfriend

___f) Adoptive father

___g) Foster father

___h) Other: _____

C14. Is there a mother figure living in the home? 1=Yes 0=No
(*may be biological or other person who is like a mother to the child*)

C14a. If so, who is it? (please check one)

___a) Biological mother

___b) Step mother

___c) Aunt

___d) Grandmother

___e) Father's girlfriend

___f) Adoptive mother

___g) Foster mother

___h) Other: _____

C15. How often does your child see his/her biological father? (please check one)

___a) Rarely or never

___b) Several times a year

___c) Several times a month

___d) Several times a week

___e) Every day

___f) Don't know

C16. How often does your child see his/her biological mother? (please check one)

- a) Rarely or never
- b) Several times a year
- c) Several times a month
- d) Several times a week
- e) Every day
- f) Don't know

C17. Are you currently (please provide answer for each item):

- | | | |
|--|-------|------|
| a) Working full-time (30 or more hours/week) | 1=Yes | 0=No |
| b) Working part-time (less than 30 hours/week) | 1=Yes | 0=No |
| c) Unemployed | 1=Yes | 0=No |
| d) Looking for work | 1=Yes | 0=No |
| e) Laid off | 1=Yes | 0=No |
| f) In school/ training (full-time) | 1=Yes | 0=No |
| g) In school/ training (part-time) | 1=Yes | 0=No |
| h) In military | 1=Yes | 0=No |
| i) Something else | 1=Yes | 0=No |

Please explain: _____

C18. If you are currently working, what is your job? _____

C19. If applicable, is your spouse/partner currently employed? 1=Yes 0=No 2=N/A

C20. Did you receive assistance from any of the following sources over the past year (12 months)?

- | | | |
|--|-------|------|
| a) WIC | 1=Yes | 0=No |
| b) School lunch/ breakfast program | 1=Yes | 0=No |
| c) Earned income tax credit | 1=Yes | 0=No |
| d) Childcare assistance | 1=Yes | 0=No |
| e) Housing assistance | 1=Yes | 0=No |
| f) Energy/ fuel assistance | 1=Yes | 0=No |
| g) Transportation assistance | 1=Yes | 0=No |
| h) Education grants or loans | 1=Yes | 0=No |
| i) Medicaid | 1=Yes | 0=No |
| j) Welfare (TANF) | 1=Yes | 0=No |
| k) Unemployment Insurance | 1=Yes | 0=No |
| l) SSI or SSDI | 1=Yes | 0=No |
| m) Social Security Retirement or Survivor's benefits | 1=Yes | 0=No |
| n) Veteran's benefits | 1=Yes | 0=No |
| o) Spousal support | 1=Yes | 0=No |
| p) Food stamps | 1=Yes | 0=No |
| q) Child support | 1=Yes | 0=No |

C21. Thinking about all the sources of income you and your family received, including those from the list above, what was the total income for your household **last month** (your best guess is fine):

- a) Less than \$250
- b) Between \$250 and \$500
- c) Between \$501 and \$750
- d) Between \$751 and \$1000
- e) Between \$1001 and \$1250
- f) Between \$1251 and \$1500
- g) Between \$1501 and \$1750
- h) Between \$1751 and \$2000
- i) Over \$2001
- j) Don't know

C22. Thinking about all the sources of income you and your family received, including those from the list above, what was the total income for your household **last year** (your best guess is fine):

- a) Less than \$8,000
- b) Between \$8,000 and \$10,000
- c) Between \$10,001 and \$12,000
- d) Between \$12,001 and \$14,000
- e) Between \$14,001 and \$16,000
- f) Between \$16,001 and \$18,000
- g) Between \$18,001 and \$20,000
- h) Between \$20,001 and \$22,000
- i) Between \$22,001 and \$24,000
- j) Between \$24,001 and \$28,000
- k) Between \$28,001 and \$30,000
- l) Over \$30,000
- m) Don't know

C23. Housing is usually the largest expense for families. About how much do you pay for housing each month (e.g. rent)?

- a) Housing is subsidized, paid in full
- b) Less than \$100
- c) Between \$100 and \$200
- d) Between \$201 and \$300
- e) Between \$301 and \$400
- f) Between \$401 and \$500
- g) Between \$501 and \$600
- h) Between \$601 and \$700
- i) Between \$701 and \$800
- j) Between \$801 and \$900
- k) Between \$901 and \$1000
- l) More than \$1001

C24. How many times have you moved in the last 12 months?

- a) Never moved
- b) 0-1 moves
- c) 2-3 moves
- d) 4 or more moves

Thank you!!



Paquete para los padres

Por favor conteste las siguientes preguntas. Toda la información que usted provea será mantenida confidencialmente. No hay respuestas correctas ni incorrectas para las preguntas. La información que usted provea nos ayudará a entender mejor a usted y a su hijo/a. Cualquier información que provea en este formulario se mantendrá en privado.

NOMBRE DEL NIÑO/A _____

NÚMERO DE IDENTIFICACIÓN _____

FECHA DE NACIMIENTO/EDAD _____

AGE _____

NOMBRE DEL PADRE/MADRE (el que está completando este formulario)

FECHA _____

NOMBRE DE MAESTRA _____

SCHOOL _____

SESSION (AM, PM or FULL) _____

Rev Sept 07

Sección A. Su Hijo/a y Su familia

A1. ¿Es usted la persona encargada del cuidado de su hijo/a? (por favor encierre en un círculo una respuesta) 1=Sí 0=No*

***A1a. Si respondió no,** ¿quién es la persona encargada del cuidado de su hijo/a y qué es su relación con su hijo/a? _____

A2. ¿Cuál es la fecha de nacimiento de su hijo/a? ____ / ____ / ____
(mes/día/año)

A3. ¿Cuántos años tiene su hijo/a? ____ años ____ meses

A4. ¿Cuál es el sexo de su hijo/a? (por favor encierre en un círculo una respuesta)
1= masculino 2= femenino

A5. ¿Cuál considera que es el grupo étnico de su hijo/a? (por favor marque una respuesta)

- ____ a) hispano/a
____ b) no hispano/a

A6. ¿Cuál considera que es la raza de su hijo/a? (por favor marque una respuesta)

- ____ a) anglosajón/a, no-descendencia hispana
____ b) afro-americano/a
____ c) blanco/a, hispano/a o latino/a
____ d) indio americano/a / nativo/a de Alaska
____ e) asiático/a
____ f) nativo/a de Hawaii o de otra descendencia de las Islas del Pacífico
____ g) otro: por favor especifique _____

A7. ¿Su hijo nació en los Estados Unidos? 1= Sí 2= No

***A7a.** Si no nació en los EEUU, ¿dónde nació su hijo/a?

_____ (Ciudad/ Estado/ País)

***A7b.** ¿A qué edad llegó su hijo/a a los Estados Unidos?

_____ años ____ meses

A8. ¿Su hijo/a (o si es bebé, hablará su hijo/a) habla inglés? 1= Sí 0= No

A9. ¿Su hijo/a habla otro idioma? 1= Sí* 0= No

A9a*. Si contesta sí, ¿cuál idioma? _____

***A9b. If Yes*,** at what age did you (or anyone) start speaking English to your child?
_____ years ____ months OR ____ do not speak to child in English

Sección B. Los Niños con Necesidades Especiales

Si usted responde a cualquiera de las preguntas en esta sección afirmativamente (Sí)*, por favor conteste las siguientes preguntas.

B1. ¿Tiene su hijo/a una discapacidad identificada, la cual puede ser física, emocional, de aprendizaje, de lenguaje, una deficiencia auditiva u otras necesidades especiales?

1=Sí* 0=No

B1a. Si la respuesta es afirmativa* ¿Cuál es la discapacidad de su hijo/a o el diagnóstico?

B2a. ¿Ha tenido preocupación por retrasos o diferencias en el desarrollo de su niño/a?

1=Sí* 0=No

B2b. ¿Ha mostrado la persona encargada de cuidar a su hijo/a preocupación por retrasos o diferencias en el desarrollo de su niño/a?

1=Sí* 0=No

B2c. ¿Ha mostrado el maestro/a preocupación por retrasos o diferencias en el desarrollo de su niño/a?

1=Sí* 0=No

B2d. ¿Ha mostrado alguien más/otra persona preocupación por retrasos o diferencias en el desarrollo de su niño/a?

1=Si* 0=No

¿Quién? _____

B2aa. Si su respuesta es afirmativa* ¿Cuál es la preocupación? _____

B3. ¿Se ha hecho algún tipo de discusiones/métodos informales para remediar estas preocupaciones?

1=Sí* 0=No

B3a. Si su respuesta es afirmativa* explique los esfuerzos y los resultados

B4. ¿Ha sido el/la niño/a referido/a para una evaluación de desarrollo tardío a través del Equipo Multi-diciplinario de la escuela pública (MDT)?

1=Sí* 0=No

B4a. Si su respuesta es afirmativa* Fecha que fue referido _____ Fecha que fue evaluado _____

B5. Si su respuesta es afirmativa* ¿El equipo multi-diciplinario de la escuela pública (MDT) ha identificado que su niño/a tiene necesidades especiales o desarrollo tardío?

1=Sí* 0=No

B5a. Si su respuesta es afirmativa* ¿Tiene el niño un Plan Individualizado de Servicio Familiar (IFSP)? 1=Sí* 0=No

B5b. Si su respuesta es afirmativa* ¿Tiene el niño un Plan Individualizado Educativo (IEP)? 1=Sí* 0=No

Sección C. Usted y su Familia

C1. ¿Cuál es su parentesco con el niño o niña? (por favor escoja una respuesta)

- _____ a) Madre
 _____ b) Padre
 _____ c) Abuela
 _____ d) Abuelo
 _____ e) Madrastra
 _____ f) Padrastro
 _____ g) Madre de Crianza
 _____ h) Padre de Crianza
 _____ i) Otro: Por favor especifique _____

C2. ¿Cuál es su edad? _____

C2a. ¿Cuál es su fecha de nacimiento? _____ / _____ / _____ (mes/ día/ año)

C3. ¿Cuál es su sexo? (marque uno) 1= Masculino 2= Femenino

C4. ¿Cuál considera que es su grupo étnico? (por favor marque solamente uno)

- _____ a) hispano/a
 _____ b) no hispano/a

C5. ¿Cuál considera su raza? (por favor marque solamente uno)

- _____ a) anglosajon/a, no-descendencia hispana
 _____ b) afro-americano/a
 _____ c) hispano/a o latino/a
 _____ d) indio americano/a/ nativo/a de Alaska
 _____ e) asiático/a
 _____ f) nativa de Hawaii o de otra descendencia de las Islas del Pacífico
 _____ g) Otro: Por favor especifique _____

C6. ¿Nació usted en los Estados Unidos? 1= Sí 0= No

C6a. Si no, ¿dónde nació? _____ (Ciudad /Estado / País)

C6b. ¿Cuánto tiempo lleva viviendo en los Estados Unidos? ____ años ____ meses

C7. ¿Qué idioma se habla con más frecuencia en el hogar de su hijo/a?

C8. ¿Cuántos años tenía usted cuando nació su primer/a hijo o hija? _____ años de edad.

C9. ¿Cuántos años tenía usted cuando nació ESTE/A hijo/a? _____ años de edad.

C10. ¿Cuál es su estado civil actual (por favor marque solamente uno)?

- _____ a) casado/a
- _____ b) divorciado/a
- _____ c) soltero/a, nunca casado/a
- _____ d) separado/a
- _____ e) viudo/a
- _____ f) con pareja/ no casados

C11. ¿Cuál ha sido el nivel de educación más alto que ha *completado* (por favor marque solamente uno)?

- | | |
|-------------------------------------|---|
| _____ a) ningún tipo de educación | _____ i) algún tipo de educación después de la preparatoria |
| _____ b) menos del octavo grado | _____ j) un año de certificado de educación vocacional |
| _____ c) noveno grado | _____ k) título del colegio comunitario de dos años |
| _____ d) décimo grado | _____ l) título de universidad de cuatro años |
| _____ e) onceavo grado | _____ m) algunos cursos de educación de posgrado |
| _____ f) doceavo grado | _____ n) título de posgrado |
| _____ g) diploma de la preparatoria | |
| _____ h) GED | |

C12. Quién vive en su casa?

a. ¿Cuántas personas que más de 18 años de la edad viven en su casa? _____

b. ¿Cuántas personas 12 a 18 años de la edad viven en su casa? _____

c. ¿Cuántas personas bajo la edad de 12 viven en su casa? _____

C13. ¿Hay alguna figura paterna viviendo en el hogar? 1= Sí 0= No
(puede ser biológico u otra persona que es como el padre para el niño/a .)

C13a. Si existe, ¿quién es? (por favor marque solamente uno)

- a) padre biológico
- b) padrastro
- c) tío
- d) abuelo
- e) novio de la madre
- f) padre adoptivo
- g) padre de crianza
- h) otra: _____

C14. ¿Hay alguna figura maternal viviendo en el hogar? 1= Sí 0= No
(puede ser biológico o otra persona que es como la madre para el niño/a .)

C14a. Si existe ¿quién es? (por favor marque solamente uno)

- a) madre biológica
- b) madrastra
- c) tía
- d) abuela
- e) novia del padre
- f) madre adoptiva
- g) madre de crianza
- h) otra: _____

C15. ¿Cuántas veces ve el niño o la niña a su padre biológico? (por favor marque solamente uno)

- a) Rara vez o nunca
- b) Varias veces durante el año
- c) Varias veces al mes
- d) Varias veces a la semana
- e) Todos los días
- f) No sé

C16. ¿Cuántas veces ve el niño o niña mira a su madre biológica? (por favor marque solamente una)

- a) Rara vez o nunca
- b) Varias veces durante el año
- c) Varias veces al mes
- d) Varias veces a la semana
- e) Todos los días
- f) No sé

C17. Actualmente usted (encierre en un círculo todas las que apliquen):

- a) Trabaja tiempo completo (30 o más horas por semana) 1=Sí 0=No

- | | | |
|---|------|------|
| b) Trabaja medio tiempo (menos de 30 horas por semana) | 1=Sí | 0=No |
| c) Está desempleado | 1=Sí | 0=No |
| d) Está buscando trabajo | 1=Sí | 0=No |
| e) Ha sido despedido | 1=Sí | 0=No |
| f) Está en la escuela/ recibe entrenamiento (tiempo completo) | 1=Sí | 0=No |
| g) Está en la escuela/ recibe entrenamiento (medio tiempo) | 1=Sí | 0=No |
| h) Está en el ejército | 1=Sí | 0=No |
| i) Está en otra cosa | 1=Sí | 0=No |

Por favor explique _____

C18. Si está trabajando actualmente, ¿Cuál es su trabajo? _____

C19. Si aplica, ¿Tiene su compañero/a o esposo/a actualmente un empleo?

1=Sí 0=No 2=NA (no es aplicable)

C20. ¿Ha recibido usted ayuda de alguna de las siguientes fuentes en el último año (12 meses)?

- | | | |
|---|------|------|
| a) WIC | 1=Sí | 0=No |
| b) Almuerzo en la escuela/Programa de desayuno | 1=Sí | 0=No |
| c) Crédito sobre los impuestos | 1=Sí | 0=No |
| d) Asistencia de guardería | 1=Sí | 0=No |
| e) Asistencia de vivienda | 1=Sí | 0=No |
| f) Asistencia con energía/gas | 1=Sí | 0=No |
| g) Asistencia de transporte | 1=Sí | 0=No |
| h) Becas o préstamos para la educación | 1=Sí | 0=No |
| i) Medicaid (Asistencia médica) | 1=Sí | 0=No |
| j) Welfare (TANF) (Asistencia social) | 1=Sí | 0=No |
| k) Seguro de desempleo | 1=Sí | 0=No |
| l) SSI o SSDI | 1=Sí | 0=No |
| m) Fondo de retiro del Seguro Social o Beneficios de sobreviviente. | 1=Sí | 0=No |
| n) Beneficios de veterano | 1=Sí | 0=No |
| o) Manutención (pensión) de uno de los esposos | 1=Sí | 0=No |
| p) Estampillas de comida | 1=Sí | 0=No |
| q) Manutención infantil | 1=Sí | 0=No |

C21. Teniendo en cuenta todas las fuentes de ingreso que usted y su familia reciben, incluyendo las de la lista anterior, ¿cuál fue el total de sus ingresos familiares el **mes pasado** (su mejor aproximación está bien):

- _____ a) Menos de \$250
 _____ b) Entre \$250 y \$500
 _____ c) Entre \$501 y \$750
 _____ d) Entre \$751 y \$1000
 _____ e) Entre \$1001 y \$1250
 _____ f) Entre \$1251 y \$1500
 _____ g) Entre \$1501 y \$1750
 _____ h) Entre \$1751 y \$2000

- _____ i) Más de \$2001
 _____ j) No sé.

C22. Teniendo en cuenta todas las fuentes de ingreso que usted y su familia reciben, incluyendo las de la lista anterior, ¿cuál fue el total de sus ingresos económicos el **año pasado**.(Su mejor aproximación está bien):

- _____ a) Menos de \$8,000
 _____ b) Entre \$8000 -- \$10,000
 _____ c) Entre \$10.001 - \$12.000
 _____ d) Entre \$12.001 - \$14.000
 _____ e) Entre \$14.001 - \$16.000
 _____ f) Entre \$16.001 - \$18.000
 _____ g) Entre \$18.001 - \$20.000
 _____ h) Entre \$20.001 - \$22.000
 _____ i) Entre \$22.001 - \$24.000
 _____ j) Entre \$24.001 - \$28.000
 _____ k) Entre \$28.001 - \$30.000
 _____ l) Entre \$30.000 – o más
 _____ m) No sé.

C23. Normalmente, la vivienda es el gasto más caro para una familia. ¿Cuánto paga usted más o menos por mes por su vivienda? (ejemplo, el alquiler)

- _____ a) El gobierno paga mi renta por completo
 _____ b) Menos de \$ 100
 _____ c) Entre \$100 -- \$200
 _____ d) Entre \$201 -- \$300
 _____ e) Entre \$301 -- \$400
 _____ f) Entre \$401 -- \$500
 _____ g) Entre \$501 -- \$600
 _____ h) Entre \$601 -- \$700
 _____ i) Entre \$701 -- \$800
 _____ j) Entre \$801 -- \$900
 _____ k) Entre \$901 -- \$1000
 _____ l) Más de \$1001

C24.¿Cuántas veces ha cambiado de domicilio en los ultimos 12 meses?

- ___ a) Nunca me he cambiado de casa
 ___ b) 0-1 cambio de casa
 ___ c) 2-3 cambios de casa
 ___ d) 4 o más cambios

Gracias!!