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An Examination of the Roles of Classroom Quality and Approaches to Learning on the Early Academic Skills of Latino Dual Language Learners Enrolled in Head Start

Marcela A. Galicia
University of South Florida, marcela.aguilar8@gmail.com

An Examination of the Roles of Classroom Quality and Approaches to Learning on the Early Academic Skills of Latino Dual Language Learners Enrolled in Head Start

by

Marcela A. Galicia

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Co-Major Professor: Lisa M. Lopez, Ph.D.
Co-Major Professor: Shannon Suldo, Ph.D.
John Ferron, Ph.D.

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Abstract

This thesis examined the relationship between classroom quality, approaches-to-learning, and early academic skills among 384 Latino dual language learners (DLLs) enrolled in Florida Head Start programs. The children were living in low-income homes where Spanish was the primary language spoken by at least one parent. The study analyzed the extent to which approaches-to-learning behaviors moderate early literacy and numeracy skills in Head Start classrooms of varying quality. During the spring of their prek-4 year, the children were administered the English and Spanish Letter-Word Identification and Applied Problems subtests of the WJ-III (Woodcock, McGrew, & Mather, 2001) and the Batería III (Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005) Tests of Achievement. General features of classroom quality were measured using the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). Multilevel models indicated that there is a negative association between a classroom's level of emotional support and early English Literacy Skills, a positive association between Attention/Persistence Learning Behaviors and early English Literacy Skills, and a positive association between Competence Motivation Learning Behaviors and early English Numeracy Skills. Approaches-to-learning behaviors did not moderate the relationship between classroom quality and early academic skills. Results are consistent with previous research that has found that general measures of classroom quality may not capture the cultural and linguistic factors that influence a DLL's early academic skills. The current findings are consistent with previous literature on the positive influence of approaches-to-learning behaviors on early academic skills. Implications for practice include using culturally responsive teaching practices, creating a positive

classroom environment, and supporting the development of Attention/Persistence and Competence Motivation Learning Behaviors. Implications for research include strengths-based research examining the promotive role of approaches-to-learning in DLL development and using culturally sensitive measures of classroom quality.

Chapter 1: Introduction

Statement of the Problem

Children who enter kindergarten with basic literacy and numeracy skills in English (i.e., academic school readiness) are more likely to succeed academically in the future (Duncan et al., 2007). In fact, research has shown that preschool children's early academic skills are the strongest predictor of later academic outcomes (Duncan et al., 2007). However, the United States (U.S.) Department of Education (2015) estimates that of the four million children who enter kindergarten every year, a large portion are living in low-income households and are significantly behind their classmates in early academic skills. Many efforts to address the challenges that children in poverty face have focused on preschool because research has shown that preschool programs have positive effects on academic, language, and socio-behavioral outcomes for low-income children (Páez, Tabors, & López, 2007; Reynolds et al., 2011; Camilli, Vargas, Ryan, & Barnett, 2010). Despite these efforts, the gap in early academic skills is not closing for Latino students in the U.S. and may have serious negative outcomes for Latino children (Páez, Tabors, & López, 2007). Approximately 25% of preschool aged children in the U.S. are Latino (U.S. Department of Education, 2015), many who are Spanish-speaking Dual Language Learners (DLLs; Suarez-Orozco & Páez, 2002). DLLs are young children under the age of 8 years old mastering both their native language and English simultaneously (Weyer, 2015). Research on the early academic skills of Latino DLLs is limited. There is little known about the influences of classroom quality and approaches-to-learning variables on the early academic skills of Latino DLLs in preschool programs. The present study addressed this gap by investigating the extent to which the approaches-to-learning behaviors of

Spanish-speaking DLL preschoolers influence the relationship between classroom quality and early academic skills in English and Spanish.

Theoretical Framework

The present study examines the relationship between classroom quality, approaches-to-learning, and early academic skills of DLLs as guided by ecological (Bronfenbrenner, 1994) and socio-cultural (Castro et al., 2013) theories. According to these theories, a child's development is greatly influenced by factors within the environments in which the children interact regularly (e.g., classroom).

According to the ecological model of human development (Bronfenbrenner, 1994), human development is shaped by the interaction between a child's personal characteristics and various environmental factors (e.g., classroom environment). The child's characteristics (e.g., temperament, genetics, and cognitive abilities) are at the center of the model (Bronfenbrenner & Morris, 2006). The theory posits that factors in the following five levels of the environment influence the child's development: the microsystem (i.e., child's immediate and closest relationships and environments), mesosystem (i.e., the relationships between the different parts of the microsystem), exosystem (i.e., indirect environmental variables that influence the child), macrosystem (i.e., larger cultural and social influences on the child), and chronosystem (i.e., changes that occur over time due to environmental events). However, this theory does not account for all of the factors that influence the development of DLLs in school settings.

Founded upon Vygotsky's (1978) and Rogoff's (2003) theories, Castro et al. (2013) argue that cultural factors specific to DLLs influence DLL child development. Castro et al. (2013) argue that certain early childhood experiences are unique to DLLs and must be considered when working with DLLs. They posit that DLL experiences differ from the experiences that influence monolingual child development. Examples of these cultural factors that influence DLL children's

development may include being an ethnic and linguistic minority, living in poverty, being raised by family with low educational backgrounds, and being raised in at least two languages and cultures. In order to better understand the unique environmental context of school readiness of DLLs, the following section provides demographic information of Latinos in the U.S. and Florida, as well as, an overview of how preschool programs have attempted to address the challenges that at-risk students face.

Background and Context

Latino Students in the U.S. and Florida

Latinos comprise 16% of the U.S. population, making them the largest minority group in the U.S. (Colby & Ortman, 2015). There are approximately 50.5 million Latinos in the U.S. (Ennis, S., Rios-Vargas, M., & Albert, 2011), of which the majority are of Mexican (64%), Puerto Rican (9.2%) and Cuban (3.5%) descent (Ennis, Rios-Vargas, & Albert, 2011). While some subgroups of Latinos have resided in the U.S. for centuries, others have immigrated more recently for economic and or political reasons (Suárez-Orozco & Páez, 2002). For example, Mexican Americans have been living in the southeastern U.S. since the 1800s when the U.S. government acquired approximately 40% of Mexican territory. Approximately one in four K-12 students in the U.S. (National Center for Education Statistics, 2013a) and 29% of K-12 students in Florida are Latino (Excelencia in Education, 2015). One in four preschool aged children are Latino (U.S. Department of Education, 2015). The National Academies of Science, Engineering, and Medicine (2017) estimates that most teachers of early care and education (ECE) programs will work with Spanish-speaking DLLs at some point in their careers.

Latino DLLs have a unique set of domain-general strengths that can benefit their K-12 educational journey (Phillips et al., 2017). Research has found that the benefits of bilingualism and biculturalism include cognitive, linguistic, and social advantages due to living with two languages

and cultures (Grosjean, 2008). Research suggests that strengths of DLL preschoolers include lower rates of externalizing problem behaviors (De Feyter & Winsler, 2009; Han, 2010), strong self-regulation skills (Espinosa, 2013), heightened executive functioning abilities (Castro et al., 2013), and a broader social-cultural awareness (Grosjean, 2008). However, due to instructional systems favoring middle to upper class monolingual students in U.S. schools, DLLs are more likely to struggle academically (Rathbun, West, & Germino Hausken, 2004) and have a greater likelihood of being retained later on (Gersten & Woodward, 1994). The barriers that DLLs face at school include coming from non-English speaking families, which puts them at-risk in their development of early academic skills, especially for those in English-only educational settings (Bulotsky-Shearer, Lopez, & Mendez, 2016). Furthermore, Latino children tend to come from low-income households as there are 6.1 million Latino children living in poverty in the U.S. (Lopez & Velasco, 2011). The challenges that at-risk children, including DLLs, face have brought national and statewide attention to research, policies, and practices surrounding the access to and quality of preschool and ECE programs.

Preschool Education in the U.S.

Federal efforts to address the academic and social challenges that children in poverty face have focused on preschool. There is robust evidence that preschool programs have positive effects on academic, language, and socio-behavioral outcomes for low-income children and DLLs (Páez, Tabors, & López, 2007; Reynolds et al., 2011; Camilli, Vargas, Ryan, & Barnett, 2010). Furthermore, children who attend preschool programs have higher levels of early academic, socio-emotional, cognitive, and language skills upon kindergarten entrance than those who do not participate in preschool programs (Burchinal, Magnuson, Powell, & Hong, 2015; Love et al., 2002). However, Latino 3 to 5 year olds are less likely than children in any other ethno-racial group to participate in preschool (McFarland et al., 2017). Researchers posit that lower enrollment

rates for Latinos may be due to cultural beliefs and practices (Fuller & García Coll, 2010, Greenfader & Miller, 2014; Meyers & Jordan, 2006; Ansari, 2017) or limited access to preschool programs due to systematic inequality, and linguistic and or socioeconomic challenges that many Latino families face (Ansari, 2017; Meyers & Jordan, 2006).

In 1965, President Lyndon B. Johnson created the early childhood program Head Start with the goal of increasing the school readiness of low-income children (Puma et al., 2010). Upon entering Kindergarten, children in Head Start programs outperform their peers who did not attend preschool in academic, socioemotional, cognitive, and language measures of school readiness (Love et al., 2002). For example, when compared to children who do not attend federally funded preschool programs, low-income children who do attend tend to score higher in early academic skill measures (Phillips et al., 2017), are more likely to graduate high school, and more likely to attend college (National Head Start Association, 2017). Research has found that preschool programs in the U.S. can increase the early academic skills and life outcomes of low-income children, yet the early academic skills gap between children in low-income and/or non-English speaking households and those living in middle- to high-income households and/or English-speaking households is not closing (Phillips et al., 2017).

Early Academic Skills of DLLs

Significance of Early Academic Skills of DLLs

A child's early academic skills before kindergarten entry are the strongest predictors of overall academic success (Crnic & Lamberty, 1994; Duncan et al., 2007). Reading, writing, and mathematical skills develop along a continuum beginning with the early literacy and numeracy skills that occur at the beginning stages of learning to read, write, and understand and use mathematical concepts. These early literacy and numeracy skills are strongly related to later academic outcomes (e.g., Duncan et al., 2007), socio-emotional functioning (Jeon et al., 2018),

and risk of grade retention in elementary school (Davoudzadeh et al., 2015). While research has found that the early English academic skills of Latino students at kindergarten entry are predictive of future academic outcomes (Quirk et al., 2015), the current state of Latino school readiness is concerning. A study by the Child Trends Data Bank (2015) found that Latino children's early academic skills are significantly lower than those of their monolingual and non-Latino peers. Furthermore, Choi et al. (2018) found that DLLs preschoolers' early academic skills are highly dependent upon their English-language proficiency. Research has found that DLLs use language and academic skills in their home language to acquire language and academic skills in their second language (e.g., Pendergast, Bingham, & Patton-Terry, 2015; Raynolds & Uhry, 2010; Cárdenas-Hagan, Carlson, & Pollard-Durodola, 2007; Chiappe, Glaeser, & Ferko, 2007; Helman, 2004). Despite this cross linguistic transfer between early Spanish academic skills and early English academic skills, research on the early Spanish academic skills of Latino DLLs in the U.S. is limited.

Factors that May Influence the Early Academic Skills of DLLs

Various factors influence a child's early academic skills, including approaches-to-learning behaviors of preschoolers and preschool classroom quality. Li-Grining and Haas (2010) define approaches-to-learning as, "characteristics and behaviors that children show while engaging in learning activities" (p. 13). For example, cooperating in group activities, and generating and implementing new ideas when solving a problem. Research has found that at-risk preschoolers with positive approaches-to-learning tend to have stronger language and literacy skills than their peers with lower approaches-to-learning scores (Fantuzzo, McWayne, Perry, & Childs, 2004). Furthermore, research has found that approaches-to-learning may have a protective moderating role on academic outcomes of preschoolers in high and low quality Head Start classrooms (e.g., Meng, 2015a). Latino students' approaches-to-learning is a significant predictor of Latino students'

academic outcomes (Bustamante & Hindman, 2018; Galindo & Fuller, 2010). Furthermore, research suggests that approaches-to-learning are a unique strength of bilingual Latino students compared to their monolingual peers (Bustamante & Hindman, 2018; Galindo & Fuller, 2010). However, not much is known about the approaches-to-learning behaviors of Latino DLLs. In order to better equip DLLs for academic success in the K-12 U.S. school system, there is still much that needs to be discovered about low-income DLLs enrolled in preschool.

Second, factors in the classroom environment influence a student's academic outcomes (Hamre et al., 2013). For example, positive and stimulating educational environments positively influence a students' academic and behavioral development (e.g., Perry, Donohue, & Weinstein, 2007; Hamre et al., 2013). Research has found that preschoolers in high-quality classrooms have greater academic outcomes than those in low-quality classrooms (Pianta, La Paro, & Hamre, 2007). Certain aspects of classroom quality play a more direct role on academic outcomes than others. Specifically, research has found that process quality factors, such as, teacher-student interactions, classroom management, and instructional quality and support, are more direct indicators of school readiness (e.g., Castro, Espinosa, & Paez, 2011; Pianta, La Paro, & Hamre, 2008). Structural quality factors of a classroom environment, such as cleanliness, daily schedule, access to activities or materials, teacher qualifications, teacher-student ratios, and length of the school day, have an indirect role in student outcomes by influencing a classroom's process quality factors but not being strong indicators of school readiness alone (Burchinal, 2018). Researchers argue that high-quality classrooms are especially important for low-income and non-English speaking students (Yoshikawa et al., 2013). However, the majority of research to date has focused on the general effect of preschool programs on DLL development, with no emphasis on quality. Furthermore, Greenfader and Miller (2014) found that if Latino families have access to quality

ECE programs, families of Latino DLLs are significantly more likely than monolingual English-speaking families to enroll their children in quality programs.

Purpose of the Study

The relationship between classroom quality, approaches-to-learning, and early academic skills of Spanish-speaking Dual Language Learners (DLL) in Head Start programs has yet to be researched. In order to address this gap, the present study investigated the extent to which the Latino DLL students' approaches-to-learning can moderate their early numeracy and early literacy school readiness in high and low quality Head Start classrooms. It expands upon previous work by Meng (2015a) who found that approaches-to-learning moderate the effects of high or low classroom quality on academic skills of preschoolers in Head Start. This study expands upon Meng's (2015a) findings by focusing on Latino DLL preschoolers in Head Start using a measurement of process quality factors of the classroom environment (i.e., Classroom Assessment Scoring System; CLASS) instead of the revised Early Childhood Environment Rating Scale (ECERS-R) used by Meng (2015a). Furthermore, the present study examines the early academic skills of DLLs in both English and Spanish. To examine the relationship between classroom quality, approaches-to-learning, and early academic skills of DLL students in Head Start, the present study analyzed archival data from the Florida English Language Learners Attending Head Start: A Cultural and Academic Analysis (FELLA-HS) project directed by Dr. Lisa Lopez, which examined the school readiness of Spanish-speaking DLL enrolled in Head Start in five counties in Florida. The FELLA-HS project was funded by the Administration for Children and Families Head Start University Partnerships research grant program [ACF HSUP 90YF0061]. Furthermore, the findings from this study may inform the practice of teachers, school psychologists, and administrators who work with low-income Latino DLL preschoolers.

Research Questions

This study answered the following research questions:

1. To what extent is classroom quality related to the early academic skills of Latino DLL preschoolers in Florida Head Start programs?
2. Among Latino DLL preschoolers in Florida Head Start programs, to what extent do approaches-to-learning behaviors moderate the relationship between classroom quality and preschoolers' early academic skills?

Significance of the Study

Given that that school readiness skills upon entering Kindergarten are indicative of later academic success (Duncan et al., 2007, Quirk et al., 2015) and Latino students tend to struggle academically (Klingner & Artiles, 2003), it is important to understand the factors influencing Latino DLLs in preschool. Research has found that Spanish-speaking DLLs are more likely to be academically unprepared when entering Kindergarten (Rathbun, West, & Germino Hausken, 2004). In order to address the challenges that Latino DLL preschoolers face, educators need to understand the factors influencing their academic outcomes. This study aims to fill in the knowledge gap by investigating the relationship between classroom quality, approaches-to-learning, and preschool DLLs' proficiency in early math and reading abilities, two important school readiness skills. Understanding the role that approaches-to-learning has on academic outcomes may provide insight on preventative or early intervention practices for preschool educators working with Latino DLLs.

Operational Definition of the Terms

Dependent Variables

Early academic skills include early English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills, and Spanish Numeracy skills as measured by the Letter-Word

Identification (i.e., Letter-Word ID) and the Applied Problems subtests from the Woodcock–Johnson Tests of Cognitive Abilities - 3rd Edition (WJ-III; Woodcock, McGrew, & Mather, 2001) and the *Identificación de Letras y Palabras* and *Problemas Aplicados* subtests from the Batería III Woodcock-Muñoz (Batería-III; Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005).

Moderator Variables

Approaches-to-learning behaviors include approaching learning challenges with flexibility, persistence, organization, and emotion regulation. These learning behaviors also include accepting help when needed, being willing to engage in a new activity, and cooperating in group activities. This variable is measured through teachers' ratings of the children's approaches-to-learning behaviors using the Preschool Learning Behaviors Scale (PLBS; McDermott, Green, Francis, & Stott, 2000), which yields scores in three domains of a student's learning behaviors: Competence Motivation, Attention/Persistence, and Learning Strategy Behaviors. See Appendix B for more information about the PLBS measure.

Independent Variable

Classroom quality factors in this study include process quality factors of the classroom environment (i.e., teaching practices). For example, a teacher's regard for student perspectives, behavior management, productivity, and language modeling. Classroom quality is measured with the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2007), which yields Emotional Support, Classroom Organization, and Instructional Support domain scores of the classroom environment. See Appendix A for more information about the CLASS measure.

Delimitations and Limitations

Although not randomly selected, the participants were recruited from a population of low-income students enrolled in Head Start programs in one of five different counties in the state of Florida. Therefore, the findings of this study may be generalizable to similar populations of

students. Specifically, the findings may be generalizable to low-income preschool Latino DLL enrolled in Head Start or similar programs in Florida. Because this sample is limited to low-income Spanish-speaking DLLs in Florida Head Start programs, the findings may not be generalizable to other DLLs in Florida or other states. Given that the sample was recruited from 5 counties in Florida, the findings may not be representative of all DLLs enrolled in Florida Head Start programs. It can also be concluded that the results may not be representative of Latino children who do not speak Spanish or are from middle to upper class families.

Organization of Remaining Chapters

Chapter 2 consists of a review of published literature relevant to the present study, including an overview of research on classroom quality, approaches-to-learning, and early academic skills of DLL preschoolers. Chapter 3 consists of a description of the participants, ethical considerations, variables, assessment instruments, procedures, and data analyses for the present study. Chapter 4 contains the study results. Chapter 5 consists of an overview of the results, implications of the study, and directions for future research.

Chapter 2: Review of Literature

Approximately four million children enter kindergarten in the United States (U.S.) every year (U.S. Department of Education, 2015). Those who begin kindergarten with basic academic skills are more likely to succeed academically in the future (Duncan et al., 2007). However, many children enter kindergarten significantly behind their classmates in academic skills (U.S. Department of Education, 2015). For Latino children in the U.S., this gap in early academic skills does not appear to be closing and may result in serious negative outcomes for Latino children (Páez, Tabors, & López, 2007). Many Latino children entering kindergarten are Spanish-speaking Dual Language Learners (DLLs; Suarez-Orozco & Páez, 2002). DLLs are young children (i.e., usually under 8 years old) who are mastering both their native language and another language (i.e., in this case, English) at once (Weyer, 2015). Research on the early academic skills, classroom quality, and approaches-to-learning variables of Latino DLL preschools is limited. In order to address this, the current study investigated the extent to which Spanish-speaking DLL students' approaches-to-learning behaviors influence the relationship between classroom quality and early academic skills.

This chapter reviews some of the relevant literature regarding Latino DLLs in early care and education (ECE) programs and how approaches-to-learning and classroom quality influence their early academic skills. The existing school readiness, approaches-to-learning, and classroom quality literature has focused primarily on monolingual students. This chapter will review literature that focuses on Latino DLLs, when available, along with relevant literature that focuses on monolingual students. First, the theoretical frameworks that guide the conceptualization of Latino

DLL development within the school context are discussed. Second, this chapter describes some of the characteristics of Latinos in the U.S. and in schools. Third, the chapter describes outcomes of U.S. preschool programs. Fourth, this chapter reviews literature regarding school readiness and early academic skills. Finally, this chapter describes what is known about the effects of classroom quality and approaches-to-learning on Latino DLL's early academic skills.

Theoretical Framework

Ecological and socio-cultural theories of child development guide models of classroom quality and school readiness. These theories posit that a child's development is greatly influenced by variables within the environment in which the child interacts regularly, such as the classroom. This section will review ecological (i.e., Bronfenbrenner, 1994) and socio-cultural (i.e., Castro et al., 2013) theories of child development, which provide the conceptual framework for the current study.

Ecological Model of Human Development

According to the Ecological Systems Theory, human development is shaped by the bidirectional interaction between an individual's characteristics and various environmental factors, such as the school environment (Bronfenbrenner, 1994). The child's personal characteristics (e.g., temperament, genetics, cognitive abilities, etc.) are at the center of the model (Bronfenbrenner & Morris, 2006). The theory posits that factors in the following five levels of the environment influence the child's development: the microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

The microsystem consists of the child's immediate and closest relationships and environments, such as caregivers and teachers. Positive interactions between the child and their microsystem provides the child with the opportunities, nurture, and encouragement needed for the child to learn and grow. The mesosystem consists of the relationships between the different parts

of the microsystem. The quality of these relationships influences the child. For example, children benefit more from their relationships with their parents and teachers if the relationships are positive, than they would if there is conflict or disunity in the relationships. The exosystem consists of indirect environmental variables that the child may have limited direct contact with but that greatly influence the child's development, such as the resources available in the child's neighborhood. The macrosystem consists of larger cultural and social influences on the child, such society's laws and influences on the subcultural aspects of being Latino. The chronosystem consists of the changes that occur over time due to environmental events.

The factors within the ecological system are unique to each student so that the development of school readiness skills for preschool students includes interactions between child-level factors (e.g., approaches-to-learning, early academic skills) and their educational environments (e.g., classroom structure, student-teacher interactions). Vélez-Agosto et al. (2017) extend upon Bronfenbrenner's (1994) socio-ecological framework by arguing that culture plays a significant role in child development starting at the micro level and extending to all levels. The Ecological Systems Theory does not account for all of the factors that influence the development of DLLs in school settings. Therefore, conceptual frameworks regarding socio-cultural theories of child development will be discussed next.

Conceptual Framework for Understanding the Development of DLL Children

Founded upon sociocultural learning theories (i.e., Vygotsky, 1991; Rogoff , 2003), Castro, Garcia, and Markos (2013) describe a conceptual framework for understanding the development of DLL children in the U.S. Castro et al. (2013) argue that cultural factors specific to DLLs greatly influence DLL child development. These cultural factors may include, being an ethnic and linguistic minority, living in poverty, having parents with low educational backgrounds, and being raised in two languages and cultures. Castro et al. (2013) argue that certain early childhood

experiences are unique to DLLs and differ from the experiences that influence monolingual child development, and so must be considered when working with DLLs. According to Vygotsky's sociocultural learning theory (Vygotsky, 1978, 1991), interactions with others in the child's immediate environmental context guide a child's cognitive development. Castro et al. (2013) posit that the environmental context for Latino DLL development may include their immediate and extended family members, communities, schools, homes, early care programs, immigration policies and laws, language loss, cultural shame, and separation from families due to deportation or work demands, to name a few. Rogoff (2003) posits that human development is influenced by previous cultural experiences. According to the Castro et al. (2013) framework, DLLs approach challenges, learning, everyday situations, and developmental tasks according to their previous cultural experiences.

Summary

These theories and conceptual frameworks focus on the quality of the relationship between factors in the environment and the child. A child's personal characteristics, including abilities and skills, influence his or her environment (e.g., how others treat the child and the opportunities made available to the child) just as the environment influences the child. For example, a well-behaved student is more likely to evoke positive attention and interactions with the teacher, which in turn, may provide the child with greater opportunities for learning. According to these models, both external (e.g., classroom quality) and internal (e.g., approaches-to-learning) factors influence a student's academic outcomes. The factors that influence the development of DLLs are varied and dynamic, and are greatly influenced by culture. The present study will examine the relationship between classroom quality, approaches-to-learning, and early academic skills of DLLs enrolled in Florida Head Start programs as guided by ecological (Bronfenbrenner, 1994) and socio-cultural (Castro et al., 2013) theories of child development. According to these theories, Latino DLLs'

development is influenced by an environmental context that is unique to DLLs. In order to understand the unique environmental context of school readiness of DLLs, the following sections provide demographic information of Latinos in the U.S., as well as, an overview of DLLs' educational background, and how preschool programs have attempted to address the challenges that at-risk students face.

Latino Students in the U.S. and Florida

Latino DLLs are an ethno-racial and linguistic minority group in the U.S. (Suárez-Orozco & Páez, 2002). According to the U.S. Census Bureau, a Latino or Hispanic person is an individual "of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (Humes, Jones, & Ramirez, 2011, p.2). The terms Latino and Hispanic are mainly used to refer to individuals living in the U.S. and are usually used by individuals living in the U.S. (Suárez-Orozco & Páez, 2002). In many cases, the terms Latino and Hispanic are used interchangeably. According to Suárez-Orozco and Páez (2002), the term Hispanic, "emphasizes the population's link with 'Hispania' or Spain," but being Latino is "a cultural category that has no precise racial [or national] signification" (p. 3-4). In fact, most Latinos do not identify culturally with Spain and prefer to identify with their family's country of origin (Taylor, Lopez, Martínez, Velasco, 2012). The term Latino includes individuals who identify as, "white, black, indigenous, and every possible combination thereof" (Suárez-Orozco & Páez, 2002, p. 3). The panethnic term Latino is used in this document because it has less emphasis on race and Spain's colonization of the individual's country of origin.

Demographics

There are approximately 50.5 million Latinos in the U.S. (Ennis, S., Rios-Vargas, M., & Albert, 2011). Latinos are the largest minority group and comprise 16% of the U.S. population (Colby & Ortman, 2015). The majority of Latinos in the U.S. are of Mexican descent (64%),

followed by Latinos of Puerto Rican (9.2%) and Cuban (3.5%) descent (Ennis, Rios-Vargas, & Albert, 2011). Of the Latinos in the U.S., approximately 28% live in California, 19% live in Texas, and 8% live in Florida (Ennis, Rios-Vargas, & Albert, 2011). In regard to children, approximately one in four K-12 students in the U.S. (NCES, 2013a) and 29% of K-12 students in Florida are Latino (Excelencia in Education, 2015). Furthermore, one in four preschool aged children are Latino (U.S. Department of Education, 2015), many who are DLLs (Suarez-Orozco & Páez, 2002).

Language

Children who attend schools where the instructional language differs from their home-language are challenged with the task of mastering academic skills in a language they do not regularly use (Jongejan, Verhoeven & Siegel, 2007). Approximately 9.2% of public school students in Florida are ELLs (McFarland et al., 2017). The first language of the majority (77.1%) of ELLs in Florida is Spanish (McFarland et al., 2017). Most (95%) Latinos in the U.S. believe that it is important for future generations of Latinos in the U.S. to speak Spanish (Taylor et al., 2017). It is estimated that due to the prevalence and growth of Latino students in the U.S., most ECE teachers and staff in the U.S. will work with Spanish-speaking DLLs at some point in their careers (National Academies of Science, Engineering, and Medicine, 2017).

Strengths and Challenges

Latino DLLs have a unique set of strengths and barriers that can follow them throughout their K-12 educational journey (Phillips et al., 2017). Research has found that there are cognitive, linguistic, and social benefits from learning and living with two languages and cultures (Grosjean, 2008). In addition to bilingualism and biculturalism, strengths of DLLs may include lower rates of problem behaviors (De Feyter & Winsler, 2009; Han, 2010), strong self-regulation skills (Espinosa, 2013), heightened executive functioning abilities (Castro et al., 2013), and broader social-cultural awareness (Grosjean, 2008). These domain general skills are unique strengths of

Latino children (Bustamante & Hindman, 2018). Despite research demonstrating the advantages of bilingualism and biculturalism (see Castro et al., 2013), many educators view bilingualism and biculturalism as barriers or challenges that must be overcome in order for DLLs to succeed in the American education system (Gándara, & Contreras, 2009). While bilingualism and biculturalism are not weaknesses, the current educational system is not equipped to help DLLs succeed academically and so DLLs face several challenges at school (Gándara, & Contreras, 2009). Research has shown that Latinos in ECE and public school system settings face challenges specific to their cultural and linguistic backgrounds. In this section, research on the educational barriers that DLLs face is discussed.

First, DLLs tend to come from non-English speaking families which puts them at a disadvantage in developing numeracy and English literacy skills, especially for those in English-only educational settings (Bulotsky-Shearer, Lopez, & Mendez, 2016). Second, due to instructional factors favoring monolingual speakers in U.S. schools, DLLs are more likely to struggle academically (Rathbun, West, & Germino Hausken, 2004) and have a greater likelihood of being retained later on (Gersten & Woodward, 1994). The National Assessment of Educational Progress found that only one in five 4th grade Latino students meet or exceed their grade level reading expectations (NCES, 2013b). However, Ladd (2017) argues that "DLLs can experience especially rapid [academic] growth in early learning when exposed to supportive and rich learning opportunities in pre-k" (p. 22). Therefore, DLLs' academic struggles are likely due to poor educational practices regarding DLLs and their language development. Third, Latino DLLs tend to come from low-income families (Lopez & Velasco, 2011). The poverty rate of Latino children has increased more rapidly than that of African American or Caucasian American children (Lopez & Velasco, 2011). Approximately 26.6% of Latinos live below the poverty line (DeNavas-Walt, Proctor, & Smith, 2011) which equivalates to approximately 6.1 million Latino children living in

poverty in the U.S. (Lopez & Velasco, 2011). Furthermore, there is a disproportionate representation of ELLs in special education in the U.S. (see Barrio, 2017).

These challenges and alarming outcomes have brought national and statewide attention to research, policies, and practices surrounding the educational efforts in serving Latino students and DLLs, with a great emphasis on the access to and quality of preschool and ECE programs. Although the research on Latino DLLs is expanding, the need to understand DLLs, their school readiness, and their strengths and needs in the transition into kindergarten is great.

Preschool Education in the U.S.

Educational and developmental research has indicated that the preschool and early school years are an exceptionally critical period for later academic success (Pianta, 2007). Many efforts to address the academic and social challenges that children in poverty face have focused on preschool because research has shown that preschool programs have positive effects on academic, language, and socio-behavioral outcomes for low-income children and DLLs (Páez, Tabors, & López, 2007; Reynolds et al., 2011; Camilli, Vargas, Ryan, & Barnett, 2010). In 1965, President Lyndon B. Johnson's created Head Start, an early childhood program, with the goal of increasing the school readiness of low-income children (Puma et al., 2010). Upon entering Kindergarten, children in Head Start programs outperform their peers who did not attend preschool in academic, socioemotional, cognitive, and language measures of school readiness (Love et al., 2002). Public preschool programs have been found to have both short-term (e.g., Páez, Tabors, & López, 2007) and long-term benefits (e.g., Campbell & Ramey, 1994) for children and DLLs living in low-income households.

In regard to academics, children in federally funded preschool programs tend to score higher in early academic skill measures than their non-attending counterparts (Phillips et al., 2017). Children who attend Head Start programs are more likely to graduate high school and attend

college compared to their peers who did not attend preschool (National Head Start Association, 2017). There is also evidence that quality preschool programs may help close the academic gap between high- and low-income students. For example, low-income children in Georgia who participated in the state's preschool program scored equally well on language and cognitive measures upon entering kindergarten as did their private-preschool attending peers, despite having begun preschool significantly behind the students from high-income households in school readiness measures (Henry, Henderson, Ponder, Mashburn, & Rickman, 2003). In a longitudinal randomized controlled trial (RCT) begun in the 1970s as part of the Abecedarian Project, researchers found that preschool positively influenced the outcomes and trajectories of children living in poverty (Ramey, Landesman Ramey, & Stokes, 2009). This longitudinal study of 111 children living in poverty found that quality preschool resulted in an increase in IQ score, reading and math skills, positive mother-child interactions, academic locus-of-control, social competence, total years of schooling, college attendance, and future full-time employment (see Ramey, Landesman Ramey, & Stokes, 2009).

In regard to social outcomes, adults who attended federally funded preschool tend to have a higher education and more health insurance coverage, as well as, a higher socioeconomic status (SES) than their peers who did not attend preschool prior to entering kindergarten (Reynolds, Temple, Ou, Arteaga, & White, 2011). Additionally, children who attend federally funded preschool programs tend to be less involved in the criminal justice system and are less likely to struggle with substance abuse as adults than those who did not attend preschool (Reynolds et al., 2011). Head Start participants are also less likely to be chronically absent, be retained a grade level, smoke, or be unemployed in the future (National Head Start Association, 2017). Preschool is especially beneficial for males in high-risk families and children of parents without a high school diploma (Reynolds et al., 2011). Children who attend Head Start programs are also more likely to

earn more money as adults, and provide positive learning experiences to their own children than their peers who did not attend preschool do (National Head Start Association, 2017).

Latino DLLs' Participation in Preschool Programs

While approximately 70% of three to four year olds are enrolled in early education programs in the U.S. (Pianta, 2007), only 40% of Latino children participate in preschool programs (U.S. Department of Education, 2015). Researchers posit that lower enrollment rates for Latinos may be due to cultural values (Fuller & García Coll, 2010), limited access to preschool programs (Ansari and Winsler, 2012), challenges due to language barriers (Meyers & Jordan, 2006; Fuller & García Coll, 2010), and parent beliefs about school readiness (Ansari, 2017). However, the reason for low enrollment rates of Latino children is still unknown, as Ansari (2017) found that enrollment rates, cultural beliefs, and cultural practices regarding preschool enrollment varied greatly within Latino subgroups. Meyers and Jordan (2006) posit that Latino children are less likely to participate in preschool because of challenges Latino parents face regarding socio-economic factors, limited English proficiency, and limited access to preschool options that met the parents' work schedule needs. Ansari (2017) found evidence that cultural practices are not strong indicators of preschool enrollment, which supports Meyers and Jordan's (2006) suggestion that systematic inequality and socioeconomic challenges are greater barriers to preschool enrollment for Latino families than cultural beliefs and practices. However, the rates of ECE program attendance rates for Latino DLLs compared to other groups are still unclear. When compared by ethno-racial groups, Latino 3 to 5 year olds are less likely than children in any other ethno-racial group to attend a preschool program (McFarland et al., 2017). When comparing language-ability groups, Greenfader and Miller (2014) found no significant differences in Head Start attendance rates between Spanish-speaking DLLs and their monolingual peers of various ethno-racial backgrounds.

Once accepted into Head Start, Latino children are more likely than their monolingual peers to attend Head Start (Greenfader & Miller, 2014). Greenfader and Miller (2014) used data from the Head Start Impact Study (N = 4442) to examine the differences in attendance rates between Spanish-speaking DLL and monolingual English-speaking children enrolled in Head Start programs. The study is divided into two parts. The first part of the study compared the attendance rates of DLL and monolingual English-speaking preschoolers who were randomly assigned admission at a Head Start center through a lottery system. The results indicated that Spanish-speaking DLL children randomly assigned admission into Head Start were more likely to accept and attend Head Start than were monolingual-English children randomly assigned admission were. These results indicate that Spanish-speaking DLL are more likely than their monolingual peers to attend Head Start. However, DLLs who do participate in ECE programs are still likely to enter Kindergarten with academic barriers that their monolingual peers may not have (Rathbun, West, & Germino Hausken, 2004).

In summary, research has shown that preschool programs in the U.S. can increase the early academic skills and life outcomes of low-income children, yet the early academic skill gap between children in low-income and/or non-English speaking households and those living in middle- to high-income households and/or English-speaking households is not closing (Phillips et al., 2017). In order to better understand the school readiness needs of DLLs enrolled in preschool, the following section provides an overview of school readiness.

School Readiness

School readiness in the literature usually refers to a child's readiness for success in school when beginning kindergarten. The skills and abilities that encompass school readiness are believed to be necessary for a child to thrive academically in school (Snow, 2006). Because school readiness is a multifaceted phenomenon, direct and indirect measures of school readiness have been used

across studies. Traditionally, school readiness has been measured by a child's early academic skills (e.g., Cavadel & Frye, 2017; Eisenberg, Valiente, & Eggum, 2010; Duncan et al., 2007; Snow, 2006; Ramey & Ramey, 2004). However, according to the Head Start School Readiness Act of 2005 (S1107; H.R.2123), school readiness is a multidimensional notion that also includes oral language, listening comprehension, cognitive abilities, and socio-emotional skills (Snow, 2007). The National Education Goals Panel identified five dimensions of school readiness: physical well-being and motor development, social and emotional development, approaches-to-learning, language and literacy development, and cognition and general knowledge (High, 2008).

The Office of Head Start (2016) presents a framework guided by these five dimensions of school readiness to help parents and educators understand what children need to know in order to succeed in school. The domains presented by the Office of Head Start (2016) are: 1) perceptual, motor, and physical development, 2) social and emotional learning, 3) approaches-to-learning, 4) language and literacy development, and 5) cognition (i.e., mathematics and scientific reasoning). The framework for preschool (i.e., ages 3-5 years) is organized by domains (e.g., language and literacy), which have sub-domains (e.g., print and alphabetic knowledge). The sub-domains have goals (e.g., child identifies letters of the alphabet), which have developmental progressions (e.g., from recognizing to producing sounds associated with printed letters) with specific, observable indicators of the skills that children should know before beginning kindergarten (e.g., names 18 upper- and 15 lower-case letters). The following section describes research supporting the school readiness domains described by the Office of Head Start (2016) which are of specific interest in the present study (i.e., preschool development of approaches-to-learning, literacy, and numeracy skills).

Approaches-to-learning. Approaches-to-learning, also referred to as learning behaviors in the literature, are domain-general skills, such as flexibility, persistence when faced with

challenges, emotion regulation, attentiveness, and organization, that are beneficial for learning all kinds of new information and succeeding in school (Fantuzzo, et al., 2007; McWayne et al., 2004). According to the Office of Head Start (2015). Preschooler approaches-to-learning include emotional and behavioral self-regulation, cognitive self-regulation (i.e., executive functioning), initiative and curiosity, and creative problem solving. In regard to school readiness, research has found that children's learning behaviors are a stronger predictor of academic outcomes than IQ test scores (McDermott, 1984). Research on learning behaviors of preschool children has demonstrated that positive preschool learning behaviors are associated with positive prosocial skills (McDermott et al., 2002), higher cognitive abilities (McDermott et al., 2002), and a reduced risk of academic difficulties (McDermott, 1999). Furthermore, McDermott et al. (2006) found that preschool learning behaviors serve as a protective factor in children's risk of developing learning disabilities. Overall, lower levels of approaches-to-learning are strongly associated with higher levels of problem behaviors (McDermott et al., 2002) and academic difficulties (Fantuzzo et al., 2004). Research on approaches-to-learning in the Head Start population has demonstrated that African American at-risk preschoolers with positive approaches-to-learning tend to have stronger language and literacy skills than their peers with lower approaches-to-learning (Fantuzzo, McWayne, Perry, & Childs, 2004).

Language development. According to the Office of Head Start (2016), the language and communication domain of school readiness includes attending and understanding, communicating and speaking, and vocabulary. Research has found that early receptive (i.e., listening comprehension) and expressive (i.e., oral) language skills predict future academic outcomes (Castro et al., 2011; Tabors, 2008). Vocabulary and grammar development are necessary for children's receptive and expressive language abilities to grow (Shanahan et al., 2008). Providing children with high quantity and quality of vocabulary and grammar input during the first five years

of life significantly increases their receptive and expressive language development (e.g., Weisleder & Fernald, 2013; Rodriguez & Tamis-LeMonda, 2011; Hoff, 2003). Both receptive and expressive language are positively correlated with reading achievement outcomes (Biemiller, 2003; Shanahan et al., 2008). Additionally, English-language proficiency is significantly related to the early academic skills of students in the U.S., which highlights the need of supporting the English language development of DLLs (Ackerman & Tazi, 2015).

Early literacy skill development. The Office of Head Start's (2016) early literacy domain includes phonological awareness, print and alphabet knowledge, comprehension and text structure, and writing. A meta-analysis by Duncan et al. (2007) found that preschool literacy skills in English are a powerful predictor of future academic outcomes in English. According to a report by the National Early Literacy Panel (NELP, Shanahan et al., 2008), early literacy skills include emerging literacy skills (e.g., identification of the letters of the alphabet) of preschool and kindergarten children that are precursors to future conventional literacy skills (e.g., decoding, oral reading fluency, reading comprehension, writing, and spelling). There is robust evidence that both precursor and conventional skills in early learners have strong and predictive relationships with later conventional literacy skills (Shanahan et al., 2008). In their meta-analysis of 234 studies on predictors of literacy skills, Shanahan et al. (2008) found that five important precursor literacy skills include phonological awareness, alphabet knowledge, rapid automatic naming (RAN) of letters, colors, or pictures of objects, writing of letters in isolation or writing of name, and phonological memory. Phonological awareness, the ability to identify, manipulate, or analyze the smallest units of sounds in a language (i.e., phonemes), is the foundation of the other areas of early literacy, as well as, a strong predictor of later reading success (Snow, Burns, & Griffin, 1998). Alphabet knowledge includes knowing the names of and sounds associated with printed letters (Snow, Burns, & Griffin, 1998). RAN involves having children expressively identify objects,

colors, or symbols (i.e., letters or digits) as rapidly as possible, and may reflect the "integrity of the left-hemisphere object-recognition and naming circuits [in the brain]" (Lervåg & Hulme, 2009, p. 1040). Children's early writing skills include the ability to write their names or the letters of the alphabet in isolation. Phonological memory is the ability to remember and repeat spoken sounds or words for a short period of time (Alt, 2011). Children who enter kindergarten with these foundational early literacy skills are strongly equipped to succeed in school (Head Start, 2015).

Early numeracy skill development. Mathematical development of preschoolers is measured by early numeracy skills, the foundational skills that are precursors of more advanced mathematical skills (National Association for the Education of Young Children, 2002). Early numeracy skills include ease of counting, understanding relations, and simple arithmetic operations (i.e., simple addition and subtraction; Cross, Woods, & Schweingruber, 2009). Mastery of these three aspects of general number sense (i.e., counting, understanding relations, and simple arithmetic operations) is predictive of later more advanced mathematical skills (Cross et al., 2009). In one study, Duncan and colleagues (2007) explored the associations between three areas of school readiness (i.e., academic, attention, and socioemotional skills) at the beginning of kindergarten and later academic achievement of 1,364 students across 6 longitudinal studies. The researchers found that early numeracy skills are the strongest predictors of later academic achievement, followed by reading, and then attention skills (Duncan et al., 2007). These findings have been replicated by Pagani et al. (2010) in Canada with French-English DLLs.

Early Academic Skills of DLLs

Even before entering kindergarten, a child's early academic skills are the strongest predictor of overall academic success from elementary to high school (Crnic & Lamberty, 1994; Duncan et al., 2007). Early academic skills include the language, literacy, and numeracy skills that occur at the beginning stages of learning to read, write, and understand and use mathematical concepts.

Research has shown that early academic skills are associated with socioeconomic status (Duncan & Magnuson, 2005; Cavadel & Frye, 2017), birth weight (Reichman, 2005; Prasad & Corbett, 2017), epilepsy (Prasad & Corbett, 2017), maternal perinatal health (i.e., smoking, high blood pressure, diabetes; Prasad & Corbett, 2017), Theory of Mind (Cavadel & Frye, 2017), behavior problems (Fantuzzo, Bulotsky, McDermott, Mosca, & Lutz, 2003), and social skills (Doctoroff, Greer, & Arnold, 2006). A study by Davoudzadeh et al. (2015) found that low early academic skills predict grade retention in elementary school, which in turn predicts high school graduation rates (Jacob & Lefgren, 2004). Additionally, a recent study by Jeon et al. (2018) found that children's academic skills in English at five years old predicted the academic skills and socioemotional functioning of the students at ten years old. Similarly, in their meta-analysis of school readiness measures, Duncan et al. (2007) found that of various school readiness domains, early English academic skills were the strongest predictors of later academic outcomes, even for children with high levels of externalizing problem behaviors. Therefore, developing a DLL preschooler's early academic skills in English is vital for providing the child with opportunities for positive future academic and life outcomes in the U.S. Traditionally, early academic skills in the U.S. focus on early English Literacy and Numeracy Skills. However, there is cross linguistic transfer between early Spanish academic skills and early English academic skills (e.g., Pendergast, Bingham, & Patton-Terry, 2015; Raynolds & Uhry, 2010). Although DLLs use language and academic skills in their home to acquire language and academic skills in their second language (e.g., Cárdenas-Hagan, Carlson, & Pollard-Durodola, 2007; Helman, 2004; Chiappe, Glaeser, & Ferko, 2007), research on the early Spanish academic skills of Latino DLLs in the U.S. is limited. This section includes a review of the literature on what is known about the early English Literacy and Numeracy Skills of Latino preschoolers in the U.S.

Research on the current levels of early English academic skills of Latino children has yielded concerning results. Recently, Choi, Rouse, and Ryu (2018) examined the academic trajectories of Latino DLLs enrolled in Head Start. The participants included Spanish-English bilingual, Spanish-English emergent bilingual, and English monolingual preschoolers enrolled in Head Start programs. The results revealed that DLLs with limited English proficiency at Head Start entry had the lowest initial vocabulary and math scores. The gaps in English vocabulary skills between these DLLs and their monolingual peers persisted over time, but the gap in mathematical knowledge narrowed by kindergarten entry. However, DLLs with English proficiency at Head Start entry developed English vocabulary and math skills over time similarly to their monolingual English-speaking peers. These results indicate that the school readiness of DLLs is affected by English language proficiency. Additionally, vocabulary gains experienced by DLLs with English proficiency did not come at the cost of their Spanish vocabulary skills as the results indicated that there was not a statistically significant difference in Spanish vocabulary between both groups of DLLs. These results indicate that DLLs preschoolers' early academic skills are highly dependent upon their English-language proficiency, but that Spanish-language proficiency is not a risk factor. Choi et al. (2018) found that the gap between the early academic skills of Latino DLLs and their monolingual peers is especially pronounced for English vocabulary skills. Both languages are important in their own right as early academic skills in Spanish facilitate skills in English (e.g., Palermo et al., 2017).

Moreover, a report by Child Trends Data Bank (2015) compared the early academic skills data collected by NCES' National Education Household Survey of preschoolers from 1993, 1999, 2001, 2005, 2007, and 2012 nationwide. The study compared thousands of parental reports of children's school readiness measured by four emerging literacy and numeracy skills. The skills that the children were assessed on included recognizing all the letters of the alphabet, counting to at

least 20, writing their names, and reading words in books. A school readiness survey was given using a computer-assisted telephone interview (1993-2007) or via paper format delivered by mail (2012) to parents of children from three to six years old who had not yet started kindergarten. In regard to Latinos, the results indicated that Latino children demonstrated school readiness skills at a significantly lower rate than African American, Caucasian, or Asian/Pacific Islander children. Additionally, at all time points, children living in homes without parents who spoke English were significantly less likely to demonstrate school readiness skills than children in homes with at least one parent who spoke English. Overall, children who lived in homes with two English-speaking parents were most likely to demonstrate early academic skills in English. The survey trends indicate that Latino children's early academic skills have increased over time. However, Latino children's early academic skills are significantly below those of their monolingual and non-Latino peers.

Research has shown that the early academic skills of Latino children are important for their future academic outcomes. In one study, Quirk et al. (2015) followed 1,253 Latino preschoolers until 5th grade to analyze their literacy trajectories. The researchers measured the students' academic, socio-emotional, physical, and cognitive school readiness at the beginning of kindergarten. The results revealed that, like their African American and Caucasian American peers, Latino children with high levels of early academic skills upon entering kindergarten experienced higher literacy achievement scores than did students who were less ready for school when entering kindergarten. The results also revealed that cognitive school readiness is a strong predictor of long-term literacy achievement of Latino preschoolers. These results indicate that the school readiness of Latino students at kindergarten entry are predictive of future academic outcomes. The factors that influence the early academic skills of Latino DLLs are discussed in the following section.

Factors That May Influence the Early Academic Skills of Latino DLLs

Classroom Quality

There is extensive evidence that the critical early years of child development are foundational for advancement in all five developmental domains (i.e., motor, cognitive, social, language, and adaptive; Yoshikawa et al., 2013). Positive and stimulating educational environments have beneficial influences on a students' academic and behavioral development (e.g., Perry, Donohue, & Weinstein, 2007; Hamre et al., 2013). Research has shown that classroom quality plays a significant role in the early academic skills of preschool students (Perry, Donohue, & Weinstein, 2007; Pianta, La Paro, & Hamre, 2008). Researchers argue that high-quality classrooms are especially important for students whose first language is not English and students living in poverty (see Yoshikawa et al., 2013). However, research on the effects of quality programs on DLL outcomes is limited, as the majority of research literature to date has focused on the general effect of preschool programs on DLL outcomes. This section contains a review of literature on preschool ECE and classroom quality. It includes a review of literature on the definitions of classroom quality, as well as, a review of the characteristics of high-quality classrooms for DLLs.

In one study, Greenfader and Miller (2014) used data from the Head Start Impact Study (N = 4442) to examine the differences in quality ratings of ECE programs in which Spanish-speaking DLL and monolingual English-speaking children were enrolled. The study is divided into two parts. The first part of Greenfader and Miller's (2014) study looked at attendance rates. The participants in the second study were in the control condition of the first study. The second part of the study compared the quality of non-Head Start ECE programs across the nation that DLL and monolingual English-speaking preschoolers attended. The participants were enrolled in non-Head Start ECE centers of their families' choosing. The researchers found that if they have access to

quality ECE programs, Spanish-speaking DLL families are significantly more likely than monolingual English-speaking families to enroll their children in quality ECE programs. The results indicate that Latino DLL families seek to enroll their children in quality ECE programs when they have access to them.

Gormley (2008) explored the effects that Oklahoma's pre-kindergarten program had on Latino children's outcomes, the results indicated that Latino students experienced substantial improvements in early reading, writing, and math skills after participating in a self-labeled high quality preschool program. The effects were strongest for students whose parents speak Spanish at home or whose parents were born in Mexico. This study did not measure classroom quality directly, but claimed that Oklahoma's public preschool programs have taken evidence-based measures to ensure high quality ECE for the students enrolled (e.g., all preschool classrooms are led by a college-educated and ECE certified teacher).

Definitions of classroom quality in the literature. Although classroom quality is usually described as being of either high or low quality (e.g., Meng, 2015a; Lin & Magnuson, 2018; McLean et al., 2016), definitions of classroom quality are varied in literature and practice. ECE quality can refer to teaching practices, teachers, or schools, or can be measured in terms of student achievement upon entering kindergarten. Aspects of ECE quality fall into two general domains in the literature: structural and process quality. Structural quality consists of structural "characteristics of the ECE program and teachers… such as ECE providers' education and training, the ratio of children to providers, group sizes, providers' wages and training, the leadership and administration of the ECE setting, parental involvement, inclusion of children with special needs, and inclusion of the home language and culture in the setting" (Burchinal, 2018, p. 4). Process quality consists of "the interactions between the caregiver and the young child" (Burchinal, 2018, p. 4). In a study of children in Germany (n = 82), Portugal (n = 80), Spain (n =

55), and the U.S. (n = 288), Cryer, Tietze, Burchinal, Leal, and Palacios (1999) found that structural quality factors predict process quality factors in classrooms around the globe. Measurements for structural and process quality factors are based on differing theoretical frameworks. Measurements of structural quality factors are based on ecological theories of child development (Burchinal, 2018). Measurements of process quality factors are based on ecological, attachment, and learning theories of child development (Burchinal, 2018). This section will review the literature on the outcomes of structural and process classroom quality factors, as well as, review the literature on the characteristics of high-quality classrooms that can promote the academic and language development of DLLs.

Structural quality factors. Structural quality factors include staff training and qualifications, teacher-student ratios, and length of the school day. Research on the effect of structural quality elements on early academic skills has found mixed results. For example, Burchinal, Cryer, Clifford, and Howes (2002) found that teacher education level is related to measures of classroom quality. However, other studies have found no evidence that higher levels of teachers' education are related to better classroom quality or greater school readiness of preschoolers (e.g., Lin & Magnuson, 2018; Early et al., 2006; Mashburn et al., 2008). In one recent study, Lin and Magnuson (2018) examined the relationship between teachers' level of education, classroom quality, and early academic skills. The participants included 661 students three to five years old in 189 community-based child care centers. The researchers controlled for fall assessment scores and teachers' work-related characteristics (e.g., motivation). Although the researchers found that teachers without a college degree are in classrooms of significantly lower quality compared with teachers who have a college degree, the statistical models indicate that teachers' education did not predict the students' early academic skills.

Structural quality also includes general features of the classroom environment, such as, cleanliness, daily schedule, and access to activities, materials, playground equipment, parents, staff, and other children. Although general features of the classroom environment may be related to other aspects of classroom quality (e.g., process quality factors), the research on the general features element of classroom quality alone has demonstrated that general features of the classroom do not seem to directly influence school readiness (Pianta, Downer, & Hamre, 2016; Burchinal, 2018). A meta-analysis by Burchinal, Kainz, and Cai (2011) demonstrates that when controlling for teacher-student interactions, the relationship between measures of structural quality and child outcomes is nonexistent, especially for low-income students. This finding indicates that although general classroom features may play an indirect role in classroom quality, these general features of the classroom do not result in greater school readiness and are not strong indicators of classroom quality. These results were replicated by Brinkman et al. (2017) who found that structural characteristics were not significant predictors of early child development in 7900 children enrolled in 578 preschools in rural Indonesia. Furthermore, in a study of low-income children enrolled in Head Start, Meng (2015a) found that the early academic skills of low-income children in classrooms rated as higher quality were not significantly different than the skills of students in low quality classrooms as measured with the Early Childhood Environmental Rating Scale–Revised Edition (ECERS-R), an observation tool that measures general features of the classroom (e.g., space, schedule, cleanliness of playground equipment, staff's hand-washing). At the time, it appears that measurements of general features of the classroom environment may not clearly reflect the aspects of classroom quality that result in positive academic outcomes when controlling for confounding variables (Burchinal, Kainz, & Cai, 2011). However, structural quality factors are associated with process quality factors and so may play a more indirect role on preschoolers' early academic skills (Cryer et al., 1999). According to Burchinal (2018), "structural

factors are viewed as necessary, but insufficient, for higher process quality" (p. 4). The following section describes process quality factors.

Process quality factors. Process quality factors include those variables that occur through teacher-child interactions, such as, a positive teacher-student relationship, classroom management, and instructional quality and support (e.g., Castro, Espinosa, & Paez, 2011; Pianta, La Paro, & Hamre, 2008). Research has found that process quality factors have a moderate effect on early academic skills (see Burchinal, 2017). Research on the role of positive teacher-child interactions has found that a teacher's responsivity toward student needs, his or her support for the students' learning, and his or her creation of opportunities for language and cognitive development during the school day may benefit young students from preschool through the third grade (Pianta, Downer, & Hamre, 2016). A brief review of the evidence behind positive teacher-student interactions, and instructional quality and support aspects of process quality is described.

First, research on the interactions between teachers and student demonstrates that it is a robust indicator of classroom quality, even when controlling for other school and home factors (Pianta, Belsky, Houts, & Morrison, 2007). Furthermore, the National Institute of Child Health (NICH), Human Development Early Child Care Research Network (HDECCRN), and Duncan (2003) provide evidence that teacher-child interactions are positively associated with academic and cognitive growth. A positive teacher-student relationship in preschool settings sets the stage for a child's behavior in the classroom (Hemmeter, Ostrosky, & Corso 2012) and may result in fewer aggressive and anxious behaviors in students, as well as, higher rates of pretend play (Howes et al., 2011). Although these teacher-child interactions are dynamic, in that behaviors of each individual evokes behaviors in the other, measurements of process quality usually focus on the teacher's behavior, language use, and warmth toward the students. Naturally, these interactions can

change throughout the day due to various factors, such as, the teachers' responsibilities, knowledge, skills, or mood, and the students' behavior, abilities, or mood.

Furthermore, there is evidence that a positive teacher-student relationship is a protective factor for future student academic and behavioral outcomes, as well. For example, in a longitudinal study by Hamre and Pianta (2001), 179 children were followed from kindergarten to eighth grade in order to explore the extent to which a teacher's perceptions of the student-teacher relationship predicted the student's future academic grades, standardized test scores, behavior disciplinary records, and work-habit behavior ratings. The results indicated that the teachers' perceptions of the teacher-student relationship were significantly related to the students' academic and behavior outcomes, even when controlling for a child's gender, ethnicity, and cognitive abilities. In addition to academic benefits of positive teacher-student relationships and interactions, Owen, Klausli, Mata-Otero, and Caughy (2008) found that parents of children in relationship-focused programs reported higher child compliance and closer parent–teacher relations than did parents of children in usual child care centers.

A second aspect of process quality is instructional quality and support in the classroom. In the literature, instructional quality and support is defined by teachers' provision of scaffolded and appropriate opportunities for learning in the classroom. A study on instructional quality conducted by Hamre and Pianta (2005) examined how the achievement scores and emotional rating outcomes of 910 academically and behaviorally at-risk children aged 5-6 years old were affected by instructionally supportive classrooms. Students were placed in classrooms with either a highly supportive teacher or a less supportive teacher. By the end of the school year, the at-risk students with a highly supportive teacher were reaching grade level standards and performing at almost or the same level as their low-risk peers. They also found that the at-risk students placed in highly

supportive environments performed much better than their at-risk peers in lower supportive environments.

Characteristics of high-quality classrooms for DLLs. Regarding DLLs, research on high-quality classrooms is limited but growing. In one study, Yazejian et al. (2015) found that 1,492 Latino DLLs enrolled in early education programs that used evidence-based practices regarding classroom quality made significant language gains in both English and Spanish. Over 70% of the DLLs were in classrooms with at least one teacher who spoke Spanish. DLLs who entered the program as infants and toddlers scored higher in receptive English language measures at kindergarten entry than did DLLs who began the program for preschool, indicating that longer exposure to high quality learning environments was beneficial for English language development. These English language gains occurred without losses to the child's Spanish language skills. While this study demonstrates the benefits of ECE for Latino DLLs, empirical research on the characteristics and effects of high-quality ECE for Latino DLLs is limited. Castro, Espinosa, and Paez (2011) reviewed the literature that examines the elements of ECE that benefit DLLs. Castro et al. (2011) examined research on curriculum and instruction, program and teacher characteristics, and family engagement. Based on the results of their review, Castro et al. (2011) presented fourteen elements of high-quality ECE programs for DLLs (see Table 1).

For the purpose of the current literature review, a thematic analysis of these 14 quality ECE practices for DLLs was conducted and revealed three major themes of process quality: fostering positive relationships, incorporating DLL culture into the classroom, and supporting dual language development. Several examples from the DLL literature support these recommendations. This section will review studies that provide support for the culture and language themes identified from the ECE practices that Castro et al. (2011) suggest. Research on positive relationships were discussed in detail in the previous section.

Considering culture. Several of Castro et al.'s (2011) recommendations of quality ECE program features for DLLs focus on acknowledging and affirming the cultures of DLLs in the classroom through curriculum, books, pictures, stories, and home-language use by the teacher. In a qualitative case study of culturally-sensitive teaching practices, Gillanders (2007) describes how the teaching practices of Sarah, a monolingual English-speaking kindergarten teacher in North Carolina, benefited DLLs in her classroom. The study aimed to understand how Sarah communicated and taught her Latino DLLs while supporting their home-language. The study also examined the strategies that Sarah used to promote the DLL's English language and literacy skills. Of the 16 students in her classroom, 80% received free or reduced lunch. In her class, four of the children were Latino DLLs, eleven of the students were African-American, and one student was Asian. Sarah indicated that the Latino students in her class were very quiet and did not speak very much. Gillanders (2007) conducted 51 observations and found that Sarah's efforts for working with the DLLs in her classroom focused on building positive teacher-child and child-peer relationships, learning and using Spanish words, and including the DLL children in play. Sarah enrolled in Spanish-language classes at a local high school, expressed her affection for the DLLs by holding their hands or having one sit in her lap during circle time, worked in small groups with the DLLS, and encouraged the other children to invite the DLL children to play with them. Sarah also sang songs in Spanish with the entire class on a daily basis and frequently showed the children in her class Spanish-English bilingual educational videos. These culturally-sensitive practices appeared to increase the social value of being bilingual and increased the other students' positive interactions (i.e., speaking and engaging) with the Latino DLLs. Gillanders (2007) found that the DLL students made growth in English literacy skills and participation in the classroom community. This study provides support for Castro et al.'s (2011) suggestions for incorporating and affirming DLL students' culture in the classroom. In addition to these positive social and

academic findings, Gillanders (2007) found that the DLLs made significant gains in formal and informal measures of English and Spanish receptive vocabulary by the end of the year.

Considering language development. Children's early language and literacy experiences influence their language and educational outcomes. According to Castro et al.'s (2011) list of quality ECE features, quality ECE programs for DLLs should support DLL's English and Spanish language development. Castro et al. (2011) argue that research on DLLs' language and academic development has indicated that teachers must understand and support the process of second language acquisition (SLA), while supporting the development of a child's home-language. The literature gives several examples that support these recommendations. In order to develop rich language skills, children need high-quantity and quality of language exposure rich language skills (Hart & Risley, 1995; Snow, 1999). Teachers who provide a linguistically rich environment in English expose DLLs to language and literacy experiences that develop children's vocabulary, oral language, and reading skills in English (Tabors, 2008). High quality classroom should provide students with rich linguistic input and opportunities for practice (e.g., McCartney, 1984; Castro et al., 2011; Tabors, 2008). In addition to rich English language exposure, using Spanish in the classroom is also beneficial for Latino DLLs (Gillanders, 2007). Research has found that classrooms which support home-language promote DLL language, academic, and socio-emotional growth (e.g., Garcia, 2018; Collins, 2014; Yazejian, Bryant, Freel, & Burchinal, 2015; Chang et al., 2007; Gillanders, 2007).

In their meta-analysis, Rolstad, Mahoney, and Glass (2005) examined the characteristics of programs in which ELL students are enrolled. Their analysis included 17 studies on ELLs' academic outcomes. Rolstad et al. (2005) found that bilingual educational programs are more effective at developing a DLL's English reading skills than are English-only programs. Rolstad et al.'s (2005) results mirror the findings on research of the positive effects of cross-linguistic transfer

in SLA (e.g., Bialystok, Luk, & Kwan, 2005; Hammer, Lawrence, & Miccio, 2007). These findings also mirror the results of previous meta-analyses that conclude that bilingual education approaches are superior to English-only full immersion approaches for DLLs (e.g., Slavin & Cheung, 2003). Rolstad et al. (2005) provides support for Castro et al.'s (2011) suggestions for supporting DLL language development in the classroom.

In summary, research indicates that classroom quality is a significant predictor of the early academic skills of preschool students (Perry, Donohue, & Weinstein, 2007; Pianta, La Paro, & Hamre, 2008). Structural quality factors (e.g., teacher education level) in the classroom environment may play an indirect role on preschoolers' early academic skills by influencing the classroom's process quality factors (e.g., teacher-student interactions; Cryer et al., 1999). Specific process factors that may be beneficial for DLLs' development include culturally and linguistically sensitive practices in the classroom (Castro et al., 2011). However, the effects of different classroom quality factors on Latino DLL growth is not yet understood.

Approaches-to-Learning

Approaches-to-learning are "neurologically-based processes that involve managing one's self and one's resources in order to achieve a goal" (Cooper-Kahn & Dietzel, 2008, p. 19). Approaches-to-learning behaviors (e.g., flexibility, persistence in difficult situations, emotion regulation, attentiveness, and organization) are necessary for young children to become engaged in learning and capitalize opportunities for learning in the classroom (Fantuzzo, Perry, & McDermott, 2004). Research suggests that approaches-to-learning are beneficial for learning new information and are necessary for success in school (Fantuzzo, et al., 2007; McWayne et al., 2004). Approaches-to-learning are traditionally measured by a child's behaviors toward new activities, situations, and learning opportunities. Learning behaviors can be measured directly or indirectly using observations or behavior scales, for example. Research has found that approaches-to-

learning behaviors predict preschoolers' math, language, and science outcomes (e.g., Bustamante, White, Greenfield, 2017; Vitiello & Greenfield, 2017; McWayne et al., 2004, Schaefer & McDermott, 1999). Research has also found that the positive effects that approaches-to-learning have on academic achievement tend to grow over time (McDermott, Rikoon, & Fantuzzo, 2014). This section includes a review of literature on the approaches-to-learning of at-risk preschoolers and Latino students.

First, there is evidence that approaches-to-learning play a protective moderating role on preschool children's academic success in high and low quality Head Start programs (e.g., Meng, 2015a). Meng (2015a) investigated whether approaches-to-learning moderated the relationship between the classroom environment and academic skills of preschoolers enrolled in Head Start. The participants included 786 three and four year olds (387 boys, 399 girls; 119 Latino children, 280 African American children, 312 Caucasian children). Teachers reported student learning behaviors for the students in their classrooms of varying quality. Meng (2015a) found that approaches-to-learning moderated the effect of preschool classroom quality on early literacy skills. In order words, positive learning behaviors appear to be a protective factor for students in low-quality classrooms (Meng, 2015a). Meng (2015b) also found that children's approaches-to-learning moderated the relationship between home literacy environment and English receptive vocabulary development of children enrolled in Head Start programs. The results indicated that children with more positive approaches-to-learning had higher English receptive vocabulary scores. This means that positive approaches-to-learning may play a protective role and may compensate, at least partially, for low classroom quality and a limited home literacy environment of low-income preschoolers. Bustamante and Hindman (2019) found similar results for the Head Start population with data from the 2009 Family and Childhood Experiences Study (FACES) dataset. Bustamante and Hindman (2019) found that classroom quality predicted approaches-to-

learning behaviors which predicted the early academic skills of preschool children enrolled in Head Start.

Second, research has found that approaches-to-learning may be a strength of certain groups of Latino students (Han, 2010, Bustamante & Hindman, 2018; Galindo & Fuller, 2010). Han (2010) found that Spanish-dominant bilingual students' learning behavior trajectories from kindergarten to fifth grade are very positive. As part of the large Early Childhood Longitudinal Study (ECLS), 14,853 bilingual and monolingual students were followed from Kindergarten to fifth grade. Overall, the results indicated that bilingual Latinos were doing as well as or better than their Caucasian monolingual peers on socioemotional well-being and approaches-to-learning. Data indicated that Spanish-dominant bilingual fifth-graders scored higher on approaches-to-learning, self-control, and interpersonal skill measurements than all other groups. English-dominant bilingual fifth-graders also scored higher on these measures, but the results did not reach significance, therefore, they were statistically similar to Caucasian monolingual English speaking fifth-graders. Furthermore, the Spanish-dominant bilingual Latino students scored lower on measures of internalizing and externalizing behavior problems compared to English-dominant bilingual and monolingual fifth grade students. However, these benefits for Latino students were only found for bilingual students, as Latino children who did not speak English were rated by their teachers as having the lowest self-control and interpersonal skills, and the highest internalizing problems compared to all other groups of fifth graders.

Moreover, Bustamante and Hindman (2018) provide further evidence that approaches-to-learning may be a strength of Latino DLLs. Using data from the 2009 FACES study, the researchers examined the approaches-to-learning and early academic skills of at-risk preschoolers enrolled in Head Start. The participants included Latino and non-Latino children between 32 to 59 months old (N=1661). In regard to ethno-racial backgrounds, 40% were identified as Latino, 33%

were identified as African American (non-Latino), 20% were identified as Caucasian (non-Latino), and 7% were identified as being of other or multiple backgrounds. In regard to language, 30% of preschoolers were DLLs. Furthermore, a large majority (70%) of the Latino children spoke Spanish at home. The researchers found that the Latino preschoolers had higher approaches-to-learning scores than did their non-Latino peers for both fall and spring timepoints of the Head Start school year. The study found that being Latino positively predicted approaches-to-learning gains during the school year. In regard to achievement, the researchers found that being Latino negatively predicted early academic skills at the beginning of the preschool year but that Latino preschools made significant gains in early academic skills by the end of the school year. Approaches-to-learning mediated Latino preschoolers' academic growth throughout the school year.

Finally, there is further evidence that approaches-to-learning may be a strength of certain groups of Latino preschoolers and a weakness of others. In their study of the early numeracy and cognitive skills of Latino kindergarteners, Galindo and Fuller (2010) examined the effects of five domain general competencies (i.e., approaches-to-learning, self-control, interpersonal skills, and internal and external behavior problems) on the cognitive school readiness of Latino, African American, and Caucasian students. Using data from the ECLS kindergarten cohort (N=19,590), the researchers examined variability among Latino subgroups by region of origin. The researchers found that approaches-to-learning scores were the strongest predictor of growth in Latino students' early numeracy scores. Overall, Latino children received higher approaches-to-learning scores than their African American peers but lower approaches-to-learning scores than their Caucasian peers. However, when the researchers explored the variability between Latino subgroups, they found that Latino children of South American and Cuban origin had higher approaches-to-learning scores than children of Mexican, Puerto Rican, and Central American heritage. Furthermore,

children of South American and Cuban heritage were not statistically different than their Caucasian peers on approaches-to-learning measures. Children of Puerto Rican, Central American, and Mexican descent scored significantly lower on approaches-to-learning measures than their Caucasian peers did. The authors hypothesize that these results may reflect SES and more research is needed on cultural and socioeconomic variables to fully understand these findings. Bustamante and Hindman (2018) posit that Galindo and Fuller's (2010) analyses may not have been able to account for the SES differences between Latino and Caucasian children and so approaches-to-learning advantages of Latino children may have not been caught.

Overall, these results indicate that approaches-to-learning is a unique strength of Latino students. Latino DLLs are underrepresented in the approaches-to-learning school readiness literature. Research has indicated that Latino students' approaches-to-learning is a significant predictor of Latino students' academic outcomes. The findings of the studies reviewed indicate that approaches-to-learning advantages may exist for Latino students or certain groups of Latino students, however, the approaches-to-learning behaviors of Latino DLLs need to be more fully understood.

Conclusion

In summary, research has shown that the early academic skills of children are the strongest predictors of later academic outcomes (Duncan et al., 2007) and that Latino DLLs benefit academically and linguistically from federally funded preschool programs (Páez, Tabors, & López, 2007; Burchinal, Magnuson, Powell, & Hong, 2015). However, despite the growth in early academic and language skills that DLLs in preschool programs experience, the academic gap at the beginning of kindergarten between low-income DLLs and their monolingual peers is not closing (Páez, Tabors, & López, 2007). There is a great need for understanding how to improve the school readiness of Latino children and DLLs who may face different challenges when entering

kindergarten. Given the expected growth of the Latino population and the troubling academic outcomes for this group, research is needed to better understand how to help Latino DLL students achieve academically. While research suggests that approaches-to-learning may be a unique strength of Latino students (Han 2010; Bustamante & Hindman, 2018), the approaches-to-learning behaviors of Latino DLLs are underrepresented in the school readiness literature. We must better understand the current state of and barriers to school readiness of Latino students in order to develop methods for improving their school readiness and overall academic success.

Purpose of the Study

Research on the influences of classroom quality and approaches-to-learning variables on the early literacy and numeracy skills of Spanish-speaking DLLs in preschool programs is minimal. The goal of this study is to investigate the extent to which Spanish-speaking DLL students' approaches-to-learning behaviors moderate the relationship between classroom quality and early academic skills. This study expands upon research (i.e., Meng, 2005; Bustamante & Hindman, 2019) on the classroom quality and approaches-to-learning behaviors of low-income preschoolers by focusing on low-income Latino DLL preschoolers in Head Start. Given that research has shown that process quality factors in the classroom directly influence children's early academic skills (see Burchinal, 2017) and the Classroom Assessment Scoring System (CLASS Pre-K; Pianta, R. C., La Paro, K. M., & Hamre, B. K, 2008) is a measure of process quality factors, the current study uses the CLASS measure instead of the Early Childhood Environment Rating Scale (ECERS-R; Harms, Clifford, & Cryer, 1998) used in Meng (2005a). This research project aims to add to the body of knowledge on the school readiness of Latino DLLs. The information gleaned from this study may inform the practice and policy of educational stakeholders who serve low-income DLL preschoolers.

Chapter 3: Methods

Purpose of the Study

Research is needed on the influences of classroom quality and approaches-to-learning variables on the early literacy and numeracy skills of Spanish-speaking DLLs in preschool programs. The goal of the present study is to better understand the school readiness of preschool DLL students by examining the role that approaches-to-learning has on the relationship between classroom quality and Latino DLLs' early academic skills in English and Spanish. It extends previous work by Meng (2005a) who found that approaches-to-learning behaviors moderate the effect of high or low classroom quality on the early academic skills of preschoolers in Head Start. This study expands upon Meng's (2005a) findings by focusing on low-income Latino DLL preschoolers in Head Start, assessing both Spanish and English early academic skills, and using the Classroom Assessment Scoring System (CLASS Pre-K; Pianta, R. C., La Paro, K. M., & Hamre, B. K, 2008) measurement of classroom quality instead of the revised Early Childhood Environment Rating Scale (ECERS-R; Harms, Clifford, & Cryer, 1998). This research project aims to add to the body of knowledge on the school readiness of Latino DLLs. The results of the study may inform the practice and policy of educational stakeholders who serve low-income Latino DLL preschoolers.

Data Source

Data for the present study were originally obtained for the Florida English Language Learners Attending Head Start (FELLA-HS) project, which was funded by a Head Start University Partnership Grant awarded by the Administration for Children and Families (ACF). Research

assistants collected data from children and teachers in five different Florida counties. The goal of the FELLA-HS study was to measure DLLs' school readiness and examine the role that home and classroom environments played in the children's development. Research assistants assessed the children individually in English and Spanish during three general time points. The students were assessed on different days for each language to avoid confusing the student. Research assistants conducted classroom quality observations in the spring. Teachers completed behavior rating scales and demographic teacher questionnaires, as well.

Head Start programs with a high density of DLL children were chosen to participate. The Head Start program mainly enrolls children living in families whose income is below the poverty line. The original study looked at growth across two cohorts of students enrolled in Head Start programs in Florida. The first cohort was approximately one year older than the second cohort. Therefore, children in the first cohort were evaluated at the end of their last year in Head Start and during kindergarten. Children in the second cohort were evaluated at all three-time points during their participation in a Head Start program. For the purposes of this study, the data from both cohorts during their final year of Head Start was analyzed. The original sample consisted of 396 children aged three and five years old who were enrolled in one of thirty-five Head Start centers from 5 counties (i.e., C1, C2, C3, C4, and C5). In the current sample, there were one to five classes within each of the 35 centers, for a total of 58 classes. Within each class the number of students assessed ranged from 1-19 with an average of 11 Latino DLLs per class and a total of 384 students assessed in their final year of Head Start. The children or parents of the children in the sample originated from one of the following Spanish-speaking countries: Cuba, Puerto Rico, Mexico, Guatemala, Honduras, Peru, Colombia, Dominican Republic, Panama, El Salvador, Venezuela, Nicaragua, Argentina, Ecuador, and Bolivia. The modal category for the current study was Mexico (53%), which is comparable to the distribution of the Hispanic population in the United States

(Mexico 64%; Ennis, Rios-Vargas, & Albert, 2011). The parents' level of education, English proficiency, and the number of years residing in the U.S. were varied.

Participants

Children

The child participants in the present study include 384 four to five year old Latino DLL preschoolers enrolled in their final year of Head Start programs. The children were living in low-income homes where Spanish was the primary language spoken by at least one parent. The majority (91.9%) of children were born in the U.S, while the remainder were born in either Cuba (2.7%), Mexico (2.7%), Puerto Rico (1.4%), Guatemala (0.3%), Honduras (0.3%), Peru (0.3%), or Colombia (0.3%). The sample is 53.1% female (N= 207), 44.1% male (N=172), and 2.8% non-specified (N=11).

Teachers

The teacher participants in the present study include 58 Head Start pre-kindergarten teachers. Their teaching experience ranged from 0-43 years, with a median of 13 years teaching. The majority of teachers identified as Non-Hispanic Caucasian (49.1%), followed by Latino/Hispanic (33.3%), Black/African America (10.5%), Native American/ American Indian/ Alaska Native (3.5%), multiracial (1.8%), and Asian/Pacific-Islander (1.8%). In regard to education level, 16.9% had a High School Diploma or GED, 16.9% had an Associate's Degree, 55.9% had a Bachelor's Degree, and 10.2% had a Master's Degree.

Ethical Considerations

Given that the data to be used for the present study were collected for the FELLA-HS project, there is no new data to be collected for this study. As the data were originally collected as part of the FELLS-HS project, permission from the University of South Florida Institutional Review Board (IRB) was obtained before the assessments were conducted with the children. Data

analyses for the current study were not conducted until the study was approved by the IRB committee. The author of this thesis is an approved member of the research team (i.e., study staff). Analyses in the present study involve novel examinations of data collected using tools and methods that were described in the approved study protocol. Appendix C presents the initial study approval provided to Dr. Lopez from the University of South Florida IRB.

Several measures were taken to ensure that ethical issues were addressed. Consent forms were signed before the researchers contacted the child or the family. Given that the children were too young to sign consent forms, the child's parent or legal guardian signed consent on their behalf. Because only 18% of the mothers and 10.6% of the fathers of the original sample reported speaking English very well, the parents were given consent forms in both English and Spanish. Full assent was given by the children before testing began and if the child did not want to continue the assessment at any point, testing did not continue. The Head Start program staff explained the research project to each parent before they signed the consent form. Upon receiving the consent form, the families were able to take the consent form home to make an informed decision about participating in the study. Participant privacy was protected by assigning an identification number for each participant that was used to identify the data without using the child's name. Once the consent forms and data collected for the project were recorded and reviewed, they were placed in a locked cabinet in an office at the University of South Florida.

Variables

Dependent Variables

Early literacy and numeracy skills. The dependent variables in the present study are the students' early academic skills in English and Spanish. Early academic skills include the students' early English Literacy, English Numeracy, Spanish Literacy, and English Numeracy Skills, which are strong predictors of mathematics and literacy achievement (Duncan et al., 2007; Quirk et al.,

2015). The early Literacy and Numeracy skill variables are measured by the Letter-Word Identification and Applied Problems subtests from the 3rd Edition of the Woodcock-Johnson Tests of Cognitive Abilities (WJ-III; Woodcock, McGrew, & Mather, 2001) and the *Identificación de Letras y Palabras* and *Problemas Aplicados* subtests from the Batería III Woodcock-Muñoz (Batería III; Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005). These achievement assessments are each independent assessments that focus on literacy and numeracy skills but are not intended to measure school readiness academic skills as a whole construct.

Independent Variables

Classroom quality. The quality of the classroom environment was measured using the Classroom Assessment Scoring System Pre-kindergarten (CLASS Pre-K; Pianta, La Paro, & Hamre, 2007). The CLASS Pre-K assesses the classroom environment in terms of three major domains of classroom quality: Emotional Support, Classroom Organization, and Instructional Support.

Approaches-to-learning. Students' approaches-to-learning behaviors were measured using the Preschool Learning Behaviors Scale (PLBS; McDermott, Green, Francis, & Stott, 2000). The PLBS measures preschoolers' learning behaviors in terms of three domains of approaches-to-learning behaviors: Attention/Persistence, Competence Motivation, and Attitude Towards Learning.

Measures

In this section, the measures and psychometric properties of the measures are described. The reliability of the CLASS and PLBS measures was calculated based on the sample of the project. These measures are appropriate because they are designed for use with preschoolers and have all been used in other studies of children in Head Start.

Woodcock Johnson III (WJ-III)

The participants were administered the Woodcock Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather, 2001) to measure their early academic skills in the spring of their pre-kindergarten year. The WJ-III measures scholastic aptitude in reading, mathematics, and oral and written language in English for individuals aged 2 to 90+ years old. The norm sample of the WJ-III (N= 8,818) included randomly sampled preschoolers from across the U.S. (N=1,143). While the entire battery of the WJ-III Tests of Achievement measures of academic performance was administered to the students for the original project, only the data from two areas in English (i.e., Applied Problems and Letter-Word Identification) were used for the present study. The English subtests administered were appropriate for the age group of the participants.

Batería III Woodcock Muñoz (Batería-III)

The participants were administered the *Batería III Woodcock Muñoz: Pruebas de Aprovechamiento* (Batería-III; Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005) to measure their early academic skills in Spanish during the spring of their pre-kindergarten year. The Batería-III measures scholastic aptitude in reading, mathematics, and oral and written language in Spanish for individuals aged 2 to 90+ years old. The norm sample of the Batería-III (N=1413) included Spanish-speaking children from Mexico (N=417), the United States (N=269), Costa Rica (N=248), Panama (N=153), Argentina (N=111), Colombia (N=101), Puerto Rico (N=94), and Spain (N=10). While the entire battery of the Batería-III *Pruebas de Aprovechamiento* were administered to the students for the original project, only data from two areas in Spanish (i.e., Spanish Letter-Word ID and Spanish Applied Problems) were analyzed for the present study. The Spanish subtests administered were appropriate for the age group of the participants.

Measures of early literacy skills. The early English and Spanish Literacy Skills that were examined in this study were measured by the Letter-Word ID subtest of the WJ-III and the

Identificación de Letras y Palabras subtest of the Batería-III. The Letter-Word ID subtests include identifying printed letters of the alphabet and single words. This sub-test measures a student's letter and word identification skills, and reading decoding. While the initial items in this subtest require a student to identify individual letters, the rest of the items require a student to read isolated words of increasing difficulty (Wendling, Schrank, & Schmitt, 2007). Assessment of the identification of printed letters and words requires that a student has alphabetic knowledge and basic concepts of print, such as knowing which direction letters and words face and that words are read from left to right (Snow, Burns, & Griffin, 1998). The Letter-Word ID subtest has a median reliability of .94 for English (Schrank, McGrew, Woodcock, 2001) and .95 for Spanish (McGrew & Woodcock, 2005).

Measures of early numeracy skills. Early numeracy skills that were examined in this study were measured using the English Applied Problems subtest of the WJ-III and the *Problemas Aplicados* (i.e., Spanish Applied Problems) subtest from the Batería-III. Applied Problems includes analyzing and solving math problems. At the beginning of this test, the items require the application of simple number concepts. Later items require the participant to perform a calculation. In order to perform the calculation, the participant must listen to a problem and then identify the mathematical procedure that must be used. Many of the items on the Applied Problems subtest involve either listening ability or reading comprehension. Many of the tasks for this subtest require the participant to perform the problem mentally using the visual working memory process (Wendling, Schrank, & Schmitt, 2007). The Applied Problems subtest has a median reliability of .93 for English (Schrank, McGrew, Woodcock, 2001) and .92 for Spanish (McGrew & Woodcock, 2005).

Classroom Assessment Scoring System Pre-kindergarten (CLASS Pre-K)

An independent variable in this study is classroom quality, which was measured through the Classroom Assessment Scoring System Pre-kindergarten (CLASS Pre-K; Pianta, La Paro, & Hamre, 2007). The CLASS Pre-K assesses the classroom environment in terms of three major domains of classroom quality: Emotional Support, Classroom Organization, and Instructional Support. Coding is conducted by a trained observer in 30-minute cycles for a minimum of four cycles which means that the CLASS observation is conducted for a minimum of two hours. Each of the scoring sheets has room for recording observational data and including notes, from six cycles.

Each of the domains (i.e., Emotional Support, Classroom Organization, and Instructional Support) is comprised of three to four dimensions that are rated on a 7-point Likert scale ranging from Low (1 - 2) to Middle (3 - 5) to High (6 - 7) by the trained observers. A summary of the dimensions of each of the ten domains can be found in Table 2. The dimension scores for each domain (i.e., Emotional Support, Classroom Organization, and Instructional support) are averaged and this average is referred to as the composite domain scores, which were used in the statistical analyses of this project. Emotional Support, Classroom Organization, and Instructional Support are all moderately to highly correlated with one another (Pianta et al., 2007). Internal consistency reliabilities of the CLASS Pre-K range from .76 - .90 (Pianta et al., 2008). For the current study, the internal consistency measure is .67 for Emotional Support, .90 for Classroom Organization, and .97 for Instructional Support. Excellent internal consistency was found for the CLASS domains of Classroom Organization (.90) and Instructional Support (.97), while Emotional Support (.67) had acceptable internal consistency for the current sample. See Appendix A for more information on the CLASS.

Preschool Learning Behaviors Scale (PLBS)

McDermott, Green, Francis, and Stott (2000) developed the Preschool Learning Behaviors Scale (PLBS) to assess the approaches-to-learning behaviors of preschool children. Using this tool, a child's learning behaviors can be measured by the teacher using a 29-item scale that yields results in three main learning behavior domains: Attention/Persistence, Competence Motivation, and Attitude towards Learning. The teachers report the children's learning behaviors during the last two months using a three-point Likert scale (i.e., most often applies, sometimes applies, or doesn't apply). It is likely that the unique dimensions and aspects of approaches-to-learning variables (i.e., competence motivation, attention/persistence, and attitude toward learning) are interconnected (Daniels, 2014). McDermott, Leigh, and Perry (2002) describe the national standardization and validation of the PLBS for children three to five and a half years of age. They found that the Competence Motivation dimension has a Cronbach's alpha of .85, the Attention/Persistence dimension has a Cronbach's alpha of .83, and the Attitude towards Learning dimension has a Cronbach's alpha of .75 (McDermott, Leigh, & Perry, 2002, p. 360). For the national sample, the Competence Motivation dimension has 11 items, the Attention/Persistence dimension has 9 items, and the Attitude towards Learning dimension has 7 items (McDermott, Leigh, & Perry, 2002). In regard to urban and at-risk children, McDermott, Rikoon, Waterman, and Fantuzzo (2012) validated the PLBS with a large sample (N=1,666) of children enrolled in Head Start and found that the items loaded differently onto factors for the Head Start sample. For the Head Start sample, McDermott et al. (2012) identified three reliable factors for children enrolled in Head Start programs. These factors and their Cronbach's alphas are Competence Motivation (.86), Attention/Persistence (.88), and Learning Strategy (.76). Since the sample of the present study were enrolled in Head Start, the present study used the norms for Head Start proposed by McDermott et al. (2012). The Competence Motivation dimension has 12 items, the

Attention/Persistence dimension has 12 items, and the Learning Strategy dimension has 8 items. The internal consistency measures for the current study are .79 for Competence Motivation, .84 for Attention/Persistence, and .66 for Learning Strategy domains. The Cronbach's alpha of the Attention/Persistence (.84) variable indicates that it had good levels of internal consistency. Acceptable internal consistency was found for Competence Motivation (.79) and Learning Strategy (.66). See Appendix B for more information about the PLBS.

Procedures

Two cohorts of students enrolled in Florida Head Start programs were recruited and followed over two academic years. In the second year, the older cohort (i.e., original four-year-olds) transitioned to kindergarten and the younger cohort (i.e., original three-year-olds) remained in Head Start for one more year. For the purpose of this study, the data from the students' final year in Head Start were used for both cohorts so that all students included in the study were four years old when assessed. Therefore, data from the older cohort and younger cohort were analyzed together for a total of 58 classrooms and 384 students total in the current study. For the current study, all assessments were completed at one time point (i.e., spring of the students' prekindergarten year). For the purpose of the present study, the children in the older cohort were paired with their year 1 teachers and the children in the younger cohort were paired with their year 2 teachers for classroom level analyses.

Assessments began after the signed informed consent forms were given to the research team. The parents completed a demographic and home questionnaire. The children were assessed individually in a private area at their Head Start center between 9:00 a.m. and 12:00 p.m. For the original project, the children were assessed in both English and Spanish to measure their oral language, cognitive, early literacy, and early numeracy skills. It took approximately a total of 80 minutes to complete all the assessments in both languages. In order to prevent the children from

becoming overtired, the assessments in each language were delivered in two parts so that testing lasted for a total of four days for each child. The examiners were highly trained and only spoke in the language of assessment during the respective assessment session. After each session, the children received a toy or sticker, and the parents received a bilingual children's book.

Data from the teachers were collected after their signed consent forms were given to the researchers. Each teacher received a research packet with a letter about the FELLA-HS study informing them that at least one student in their classroom was participating in the study. The packet also contained a demographic questionnaire and the PLBS. Teachers filled out demographic questionnaires and rated the children's approaches-to-learning behaviors using the PLBS. Members of the research team delivered or mailed the packets to the teachers. The teachers were given approximately five weeks to return the questionnaires. A Wal-Mart, Target or Office Depot gift card with $10 was given for completing the teacher demographic questionnaire. The teachers also received monetary compensation for each survey or questionnaire completed per child, including the PLBS. Once the packets were returned to the research team, research assistants used Remark OMR software to scan the data into an Excel spreadsheet. To ensure accuracy, research assistants performed quality checks by comparing the original questionnaire data to the data on the spreadsheet. A different research assistant then performed a second quality check of every fifth entry. If an error was identified, a research assistant checked every entry for that particular survey to make sure that there were no additional errors. Highly trained observers then conducted the CLASS measure in the spring of each school year for each of the classrooms.

Qualifications

The research assistants were undergraduate students, graduate students, and community members fluent in both English and Spanish. Each research assistant received extensive training on the administration of the Pre-kindergarten Classroom Assessment Scoring System (CLASS

Pre-K) and the battery of child assessments. This extensive training on the CLASS Pre-K included training the research assistants until they reached reliability with the master coders, according to Teachstone procedures.

Research Questions

The present study answered the following research questions:

1. To what extent is classroom quality related to the early academic skills of Latino DLL preschoolers in Florida Head Start programs?
2. Among Latino DLL preschoolers in Florida Head Start programs, to what extent do approaches-to-learning behaviors moderate the relationship between classroom quality and preschoolers' early academic skills?

Data Analysis

Before the data were statistically analyzed, the data were explored in order to identify outliers, make sure the outliers are correct data points, identify data entry errors, and eliminate all incorrect data values from the analysis. Participants with missing data for any of the variables were included in the analyses when possible. Descriptive statistics for each continuous variable were analyzed. Next, bivariate correlations between the classroom quality domains, learning behavior domains, and early literacy and math skills of Latino DLL preschoolers in Florida Head Start programs were conducted.

In order to answer the research questions, a series of multilevel models were conducted for each early academic skill outcome (i.e., English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills, and Spanish Numeracy Skills). Listwise deletion of participants with missing data occurred for the multilevel models. Multilevel models were used to account for the nested nature of the data. In the current study, children were nested within classrooms and classrooms were nested within centers. For statistical analyses, the children were paired with their preschool

classrooms and teachers. For the first research question, level one is the child level (i.e., early academic skills) and level two is the class level (i.e., classroom quality domain scores). For the second research question, level one is the child level (i.e., early academic skills and approaches-to-learning scores) and level two is the class level (i.e., classroom quality domain scores).

Chapter 4: Results

Overview

Spanish-speaking Latino DLLs enrolled in pre-kindergarten at Head Centers in Florida and their teachers participated in the study. The children were administered the English and Spanish Letter-Word Identification and Applied Problems subtests of the WJ-III (Woodcock, McGrew, & Mather, 2001) and the Batería-III Woodcock-Muñoz (Batería III; Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005) Tests of Achievement. The tests measured the children's early academic skills in English and Spanish. In order to avoid the mixing of languages, the children were tested on different days. Additionally, testing was counterbalanced so that half of the children were assessed first in English and the other half were assessed first in Spanish. To measure the classroom quality, observers trained to reliability with the Teachstone master coders conducted the Classroom Assessment Scoring System Pre-kindergarten (CLASS Pre-K; Pianta, La Paro, & Hamre, 2008). A score for each classroom quality domain measured by the CLASS was calculated (i.e., Emotional Support, Classroom Organization, and Instructional Support). To measure the teachers' demographic information, the teachers completed the demographic teacher questionnaire. To measure the students' approaches-to-learning behaviors, the teachers completed the Preschool Learning Behaviors Scale (PLBS; McDermott, Green, Francis, & Stott, 2000). A score for each domain of approaches-to-learning behaviors (i.e., Competence Motivation Learning Behaviors, Attention/Persistence Learning Behaviors, and Learning Strategy Behaviors) was calculated. All associations were at one time point. This chapter describes the results of the study.

The goal of this study was to better understand the early literacy and numeracy skills of Latino DLLs in preschool by examining the role that approaches-to-learning has on the relationship between classroom quality and early academic skills. To begin, descriptive statistics were conducted to understand the distribution of the variables. Next, in order to analyze the relationship between all variables, correlations were conducted. Finally, to test the relationship between the independent variables (i.e., classroom quality and learning behaviors) and the dependent variables (i.e., early English Literacy and Numeracy Skills, and early Spanish Literacy and Numeracy Skills), multilevel models were run. The children were nested in classrooms and the classrooms were nested in centers, therefore, multilevel modeling was used for statistical analyses. Due to there being few classrooms in many centers (*Mdn* = 1; *M* = 1.8), two-level models, as opposed to three-level models, were conducted to account for the nested nature of the data (i.e., children in classrooms).

Preliminary Analyses

Descriptive Statistics of the Variables

Frequency, mean, standard deviation, skewness, and kurtosis analyses were run to examine the distribution of each variable. The results of the descriptive analyses are presented in Table 3. In regard to the mean and standard deviation of the early English and Spanish Literacy and Numeracy Skill variables, the WJ-III Letter-Word ID (*M* = 97.69; *SD* = 12.38), WJ-III Applied Problems (*M* = 92.5; *SD* = 13.905), Bateriá-III Letter-Word ID (*M* = 90.05; *SD* = 11.62), Bateriá-III Applied Problems (*M* = 90.37; SD = 14.05) were within in the average range, suggesting that significant cognitive or learning delays in the sample were unlikely. The WJ-III and Baterìa-III have a mean of 100 and standard deviation of 15 (Woodcock, McGrew, & Mather, 2001; Muñoz-Sandoval et al., 2005). The CLASS Classroom Emotional Support (*M* = 5.592; *SD* = .873), Classroom Organization (*M* = 5.40; *SD* = 1.06), and Classroom Instructional Support (*M* = 3.25;

SD = 1.44) domain scores were within the middle classroom quality range. The means and standard deviations for the PLBS domains of Competence Motivation Learning Behaviors (*M* = 1.59; *SD* = .32), Attention/Persistence Learning Behaviors (*M* = 1.62; *SD* = .34), and Learning Strategy Behaviors (*M* = 1.48; *SD* = .32) were in the moderate range. In regard to the distribution of the variables, skewness values in all the variables ranged from -.92 to .51 and kurtosis values ranged from -.94 to 2.10.

Correlational Analyses

While correlations do not account for the nested nature of the data, to determine whether there were significant bivariate relationships between any of the variables, bivariate correlations were conducted between all of the variables. The correlation matrix included the English and Spanish Literacy Skills, English and Spanish Numeracy Skills, Classroom Quality domains (i.e., Emotional Support, Classroom Organization, and Instructional Organization), and Approaches-to-Learning Behavior domains (i.e., Attention/Persistence Learning Behaviors, Competence Motivation Learning Behaviors, and Learning Strategy Behaviors). The results of the correlational analyses are presented in Table 4.

In terms of early academic skills, the correlation matrix indicated that English Literacy Skills are significantly associated with English Numeracy Skills (*r* = .471), Spanish Literacy Skills (*r* = .347), Spanish Numeracy Skills (*r* = .283), Competence Motivation Learning Behaviors (*r* = .167), and Attention/Persistence Learning Behaviors (*r* = .177). Additionally, the correlation matrix indicated that English Numeracy Skills are significantly associated with Spanish Literacy Skills (*r* = .273), Spanish Numeracy Skills (*r* = .361), and Attention/Persistence Learning Behaviors (*r* = .033). In addition, the correlation matrix indicated that Spanish Literacy Skills are significantly associated with Spanish Numeracy Skills (*r* = .472) and Attention/Persistence Learning Behaviors (*r* = .135). The correlation matrix also indicated that Spanish Numeracy Skills

are significantly correlated with Competence Motivation Learning Behaviors (r = .175) and Attention/Persistence Learning Behaviors (r = .183).

In terms of classroom quality, the correlation matrix indicated that Classroom Emotional Support is significantly correlated with English Literacy Skills (r = .-197), Classroom Organization (r = .668), and Classroom Instructional Support (r = .492). Classroom Instructional Support is significantly correlated with Classroom Organization (r = .70).

In terms of approaches-to-learning behaviors, the correlation matrix indicated that Competence Motivation Learning Behaviors are significantly correlated with Attention/Persistence Learning Behaviors (r = .729) and Learning Strategy Behaviors (r = .479). The correlation matrix also indicated that Learning Strategy Behaviors are significantly correlated with Attention/Persistence Learning Behaviors (r = .473), Classroom Organization (r = .246), and Classroom Instructional Support, (r = .179).

Multilevel Analyses of Factors Influencing Early Academic Skills

A total of eight multilevel regression models were analyzed to address the research questions. First, unconditional models for early academic skill variables were run without predictors. Second, a model for each of the four early academic skill outcome variables (i.e., early English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills, and Spanish Numeracy Skills) were run to answer the first research question for a total of four mixed linear models. Finally, a model for each of the four early academic skill outcome variables were run to answer the second research question, for a total of four mixed linear models. The dependent variables (i.e., early English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills, and Spanish Numeracy Skills) are level one variables. The approaches-to-learning predictor variables (i.e., Competence Motivation Learning Behaviors, Attention/Persistence Learning Behaviors, and Learning Strategy Behaviors) are level one variables. The classroom quality predictor variables

(i.e., Emotional Support, Classroom Organization, and Instructional Support) are level two variables. For statistical analyses, the children were paired with their preschool classrooms.

First, unconditional models for the early academic skill variables were run without predictors. To determine the degree of dependence between individuals, the ICC was calculated. The ICC for early English Literacy Skills is .29. The ICC for early English Numeracy Skills is .18. The ICC for early Spanish Literacy Skills .09. The intercepts indicated that there was little variation across classrooms for early Spanish Numeracy Skills (ICC = .04). The parameter estimates and standard errors for the unconditional models (i.e., Model 1) can be found in tables 5 through 8, within the columns for Model 1. The Model 1 equations are:

Level 1: $Y_{ij} = \beta_{0j} + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

Research Question 1

The first research question is: To what extent is classroom quality related to the early academic skills of Latino DLL preschoolers in Florida Head Start programs? In order to answer the first research question, four multilevel regression models were conducted to analyze the relationship between each domain of classroom quality (i.e., level two variables) and each early academic skill variable (i.e., level-one variables) of Latino DLL preschoolers enrolled in Florida Head Start programs. The CLASS domain scores were grand mean centered.

Assumptions of Normality and Homoscedasticity. Visual analyses of the scatterplots, box plots, and histograms of the residuals indicated that there were no substantial violations of the homoscedasticity and normality assumptions underlying multilevel regressions.

Conditional Models. The conditional models predicting early academic skills (i.e., early English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills, and Spanish Numeracy

Skills) included the CLASS classroom quality domain scores (i.e., Emotional Support, Classroom Organization, and Instructional Support). Level one is the child level (i.e., early academic skills) and level two is the classroom level (i.e., CLASS domain scores). For each dependent variable, the Model 2 equations are:

Level 1: $Y_{ij} = \beta_{0j} + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}\text{emotion} + \gamma_{02}\text{organization} + \gamma_{03}\text{instruction} + r_{0j}$

Results of the classroom quality models are presented in Tables 5 to 8, within the columns for Model 2. The English Literacy Skills model yielded statistically significant main effects for Classroom Emotional Support, $\beta = -5.45$, $t(35.8) = -3.25$, $p = .003$. This finding suggests that Classroom Emotional Support may independently predict early English Literacy Skills. The Classroom's Emotional Support score had a significant *negative* effect on early English Literacy Skills, suggesting that for every unit increase of Classroom Emotional Support, the child's predicted English Literacy Skill score will decrease by 5.45. None of the other models were statistically significant, suggesting that neither of the other two domains of classroom quality (i.e., Classroom Organization and Classroom Instructional Support) independently predict any early academic skills of Latino DLLs enrolled in Florida Head Start programs, and Classroom Emotional Support only predicted one of the four academic outcomes (i.e., Early English Literacy Skills).

Research Question 2

The second research question is: Among Latino DLL preschoolers in Florida Head Start programs, to what extent do approaches-to-learning behaviors moderate the relationship between classroom quality and preschoolers' early academic skills? In order to answer the second research question, a series of mixed linear models were conducted to determine if there is a moderating relationship between the classroom quality, approaches-to-learning behaviors, and the early

academic skills of Latino DLL preschoolers enrolled in Florida Head Start programs. Four multilevel models, one for each early academic skill outcome (i.e., English Literacy Skills, English Numeracy Skills, Spanish Literacy Skills and Spanish Numeracy Skills), were conducted and the results are reported in Tables 5 to 8. The scores of the Classroom Emotional Support, Classroom Organization, Classroom Instructional Support, Attention/Persistence Learning Behavior, Competence Motivation Learning Behavior, and Learning Strategy Behavior domains were grand mean centered. The assumptions underlying multilevel regression are linearity, normality, and homoscedasticity. These assumptions were checked by reviewing the residuals.

Assumptions of Normality and Homoscedasticity. Visual analyses of the scatter plots and histograms of the residuals indicated that there was no consequential violation of the homoscedasticity and normality assumptions underlying multilevel regressions. Visual analyses of the boxplots of the residuals indicated that there was not a substantial violation of the normality assumption for the English Literacy Skills, English Numeracy Skills, and Spanish Literacy Skills models. The boxplots indicate that there is some non-normality in the distribution of the residuals across classrooms for the Spanish Numeracy Skills model. However, the present study is primarily concerned with the fixed effects and for the fixed effects multilevel modeling is robust to violations of the normality assumption (Maas & Hox, 2004).

Conditional Models. The conditional models predicting early academic skills in English and Spanish included the approaches-to-learning and classroom quality domain variables. Level one is the child level (i.e., early academic skills and approaches-to-learning behavior domains) and level two is the class level (i.e., classroom quality domain scores). For each dependent variable, the Model 3 equations are:

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j}\text{attention} + \beta_{2j}\text{motivation} + \beta_{3j}\text{attitude} + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}\text{emotion} + \gamma_{02}\text{organization} + \gamma_{03}\text{instruction} + r_{0j}$

$\beta_{1j} = \gamma_{10} + \gamma_{11}\text{emotion} + \gamma_{12}\text{organization} + \gamma_{13}\text{instruction} + r_{1j}$

$\beta_{2j} = \gamma_{20} + \gamma_{21}\text{emotion} + \gamma_{22}\text{organization} + \gamma_{23}\text{instruction} + r_{2j}$

$\beta_{3j} = \gamma_{30} + \gamma_{31}\text{emotion} + \gamma_{32}\text{organization} + \gamma_{33}\text{instruction} + r_{3j}$

Results of the mixed linear models for research question 2 (i.e., Model 3) are presented in Tables 5 through 8, within the columns for Model 3. The English Literacy Skills model yielded statistically significant main effects for Classroom Emotional Support (β= -6.06, t(46.3) = -3.03, p = .004) and Attention/Persistence Learning Behaviors (β= 10.04, t(189.9) = 2.16, p = .032). These findings suggest that Classroom Emotional Support and Attention/Persistence Learning Behaviors may independently predict early English Literacy Skills. The Classroom Emotional Support score had a negative effect on early English Literacy Skills with a coefficient value of -6.06, suggesting that for every unit increase of Classroom Emotional support, the child's predicted English Literacy Skills score will decrease by 6.06. The child's Attention/Persistence Learning Behavior score had a positive effect on English Literacy Skills with a coefficient value of 10.04, suggesting that for every unit increase of a child's Attention/Persistence Learning Behaviors, the child's predicted English Literacy Skills score will increase by 10.04. This model did not yield any statistically significant interaction effects, suggesting that approaches-to-learning behaviors do not moderate the relationship between classroom quality and the early academic skills of Latino DLLs enrolled in Florida Head Start programs.

The model for the English Numeracy Skills yielded statistically significant main effects for Competence Motivation Learning Behaviors, β= 12.02, t(165.4) = 2.22, p = .027. This finding suggests that Competence Motivation Learning Behaviors may independently predict English

Numeracy Skills. The child's Competence Motivation Learning Behaviors score had a positive effect on English Numeracy Skills with a coefficient value of 12.02, suggesting that for every unit increase of Competence Motivation Learning Behaviors, the child's predicted English Numeracy Skills score will increase by 12.02. This model did not yield any statistically significant interaction effects, suggesting that approaches-to-learning behaviors do not moderate the relationship between classroom quality and the early academic skills of Latino DLLs enrolled in Florida Head Start programs. None of the other models were statistically significant for main or interaction effects, suggesting that none of the other domains of classroom quality and approaches-to-learning behaviors make unique contributions to the prediction of the early academic skills of Latino DLLs enrolled in Florida Head Start programs. The trend in the data indicates that there may be an underpowered association between Spanish Literacy Skills and approaches-to-learning (i.e., Attention/Persistence Learning Behaviors and Learning Strategy Behaviors).

Chapter 5: Discussion

Overview

Previous research suggests that early academic skills upon entering Kindergarten are predictive of later academic success (Duncan et al., 2007; Quirck et al., 2015) and that Latino students tend to struggle academically (Klinger & Artiles, 2003). Thus, exploration of the preschool classroom factors influencing Latino DLLs' development of early academic skills is necessary. The current study investigated the relationship between classroom quality, approaches-to-learning, and early academic skills of Latino DLLs enrolled in Florida Head Start centers. The study was guided by two research questions. The first research question addressed the extent to which classroom quality is related to the early academic skills of Latino DLL preschoolers in Florida Head Start programs. In response to the first research question, the results indicated that there is a negative association between the level of Classroom Emotional Support and DLL students' early English Literacy Skills. Furthermore, the results indicated that there is not a significant relationship between the Classroom Organization and Classroom Instructional Support domains of classroom quality and any early academic skills of Latino DLLs.

The second research question examined the extent to which approaches-to-learning behaviors moderate the relationship between classroom quality and the early academic skills of Latino DLL preschoolers enrolled in Florida Head Start programs. In response to the second research question, approaches-to-learning behaviors did not moderate the relationship between classroom quality and early academic skills of Latino DLLs enrolled in Florida Head Start programs. However, the moderating effects of Learning Strategy Behaviors on the relationship

between Classroom Organization and early Spanish Numeracy Skills was reaching conventional levels of significance. Rather than functioning as a moderator, types of approaches-to-learning behaviors emerged as promotive factors, in other words a main effect whereby higher levels of Attention/Persistence and Competence Motivation Learning Behaviors co-occurred with higher English Literacy and English Numeracy Skills, respectively.

Although the findings discussed below did not align with the questions, there are other findings that have important implications for the field. For example, the results of the multilevel model indicated a significant relationship between Attention/Persistence Learning Behaviors and early English Literacy Skills. The results also indicated that there is a significant relationship between Competence Motivation Learning Behaviors and early English Numeracy Skills. Furthermore, although none of the classroom quality or approaches-to-learning variables significantly predicted early Spanish Literacy and Numeracy Skills, the trend in the data indicates that there may be an underpowered association between Spanish Literacy Skills and Attention/Persistence and Learning Strategy Behaviors, as these associations were reaching conventional levels of significance. The following section will highlight these findings. This chapter contains a summary of the study findings, as well as, a discussion on the study limitations, implications for educators, and directions for future research.

Factors Associated with Early Academic Skills of Latino DLLs

Classroom Quality

There are two main findings regarding the relationship between classroom quality and the early academic skills of Latino DLLs. First, a teacher's observed emotional support as measured by the CLASS independently negatively predicted early English literacy skills. These findings support the findings of Partika et al. (2019) who also documented negative effects of classroom emotional support measured by the CLASS on the English literacy skills of DLLs. It unclear why

the current study found an inverse association between DLLs' early English Literacy Skills and a teacher's observed emotional support. It may be that the negative relationship between CLASS Emotional Support scores and early English Literacy Skills is picking up on something different than what this domain intended to measure. The CLASS Emotional Support domain intends to measure teacher sensitivity toward students by observing the teacher's awareness and anticipation of challenges that students face, how the teacher provides acknowledgement, comfort, assistance, or individualized support to the emotional student, and how the teacher addresses challenges that the student is facing. This domain also measures the students' comfort in participating in class activities and seeking support from the teacher (Pianta, La Paro, & Hamre, 2008). It may be that classrooms with a higher number of students with socio-emotional and behavioral needs require teachers to provide more emotional support, therefore, limiting instructional time. There is strong evidence that the disruptive behaviors of other children influence the learning environment of their classmates (e.g., Miles & Stipek, 2006), as well as, a teacher's stress level (Hopman et al., 2018), both which may influence a DLL's exposure to the English language. Furthermore, this finding may be influenced by the fact that the CLASS does not measure culturally-relevant emotional support. Teacher practices that are emotionally supportive for DLLs may be different than those which are supportive for their monolingual peers. For example, Zepeda (2015) posits that a teacher's comprehension and use of a DLL's home language influences the teacher's ability to recognize and be responsive toward the emotional needs of the DLL child.

Second, findings from the current study are not consistent with the body of research that documents positive effects of classroom quality on early academic skills of low-income children (e.g., Downer et al., 2012). The present study found no association between the early academic skills of preschool Latino DLLs and the classroom organization and instructional support aspects of classroom quality measured by the CLASS. However, the current findings add to the body of

literature that has not found significant positive effects of classroom quality as measured by global measures of classroom quality (e.g., CLASS, ECERS-R) on the early academic skills of Latino DLLs and low-income children enrolled in Head Start (e.g., Bustamante & Hindman, 2019; Meng, 2015a). Global measures of classroom quality may not capture teacher practices and student-teacher interactions specifically relevant for DLLs. Zepeda (2015) posits that cultural differences in values, understanding of appropriate behaviors, and language comprehension and use between preschool teachers and their DLL students influence teacher practices, student behaviors, and CLASS observer interpretation of the classroom environment, all which put into question the validity of using the CLASS with DLL populations. Rothstein-Fisch and Trumbull (2008) summarize research that shows that students living in collectivistic families, such as many Latino DLLs in the U.S., value cooperation, helping, modesty, group success, and sharing over individual achievement, independence, and task orientation. For example, Raeff, Greenfield, and Quiroz (2000) found that when given a scenario of two students (one sick and one healthy), who have each been given a classroom chore at the end of the school day, teachers and Latino immigrant parents disagreed on how the healthy student should respond to the sick student's request for help. Whereas teachers indicated that the healthy student should prioritize the completion of his or her task first, Latino parents believed that the healthy student should prioritize helping their classmate even at the expense of not completing their own required task. A teacher's awareness of, sensitivity to, and responsiveness to a DLL's cultural norms and linguistic needs influence a DLL's classroom experience, but these aspects of classroom quality are not measured by the CLASS (Zepeda, 2015). A further discussion of these findings is found in the implication section below.

Approaches-to-Learning

There are two main findings regarding the relationship between DLLs' approaches-to-learning and early academic skills. First, certain approaches-to-learning behaviors independently

predicted early English Literacy and Numeracy Skills. These results support the evidence in the literature that preschoolers' approaches-to-learning behaviors predict early English Literacy and English Numeracy Skills (e.g., Vitiello & Greenfield, 2017; McWayne et al., 2004; Bustamante & Hindman, 2019). Specifically, Bustamante and Hindman (2019) found that a child's approaches-to-learning behaviors had moderate effects on the early English literacy and numeracy abilities of preschoolers in Head Start from various racial and ethnic backgrounds. The current study found that a DLL's attention and persistence behaviors in school activities positively predicted his or her early English literacy skills, regardless of the level of classroom quality. It is possible that DLLs with higher attention and persistence behaviors at school are better able to capitalize on learning opportunities in the classroom to make greater form-meaning connections in English, allowing them to acquire stronger English language skills than those of their Latino DLL peers who do not engage in attention and persistence behaviors as often. Furthermore, the current study found that Competence Motivation Learning Behaviors positively predicted early English Numeracy Skills, regardless of the level of classroom quality. It is possible that DLLs with higher motivation to become competent at math are better able to capitalize on learning opportunities in the classroom, allowing them to develop early numeracy skills. This study provides further evidence that approaches-to-learning behaviors predict Latino DLLs' early academic skills (e.g., Bustamante & Hindman, 2018; Galindo & Fuller, 2010). In fact, Galindo and Fuller (2010) found that of several domain general competencies (i.e., approaches-to-learning, self-control, interpersonal skills, and internal and external behavior), approaches-to-learning scores were the strongest predictor of growth in Latino students' early numeracy scores. Furthermore, Han (2010) found that bilingual Latino students had stronger approaches-to-learning skills compared to Latino and non-Latino monolingual students. Researchers have argued that using a strengths-based model, approaches-to-learning behaviors of Latino students could be used to bridge the early academic skill gap that

Latino DLLs face (e.g., Han, 2010, Bustamante & Hindman, 2018; Galindo & Fuller, 2010). The implication section below includes a discussion of the current study's findings of approaches-to-learning behaviors as promotive factors for DLL children.

Second, this study found that there were no moderation effects of approaches-to-learning on the relationship between classroom quality and DLLs' early academic skills. The current findings do not add to the body of literature that documents that approaches-to-learning behaviors serve as a protective factor for Head Start students in low-quality classrooms (Meng, 2015a; Bustamante & Hindman, 2019). Within the current study, the moderating effects of Learning Strategy Behaviors approached significance for early English Numeracy Skills, so it may be that a greater sample size is needed to identify the possible protective effects of Learning Strategy Behaviors on the early English Numeracy Skills of DLLs in low-quality classrooms. These findings are further discussed in the implication section below.

Limitations

Given that the significance of some effects were in the range of .05 to .10, trending toward conventional levels of significance, it may be that a larger sample size would have enough power to answer the second research question. A second limitation is that there was not a comparison group. Because this sample is limited to low-income Spanish-speaking DLLs in Florida Head Start programs, the findings may only be generalizable to low-income preschool Latino DLL enrolled in Head Start or similar programs in Florida. Furthermore, the findings may not be generalizable to other DLLs in Florida or other states. Given that the sample was recruited from five counties in Florida, the findings may not be representative of all DLLs enrolled in Florida Head Start programs. A third limitation is that the CLASS measure used in the present study does not appear to measure the classroom quality factors important for DLLs. It can also be concluded that the results may not be representative of Latino children who do not speak Spanish or are from middle

to upper class families. Despite these limitations, the current study has implications for educators and researchers regarding the influence of classroom quality and approaches-to-learning on the early academic skills of Latino DLLs. The following section summarizes the practice and research implications in light of the current study's findings.

Implications and Future Directions

Implications for Educators

The findings for the current study are relevant for preventative and early intervention practices of educational stakeholders. ECE teachers and administrators should use evidence-based practices when working with DLLs to support their development (see Castro et al., 2011). For example, bilingualism should be encouraged and supported in DLL development as bilingualism has many benefits for bilingual individuals, as well, as society as a whole. Additionally, Rolstad et al. (2005) found that dual language educational programs are more effective at developing a DLL's English literacy skills than are English-only programs. The National Academies of Sciences, Engineering, and Medicine (2017) recommend that DLLs participate in dual language education programs instead of English-only school programs. However, access to bilingual programs is limited as the majority of ECE programs in the U.S. are English-only. Therefore, this section will discuss three practical implications based on the results of the current study that can be implemented in dual language or English-only ECE programs (i.e., culturally responsive teaching practices, positive classroom environment, and supporting domain-general skills).

Culturally responsive teaching practices. Given that traditional measures of classroom quality may not capture teacher practices and student-teacher interactions specifically relevant for DLLs, the ECE practices important for linguistically and culturally diverse students are different than those that are important for monolingual English-speakers in the US. Therefore, ECE classrooms should specifically seek to understand more about the cultural aspects of DLL students

and their families, as well as, implement culturally-responsive practices when engaging in curriculum development and behavior management techniques. Since research has shown that DLLs use language and academic skills in their home language to acquire language and academic skills in English (see Cummins, 2008), teachers could create learning opportunities for DLLs in their home language(s). Overall, teachers should include the features of quality ECE practices (see Table 1) reviewed by Castro et al. (2011) in their classrooms. For example, teachers should seek to learn about the language(s) that their students speak at home in order to use some of these words in their classrooms. Given that the current study found that observed emotional support negatively predicted Latino DLLs' early English literacy skills and the emotionally supportive teacher practices for DLLs may be different than those which are supportive for their monolingual peers, a discussion of cultural considerations regarding a teacher's sensitivity to and regard for DLL students' perspective follows.

According to Pianta, La Paro, and Hamre (2007), an emotionally supportive classroom includes fostering a positive climate as well as, a teacher's sensitivity and regard for student perspectives. This section will discuss implications regarding cultural influences regarding a teacher's sensitivity to and regard for Latino DLL student perspectives. Implications regarding positive climate are discussed in detail in the following section. According to the CLASS Manual, the emotional support domain measures the teacher's awareness and anticipation of challenges that students face, how the teacher provides acknowledgement, comfort, assistance, or individualized support to the emotional student, and how the teacher addresses challenges that the student is facing (Pianta, La Paro, & Hamre, 2008). Zepeda (2015) argues that teachers' cultural and linguistic backgrounds influence a teacher's ability to recognize and be responsive toward the emotional needs of the DLL child. The emotional support domain also measures the students' comfort in seeking support from the teacher and participating in class activities (Pianta, La Paro,

& Hamre, 2008). When the observer is measuring a child seeking support from the teacher, Zepeda (2015) explains that a "child's response is dependent on the teacher's ability to respond to child cues. If the teacher does not have the language cultural match or does not understand the cultural cue, then it will [be] more difficult to interpret child's behavior" (p. 12). Therefore, teachers should be aware that school behaviors and expectations are highly influenced by culture.

Positive classroom environment. The current study found that DLLs in classrooms with teachers who engaged in a greater amount or intensity of emotionally supportive behaviors had greater challenges in their English literacy skills than DLLs in classrooms that do not require these teacher behaviors. As a result, ECE teachers should receive support in preventing situations that would require such strong emotional support from them. Hemmeter, Ostroksy, and Corso (2012) found that ECE teachers become overwhelmed, concerned, and frustrated about classroom management when there are high levels of emotional outbursts or behavior disruptions in their classrooms. There is robust evidence that the use of Positive Behavior Intervention and Supports (PBIS) creates a more positive classroom environment and lowers the rate of problem behaviors in the classroom, therefore increasing children's opportunities for learning (Hemmeter, Fox, Jack, & Broyles, 2007; Blair et al., 2010). Classrooms that use PBIS strategies tend to have behavioral expectations clearly explained and reinforced. For example, a preschool classroom may have a visual schedule of the morning routine posted at the children's eye level, preventing difficulties in morning transitions.

Encouraging domain general learning skills and beliefs. The current study found that certain domain-general non-cognitive skills— particularly Attention/Persistence and Competence Motivation Learning Behaviors— are assets or promotive factors for Latino DLL's development of early English academic skills. Early childhood is an optimal time for teaching domain-general non-cognitive skills, such as approaches-to-learning, that have a positive outcome on child

development (García, 2014). Therefore, teachers should encourage and facilitate domain-general approaches-to-learning skills to help Latino DLLs to succeed academically. There is a growing body of research that demonstrates that intrinsic learning variables impact an individual's Competence Motivation (Dweck & Molden, 2005; Yeager, & Dweck, 2012) and Attention/Persistence, such as grit and effort when facing new or difficult learning tasks (e.g., Mrazek, Ihm, Molden, Mrazek, Zedelius, & Schooler, 2018; Duckworth, 2013). Teachers can use naturally occurring situations in the classroom environment to model and teach these domain-general learning skills. For example, teachers can verbalize their thoughts when they encounter information that contradicts their previous beliefs. A discussion on how educators can support and encourage Attention/Persistence and Competence Motivation Learning Behaviors follows.

Developing Attention/Persistence Learning Behaviors. The current study found that Attention/Persistence Learning Behaviors (e.g., settling easily into new activities, demonstrating grit when working on difficult tasks, paying attention when the teacher is speaking, seeking help when needed, taking sufficient time to complete a difficult task, and not being easily distracted) influence Latino DLLs' acquisition of English Literacy Skills. Research has found that persistence and grit have positive impacts on an individual's academic achievement (Jiang, Xiao, Liu, Guo, Jiang, & Du, 2019; Duckworth, 2013). Regarding DLLs, O'Neal, Goldthrite, Weston Riley, and Atapattu (2018) examined the role of grit on the literacy skills of 142 diverse students with limited English proficiency in grades 3-5. The participants included DLL speakers of various languages, including Spanish (63%). O'Neal and colleagues (2018) found that the students' grit significantly predicted their English Literacy Skills. Given these findings and the unique challenges that DLLs face in the U.S. educational system, teachers should encourage and praise grit and persistence in their DLL students.

Research has also found that individuals with a growth mindset— the belief that intelligence and abilities are malleable and can be developed by an individual's efforts— tend to persist more when engaging in difficult learning activities and have better overall outcomes, including higher GPAs and college enrollment rates (Yeager et al., 2016; Paunesku et al., 2015). Therefore, teachers and schools should implement growth mindset interventions into their curricula. Teachers should label and praise behaviors such as paying attention, demonstrating determination when working on a task, focusing on a task, and persisting when facing a challenge. Teachers should model their own flexible thinking and use of procedures when completing a task by verbalizing their thought process (e.g., "When that didn't work, I decided to try a different way to organize the items in my box so I..."). Additionally, because DLLs require a greater amount of support in an English-only classroom than their monolingual English-speaking peers may need, teachers should also model, encourage, and reinforce appropriate help-seeking behaviors so that DLLS engaged in tasks that they do not yet know how to do or concepts that they do not yet understand can receive teacher support when needed.

Developing Competence Motivation Learning Behaviors. The current study found that Competence Motivation Learning Behaviors (e.g., interest in new activities, approaching new tasks without hesitation or fear, demonstrating willingness to attempt a new or difficult task, demonstrating determination to finish a task) are promotive factors for Latino DLLs' development of early English Numeracy skills. Research has found that students who are intrinsically motivated to learn and gain competence in new skills have greater positive academic, social, and health outcomes than their less motivated peers (see Pintrich & Schunk, 2002). Given that Competence Motivation Learning Behaviors predicted early English Numeracy Skills, teachers should label and praise students' efforts at learning about new concepts and or attempting new or difficult skills. Furthermore, teachers should encourage students to become learning-oriented rather than

performance-oriented in order to increase their Competence Motivation Learning Behaviors (Elliott & Dweck, 1988). Learning-oriented individuals are said to have a growth mindset. Therefore, teachers should help their students develop a growth mindset in order to help them increase their motivation to become competent in a new or difficult learning activity. Furthermore, when a teacher notices that a child is having a difficult time with a task, such fitting a shape piece into a puzzle, he or she should observe the student and allow the student to take their time in completing the task, allowing the student to ask for help if needed. Doing so may demonstrate the teacher's confidence in a student's ability to accomplish a difficult task.

Implications for Researchers

The findings for the current study are also relevant for researchers. Many studies of DLLs and Latino students living in poverty focus on the deficits and challenges that these students experience. Strengths-based research is needed in order to understand and identify protective factors found in Latino DLL development. In this section, the study's implications for research and future directions are discussed regarding classroom quality and approaches-to-learning.

Classroom quality. The current study found that DLLs in classrooms with teachers who engaged in higher emotional support had greater challenges acquiring English literacy skills than DLLs in classrooms with teachers who did not engage in these behaviors. This author is not aware of any published studies that examine the relationship between classroom emotional support and DLL academic outcomes. Research is needed to understand the factors that may influence the relationship between a classroom with too much emotional support and the declining English literacy outcomes of Latino DLLs. Furthermore, the current study found no association between the early academic skills of preschool Latino DLLs and the classroom organization and instructional support aspects of general classroom quality features measured by the CLASS. The need for more research on the relationship between classroom quality and early academic skills of

Latino DLLs is markedly needed. Given that DLLs' development is highly influenced by cultural variables within their environment and that measures of general features of the classroom may not be able to capture these variables (White, 2018; Figueras-Daniel, 2018; Oliva-Olson & Fernandez, 2018; Zepeda, 2015), the following section reviews cultural implications for measuring classroom quality in DLL research.

Cultural Considerations for DLLs. The current study provides evidence that the general measures of classroom quality may not accurately capture classroom quality factors important for DLLs. Therefore, researchers using global classroom quality measures (e.g., CLASS) for classrooms with DLLs should be aware that their results may not reflect the true state of classroom quality for these students. Vitiello (2012) indicates that the CLASS can be used for all students, including DLLs. However, the manual and Teachstone training procedures do not delineate considerations that the examiner must make in order to be culturally sensitive. Because the manual and Teachstone training procedures do not address the cultural differences in values, beliefs, and behaviors of children with culturally or linguistically diverse backgrounds, an observer may not be able to code the teacher and child interactions correctly (Zepeda, 2015). For example, the examiner's comprehension and use of a DLL's home language influences the assessment procedures using the CLASS. Therefore, researchers should be mindful when using the CLASS.

Currently, the CLASS is being used nationwide to assess the quality of Head Start classrooms (Office of Head Start, 2016). However, there is a growing body of research that indicates that the CLASS may not be a good measure to use for DLLs (e.g., Partika et al., 2019; White, 2018; Figueras-Daniel, 2018; Oliva-Olson & Fernandez, 2018; Lopez, Arango, & Ferron, 2012). Because classroom quality may not have been accurately measured for this sample, a replication of this study using a culturally sensitive classroom quality tool is needed to further understand the relationship between classroom quality, approaches-to-learning, and early

academic skills of Latino DLLs. Furthermore, more research is needed to clearly identify the aspects of ECE quality that impact the learning of linguistically and culturally diverse children. The following section reviews the development of a measure of classroom quality that takes into account linguistic and cultural factors of the classroom environment.

Based on research on DLL development, Freedson, Figueras, and Frede (2009) argue that classroom quality factors important for DLLs' language, cognitive, and social development include a teacher's interactions with DLLs, culturally inclusive teaching practices, use of appropriate curriculum content, supports for home and English language acquisition, classroom management skills, and supports for social-emotional development. These specific process quality factors are measured by an unpublished tool called the Classroom Assessment of Supports for Emergent Bilingual Acquisition (CASEBA; Freedson, Figueras & Frede, 2009). Using the 26-item CASEBA, trained observers measure the quality of a teacher's language and literacy supports offered to their DLL students (Castro, Espinosa & Paez, 2011). Figueras-Daniel (2018) indicated that the CASEBA was sensitive to growth in classroom quality factors targeted by an intervention for teacher's working with DLLs that the global measure ECERS-R did not detect. Future research should use a measure of classroom quality that is sensitive to the cultural and linguistic factors that influence a DLL's school readiness.

Approaches-to-learning. The current study adds to the body of research that has found that approaches-to-learning behaviors independently predict preschoolers' early academic skills in English. Research on interventions that can help DLLs grow in or capitalize on their approaches-to-learning skills is needed. To the present author's knowledge, no other study has examined the role that classroom quality and approaches-to-learning behaviors play in the early academic skills of low-income Latino DLLs in preschool. Therefore, future studies should further explore the roles of classroom quality and approaches-to-learning behaviors of Latino DLLs in preschool, using a

culturally sensitive measure of classroom quality. Given that approaches-to-learning behaviors may be unique strengths of Latino DLLs (Han, 2010, Bustamante & Hindman, 2018; Galindo & Fuller, 2010), further exploration of the possible protective role of approaches-to-learning behaviors on DLL school readiness development is warranted. Future validation of the PLBS tool with a Latino population is warranted.

Conclusion

Latino students begin kindergarten significantly behind their non-Latino peers in English academic skills (Páez, Tabors, & López, 2007). However, research on the factors that influence the school readiness of low-income Latino DLLs is limited. The largest intervention targeted at bridging this gap for low-income Latino students has been a push for enrollment in ECE programs (Puma et al., 2010). While ECE programs have positive benefits on the outcomes of low-income students (Love et al., 2002), the gap for Latino students continues widening throughout their K-12 education. The current study aimed to examine the effects of classroom quality and approaches-to-learning behaviors on the early academic skills of Latino DLLs enrolled in Florida Head Start programs. Regarding classroom quality, the results of the current study did not add to studies in the body of literature that have found positive effects of global aspects of classroom quality. It appears that Latino DLLs have different needs in the classroom environment that are not captured by global measures of classroom quality. Regarding approaches-to-learning, Attention/Persistence Learning Behaviors independently predicted early English Literacy Skills and Competence Motivation Learning Behaviors independently predicted early English Numeracy Skills. Research is needed to better understand the classroom and child variables that influence a DLL's academic, cognitive, socio-emotional, and linguistic development using a strengths-based and culturally-responsive approach.

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Appendices

Appendix A

Information on Classroom Quality Measure

- Classroom Assessment Scoring System Pre-kindergarten (CLASS Pre-K; Pianta, La Paro, & Hamre, 2007) assesses the classroom environment in terms of three major domains of classroom quality: Emotional Support, Classroom Organization, and Instructional Support (see Table 9). Each of the domains is comprised of three to four dimensions.
- Composite domain scores: the average of the dimension scores for each domain (i.e., Emotional Support, Classroom Organization, and Instructional support), which were used for data analyses.
- Coding is conducted by a trained observer in 30-minute cycles for a minimum of four cycles (i.e., two hours).
- Items are rated on a 7-point Likert scale ranging from Low (1 - 2) to Middle (3 - 5) to High (6 - 7).

Appendix B

Information on the Preschool Learning Behaviors Scale (PLBS) Measure

- Teachers report the children's learning behaviors during the last two months using a three-point Likert scale with 29 items (i.e., most often applies, sometimes applies, or doesn't apply).
- This thesis used the domains standardized for Head Start children (see Table 10).
    - Competence Motivation dimension has 12 items
    - Attention/Persistence dimension has 12 items
    - Learning Strategy dimension has 8 items

Appendix C

Initial University of South Florida IRB Study Approval Letter

USF
UNIVERSITY OF
SOUTH FLORIDA

February 12, 2008

Lisa Lopez, PhD
Department of Psychological & Social Foundations
EDU 162

RE: **Expedited Approval** for Initial Review
IRB#: 106542 G
Title: *Florida English Language Learners Attending Head Start (FELLA-HS): A Cultural and Academic Analysis*
Study Approval Period: 02/08/2008 to 02/06/2009

Dear Dr. Lopez:

On February 8, 2008, Institutional Review Board (IRB) reviewed and **APPROVED** the above protocol **for the period indicated above.** It was the determination of the IRB that your study qualified for expedited review based on the federal expedited category number six (6): Collection of data from voice, video, digital, or image recordings made for research purposes.

Also approved under federal expedited category number seven (7): Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Also approved are the 3 Informed Consent forms: Parent, Spanish translation for Parent, and Teacher.

Please note, if applicable, the **enclosed informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on page one of the form.** Valid consent must be documented on a copy of the most recently IRB-approved consent form. Make copies from the enclosed original.

Please reference the above IRB protocol number in all correspondence regarding this protocol with the IRB or the Division of Research Integrity and Compliance. In addition, we have enclosed an Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities in the conduction of human participant research. Please read this guide carefully. It is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB.

OFFICE OF RESEARCH • DIVISION OF RESEARCH INTEGRITY & COMPLIANCE
INSTITUTIONAL REVIEW BOARDS, FWA NO. 00001669
University of South Florida • 12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • Fax (813) 974-5618

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Paul G. Stiles, J.D., Ph.D., Chairperson
USF Institutional Review Board

Enclosures: (If applicable) IRB-Approved, Stamped Informed Consent/Assent Documents(s)
IRB Quick Reference Guide

Cc: cd/Various Menzel, USF IRB Professional Staff

SB-IRB-Approved-EXPEDITED-0601

Appendix D

Tables

Table 1. *Features of quality ECE practices (Castro et al., 2011, p. 270)*

Feature
1. Classroom and family care environments that incorporate the cultures and languages of the children enrolled (e.g., print, books, posters, pictures, stories that reflect the languages and cultures of the children)
2. Educators and related staff who are fluent in the children's primary languages and familiar with the family cultural beliefs, practices, and values
3. Educators and related staff who are knowledgeable about first and second language development and instructional practices that promote both maintenance of home language and English acquisition
4. Amount and type of support for primary language development
5. The quantity and quality of language interactions (e.g., language of interaction, educator responsiveness to child language initiation, richness and context of interactions)
6. Amount and nature of explicit instruction in English language acquisition (e.g., targeted vocabulary instruction; storybook reading; use of cues, props, and gestures; scaffolding of existing knowledge for DLLs)
7. Educators' ability to adapt level of English instruction according to knowledge of child's stage of English acquisition
8. Opportunities and support for DLLs to communicate in their home language
9. Positive educator–child interactions that support the social-emotional development of children who are DLLs
10. Arrangements for small-group and individualized instruction
11. Active teacher support for peer social interactions
12. Appropriate and multidimensional assessments (e.g., observations, direct child assessments, family reports) conducted frequently in the home language and English
13. Educators' knowledge of each child's early language learning background (e.g., first language spoken to child, by whom, extent of English exposure and usage)
14. Linguistically and culturally appropriate outreach to, and engagement of, families

Table 2. *Summary of CLASS Domains and Dimensions (Pianta, La Paro, & Hamre, 2007)*

Domain 1: Emotional Support	Domain 2: Classroom Organization	Domain 4: Instructional Support
Positive Climate	Behavior Management	Concept Development
Negative Climate	Productivity	Quality of Feedback
Teacher Sensitivity	Instructional Learning Formats	Language Modeling
Regard for Student Perspectives		

Table 3. *Descriptive Statistics of Variables*

Variable	N Students	M	SD	Skewness	Kurtosis
English Literacy Skills	272	97.69	12.38	- 0.60	0.76
English Numeracy Skills	272	92.51	13.91	-0.59	0.83
Spanish Literacy Skills	301	90.05	11.62	0.27	-0.49
Spanish Numeracy Skills	301	90.37	14.05	-0.92	02.10
Classroom Emotional Support	294	5.59	.87	-0.62	0.58
Classroom Organization	294	5.40	1.06	-0.67	-0.06
Classroom Instructional Support	294	3.25	1.44	0.51	-0.94
Competence Motivation Learning Behaviors	355	1.59	.32	-0.65	-0.37
Attention/Persistence Learning Behaviors	355	1.62	.34	-0.84	-0.15
Learning Strategy Behaviors	355	1.48	.32	-0.45	-0.04

Table 4. *Correlations Between the Variables*

Variable	1	2	3	4	5	6	7	8	9
1.English Literacy Skills	--								
2. English Numeracy Skills	.471**	--							
3. Spanish Literacy Skills	.347**	.273**	--						
4. Spanish Numeracy Skills	.283**	.361**	.472**	--					
5. Classroom Emotional Support	-.197**	-.090	-.052	-.002	--				
6. Classroom Organization	.018	-.083	.018	.030	.668**	--			
7. Classroom Instructional Support	.056	-.047	.053	.034	.492**	.708**	--		
8. Competence Motivation Learning Behaviors	.167**	.091	.115	.175**	.057	.216**	.250**	--	
9. Attention/Persistence Learning Behaviors	.177*	.033	.135*	.183**	.087	.236**	.237**	.729*	--
10. Learning Strategy Behaviors	.116	-.062	-.011	.004	.014	.246**	.179**	.479**	.473**

Note: *$p < .05$, **$p < .01$, ***$p < .001$. Sample sizes ranged from 294 to 355.

Table 5. *Mixed Linear Models for English Literacy Skills*

	Model 1 (N= 272)			Model 2 (N= 226)			Model 3 (N= 207)		
Variable	Estimate	SE	P-Value	Estimate	SE	P-Value	Estimate	SE	P-Value
Intercept	97.35	1.11	.000***	96.87	1.07	.000***	96.62	1.30	.000***
Main Effects									
Class Emotional Support				-5.45	1.68	.003**	-6.06	2.00	.004**
Class Organization				1.51	1.68	.374	1.14	1.95	.559
Class Instructional Support				1.54	1.09	.166	1.19	1.31	.367
Competence Motivation Behaviors							1.41	4.61	.761
Atten./Persistence Behaviors							10.04	4.64	.032*
Learning Strategy Behaviors							.64	3.52	.856
Interaction Effects									
Class Emotional Support X Motivation Behaviors							8.11	7.09	.254
Class Emotional Support X Atten./Persistence Behaviors							.51	8.13	.950
Class Emotional Support X Learning Strategy Behaviors							2.35	6.61	.718
Class Organization X Motivation Behaviors							-2.88	7.44	.699
Class Organization X Atten./Persistence Behaviors							-2.22	6.94	.750
Class Organization X Learning Strategy Behaviors							2.38	5.74	.678
Class Instructional Support X Motivation Behaviors							-.93	5.19	.858
Class Instructional Support X Atten./Persistence Behaviors							.04	5.02	.994
Class Instructional Support X Learning Strategy Behaviors							-.95	3.25	.770

Note: *p<.05, **p<.01, ***p<.001

Table 6. *Mixed Linear Models for English Numeracy Skills*

	Model 1 (N=272)			Model 2 (N=226)			Model 3 (N=207)		
Variable	Estimate	SE	P-Value	Estimate	SE	P-Value	Estimate	SE	P-Value
Intercept	92.71	1.13	.000***	91.42	1.23	.000***	91.65	1.39	.000***
Main Effects									
Class Emotional Support				-2.03	1.93	.299	-1.70	2.13	.430
Class Organization				-.43	1.93	.824	-.11	2.10	.957
Class Instructional Support				.61	1.25	.631	.21	1.38	.881
Competence Motivation Behaviors							12.02	5.40	.027*
Atten./Persistence Behaviors							-.09	5.50	.987
Learning Strategy Behaviors							-7.56	4.13	.069
Interaction Effects									
Class Emotional Support X Motivation Behaviors							9.54	8.36	.256
Class Emotional Support X Atten./Persistence Behaviors							-9.50	9.71	.329
Class Emotional Support X Learning Strategy Behaviors							10.21	7.75	.189
Class Organization X Motivation Behaviors							-8.15	8.72	.351
Class Organization X Atten./Persistence Behaviors							2.85	8.27	.730
Class Organization X Learning Strategy Behaviors							4.26	6.76	.529
Class Instructional Support X Motivation Behaviors							6.86	6.14	.265
Class Instructional Support X Atten./Persistence Behaviors							-4.94	5.98	.410
Class Instructional Support X Learning Strategy Behaviors							-6.65	3.84	.085

Note: *p<.05, **p<.01, ***p<.001

Table 7. *Mixed Linear Models for Spanish Literacy Skills*

	Model 1 (N= 300)			Model 2 (N= 239)			Model 3 (N=219)		
Variable	Estimate	SE	P-Value	Estimate	SE	P-Value	Estimate	SE	P-Value
Intercept	89.91	.80	.000***	90.43	.92	.000***	89.55	1.09	.000***
Main Effects									
Class Emotional Support				-1.74	1.42	.226	-2.07	1.67	.223
Class Organization				.54	1.53	.724	1.05	1.80	.563
Class Instructional Support				.61	.93	.515	.17	1.09	.875
Competence Motivation Behaviors							2.41	4.51	.594
Atten./Persistence Behaviors							7.99	4.58	.082
Learning Strategy Behaviors							-6.14	3.55	.086
Interaction Effects									
Class Emotional Support X Motivation Behaviors							4.45	7.11	.532
Class Emotional Support X Atten./Persistence Behaviors							-2.54	7.46	.734
Class Emotional Support X Learning Strategy Behaviors							-6.19	6.11	.312
Class Organization X Motivation Behaviors							-1.96	7.72	.799
Class Organization X Atten./Persistence Behaviors							.17	7.55	.982
Class Organization X Learning Strategy Behaviors							7.09	5.88	.229
Class Instructional Support X Motivation Behaviors							1.25	4.99	.802
Class Instructional Support X Atten./Persistence Behaviors							-1.37	5.04	.786
Class Instructional Support X Learning Strategy Behaviors							-.42	3.40	.901

Note: *p<.05, **p<.01, ***p<.001

Table 8. *Mixed Linear Models for Spanish Numeracy Skills*

	Model 1 (N=300)			Model 2 (N=239)			Model 3 (N=219)		
Variable	Estimate	SE	P-Value	Estimate	SE	P-Value	Estimate	SE	P-Value
Intercept	90.25	.89	.000***	90.17	1.12	.000***	89.45	1.23	.000***
Main Effects									
Class Emotional Support				-.92	1.72	.599	-.63	1.88	.742
Class Organization				.92	1.85	.620	1.08	2.03	.598
Class Instructional Support				-.12	1.13	.924	-1.00	1.21	.418
Competence Motivation Behaviors							7.48	5.14	.147
Atten./Persistence Behaviors							5.43	5.19	.297
Learning Strategy Behaviors							-5.07	4.09	.218
Interaction Effects									
Class Emotional Support X Motivation Behaviors							8.40	8.29	.313
Class Emotional Support X Atten./Persistence Behaviors							-3.62	8.58	.674
Class Emotional Support X Learning Strategy Behaviors							-6.23	7.18	.387
Class Organization X Motivation Behaviors							8.68	8.72	.321
Class Organization X Atten./Persistence Behaviors							-11.46	8.51	.179
Class Organization X Learning Strategy Behaviors							11.84	7.00	.092
Class Instructional Support X Motivation Behaviors							-1.48	5.72	.796
Class Instructional Support X Atten./Persistence Behaviors							-.14	5.78	.980
Class Instructional Support X Learning Strategy Behaviors							-3.69	3.89	.344

Note: *p<.05, **p<.01, ***p<.001

Table 9. *Overview of CLASS Domains and Dimensions (Pianta, La Paro, & Hamre, 2007)*

Domain 1: Emotional Support	Domain 2: Classroom Organization	Domain 4: Instructional Support
Positive Climate	Behavior Management	Concept Development
Relationships	Clear Behavior Expectations	Analysis and Reasoning
Positive Affect	Proactive	Creating
Positive Communication	Redirection of Misbehavior	Integration
Respect	Student Behavior	Connections to the Real World
Negative Climate	Productivity	Quality of Feedback
Negative Affect	Maximizing Learning Time	Scaffolding
Punitive Control	Routines	Feedback Loops
Sarcasm/Disrespect	Transitions	Prompting Thought Processes
Severe Negativity	Preparation	Providing Information
		Encouragement and Affirmation
Teacher Sensitivity	Instructional Learning Formats	Language Modeling
Awareness	Effective Facilitation	Frequent Conversations
Responsiveness	Variety of Modalities and Materials	Open-Ended Questions
Addresses Problems	Student Interest	Repetition and Extension
Student Comfort	Clarity of Learning Objectives	Self- and Parallel Talk
		Advanced Language
Regard for Student Perspectives		
Flexibility and Student Focus		
Support for Autonomy and Leadership		
Student Expression		
Restriction of Movement		

Table 10. *Comparison of National and Head Start Standardizations of the PLBS*

National Standardization Domains (McDermott, Leigh, & Perry, 2002)	Head Start Standardization Domains (McDermott et al., 2012)
● Competence Motivation (α =.85) ● Attention/ Persistence (α = .83) ● Attitude Towards Learning (α = .75)	● Competence Motivation (α = .86) ● Attention/ Persistence (α = .88) ● Learning Strategy (α = .76)