KEY INFLUENCES ON THE QUALITY AND OUTCOMES OF PRESCHOOL EDUCATION FOR DUAL LANGUAGE LEANERS: PROFESSIONAL DEVELOPMENT AND BILINGUAL STAFFING PATTERNS

by

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ABSTRACT OF THE DISSERTATION

Key Influences on the quality and outcomes of preschool education for dual language learners: Professional development and bilingual staffing patterns

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The rising numbers of young Hispanic children in the United States (now about 25% of those under five) poses obvious challenges in terms of meeting their particular needs for preschool education (Passel, Livingston & Cohn, 2012). Yet, education policy is only beginning to address these even with respect to language development (Castro, Garcia & Markos, 2013; Waldfogel, 2012). Some researchers have suggested that high quality early childhood education programs that incorporate home language instruction are particularly beneficial for addressing the home-school cultural divide as well as developing English language proficiency (Zepeda, Castro & Cronin, 2011). However, high quality bilingual early childhood is expensive and challenging to provide. It requires teachers who are knowledgeable about best practices for all children and for bilinguals, both of which are in short supply (Garcia, Arias, Murri, & Serna, 2010; Whitebook, 2014). Both teacher preparation and staffing patterns impact this problem.

The goals of this study were two-fold. First, through a pre/post-test design with an embedded second randomized trial of professional development, impacts of professional development regarding the education of young DLLs on practice and children's learning

were assessed. Second, the relative effectiveness of different teacher and assistant teacher bilingualism combinations on teaching practices and children were also assessed. In addition, the study presents a first look at classroom quality for DLLs using an instrument specifically designed to measure practices that are supportive of home language maintenance and English acquisition for DLLs.

Findings revealed that PD was not effective at improving classroom practices for treatment group teachers and consequently no differences in children's receptive vocabulary scores were found. Results of the second research question showed that the classroom quality scores relative to staff language configurations did matter with Spanish-speaking lead teachers earning significantly higher scores that the other staff language configuration groups of teachers. While no effects were found relative to child outcomes on tests of receptive vocabulary in English or Spanish, the implications of the study do present a springboard for policy conversations regarding the supply and demand of bilingual teachers and teacher assistants, pre-service training and professional development.

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DEDICATION

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CHAPTER 1

Introduction

The population of Hispanic children in the United States has grown from over the past two decades. Hispanics now account for about a quarter of children under the age of five and 26 percent of all births in 2011 (Passel, Livingston & Cohn, 2012). Though high quality preschool has been shown to help children make important strides before Kindergarten, for the youngest Hispanic children a complex intersection of factors often threatens progress during these early years (Figueras-Daniel & Barnett, 2013). These factors include languages other than English spoken at home, low levels of parental education, coupled with high rates of poverty (Figueras-Daniel & Barnett, 2013). Young Hispanic children with all three of these risk factors are at great risk for developing their ability to communicate and learn in English (Galindo, 2010). For preschool educators, administrators and policy makers, the rising population of children with multiple risk-factors is of critical concern and presents a need for action.

Participation in high quality preschool has been proven to be an effective intervention for young dual language learners,[1] particularly the most disadvantaged (DLLs; Gormley, 2008, Weiland & Yoshikawa, 2013). The benefits of preschool include cognitive and linguistic skills that can help children academically as well as attitudes and dispositions related to social and emotional development (Mashburn, et. al., 2008). For many DLLs and their families, preschool experiences represent the first contact with school culture and subsequently the development of a student identity. Most importantly, preschool can also mean a first exposure to English in an academic context (Bernhard,

[1] Dual language learner (DLL) will be used in this paper as it refers to preschool aged children acquiring both English and continuing development in a home language.

Cummins, Campoy, Flor Ada, Winsler & Bleiker, 2006; Fantuzzo, Perry & McDermott, 2004). Language differences among children in early childhood have been noted to explain much of the Hispanic-White achievement gap seen in elementary grades suggesting the need for English exposure as early as possible (Waldfogel, 2012).

These findings, however, do not offset research indicating that use of the home language (HL) for instruction and the incorporation of home culture are important features of effective early childhood experiences in classroom settings (Zepeda, Castro & Cronin, 2011). One reason for this is that the home language (HL) contributes to acquiring a second language when the first language is securely in place (Genesee, 2010). For the most part, studies find that approaches to preschool education that combine the use of English and the HL, yield better child outcomes for DLLs than English only approaches (Burchinal, Field, Lopez, Howes & Pianta, 2012; Farver, Lonigan & Eppe, 2009; Gormley, 2008; Barnett, et al., 2007). Specifically, this research has found that not only can DLL children acquire English at rates equal to those of children instructed in English only, but they also make greater strides in developing their home language skills when instruction combines use of both languages. Unfortunately, securing adequately trained staff to work with DLLs to maximize learning gains in both languages is challenging (Maxwell, Lim & Early, 2006). Training here refers not only to teacher awareness of the benefits of HL in the classroom, but also knowledge about what strategies teaching staff can use to support HL when they do not speak the HL of one or more children in their class. All too often, pre-service teacher education programs do not provide teachers with preparation about supporting the development of a new language while maintaining a home language or about specific strategies that help with second

language acquisition (Maxwell, Lim & Early, 2006). Consequently, program administrators often must institute professional development efforts to compensate for underprepared teachers even though they have little expertise of their own to effectively draw from (Freedson, 2010). In large part, professional development, on responding to the needs of dual language learners, occurs as in-service rather than pre-service teacher training.

Despite the limitations of current teacher education offerings with respect to support for DLLs, there is consensus regarding the specific content considered most crucial in preparing teachers to work with young DLLs. Zepeda, Castro and Cronin (2011) identify 6 topics: 1) understanding language development, 2) understanding the relationship between language and culture, 3) developing skills and abilities to effectively teach DLLs, 4) developing abilities to use assessment in meaningful ways with DLLs, 5) developing a sense of professionalism, and 6) understanding how to work with families. In addition, many teacher education accrediting agencies agree that the workforce in general needs to be more diverse both culturally and linguistically (Bornfreund, 2011). To achieve this, however, sufficient course offerings focusing on pedagogical practice relevant to DLLs in teacher preparation programs are necessary. Also needed is increased recruitment of minority language speakers into programs of higher education focusing on early childhood teacher preparation.

The purpose of this study is two-fold. The first will be to evaluate the impacts of professional development regarding the education of young DLLs for teachers of DLLs in preschool. This piece of the research builds on a model of professional development that covers the six topics identified by Zepeda et al. (2011). The second, is be to

investigate the relative effectiveness of alternative staff language groups with regard to teacher and assistant teacher bilingualism, in the presence of stronger preparation regarding the education of young DLL children and its impacts on children. In addition, practices supportive of DLLs are measured using an instrument created distinctly for this purpose. The findings of the study could inform not only decisions about Pre-K program staffing but also the content of college courses and professional development targeting pedagogical practice relevant to DLLs. Moreover, the study should contribute to literature concerning linguistic/cultural "match" between teachers and preschool DLL students.

Statement of the Problem

Currently, few policy directives have addressed the educational issues faced by the increasing numbers of preschool age DLLs (Castro, Garcia & Markos, 2013). A key challenge for this group is acquiring English proficiency, which will later influence academic achievement (Waldfogel, 2012). For Pre-K children straddling the cultures of school and home for the first time, contributes to the challenge. Some researchers have suggested that high quality early childhood education programs that incorporate home language instruction are particularly beneficial (Barnett, et. al., 2007; Duran, Roseth & Hoffman, 2010; Farver, Lonigan, & Eppe, 2009; Restreppo, Castilla, Schwanenflugel, Neuharth-Prictchett, Hamilton, & Arboleda, 2010; Ryan, 2007). However, developing bilingual high quality early childhood programs requires additional resources and teacher training. Achieving this requires that all teachers, whether they are bilingual or not need to be knowledgeable about best practices for DLL children and for teachers who are bilingual, both of which given the current landscape, are in short supply (Garcia, Arias,

Murri, & Serna, 2010; Whitebook, 2014). Both teacher preparation and classroom staffing patterns, (who teachers are, their language capabilities and what they are prepared to do) impact this problem.

The contribution of both bilingual teacher and assistant teachers to the academic effectiveness of classroom settings for DLL children in classroom settings is an important topic for research. Recent policy proposals, seek to increase use of home language instruction in preschool. In their most recent proposal, Head Start, for example, has introduced a wide range of DLL focused requirements specifically focused on home language maintenance (DHHS, 2015). Additionally, Illinois requires that teachers of young DLLs be certified as bilingual or prepared in English as a Second Language (ESL) strategies. Examining the impact of the language capacity of both teachers and assistant teachers working with young DLLs and how first and second language is used during teacher-child interactions is needed to inform educational policies and practices including the fidelity of program implementation. Studies of teacher credentialing and certification for more general populations as well as burgeoning research about the need for teachers of DLLs to be intentional particularly with regard to vocabulary development raise concerns about existing teacher preparations (Hindeman & Wasik, 2015; Lopez, Scanlan & Gundrum, 2013).

In possibly the only study focusing on differences in teaching quality between lead teachers and assistant teachers, researchers found that assistant teacher performance in Head Start classrooms equaled lead teachers in domains like emotional supports and classroom organization, but lagged behind lead teacher counterparts in instructional support (Curby, Boyer, Edwards & Chavez, 2012). These findings suggest that there are

reasons to be concerned that assistants may not be as effective as lead teachers. While the Curby, et al., (2012) study offers some insight, one major limitation is that it was conducted in a Head Start with only 14 classrooms and did not focus on the bilingual competence of the teaching staff. The current study seeks to contribute to the research on both teacher and assistant teachers' roles and supports for instruction in preschool classrooms when they are the native speaker of languages spoken by children in classrooms in settings, other than Head Start.

Given the lack of robust pre-service teacher education programs with a focus on young DLLs (Bornfreund, 2011) specific attention to provisions of professional development for in-service teachers is needed as well. Through the use of a classroom observation tool specifically focused on DLL supports. Information like this can potentially contribute to the field in myriad ways. Contributions includeguiding in-practice teachers through professional development efforts, the design of college coursework in teacher preparation programs, and federal and state policies regarding standards, guidance and assessment of DLL children. These topics in addition to who constitutes the workforce for DLLs will be subsequently explained in the literature review.

Current Study

This dissertation addresses two questions pertaining to classroom practices and child outcomes relating to a professional development intervention and alternative staff language configurations based on lead or assistant teacher language abilities. A randomized control trial including a professional development intervention is used to answer the first question. The staffing questions were addressed using a quasi-

experimental approach with statistical controls to examine variations in classroom quality and learning gains associated with natural variation in staffing patterns. The questions guiding this dissertation include the following:

1) Did a professional development program focused on supporting DLL students in the preschool classroom produce:

(a) Changes in the attitudes, beliefs, and practices of teachers and assistant teachers?

(b) Greater learning gains for their students?

2) Are 3 different staff language configurations associated with:

(a) Differences in observed classroom quality?

(b) Differences in children's learning?

The three staff language configurations compared are:

(a) English speaking lead teachers with Spanish speaking assistant teachers

(b) Spanish speaking lead teachers with Spanish speaking assistants

(c) Spanish speaking lead teachers with English speaking assistants

Significance

As more is learned about the needs of DLLs in preschool, policy directives will need to be soundly based in both research and theory regarding the most effective approaches to educating young DLL children (Castro, Garcia & Markos, 2013). As noted by the Institute of Medicine and National Research Council report on the early childhood workforce (IOM, & NRC, 2015), better prepared professionals for working with young DLLs are needed. The myriad policy related levers necessary to establish national consistency and higher quality early learning experiences for our young DLLs generate

extensive demands for information on policy. Topic areas where information about DLLs is applicable include, but are not limited to: early learning standards that address DLLs, teacher competency frameworks, methods for classification of DLLs into and out of language services in elementary school, pre-service preparation curricula, licensure requirements as well as improved assessment and evaluation systems for teachers working with young children and special populations (IOM & NRC, 2015).

The results of the current study contribute to our understanding of pedagogical practice for DLLs relevant to professional development. In addition, the study could provide important information regarding staffing arrangements and teacher bilingualism, with possible implications for credentialing and certification. Scant research exists on the quality of instruction between lead and assistant teachers based on their language dominance and its impact on language development. The findings of this study can contribute to our understanding of how assistant teachers support learning and how to include assistant teachers in professional development activities such as coaching. Finally, the study seeks to add to the research on whether and language of instruction actually matters and what strategies specifically help DLL children to the greatest learning gains.

The findings of this study should be of interest to policy makers, institutions of higher education providing services to future teachers, state education administrators, teachers, teacher coaches, school leaders and researchers. In addition, through the use of very specific measures of classroom quality for young DLLs, the study should add to information about what specific supports in the classroom, including home language use, matter for DLL children. These findings may also serve to inform considerations for state

Quality Rating Improvement Systems (QRIS) to include quality benchmarks that are specific to best practices for young DLLs.

CHAPTER 2

Literature Review

Generally, this review of the literature covers four major topics. First, the theoretical frame for the current study will be presented. Second, the research on the importance of early education experiences for young Hispanic DLLs as a foundation for later school success will be presented. The third topic addresses the literature on the challenges facing preschool programs serving DLLs with respect to teacher preparation and the availability of well-prepared teachers to staff such classrooms. The final topic covers the current federal and state policies that seek to address issues of DLL preschoolers, to provide an understanding of where this study might potentially help to fill gaps in policy.

Theoretical Framework

The development of two languages in early childhood can be understood from developmental, cognitive and sociocultural perspectives. Theories from each of these perspectives often intersect especially as for preschool children language development hinges on social interactions with the adults who care for them. For Hispanic, Spanish-speaking children, there are limited opportunities for scaffolded interactions for the purpose of language development in their HL, which means that though they may be communicative in their native language, the complexity of their language often only extends as far as basic conversational skills (Hoff, 2013; Garcia, 2012). Hispanic children under age five are also the least likely to attend center-based programs and as a result spend longer periods of time at home with family, which results in delaying children exposure to English and often does not mean that home language interactions are rich

enough to form strong foundations (Lopez, 2005; Simon, Lewis, Uro, Uzzell, Palacios, & Casserly, 2011). Research suggests home language maintenance depends on the sophistication of interactions in the home, which are in part related to parental educational levels, but also to attitudes (Lopez, 2005). To further this point, though not specifically about DLLs, a study of the complexity of the importance syntactic exchange for low-income/at-risk populations found that the complexity of children's talk is highly dependent on the quality and complexity of teacher talk in the classroom (Justice, McGinty, Zucker, Cabell & Piasta, 2013).

Theories of dual language development in early childhood. For Hispanic DLLs, the English acquisition by Kindergarten is important due to the high probability of unequal academic trajectory for children who are not proficient in English by kindergarten (Galindo, 2010). Though many factors are still debated, there is consensus about the interrelationships between one language and another (Cummins, 1984) and how a first language helps with learning a second (Cummins, 1979). Moreover, researchers have found that for many children under the age of five, language learning involves the acquisition of two languages simultaneously, making bilingualism a first language (Genesee, 2006). Generally, it is important to understand the mechanics of language acquisition for DLLs younger than age 5 due to the presence of important factors that impact the acquisition of the second language (Castro, Garcia & Markos, 2013). These factors include, varying ages of exposure to English due to family structure and living arrangements, differing home languages and countries of origin, and the use of first and second languages at home (Garcia, 2012).

The acquisition of a second language has been analyzed and theorized about from various perspectives of the academy (Garcia, 2012). Taken together, all emphasize the importance of bilingual development for young DLLs for healthy identity formation as well as for future academic and professional success. This research draws from developmental and socio-cultural theories as the study relies on both theories of language interdependence but also of culturally responsive practice to adequately address the needs of young DLLs in preschool classrooms.

Bilingual first language acquisition. Distinctions between *simultaneous* bilingualism and *sequential* bilingualism hinge upon age thresholds for determining in which category the child belongs in (Genesee, 2010). Genesee (1989) argues that in early childhood the simultaneous development of two languages yields a bilingual first language (BFL) though children can differentiate between their languages as they use them contextually various ways. Moreover, Genesee (2010) also argues that while some information on the acquisition of a second language during early childhood is still unknown, there is solid evidence for some factors. Specifically these include evidence that asserts that the development of morpho-syntax among DLLs occurs early in childhood and aligns to that of monolinguals and that there is transference of properties from one language to the next (Genesee, 2010). Similarly, he agrees with researchers who have also found that the most significant difference between young DLLs and their monolingual peers is that of breadth of vocabulary in each language separately, but that DLLs fall within similar ranges as monolingual children when words in both languages (conceptual vocabulary) are considered together (Pearson & Fernandez, 1994). Genesee (2010) also claims that despite BFL acquisition, that for most children, one language is

almost always dominant and that this depends on the amount and exposure to the language. Finally, one important note of caution is that Genesee's theories come from a Canadian context in which equal importance is placed on both English and French. Though Hispanic DLLs in the U.S. may fit the definition of simultaneous by virtue of their age, it is important to recognize that English and Spanish do not possess similar status in the United States. Despite this, Genesee's theories do shed light on much of the processes that DLLs experience as they enter preschool with Spanish as a home language and seek to add English.

Tabors (2008) provides further evidence for the assertions made by Genesee and other theorists who posit that young DLLs have similar milestones to language acquisition through her ethnographic study of 15 young children learning to speak English. Through her study, Tabors defined various phases of second language acquisition, which are similar to those experienced by monolinguals who experience first language learning. Tabors' stages are home language use, when children use their home language regardless of who the listener is; nonverbal period, when children do not speak, telegraphic and formulaic use, when children begin to say words in isolation or repeat common phrases; and productive use, when children express themselves comfortably in sentences.

Language interdependence and transfer theory. Cummins' Common Underlying Proficiency (CUP) model, or *interdependence hypothesis*, (1984) asserts that the language skills of each language are housed in the same part of the brain, though each, at a surface level, manifests differently. Cummins refers to the surface level of each language as "basic interpersonal communicative skills" or BICS (1979). Proficiency of

BICS includes phonological skills and basic fluency, which he asserts are basically mastered by around age six. Cummins refers to the deeper more conceptual home of language proficiency as "cognitive academic language proficiency" (CALP) or more simply, academic language (Cummins, 1979). CALP, he argues, includes literacy and vocabulary knowledge, which continue to develop over time and even into adulthood. He further asserts that CALP of the first and second language are strongly related as they rely on a common underlying proficiency (CUP) and that there is interdependence between the languages that is transferable (Cummins, 1999). Cummins argues that the distinction between these two proficiencies is important, because there are clear differences in acquisition of each depending on amounts and source of exposure for each (Cummins, 1999).

More recent iterations of the theory further assert that within the BICS and CALP proficiencies there are particular mechanisms that foster social and academic tasks. Cummins refers to these as "context-embedded" and "context-reduced" communication (2000). According to Cummins, "context-embedded" communication requires less need for explicit explanation, while "context-reduced" communication involves a more precise explanation of a message for full understanding to occur. The theory posits that it is a mastery of context-reduced communication that facilitates success in school. Cummins further asserts that academic tasks need to be intentionally created to include opportunities for "context-reduced" (Cummins, 1984).

The theories set out by Cummins and Genesee, provide a rationale for the current study as it emphasizes native language maintenance as a feature of quality in formal early education settings. Specifically, they acknowledge the importance of home-language

maintenance for the purpose of supporting second language acquisition at school (Cummins, 2000). A second matter of importance, and also key for this study, is the emphasis on the potential development and strength of CALP or academic language in young children. In this regard, Cummin's theory emphasizes that while a common underlying proficiency can benefit learning in both languages, it must be strong in the first language (Cummins, 1979). In short, this means that the extent to which children benefit from native language as a resource for second language learning depends on the content, context and quality of inputs in their native language. Language interactions must be rich enough to foster learning deep academic concepts in the first language for future transfer to occur. The inquiry of this study in regards to staffing patterns will thus examine through a very specific lens, whether teacher and assistant teachers, given their training and credentials, can equally offer such learning experiences to young learners in a model that advocates for home language maintenance.

Socio-cultural theory. Vygotsky's socio-cultural theory grounds the study's emphasis on teacher-child interactions to advance language skills. Specifically these include the assertion that (a.) children's development is tied to social, cultural, and past experiences of children (1978) and that it (b.) identifies learning as collaborative process requiring intentional interactions initiated by adults (Vygotsky, 1986). To advance children's development and learning, the theory also asserts that teachers must know their students well enough to determine their "zone of proximal development" (ZPD). Vygtosky defined ZPD as the area between what a child can do independently and what the child can do with support or collaboration (1978). The stages of language acquisition as defined by Tabors (2008) serve as a prime lens through which to view children's ZPD.

Tabors (2008), also provides strategies to support the teacher in their scaffolding of children from one stage to the next. However, also of importance is the notion that DLLs are likely to have separate ZPDs for each of their languages. Teachers would have to be familiar with each. In line with Bruner's theory (1981), and particularly as related to language development, the teacher's role is critical and largely contingent on responses and scaffolding. For DLLs the notion of ZPD and socio-cultural theory establishes groundwork for what early childhood teachers of DLLs need to know to be able to provide the appropriate supports for language development. These include, an understanding of children's actual language proficiency skills in their home language and English, an understanding of the language demands being made of children to accomplish a task in class and the skills to support and scaffold children to the next level of proficiency (Lucas, Villegas & Freedson-Gonzalez, 2008).

Another theoretical framework to consider is that of cultural responsivity which has been defined as the teacher's "explicit knowledge about cultural diversity… including values, traditions, contributions, and relational patterns with detailed factual information about the cultural particularities of specific ethnic groups" (p. 107; Gay, 2002). This point is particularly salient for the population of Hispanic DLLs as despite a common language, other traits such as immigration status, histories, economic standings, exposure to English, home literacy practices and educational backgrounds of families vary significantly (Garcia, 2012).

Home language and culture in children's development are a prominent feature of highly supportive environments for young DLLs and so theories about cultural responsivity are particularly salient to the current landscape of early education (Tabors,

2008; Lopez, 2005). To this end, researchers highlight the importance of teachers' understanding of children's language and cultural lives and communities for responsive teaching (Garcia, 2012; Garcia, Arias, Harris-Murri & Serna, 2010). For early childhood educators practices like the use of home language for instruction, the incorporation of family and culture in classroom displays and book selection are key. In sum, the current study is grounded in the framework that acknowledges that young children can benefit most from dual language early childhood programs that equally value and develop both of children's languages. Teachers and programs need to be well prepared and intentional about the interactions, activities and materials that they provide to reach this end (Castro, Espinosa, & Paez, 2011; Zepeda, Castro, & Cronin, 2011).

For teachers of young DLLs the implications of these theories further substantiate a need for deep awareness of both child development as well as the specific knowledge relative to supporting first and second language acquisition. An additional need is for teachers to create safe spaces and warm relationships in school as children transition from home to school culture for the first time. This is particularly true when teachers may not be a cultural or linguistic match with the majority of their students (Garcia, Arias, Murri, & Serna, 2010).

The Current State of Preschool Education for Young DLL Children

Effects of high quality preschool. Research consistently finds that the benefits of high quality preschool can be particularly strong for Hispanic children (Gormley, 2008; Weiland & Yoshikawa, 2013; Pianta, Barnett, Burchinal, & Thornburg, 2009)**.** Studies of both universal and targeted preschool programs have consistently found that cognitive outcomes of attendance in high quality programs differentially impact Hispanic children.

In his study of the effects of Oklahoma's Preschool Program on Hispanic children, Gormley (2008), found that Hispanic students who came from predominantly Spanish speaking homes benefitted more from the program than did other Hispanic children and others participating, as well. Weiland and Yoshikawa (2013) found in their similar study of Boston preschool, stronger effects for Hispanic children as compared to Whites on 5 out of 12 cognitive measures including receptive vocabulary, math and executive functions. Other researchers find that though Hispanic children enter school lagging behind their White peers academically the gap can narrow over time as children learn English (Waldfogel, 2012). Both of these studies mirror findings from the Head Start Impact Study (U.S. DHHS, 2010) which also found stronger effects of Head Start by the end of Kindergarten for Hispanic participating children. Clearly, experiences in high quality preschool helps to ameliorate the achievement gap, particularly that part which is due to the lack of English proficiency. This is not to say however, that academic exposure to the home-language hinders English acquisition (Barnett, et al., 2007). I have summarized effect sizes for impacts of preschool on DLLs (and non-DLLs) by program from the studies reviewed here in Table 1 below.

Table 1.

Reported effect size of preschool program impacts on Hispanic DLLs

Reference	Program	Native English Speakers			Spanish Speakers/DLLs		
		Math	Language	Literacy	Math	Language	Literacy
Gormley (2008)	Oklahoma	0.168		0.423	0.827		1.021
Weiland & Yoshikawa (2013)	Boston						
	Black	0.460	0.360	0.680	0.700	0.500	0.880
	White	0.400	0.220	0.000			
Bloom & Weiland (2015)	Head Start	0.060	0.100	0.150	0.300	0.260	0.230

None of the preschool programs studied in the Gormley (2008), Weiland and Yoshikawa (2013) or Head Start Impacts (2010) focused on supports to children in their home language (Spanish). Instead, all three research teams attributed the positive findings for Hispanics to the presence of high quality benchmarks for preschool in each program. Examples of these included research-based curricula, highly educated teachers, increased time spent on academic content and intensive coaching. Impacts of home language use on this population will be reviewed subsequently.

Access to Preschool for DLLs. Despite the findings of important state preschool evaluations and benefits that preschool affords to young Hispanic DLLs, also known, is that Hispanic children are less likely than other groups to be enrolled in preschool programs (Isner, et.al, 2015). Child Trends reports that in 2013, black children ages three to five were enrolled in full-day programs at a rate of 39%, and white children at a rate of 25% compared to only 22 percent of Hispanic children. Of all the groups Hispanic children were the least likely to be enrolled in any program with a total of 56 percent not enrolled in any programs at all (Isner, et. al., 2015).

In an analysis of NHES 2005 data, Figueras-Daniel and Barnett (2013) offer some insights as to why participation rates for DLLs are so low. Findings of the analysis showed children from Spanish speaking homes were more likely to enroll in Head Start at a rate of 21.9% and public preschool programs at a rate of 21.4% than were English speaking children at rates of 12.2% and 18% respectively at age four. At age 3, similar patterns were found, with the exception of public programs, which are likely attributable to even fewer program offerings in public preschool for three year-olds than is for four year-olds. These findings indicate that the low participation of Hispanic DLLs in

preschool programs is due to accessibility and not anything else. In short, if the programs exist, families would participate. Furthermore, access means not only the availability of programs that are within reach of families geographically, but also of cost and affordability.

In another recent study Ansari and Lopez (2015), compared the outcomes of third grade low-income Latino children (N=11,894) who attended public school Pre-K half day programs or center-based care programs that accepted child care subsidies in Miami with the Miami School Readiness Project (MSRP). Data were analyzed at the start of Kindergarten and then again at the end of third grade using scores from Florida's standardized test. At Kindergarten entry, while all sample children who attended MSRP scored at about the national average on tests of school readiness and measures of social and behavioral skills, children who attended the public school programs scored above the national average and better than those who attended the center-based programs on both sets of measures. The report further highlights that by the end of Pre-K, 42% of public enrollees and only 20% of center-based children are deemed as "fully proficient" in English. Finally, the report also shows some higher outcomes for the children who attended the public Pre-K in third grade on the Florida standardized test. Generally, there are many limitations to this study, many of which are acknowledged by the authors. Some of these include the lack of information about who the teachers are in both of the Pre-K settings, the approach of the MSRP towards language learning, and a lack of information about the tests used to measure proficiency at the end of Pre-K. However, it does acknowledge the idea of the importance of quality and that small variations in quality can mean big differences for young DLLs even when programs are available.

Features of Quality for Young DLLs. While "high quality" for Hispanic DLLs means what it does for any group, it is not sufficient and should include use of intentional and research based supports for developing English as well as when possible, maintaining Spanish (Castro, Paez, Dickinson & Frede, 2011). Nevertheless, issues of quality regarding the inclusion of home language for instruction have long been debated in the field of English language learner instruction. Largely the question has been whether academic instruction should include home languages (bilingual models) or whether an adherence to English-only is best.

There are three general "language of instruction" models: English only, bilingual transitional and dual language (Espinosa, 2010). Home language maintenance, or the lack of it, is the objective that defines each of the models uniquely. English only (or monolingual immersion) models teach exclusively in English with limited supports in the home language. Transitional programs isolate DLL children from their English only speaking peers and offer most of the instructional day in the home language. English is provided as a second language service intermittently with the ultimate goal of transitioning children into English monolingual classrooms. The dual language model is considered a truly bilingual approach in that teachers systematically and intentionally teach in both languages so as to develop proficiency in both languages. In the dual language model, both DLLs and monolingual English peers are grouped together equally allowing everyone the opportunity to interact and be fully immersed in both languages.

Home Language Use for Instruction. Use of home language for instruction in all education settings has been frequently debated. While the debates vary in their underlying points, each side agrees that ultimately the goal is for children to become

proficient enough in English to close language achievement gaps in the elementary grades (Reardon & Galindo, 2009). Essentially, what differs most among the debates is the process best designed to increase academic outcomes in the long run. To this end, each side presents data and theory on why use of home language helps or hinders the acquisition of English. Advocates of English-only argue that more time-on-task with English yields faster and better results for the acquisition of English (Porter, 1990; Imhoff, 1990). The other side bases its argument on language transference theory (Cummins, 1991), suggesting that content instruction and the development of vocabulary and background knowledge in the home language establishes a strong foundation from which a second language can be built as concepts are learned and vocabulary can later be translated and more easily learned (Cummins, 1979; 1991; Goodrich, Lonigan, Kleuver, & Farver, 2015; Mancilla-Martinez & Vagh, 2013). Others (Garcia, 2012) further argue that maintenance of home language is important for continued family relationships and that these also have indirect impacts on student achievement.

Results of one meta-analysis including 17 studies of comparative English only and bilingual programs for K-12 found that for ELs, bilingual instructional programs yielded better outcomes in both English and the home language with a mean effect size of 0.14 in English language reading outcomes, 0.17 on math outcomes and 0.86 on outcomes in the native language (Rolstad, Mahoney & Glass, 2005). These results were particularly salient when the bilingual program focused on development of home language in addition to English as increased gains in the home language also were significant. Authors of the meta-analysis indicate that challenges in conducting the meta-

analysis included sample differences, but also due to large differences in how programs were defined and carried out.

Despite the lack of similar syntheses examining the efficacy of bilingual instruction in early childhood settings, some rigorous experimental research comparing English-only to bilingual models does exist yielding very similar findings. For example at least five studies examining use of bilingual models or HL supplements (e.g. small groups in Spanish, read-aloud done in Spanish) versus English-only instruction in preschool find that DLL children gain as much English as monolingual English speaking peers as well as in the home language (Barnett, et. al, 2007; Durán, Roseth & Hoffman, 2010; Farver, Lonigan, & Eppe, 2009; Restrepo, Castilla, Schwanenflugel, Neuharth-Pritchett, Hamilton & Arboleda, 2010; Ryan, 2007). In each of these studies, when children experienced the use of Spanish for instruction for some of the time they demonstrated superior outcomes on tests of receptive vocabulary, story retelling and print knowledge tasks when compared to other DLLs who received no supports in Spanish. In addition, all the studies found that children who received instruction in Spanish showed significant gains on the same outcomes in Spanish.

In a quest to add depth to the question of home language instruction for DLLs, Valentino and Reardon (2015) consider in their study the effects of HL instruction as compared to English-only over time on language and literacy skills. The study examines the learning outcomes of DLLs who participated in four distinct language of instruction models (dual immersion, developmental bilingual, transitional bilingual, and English-only) from Kindergarten through seventh grade. Findings of this study indicate that though Hispanic DLLs lag behind peers on tasks of language and literacy early on

(through second grade) in models using HL for instruction, they are able to catch up and even surpass their DLL peers participating in English-only instructional models by seventh grade. More specifically, DLLs who participated in dual language models (50-50 English/HL and including native English speakers in addition to DLLs) show the largest gains among DLLs participating in the other bilingual models on language and literacy tasks in both English and Spanish. This study is important as it considers whether use of HL for instruction fosters equal English language acquisition opportunities and better cognitive outcomes for DLL children beyond Kindergarten. This study further validates theories and programs that suggest that children increase their abilities in both languages when some instruction is delivered in their home language and that it does not slow progress in English language acquisition (Durán, Roseth, & Hoffman, 2010; Farver, Lonigan & Eppe, 2009; Barnett, et.al., 2007; Rodriguez, Diaz, Durán & Espinosa, 1995; Winsler, Diaz, Espinosa & Rodriguez, 1999). Table 2 below presents effect sizes for each of these studies relative to English and Spanish language outcomes.

Table 2.

Effect sizes for bilingual or home language support programs (v. English only)

Reference	English Language			Spanish Language			Year
	Math	Language	Literacy	Math	Language	Literacy	
Barnett, et al., (2007)	0.17	0.08	-0.02	0.01	0.61	-0.34	Pre-K
Buysse, et. al (2010)		-0.11			0.10		Pre-K
Durán, et. al., (2010)		-0.57	0.08		0.55	1.35	Pre-K
Farver, et. al., (2009)		0.71	0.94		0.66	0.48	Pre-K
Rodriguez, et. al., (1995)		1.00			0.23		Pre-K
Winsler, et. al., (1999)		0.59			0.20		Pre-K

In addition to arguments for one model over another based on effectiveness for language acquisition, other arguments emphasize the need to acknowledge children's

culture as part of linguistic and cognitive development because this has implications for the formation of student identity as they embark on their school careers (Garcia, 2012; Garcia & Frede, 2010). One recent meta-analysis reviewed a total of 46 studies investigating ethnic-racial (how children thought of their ethnicity and race) affect and adjustment on school and health related measures in children age seven to 17 (Rivas-Drake, Syed, Umaña-Taylor et al., 2014). In sum, 25 studies including ethnic-racial affect and academic adjustment (including achievement and school attitudes) were reviewed to examine the positive racial-ethnic affect with academic adjustment. Findings indicated positive and significant relationships for both academic achievement and school attitudes together (r =.18) and separately (r =.17). Research has also shown that for Latinos specifically, having stronger and more positive ethnic identity was predictive of better grades in middle and high school and showed more positive engagement in school regarding behavior and participation (Rivas-Drake, Seaton, Markstrom et al., 2014).

Researchers have also studied the presence of relationships between familial bonds and school success. Hispanic families are thus considered an important source of capital from which young DLLs can derive many benefits given documentation that shows that Hispanic children are likely to live in situations of extended family and two-parent households (Landal, Oropesa, & Bradatan, 2006). Studies have examined practices like family dinner times, which have been related to increased academic outcomes for adolescent children and negative relationships with risky behavior such as illicit drug and alcohol use, depressive symptoms, suicide attempts, and antisocial behavior (Fulkerson et al., 2010). However, family dinners and other communicative reliant activities suffer when children lose their ability to communicate in their home language. Detractive

models of language instruction in schools have as a result, been credited for loss of native language for preschool children at school entry (Wong-Fillmore, 1991).

Effects of Teacher Language Proficiency

Much of what contributes to high quality preschool environments is the quality of the interactions nurtured by teachers. In early childhood, these interactions are defined not only as those that offer academic objectives, but also those that develop social emotional skills and which build confidence and support for children as learners (Hamre & Pianta, 2001; Burchinal, Field, Lopez, Howes, & Pianta, 2012). The quality of experiences provided depends on teacher knowledge and behavior in the domains of language development and language supports for the HL as teachers seek to scaffold children and foster activities that support their language development (Burchinal, Field, Lopez, Howes & Pianta, 2012). In addition, for young DLLs, while it may be true that HL proficiency helps with the acquisition of a second language (Goodrich, Lonigan, Kleuver & Farver, 2015; Durán, Roseth, & Hoffman, 2010; Schwartz, 2014; Cummins, 1991), it is also true that this can only occur when the first language is modeled in a sophisticated form, consisting of academic vocabulary and rich concept development (Garcia, 2012). The implications of quality of language interactions in English as well as the home language have implications for the language proficiency of teaching staff (Hoff, 2013).

Further, the most obvious consideration in implementing dual language models is the extent to which there is a teacher or other staff member who can support language development because they are bilingual, and when there is not, we must consider how to train monolingual English staff in how best to relate to and instruct DLLs, as well as to

systematically support development in both languages. To do this, specific training regarding which pedagogical approaches offer maximal benefits for DLL children is necessary (Zepeda, et. al., 2011). The following section will review the most recent evidence suggesting the need for targeted knowledge and understanding for teaching staff working with young DLL children.

Demographic Landscape of Teachers Serving DLLs in Early Education

Current population of bilingual teachers. Generally, the extent to which Spanish speaking teachers or assistant teachers serve DLLs has not been reported by any national studies, nor is it routinely reported in public education. In the SWEEP study of five, state-funded preschool programs, researchers found that 64% of sample teachers were White and 15% Latino and that 32% of teachers reported that they or their assistant spoke Spanish in the classroom (Early et al., 2005). Head Start data from the Family and Child Experiences Survey does show that 40% of lead teachers and 36% of assistant teachers in Head Start classrooms serving DLL children speak a language other than English (Hulsey, et al., 2011). Still, the study also reports that 92% of instruction is delivered in English. While indicating that some instruction is delivered in Spanish, these studies also raise question about whether and/or how much instruction is delivered in the home language of the child and by whom, given the numbers of teaching staff with the capacity to use a home-language. Possible reasons for a lack of reported instruction in the home language are training in how to teach in more than one language, and debates about what is the best teaching approach at the local level. Another issue could lie in teachers' level of comfort with using what they might consider conversational Spanish in an academic context.

The bilingual staff numbers reported by Head Start are higher than suggested by other reports of workforce for other early childhood sectors. The National Institute for Early Education Research (NIEER) reports that for state funded preschool programs that only half of state funded preschool programs allow bilingual classes. Still, there is no information on how often this option is offered and by whom (Barnett, Friedman-Krauss, Gomez, Horowitz, Weisenfeld, Brown & Squires, 2016). None of the national early childhood workforce reports tease out demographic or linguistic characteristics of lead and assistant teachers. Similarly, gauging the expertise of the early childhood workforce around DLL-focused training or coaching is also not possible at this time.

Bilingual teacher-education candidates. Recently, what has also been noted is that a pipeline of potential Spanish speaking and certified teachers is similarly narrow (Bridges & Dagys, 2012, Buysse, Castro, West & Skinner, 2005). These patterns are likely attributable to low rates of college enrollment in 4-year programs as well as completion of a BA by Hispanics (Fry & Taylor, 2013). Whitebook (2014) for instance suggests that while the ECE teacher workforce is more diverse than that of the K-12 arena that in early childhood educational stratification is still problematic. One dissertation study notes the difficulty with completing even an AA by native Spanish speaking students in a community college, despite a high interest in early childhood, due to language barriers (Eberly, 2015). This small case study documents that despite one district's offering of a "Spanish Language Pathway" Child Development Associate, with coursework is offered in Spanish, that students largely were unable to transfer the skills acquired in Spanish to English, when certifications are involved (Eberly, 2015). Another recent news analysis in the NY Times included interview data from various professors of

education stating that though Hispanic students enroll in schools of education, relatively few finish (Rich, 2015). Further, the PEW Hispanic center reports that though college enrollment for Hispanics is increasing, other aspects of higher education success including enrollment in a four-year college, full-time enrollment and completion of a BA are still largely missing from the Hispanic student body (Fry & Taylor, 2013). In a final echo of these statistics, research also finds that early childhood education preparation programs are similarly lacking in diverse faculty, who could potentially serve as mentors or role models (Bornfreund, 2011; Maxwell, Lim, and Early, 2006). These low completion rates by Hispanics are concerning as they indicate that even when native Spanish speaking candidates in early childhood education preparation programs are highly interested, they are not able to finish.

The adult population of ELs faces the same academic hurdles as do young DLLs in that though the home language can be considered an asset, it also can impede academic success when not properly supported. While Spanish language proficient teachers are needed, there is currently a shortage of programs and efficient pipelines through which to create a broader candidate base (Whitebook, 2014). These constraints lead to policy level considerations. Most specifically, as with language of instruction issues for preschoolers, certification processes that would allow potential teacher candidates to fully execute a certification process in Spanish might lead to increased positive attitudes about Spanish language use for instruction in classrooms too, which has been pointed to as an important policy initiative (Lopez, Scanlan & Gundrum, 2013). Others involve considerations of access to higher education programs including location, affordability, content, and program length (IOM & NRC, 2015).

A byproduct of this phenomenon then creates the possibility of Spanish speaking adult students to instead pursue the assistant teacher position, which typically requires less education and credentialing. This option, of course, enables a classroom to be staffed with more than one teaching staff at a lower cost (Ryan & Whitebook, 2012). The tradeoff is that assistant teachers are also less likely versed in practices specific to early childhood and DLL specific pedagogy due to fewer requirements for specific education and certifications in early childhood. In one study of Head Start teachers even lead teachers who identified as native Spanish speakers did not use Spanish for instruction and rather saw Spanish as a way to help children socially adapt to the classroom (Jacboy & Lesaux, 2014). This evidence provides information on the need for teacher preparation programs and courses to embed the use of home language into their objectives for teachers.

Aside from demographic break-downs, and degree and credentialing questions, another issue is that of other skill thresholds such as reading, writing and oral language abilities that may not be met by the workforce, despite credentials and licensures (Gilbert, 2015). Gilbert's opinion editorial raises the issue about how large proportions of state-licensed and nationally credentialed early childhood educators experience the same "word gaps" that at-risk young children in their care face. This topic looms over research that consistently finds that quality of interactions matter and that effective interactions between teachers and children have positive relationships with child outcomes, particularly vocabulary development (Hindeman & Wasik, 2015; Jacoby & Lesaux, 2014). Similarly, though on-the-job training and ongoing professional development are part of any career, coaching specific to oral language development is crucial given the

lack of pre-service training that teachers experience (Powell, Diamond & Burchinal, 2012; Bornfreund, 2011). Clearly to support home languages and even English acquisition effectively, coaches need to also be considered in thinking about effective interactions and non-English language capacity.

Specialized Knowledge for Teachers Working with Young DLL Children

While speaking the language of the students in their class is beneficial to DLLs (Burchinal, Field, Lopez, Howes & Pianta, 2012), research further highlights appropriate certifications and more specialized training yields better long-term child outcomes for DLLs (Lopez, Scanlan & Gundrum, 2013). In their recent report and call to action, the Institute of Medicine (IOM) and National Research Council (NRC) specifically outline the importance of specialized knowledge and training for working with young children from birth to age 8 (2015). The report details three basic foundations of knowledge for adults working with young children including: child development, stable relationships, and biological and environmental factors that influence child development, behavior and learning (p. 326; 2015). As one of its goals, the report evaluates early childhood educator competencies nationally, looking for patterns, overlap, and variations. Findings showed that while state level competency statements about what early childhood professionals should know and be able to do are generally in place, there are still areas that vary in their emphasis or presence from state to state. Specifically, IOM and NRC (2015) identify the following as areas most lacking in detail: descriptions of teaching subject specific content in developmentally appropriate ways, recognizing sources of stress and adversity as well as implementation of strategies, targeted competencies to foster socio-emotional development appropriately, how DLLs learn and how to support English and children's

home languages and finally the integration of technology including use of tools and what educators need to know for using technology with young children.

The lack of specificity regarding teacher competencies is important as though training and understanding of child development are key, teachers do need guidance on effective and developmentally appropriate practice (IOM and NRC, 2015). The area of language and literacy development is an important area of such focus, for all children, but particularly for DLLs. Researchers consistently cite the importance of high quality instructional language including features like rich explanation of words and the importance of extended conversations (Burchinal, Vandergrift, Pianta & Mashburn, 2009; Castro, Paez, Dickinson & Frede, 2011; Hindeman & Wasik, 2015; Dickinson & Porsche, 2011). Recent research has documented how infrequently teachers engage DLL children in the meaningful discussions that foster cognitively demanding language learning (Hindeman & Wasik, 2013; Jacboy & Leseaux, 2014). In part this can be attributed to the nature of language instruction in early childhood where most effective strategies entail conversations tailored to specific children and their interests in an organic way (Wasik, 2010). However it also highlights the degree to which teachers need to know generally how children develop language and where children are on the individual learning continuums (Dickinson & Caswell, 2007) and what strategies they should engage to foster language development in intentional ways.

Knowledge of linguistic and cultural backgrounds

One aspect of "specialized knowledge," includes that of understanding possible "moderators" that influence language learning including: "level of proficiency in the first and second language, amount and exposure of the first language at home, socioeconomic

and generational status, instruction and personality" (p. 648, Genessee, Geva, Dressler, & Kamil, 2006). Among Hispanic students, this is markedly important as despite a common language, other cultural traits such as immigration status, histories, economic standings, exposure to English, home literacy practices and educational backgrounds of families vary significantly (Garcia, 2012; Hoff, 2013). In order to make appropriate educational decisions, it is vital for the staff to be aware of the cultural and linguistic background of every child as decisions about teaching matter on an individual basis (Garcia, 2012).

Supportive Classroom Environments

Knowledge of children's cultural, linguistic and familial backgrounds are also necessary to ensure that physical aspects of the classroom environment are sensitive and inclusive to the children being served. This includes displays, play materials, and learning topics (Tabors, 2008). In addition, to physical space however is also the element of warm supportive classrooms where DLL children feel safe. In one study of classroom quality as measured by the Classroom Assessment Scoring System (CLASS; Pianta, LaParo and Hammer, 2007) results indicated that when instruction was delivered in Spanish, but the Emotional Support domain for classrooms was low, there were negative associations with math skill outcomes (effect size = .12). However, when the Emotional Supports subscale was higher, association with math skills were positive (effect size = .18; Vitiello, Downer & Williford, 2011). Given that the Emotional Support domain of CLASS examines Positive Climate, Negative Climate and Teacher Sensitivity, these findings underscore the notion that instructional content is not the sole marker of quality, but that these other features of quality involving the interactions between teachers and children need to be strong.

Supporting Language Development

Process of Language Development. Teachers specifically, need to know the language acquisition trajectory and processes for bilingual language development to be able to scaffold children to the next level appropriately. As Tabors (2008) outlines, language learning for DLLs includes various stages and can vary in length and duration by children individually. Other theories of language acquisition foster the notion of transfer (Cummins, 1979) and how learning a second language is interdependent with the first. Cummins' theories (2000) further suggest that interdependence is more likely to occur when language is more "cognitively demanding" which refers to academic language as opposed to informal language used for informal communication. Also important for teachers to know is that despite that the general trajectory for language learning is similar for DLL children, there are "moderators" that influence language learning and include: "level of proficiency in the first and second language, amount and exposure of the first language at home, socioeconomic and generational status, instruction and personality" (p. 68, Genesee, Geva, Dressler, & Kamil, 2006).

Extended Discourse and Vocabulary. Intentional interactions are the express means to fostering increased language proficiency for young children. In a path analysis of relationships between children's language experiences in preschool and Kindergarten and fourth grade outcomes, Dickinson and Porche (2011) found that teachers' use of sophisticated vocabulary and sustained attention while talking to children during free play in preschool was related to fourth grade reading comprehension (effect size .30) and decoding skills (effect size .40). Though this study was not directly focused on DLL children, it does substantiate the need for a strong communicative environment for young

children, which presently has not been found to be the standard specifically for young Hispanic DLLs.

In another study of Head Start classrooms, researchers sought to examine the extent to which English and Spanish were used for instruction as well as to examine the probability of extended discourses in classrooms with large percentage of DLLs (Jacoby & Leseaux, 2014). The researchers studied a total of six classrooms, observing for 5-hour periods over the course of the one school year with a total of 3 observations conducted per classroom. Results showed that of 147 observed lessons, only 33 (22%) included evidence of an extended discourse between teachers and child/children (Jacoby & Leseaux, 2014). Further, the authors found that these interactions were 50% more likely to happen during small group times rather than large group times. Though the authors cite the main reason being likely due to routine based lessons that are not likely to foster these kinds of interactions, this study also highlights the likelihood that teachers simply do not know what the contexts are that offer maximal opportunities to engage in extended discourse with children.

Support for Home Language Maintenance and English Acquisition. What has also been shown to be true is that not only is fostering vocabulary skills important for DLLs in English, but also in their home language. Again relying on Cummins' CUP model, researchers have empirically tested the relationships between each of DLLs languages as predictors of success in the other numerous times. In a recent study of Spanish speaking of Head Start children (n=81), Davison, Hammer and Lawrence (2011) examined the factors predicting Spanish and English receptive vocabulary to later reading outcomes in first grade through a growth curve model. Findings revealed that growth in

children's Spanish receptive language positively predicted first grade English letter-word identification as well as passage comprehension. However, also true is that Spanish language instruction that bolsters English acquisition has to be strong and elaborate at best (Vitiello, Downer & Williford, 2011).

English acquisition however depends on more than just supports for children's home language in preschool. As many have pointed out, the "sponge learning" theory of language development in children is a myth as it proposes that language learning is involuntary. Instead, careful scaffolding is necessary to move children from one level of proficiency to the next via everyday classroom interactions and activities requires much intentionality as well as an understanding of the relationship between language ability and demand of a task (Lucas, Villegas & Freedson-Gonzalez, 2008). Fostering English acquisition therefore requires specific and well planned interactions throughout the day to advance not only language, but concepts as well.

Teacher Credentials and Certifications for Working with Young DLLs

The most valued ways to accrue the elements of "specialized knowledge" mentioned above is through professional preparation via degree granting college programs (AA or BA). However, while it has been found that teachers with special certifications and more specialized knowledge, have better long-term child outcomes with DLLs (Lopez, Scanlan & Gundrum, 2013), this is not the norm (Espinosa, 2013; Freedson, 2010). Consequently, staffing arrangements as related to credential bearing staff, provide the groundwork for important policy and cost related considerations concerning the education of young DLLs (Hyson, Horm & Winton, 2012). From a policy

perspective, only one state (Illinois) requires that teachers of young DLLs be certified as Bilingual or ESL teachers and offer DLLs bilingual programs (Bridges & Dagys, 2012).

Numerous studies find a bilingual teacher is beneficial for both academic and social emotional reasons (Mundt, Gregory, Melzi, & McWayne, 2015; Winsler, Kim & Richard, 2014; Gillanders, 2007). Mainly, this research points to the advantage of using the home language to not only help with English acquisition but also to bolster content development that is later transferable across languages (Schwartz, 2014; Cummins, 1981). However, it is not easy to access this advantage due to the limited availability of bilingual certified staff and lack of models for training staff to use the home language for instruction also seems to be in short supply (Jacoby & Lesaux, 2014). Data has shown that for many state administrators, the lack of bilingual teaching staff is considered the most important issue in addressing the needs of Hispanic DLLs (Buysse, Castro, West & Skinner, 2005).

Teacher Attitudes

While teacher attitudes can not easily be changed, they do precede practice. Given the extent to which culture and language can be politically and socially controversial, it is evident that attitudes and beliefs matter as they can be inherently responsible for many teacher behaviors. Most often, teacher attitudes about their supports of DLLs do not well match their practice (Sanchez, 2011). These findings are important as other empirical research has indicated that teachers' attitudes towards home language maintenance affects students own willingness to maintain their home language, even if teachers do not speak the home language themselves (Lee & Oxelson, 2006).

Teacher attitudes and beliefs about culture and language need to be heavily considered in preparation programs so as to set a precedent for inclusion of home language and culture at the forefront rather than as an after-thought. To do this teachers need to learn that common misconceptions about the learning of two languages causing "confusion" (Genesee, 2010) or that home language maintenance inhibits English acquisition (Barnett, et al., 2007) are unfounded myths. Similarly, teachers need to understand the mechanics of language learning (Tabors, 2008). In one study teachers believed that learning language is easy and quick for children. Similarly, teachers feel that English should be the only language of instruction in school (Sanchez, 2011). Undoing these attitudes and correcting these belief systems are crucial in securing high quality instruction for young DLLs so that teachers can fully implement recommendations of the field. This is particularly true of use of home language for instruction. Similarly, these attitudes and beliefs are important in teachers' guidance and conversations about home language use for instruction with families, who often may feel reluctant to allow their children to learn in their home language for fear that it will delay acquisition of English.

A particularly salient aspect of professional development and the preparedness of teachers to work with young DLLs, concerns their attitudes and beliefs regarding use of HL to deliver instruction. Though there has not been much research around this topic for teachers at the preschool level, evidence from the elementary level can provide some information. Generally, attitudes in the area of HL maintenance are important to explore as they ultimately influence use of the HL for instruction. Prevailing attitudes have been found to range from beliefs that schools should provide English-only for academics to the

view that HL use for instruction in school is helpful for both social and cognitive development. One study found that positive attitudes and beliefs about home language use in school were more prevalent in teachers who were fluent in a language other than English themselves or who had more professional development on this topic (Lee & Oxelson, 2006).

Teacher attitudes and beliefs regarding teaching in the HL may be particularly important with respect to the teaching of content areas such as science and math in preschool. Already established is that preschool teachers generally, have insecurities around teaching science and math (Greenfield, Jirout, Dominguez, Greenberg, Maier & Fuccillo, 2009). Taken together, it seems reasonable that teachers might be least likely to use HL in these subject areas, and that this may be a particularly important consideration when creating and implementing pre-service and in-service programs for teachers that support them in effective teaching of DLL preschool students across the curriculum.

Teacher Preparation and Professional Development

Pre-service programs. The importance of teacher credentialing and specialized training for early childhood educators has been emphasized in the field for some time. However, the consensus among researchers is that degrees plus credentialing and certifications are the key to improving overall effectiveness (Allen, 2015; Bredekamp & Goffin, 2012). Currently, 33 of 57 state funded preschool initiatives require that lead teachers hold a BA and 47 programs require that teachers have specialized training in preschool. Curiously, only 21 of these same programs require that assistant teachers hold a minimum of a Child Development Associate (CDA) suggesting that policy makers do not assign much importance to the instructional contributions of assistants (Barnett, et.

al., 2016). Head Start Program Performance Standards required that 50% of teachers have a BA in ECE or enough coursework in ECE to equal a major by 2013 (U.S. DHHS, 2008). In addition, all teacher aides/assistants are required to have a CDA or be enrolled in a CDA credential program, with promise of completion in two years (U.S. DHHS, 2008).

Though recruiting bilingual teachers may be at the forefront of many agendas, other pressing issues involve the lack of teacher training around bilingual acquisition, language maintenance and cultural sensitivity specific to early childhood (Samson & Collins, 2012). Maxwell, Lim & Early (2006) find that in degree granting institutions of teacher preparation only 15% of BA programs and 13% of AA programs require coursework on working with bilingual children. Others also argue that early childhood teachers are equally in need of learning about working with children (and families) who are not just linguistically different, but culturally different, from themselves (Zepeda, Castro & Cronin, 2011; Rothstein-Fisch, Trumball, & Garcia, 2009; Fillmore & Snow, 2002). One study finding that states with requirements for teacher certifications and training related to DLLs had higher scores on NAEP tests for DLL students in fourth grade (López, Scanlan & Gundrum, 2013), suggests the need for increased pre-service training. Further substantiating the importance of this training are studies that find that preschool teachers report feeling unprepared to work with DLLs (Ray, Bowman & Robbins, 2006; Ryan, Ackerman & Song, 2005), but they are unwilling to seek additional certifications relating to this need (Bridges & Dagys, 2012). Similarly, faculty and teacher educators have been called to increase their own knowledge of understanding and teaching young DLLs (Ray, Bowman, & Robbins, 2006).

In-service training. Because of the lack of teacher training regarding issues of working with DLLs, the field has responded by providing tailored professional development (PD), coaching and curricula that guide particular interactions between teachers and children (Buysse, Castro, Peisner-Feinberg, 2010). Moving forward, one aspect in need of attention is building teacher knowledge about language acquisition processes as well as use of native language for instruction to support both English and home language development (Allen, 2015; Bornfreund, 2011; Lucas, Villegas & Freedson-Gonzlaez, 2008; Wasik, 2010). In addition, those providing supports for teachers including supervisors, evaluators and coaches need similar training as improvements in practice are likely to be limited if these other key staff do not adequately understand the intricacies of teaching young DLL children.

Also recognized is that teacher mastery of high quality instruction that fosters vocabulary development is difficult as it requires supports that are embedded in practice through coaching and feedback models (Wasik, 2010). This is especially linked to the nature of preschool learning environments in which conversations arise organically and in response to children's interests. The IOM and NRC (2015) highlight that for teachers of DLLs, this is especially important and that guidance related to how teachers can do this is largely missing from documents such as teacher competency statements. In short, teachers of DLLs still need to know that despite emergent curricula, fostering language acquisition requires intentionality and planning and that strategies for this differ from those of building language for monolingual children.

Evidence for this gentle balance can be found in Hindeman and Wasik's (2015) study of data from the Head Start Family and Child Experiences Survey (FACES) 2006

cohort. In this study Hindeman and Wasik sampled from among families who reported speaking Spanish as an additional language in their home. In their representative, weighted sample of 665 families, the researchers found that vocabulary instruction focused on word meanings alone had negative associations with word learning as measured by receptive vocabulary tests for DLLs. In contrast, high quality language instruction needs to include the intentional focus on use of new words alongside more familiar words and embedded in context of acquiring knowledge across content, rather than in isolation (Gillanders, Castro, & Franco, 2014).

Coaching. Largely missing from the research are studies about how instructional coaches support teachers of DLLs. While research on professional development interventions have been shown as a means to improve literacy and explicit vocabulary instruction for DLLs, few have focused on coaching for improved language interactions (Bowne, Yoshikawa & Snow, 2016; Yoshikawa, et al., 2015; Buysse, Castro, & Peisner-Feinberg, 2010). In a descriptive analysis of the 130 grantees involved in the Head Start early learning mentor coach initiative, researchers found that only 19.8 percent of grantees identified improving services for (DLLs) and 6.9 percent indicated that improving cultural responsiveness were goals for coaching interactions with teachers (Howard et al., 2013). Interestingly, the majority of grantees (87.1%) responded that their main goal was to improve quality of staff practice with children and 72% answered to improve CLASS ratings. Similarly, only 1% of coaches (n=350) identified cultural competency as a goal for working with teachers with the most common goal 45 % answered that improving staff teacher and staff quality and 26% said it was to improve ratings on the CLASS (Howard et al., 2013). In sum, based on what is known about the

lack of preparation of teachers to work with this population, it can be assumed that both teacher leaders such as principals, directors, and coaches are equally unprepared to make decisions about needs for professional growth regarding supports for DLLs (Freedson, 2010). Both the lack of content knowledge and awareness of issues of cultural responsivity for teacher leaders could further hamper how to focus on improvement including what professional development should address.

Coaching in addition to professional development is however, likely to be a valuable resource as it allows for teachers to test strategies and acquire guidance within the context of their classroom's existing dynamics (Powell, Diamond, & Burchinal, 2012; Yoshikwaa, et al., 2013; Neuman & Cunningham, 2009). Wasik (2010) contends that despite because rich opportunities to support language in preschool are largely organic (unplanned) that they cannot be prescribed by a curriculum. Wasik (2010) further suggests that coaching is the prime vehicle through which to help teachers develop these skills, and that instead, what should be explicitly taught to teachers is the research and evidence that documents the importance of language development for young children. However, the research on coaching is mixed at best, and while some reviews of the literature have found that coaching has created improvements in teaching, the specific methods and behaviors used by coaches are not clear (Isner, et. al., 2011; Gupta and Daniels, 2012).

Assessment tools. In order to support in-service early childhood educators' provision of high quality classrooms for young DLLs, measurement tools that quantify the effective practices and environments for supporting DLLs' simultaneous acquisition of two languages are needed. Recent reviews of the literature highlight the lack of widely

available, published measures to assess quality of early education settings that include language interactions between children and teachers and language diversity (Castro et al., 2011; Shivers & Sanders, 2011). In one recent review of 10 studies including measures of early education quality relevant to DLLs, Peisner-Feinberg and colleagues (2014) found that although widely used measures of classroom quality behave similarly for DLLs and monolingual children, only those observation measures that were expressly designed to measure supports for DLLs actually captured dimensions of the environment that were uniquely important for DLLs. This review suggests that although general measures of quality fare well for DLLs, more specifically designed measures may provide a better indication of instructional practices and environmental features supportive of DLLs' development across multiple domains. In another review of classroom quality measures for supports of DLLs, Howes, Downer, & Pianta (2011) reviewed three measures described by their developers as intended for use in describing language and literacy practices for DLLs. This review found only one tool (Classroom Assessment for Support of Emergent Bilingual Acquisition (CASEBA; NIEER, 2009) that included items specifically designed to look at teaching strategies supportive of both the home language *and* English language acquisition in early education classrooms.

Measures that specifically target practices deemed important for DLLs are crucial as they are needed to not only guide practice, but also to empirically understand what practices are most effective. Despite the success of tools (i.e. ECERS-3 and CLASS) that have generally helped to shape quality in the field of early childhood writ large, they have been critiqued for their lack of attention to how language and culture can affect student-teacher interactions (Vitiello, 2013). As a result, researchers have called for a need to

develop and validate tools that can supplement general measures of quality (Lopez, 2011).

In addition, tools not specific to DLL learner needs, may negatively rate interactions between teachers and children when teachers are teaching responsively to the needs of DLL. An example can be found in the highly valued nature of open-ended questions in these measures. Such questions, which do not call for pre-determined answers, are needed for high scores on both the ECERS-3 and CLASS. However, this type of question may not be appropriate for DLLs in an early stage of language acquisition where English language development is characterized by short one-word answers (Tabors, 2008). Open-ended questions posed in English for a young DLL at this phase might cause anxiety and discomfort, especially if asked in front of a group. Measurement tools of supports for DLLs need to be sensitive to these nuances and consider language and socio-emotional supports that allow children to feel appropriately challenged without creating anxiety. Tools that capture these complex supports may also provide guidance for educators about DLL language developmental trajectories, and how to differentiate their teaching based on knowledge of students' language abilities and culture. This perhaps may also account for a lack of focus during coaching initiatives as described by Howard, et al., (2013) in their study of coaching efforts in Head Start as without benchmarks for specific practices and behaviors to look for, this cannot systematically be done.

Brief History & Current State of Policy for Preschool DLLs

Federal Legislation and Policies: Brief History

Bilingual education policies in the U.S. have been subject to controversy over the past 50 years. Most often disagreements around language policies in schools are related to the politics of immigration and illegal immigration at the federal level even though many school-related decisions are actually made at the state and district levels (Carnock & Garcia, 2015). This is true even though federal legislation has focused on ways in which to ensure that students learn English so that ultimately, they can succeed academically (Malakof & Hakuta, 1990). The recent history of U.S bilingual student policy began with the opening of a bilingual public school in Miami, Florida. This program was born from a need to serve a quickly growing group of Cuban refugees who moved to Miami to flee the Castro regime. The Coral Way School founded in 1963 sought to allow Spanish-speaking children of Cuban refugees the opportunity to retain their native language, while allowing them to acquire English. The success of this program contributed to the passage of the 1968 Bilingual Education Act, a first attempt from the federal government to address the needs of English language learner students (Garcia & Weise, 2013). Though some argue that acceptance of the Coral Way program stemmed from the belief that Cuban refugees would soon return to their country, the program none-the-less served as encouragement that bilingual programs could help with English language acquisition (Garcia & Weise, 2013). The Bilingual Education Act of 1968, however, did not encourage language maintenance programs even through subsequent reauthorizations in1974 and 1978. The 1984 and 1988 reauthorizations did include some use of home language use models for transitioning students from home

language to English-language instruction though funding for special alternative instructional programs (Garcia & Weise, 2013).The installation of Title III, Language Instruction for Limited English Proficient and Immigrant Students through No Child Left Behind in 2001 provided more substantial mandates for states to implement regarding DLL policy including reporting of DLL students outcomes on accountability measures. Also required was that states submit English proficiency rates for DLLs as well as academic progress on a yearly basis (Ragan & Lesaux, 2006).

Still none of this legislation has addressed the needs of DLL preschool aged children, who in the current landscape make up 25 % of the population of children under age five (Castro, Garcia & Markos. 2013). Garcia and Weise (2013) argue that major considerations for reauthorization of No Child Left Behind Title III (Language instruction, limited English proficient and immigrant students for the support of bilingual students) should include the following improvements for education of DLLs aged 0-5:

(a) mechanisms to identify bilingual children early and accurately,

(b) strengthening human capital in early childhood education programs and

(c) enhanced coherence of program components (p. 338).

In their most recent proposal for updated program performance standards and complete reorganization of the Head Start Program, DHHS has proposed a large set of changes aimed at improving the outcomes of young DLLs attending Head Start (U.S. DHHS, 2015). The proposal specifically aims to provide services consistent with research about the benefits of home language maintenance and bilingualism. The proposal further proposes to treat home language maintenance differentially according to ages of children reserving when possible native instruction for infants and toddlers, and home language

supports for preschoolers. In addition, the proposal states that when teachers are not bilingual, that they will need to seek the steps necessary to be supportive of English language acquisition in appropriate ways such as ensuring that the classroom environment is reflective of children's home languages by way of displays, and presence of books. In addition the proposal outlines that these teachers also encourage families and community members who speak the home language of the children to be involved in classroom activities. Finally, the proposal also calls on a need for appropriate assessment of DLLs in both English and their home language, explanation of importance for home language maintenance to families, and professional development for teachers regarding DLL supportive practices. Though this proposal has not yet been passed, it demonstrates the importance of a specific focus and inclusion for supports aimed at young DLLs

States Policies & Local Practices

Though the presence of federal legislation to address issues faced by language minority students has moved in favorable directions, its allowance for flexibility among states and districts to make individual decisions has created great variability from state to state regarding ELL policy for students (Ragan & Lesaux, 2006). In general the major variables include entry and exit criteria (including identification systems), teacher training and certification requirements, language of instruction models, learning standards, provision of funding to specifically support educational programs, requirements for inclusion of cultural components and requirements for parental permissions to enroll children in early bilingual education programs (Garcia & Weise, 2013).

In one recent policy analysis of State Learning Development Standards (EDS) or learning guidelines, Espinosa and Calderone (2015) assigned designations to a total 21 participating states' and the District of Colombia's approach for serving DLLs based on their ELDS. The authors classified only one state (New Jersey) as a dual language development state, 16 as English language development states including AK, AZ, CA, DE, GA, IL, IA, ME, NY, NC, ND, OR, RI, TX, WA and WI, and the remaining five DC, HI, MD, MA, SC as English immersion. Only the final category (English immersion) is defined by the authors as generally dismissive of responsibilities for home language development seeking instead to teach English as quickly as possible as an objective. Included in the survey were how states ELDS and supporting documents provided the following relative to DLLs: a) a clear statement of philosophy, b) procedures for identification of the DLL population, c) a separate domain for DLLs language development, d) inclusion of DLLs in the language, communication, literacy domain, e) inclusion of DLLs in the social and emotional development domain f) family engagement strategies for DLL families, g) specific teacher qualifications for teachers of DLLs, and h) detailed recommendations for instructional and assessment practices (Espinosa & Calderone, 2015). In line with Espinosa and Calderone's findings regarding DLL related policy within ELDS, others have found that while seventeen states allow or even require languages other than English for instructional purposes of DLLs, three states: Arizona, California and Massachusetts currently preclude DLL children from receiving instruction in any language other than English as part of their state policies in the K-12 system (Garcia & Weise, 2013). Given the sheer numbers of DLL's in Arizona and California, this is a cause for great concern.

Other policy gaps are revealed in states' inability to report on DLL enrollment, workforce and data on determination of DLL status. For example, at a most basic level, only 23 out of 51 state funded preschool programs are able to report the exact number of dual language learner (DLL) students enrolled (Barnett,et. al., 2016). Only eight states report requiring specialized qualifications for teachers of DLLs (Barnett, et. al., 2016). Finally, the NIEER Year Book also reports that while nine states report having no policies for determining DLL status of preschool children, that 19 rely on family reports, five on teacher observations, a total of only 9 who use developmental or child assessment tools and that hat 17 states report allowing districts to determine this policy locally (Barnett, et. al., 2016).

The state of Illinois has made more immediate progress in the policy arena addressing both language of instruction, and teacher qualification requirements. Illinois for example enacted legislation regarding the education of its growing early childhood Hispanic population by extending the requirements present for K-12 students to 3- and 4-year olds enrolled in state funded preschool programs. One of the mandates requires that teachers working with young DLLs have training in Bilingual Instruction or English as a Second language (Bridges & Dagys, 2012). Despite the progressive stance of the mandate, experts have argued that caution must be exercised as the needs of Pre-K students are different than those of elementary students (Zehr, 2010). The Illinois policy has met with further objections given the difficulty of securing sufficient staff to deliver preschool education in students' home languages (Bridges & Dagys, 2012). Further, researchers have also recently cited the disproportionate number of dual immersion programs in Illinois are actually more prevalent in the most affluent neighborhoods due

to “ideological and cultural capital differences among communities” (Morales & Rao, 2015). The authors contend that despite the repressive nature of the policy, that in practice, there are still many ideological hurdles to straddle, specifically regarding the Latino families who are reluctant to enroll children in programs that they believe may hinder English acquisition. Conversely, the authors further argue that affluent families see bilingualism as an asset and so use the programs to their advantage enrolling their children at disproportionately higher rates.

According to the most recent survey of state preschool programs, the most widespread policy support is the allowance for bilingual, non-English-only classes. Although a total of 56.6 percent of programs report allowing bilingual preschool classrooms, little is known about the actual frequency of bilingual classes, or the quality of this instruction. The most infrequent support for DLLs was that systematic written plans must be in place on how to work with DLLs, with only 24.53 percent of programs reporting this as program policy. Importantly, 32% of programs report that the state does not regulate services for DLLs (Barnett, et al., 2016).

Other state-level considerations involve the use of Quality Rating and Improvement Systems (QRIS) to provide information on policies and practices related to DLLs as well as to establish benchmarks for high quality practice. Although these are becoming ubiquitous, QRIS rarely include ratings of specific provisions regarding DLLs (Perez, Zepeda & Espinosa, 2014). While some experts have suggested the inclusion of culturally responsive measures in QRIS, there again, the field is hindered by the lack of any published tools to make this possible (Bruner, Ray, Stover-Wright & Copeman, 2009). In one California county, the QRIS does incorporate teachers’ cultural and

linguistic responsiveness to DLLs. The incorporation of standards based on research regarding effective practices for DLLs in QRIS has the potential to further bolster high quality practices and improve documentation of these practices.

On a local level, in New Jersey, one city highlighted for its transformative success in a historically Hispanic community is that of Union City. David Kirp's *Improbable Scholars* (2013) documents the systemic changes adopted by the Union City school district that have led to student achievement outcomes at par with the suburban school districts in the state between 1999 and 2011. Kirp outlines that aside from the changes imposed by the landmark case (Abbott v. Burke) that established free high quality preschool for all 3- and 4-year olds in targeted districts in NJ, which the district imposed other measures that have contributed to its success. One of these was a dual language approach to instruction in preschool. In another interesting portion of Kirp's book, he outlines how the district's Early Childhood supervisor emphasizes the importance of highly proficient English speaking teachers for preschool classrooms as well as the importance of language rich environments.

Summary

In conclusion the research, case studies, and reviews all point to solutions that require a multi-pronged approach to serving and improving the outcomes of young DLLs as none of the data point to perfectly linear paths for guaranteed success. Instead, a combination of factors is necessary. Included are both use of Spanish and English language instruction, warm and safe classroom spaces, and well prepared and supported teachers. In short, this study aims to pursue some of these questions by exploring staffing

patterns and language of instruction through the use of a new tool that can further add to the existing literature base.

CHAPTER 3

Methods

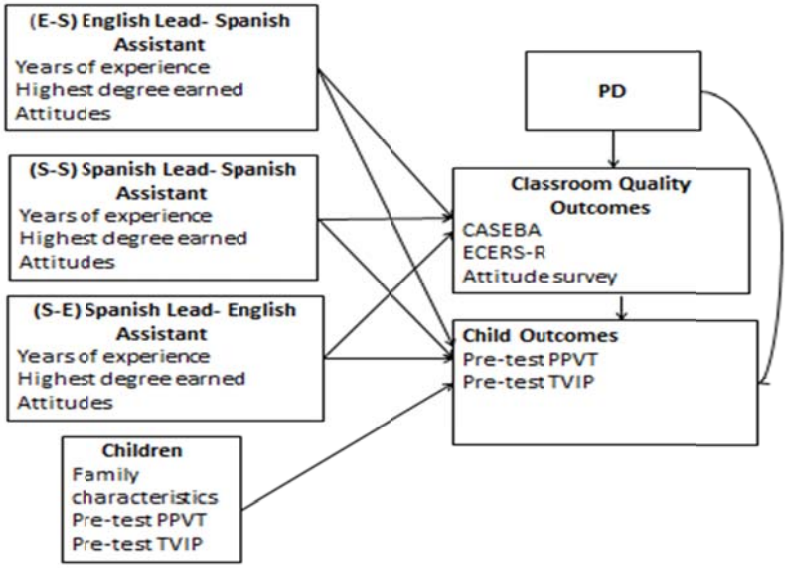
The goal of this study is to provide information where gaps currently exist related to best practices for young DLLs as well as to learn about how staff language configurations can inform policy decisions for this population of learners. Specifically, these include: (1) Whether a professional development intervention focused on supporting DLLs in preschool produces changes in attitudes and practices of teachers and assistants, and children's learning? (2) Whether different staff language configurations among teachers and assistant teachers yield different outcomes on measures of observed classroom quality and children's learning? To answer each of these, a domain specific tool was used to capture very specific supports of classroom quality for young DLLs.

Hypotheses for the question regarding the professional development intervention was that the treatment group of teachers, would show the most change from fall to spring on measures of classroom quality. In addition, it was also predicted that children's outcome scores would be higher than those of children who were in classrooms where teachers did not receive the professional development modules. Moreover, I predicted that in classrooms where lead teachers are Spanish speakers, that outcome scores would be even higher than in treatment classrooms where the lead teachers speaks English as in addition to the content information that they were given, they also have the language abilities to carry out all of the strategies suggested by the module. These potentially included the use of home language as a support as well as the English acquisition strategies that were covered by the modules. Figure 1 illustrates a conceptual model for both the research questions and all of the outcomes sought to be examined by this study.

To answer the second research questions a few underlying hypotheses preceded, as based on the extant literature previously reviewed. Generally, I hypothesized three outcomes regarding the question on staff language configurations. First, in classrooms where the lead teacher is the Spanish speaker, I predicted that classroom quality scores on the CASEBA would be higher than when the lead teacher was the English speaker, as the tool has several items that seek to evaluate the extent to which Spanish is used for instruction for the purpose of maintaining and developing the home language. Second, I hypothesized that given the research about use of home language for instruction, that in classrooms where the lead teacher was the Spanish speaker (S-E, S-S) that children would gain equally on the English language outcome measure, but would outscore their peers in English-led teacher classrooms (E-S) on the Spanish language outcome measures. A final prediction relative to the staffing question was that that while lead teachers may account for a larger share of formal training, the supports potentially offered to children to develop and maintain a home language, may be equally offered in terms of social-emotional supports by the Spanish speaking assistant teachers. As such, I predicted that both classroom quality and child outcome gains would be largest in classrooms where Spanish speakers consist of both the role of teacher and assistants (S-S groups).

Figure 1.

Conceptual model



Research Questions

The three staffing models compared are:

(a) English speaking lead teachers with Spanish speaking assistant teachers

(b) Spanish speaking lead teachers with Spanish speaking assistants

(c) Spanish speaking lead teachers with English speaking assistants

1) Did a professional development program focused on supporting DLL students in the preschool classroom produce:

(a) Changes in the attitudes, beliefs, and practices of teachers and assistant teachers?

(b) Greater learning gains for their students?

2) Are the 3 different staff language configurations associated with:

(a) Differences in observed classroom quality?

(b) Differences in children's learning?

Research Design

The current study utilized pre/post-test design with an embedded randomized trial of professional development. Children were randomly assigned to classrooms with three different staffing structures that took into account teacher and teacher assistant languages. Treatment groups of teachers were classified into three team types (or staffing structures) to distinguish the staff who delivered instruction in Spanish. These team types included a Spanish speaking lead teacher with an English speaking assistant (S-E), a Spanish speaking lead with a Spanish speaking assistant (S-S), and an English speaking lead teacher with a Spanish speaking assistant (E-S). The E-S group was the largest, and was split randomly into a control and treatment group for a professional development intervention. This intervention allowed the study to investigate the potential for professional development to improve the performance of the E-S group. The intervention provided professional development around the importance of home language maintenance, strategies for helping children to acquire English and environmental supports proven to bolster both. These teacher teams and their students were studied to

determine the extent to which different staffing arrangements affect classroom quality (structurally/procedurally) as well as child outcomes in one or both of children's languages.

Given the district's mixed-age practices, classrooms were comprised of some three- and some four-year olds. Four-year old children in the classrooms included children who participated in the program the previous year as three-year olds (looping) as well as newly entered four-year olds. The district provided a universal list of all newly entering children (three-year olds and four-year olds) and allowed NIEER to randomly assign children to teachers and thus, control or treatment groups. Only three- and newly entering 4-year-old children were sampled so as to avoid the association of effects of the current study interventions with gains that could be attributed to having participated in the program as students in the previous year.

To conduct the random assignment of children to study classrooms, enrollment lists were provided by the district with enrollment for each school building. This allowed for the determination of how many children should be selected for each building taking into consideration the number students who were looping from the previous year. A random number generator was then used to randomly assign the required number of students to each classroom. This process allowed for the assignment of children to classrooms as rolling registration of the district continued over the summer. Classroom lists were sent to the district as they were ready so that the district could inform teachers and families of children's placements before the start of the school year.

Research site/context

The school district in which the study took place was located in an urban, 71% Latino city on the east coast in which all three- and four-year olds are eligible for a free high quality preschool education. All 81 classrooms in the study were part of state-funded preschool and were subject to district and state policies. Though some contracting of private providers helped to accommodate children, all classrooms in this study were housed in public school buildings. All teachers had to be early childhood certificated (a 4-year-degree with specialization), and assistants were required to hold a CDA. Class sizes were limited to 15 children, and the district was required to choose from one of 6 state-vetted curricula. In addition, the district was also required to monitor classroom quality on a yearly basis using an approved measure of early childhood classroom quality. The district enrolled almost 100% of its age-eligible preschool population which was about 91% Hispanic.

In addition, the state requires districts to complete a Self-Assessment Validation (SAVS; NJ DOE, 2009) in which each district self evaluates the degree to which they are meeting state outlined standards of quality in the preschool program. A copy of the study district's 2009-2010 report was obtained to examine how they rated themselves on the sections about *Dual Language Learners* and *Professional Development* to provide further context for the study findings and later discussion. Results show that the district rated themselves on each area as "fully met" in terms of their implementation of the referenced criterion. Table 3 below presents the district's self- ratings of the SAVS for the year in which the study took place.

Table 3.

Districts self-rated responses on the NJ Department of Education Self-Assessment Validation System (SAVS)

Section/Criterion	Indicators	District Self-Rating
II. Curriculum & Classroom Practices 1. All ELLs receive systematic support for DLL acquisition in their natural preschool environment	A. Classrooms are equipped with literacy materials in the home languages of the children in the class, B. Lesson plans show strategies for supporting the home language of each child in the classroom. C. Lesson plans show intentional activities to scaffold ELL children's learning of English. D. Structured classroom observations are used as planning tools to support English language learners in the classroom. E. Administrative support ensures that all directors, building principals and classroom teachers receive results of the home language survey. F. Administrative supports are provided to the maximum extent possible to address the needs of children from every language background (including the provision of classroom materials, resources, professional networking and support, and assistance with developing general strategies and lesson plans).	Fully met
II. Curriculum & Classroom Practices 2. Teachers receive appropriate supports to meet the needs of English language learners.	A. Teachers receive professional development in techniques and materials needed for creating a language-rich environment that facilitates learning of the child's home or primary language, as well as English. B. The master teacher/coach specializing in bilingual education models, coaches and provides feedback to master teachers and teachers in how to facilitate language acquisition, and to promote oral language in the preschool setting. In smaller districts, this may be a function of a coach that has received specialized training to provide support for teachers in this area. C. Teachers receive professional development in general language development, individual differences in second-language learning, best practices for scaffolding to English, as well as sensitivity to cultural backgrounds.	Fully met
III. Professional Development 1. Structured classroom observation instruments are used to determine areas for professional development.	A. A structured observation instrument or set of instruments is used to measure quality practices in preschool classrooms. B. The aggregated data from the structured observations, along with results of performance based assessments are analyzed and used to plan for professional development.	Fully met

Section/Criterion	Indicators	District Self-Rating
III. Professional Development 3. Master teachers fulfill the roles and responsibilities outlined in the New Jersey Preschool Program Implementation Guidelines, August 2008	A. Master teachers/coaches provide direct professional development training/workshops for teachers and paraprofessionals. B. Master teachers/coaches model, coach, provide feedback and follow-up with teachers in preschool programs regarding developmentally appropriate practice and the district's chosen curriculum. Collaborative peer coaching in the classroom is the master teacher's primary responsibility. C. Master teachers/coaches with specific expertise (e.g. inclusion, bilingual education, math curriculum) provide consultation to other master teachers/coaches.	Fully met

Staffing Configurations

Teachers were sampled from among the seven public school-based preschool programs in the district. Though the district contracted with privately run preschool programs to provide sufficient slots for eligible children only programs housed in public school buildings were chosen for the study. This was done to eliminate potential differences due to school versus center based characteristics. In total, the sample consisted of 81 teachers in three types of staff language configurations based on language speaking abilities of each teacher in the classroom. Language designations for teaching pairs were provided by the district. To our knowledge, no measures of proficiency in either English or Spanish were used to classify teachers as speakers of either language. Teachers reported that they felt they were assigned to staff language structures (e.g., Spanish v. English) based on conversations and intake paperwork at the time of their interview and hire.

Teachers. The first and largest group of staff language pairs was the "English-Spanish " (E-S group) which accounted for 43 teaching teams with English speaking lead teachers and Spanish speaking assistant teachers. The second and third groups included the "Spanish-Spanish" and "Spanish-English" groups (S-S and S-E), which accounted for

35 teaching pairs. Children in these models were served by Spanish speaking lead teachers for the course of the year. In 10 of the classrooms the assistant teacher also spoke Spanish (S-S groups) and in 25 of the classrooms the assistants spoke English (S-E groups).

To answer question number one, teachers in the E-S group were randomly assigned to two different professional development conditions. In the experimental E-S group (N=23), teachers received an intensive two-day training during the summer as well as subsequent training over the course of the year (detailed below). Experimental group teachers had the choice of selecting pairs of dates among three offerings between June and August. Though the randomized portion of the study examining effects of PD only involved English speaking lead teachers, the Spanish speaking lead teacher groups were also included in the PD group. The purpose of this was to ensure that all teachers participating in the staff language configuration piece of the study had the same information and strategies from which to draw for teaching. In addition, the use of a self assessment of supports for DLLs was designed to closely match topics presented in the PD modules. Teacher characteristics for all groups, including control and treatment divisions for the first research question are reported in Table 4 below.

Table 4.

Teacher characteristics of full sample for both research questions

	Treatment			Control
	E-S	S-S	S-E	E-S
	N=23	N=10	N=25	N=20
Lead Teachers				
Years Exp. in ECE	8.69	8.60	5.67	6.42
Highest Degree BA	55.60	90.00	62.50	50.00
Highest Degree MA	44.40	10.00	29.20	50.00
Highest Degree PhD			8.30	
ECE cert via alternate[2]	50.00	70.00	61.90	27.80
Assistant Teachers				
Years Exp. in ECE	5.89	4.06	4.80	6.67
BA not Finished	44.00	10.00	61.10	19.00
Highest Degree BA	48.00	70.00	33.30	76.20
Highest Degree MA				4.80
Highest Degree PhD				
Has ECE Certification	14.30	33.3	6.70	33.30

Coaches. The role of coaches was a pre-existing one, established by the State's Office of Early Childhood Education. The State's *Preschool Implementation Guidelines* (2010) direct districts implementing preschool to designate one master teacher (also referred to as coach) for every 20 preschool classrooms. The Guidelines state that the priority for master teachers/coaches is to observe and collaboratively engage teachers to better their practice through a "reflective coaching cycle of improvement and second, to provide professional development opportunities for the teachers in their district" (2010, p.8). Though most of the coach's responsibilities linked to these priorities, another responsibility that was given much emphasis was the administration of standardized measures of classroom quality (e.g. Early Childhood Environmental Rating Scale;

[2] Alternate route is a non-traditional teacher preparation program designed for those individuals who have not completed a formal teacher preparation program at an accredited college or university, but wish to obtain the necessary training to become a NJ certified teacher (NJ DOE).

(ECERS), and High Scope's Program Quality Assessment, (PQA) to monitor quality once per year. The state's *Preschool Implementation Guidelines* required these be performed by districts yearly. The presence of this infrastructure made it a useful vehicle through which to offer sustained and ongoing support for all the teachers.

The study included all 8 coaches designated to work with district based programs. Coaches' participation involved attendance at all intervention efforts (training modules) along with participating teacher teams to receive content and recommendations in the same way that teachers did. Subsequently, coaches served to monitor and coach teachers within the framework set forth by the professional development intervention. Given that coaches work within schools, they were aware of which teachers in the E-S group were in the experimental group and which were in the control group. They were strictly instructed not to offer coaching to the control group around information learned in the PD intervention modules on supports for DLLs.

Children. The full sample of children across all treatment groups included a total of 383 children. To answer RQ#1 however, only children from the E-S and control groups are compared. The E-S treatment group included a total of 97 children and the control group, 120. To answer RQ#2, children from all three staff language configurations are compared, though children from the E-S treatment and control groups are treated as one large group (E-S). Table 5 presents the descriptives for the child sample for both research questions.

Table 5.

Child sample characteristics of full sample for both research questions

	Full Sample N=383	E-S Treatment N=97	E-S Control N=120	S-E N=123	S-S N=43
Percent Female	52.20	54.60	52.50	47.20	60.50
Ethnicity					
Asian	2.90	5.20	2.50	0.80	4.70
Black	4.20	4.10	6.70	3.30	-
Hispanic	88.00	85.60	85.00	91.90	90.70
White	1.30	3.10	0.80	0.80	2.30
Home Language of Child					
English	12.30	10.30	15.80	11.40	9.30
Spanish	64.20	64.90	64.20	65.00	60.50
Both English & Spanish	17.20	15.50	12.50	22.00	20.90
Other	3.90	7.20	3.30	0.80	7.00
Mother's Education					
Less than HS	26.60	27.90	26.70	25.20	27.90
HS or equivalent	38.40	36.10	40.00	37.40	41.90
Vocational after HS	4.70	4.10	2.50	8.10	2.30
Some college	17.20	20.60	15.00	18.70	11.60
Graduate/Professional	2.30	1.00	3.30	0.80	7.00
AA	0.30	1.00	-	-	-
BA	0.50	-	-	0.80	2.30
Missing	9.90	9.30	12.50	8.90	7.00

Professional Development/Intervention

Research has found that PD to enhance teaching of preschool DLLs is more effective when it focuses on the teachers' knowledge of language acquisition development, the curriculum, and how students learn (Zepeda, et. al, 2011). Furthermore as the consensus for best practices in professional development calls for intense, sustained and classroom-based approaches (Tout, Zaslow, and Berry; 2006; Loeb, Rouse, & Shorris, 2007; Klein & Gomby, 2008) the training modules attempted to reflect these

practices. Moreover, the professional development modules were created on an assumption that not only were teachers struggling in practice to best help their DLLs, but that they were also limited in their knowledge-base of how language learning occurs when two languages are learned simultaneously. The following is a description of the timing, content and format of the PD that was given to teachers.

Module One: Supporting Language and Learning in Emerging Bilingual Children

The initial professional development module was offered to the intervention group of teachers, their assistant, and coaches over the course of two full days. Participants selected dates from three available choices that ranged from the days just following the last day of school in June, to mid-July, to the weeks right before the start of the new school year in August. Teachers and assistants were compensated for attending the trainings and breakfast and lunch were provided. The contents consisted of both research-based strategies for working with dual language learners, as well as some conceptual information about the trajectory of oral language development for young children. Most specifically, the aim of the PD was to provide strategies for teachers to help with English acquisition, but also to create awareness for the importance of home language maintenance through instruction in school. Coaches and teachers alike were explicitly told not to share information with teachers in their buildings outside of pre-organized work groups so as not to inform the control teachers of the practices being learned through the study.

Establishing background knowledge. The first topic, focused on creating awareness among teachers about the demographic landscape of DLLs in the state as well as the research that supports the work we would be supporting teachers to do as part of

the study. The purpose of this was to establish a common ground of understanding about why home language maintenance is important and how it can benefit DLLs. To do this, data were presented to teachers to illustrate the numbers of DLLs around the state as well as information about the achievement gap relative to young DLLs. This was followed by a brief introduction to the limited research (at the time), that showed that DLLs fared better in environments that supported their HL in preschool settings. Following this, teachers were also presented with myths about learning two languages. The underlying rationale was that teachers would likely be uncomfortable with the idea that teaching children in their home language was helpful for learning English and that these attitudes could potentially affect teachers' willingness to implement our strategies. This introduction was immediately followed with information about the theory and stages of second language acquisition, mainly based on Tabors (2008) in early childhood. To end this section, teachers were also given information and statistics on the benefits of bilingualism in adulthood. In short, the goal of this part of professional development was to educate teachers on the content and begin to create supportive attitudes towards using home language for instruction.

Creating a supportive environment. Following the introduction, teachers were presented with information and strategies for building positive relationships with students and families. The emphasis of this portion was about the importance of learning about students' home language and culture, including that of language abilities. The parent questionnaire in Tabors' *One Child, Two Languages* was used as an example of the kinds of information that is important for teaches to know about their students. The next portion of the workshop included strategies to then incorporate family background information

into the classroom to create a supportive and welcoming environment. Ideas included things such as use of family photos in the classroom, use of books that reflect children's cultures and homes, songs, stories and even food items in the dramatic play area that are familiar to children from home.

Supporting language, literacy, and content in the home language. Once the classroom environment strategies were discussed, teachers were then given strategies on the importance of supporting home language in the classroom. Teachers were encouraged to write dictation in Spanish, to lead small and whole group lessons in Spanish and to create displays including a Spanish alphabet that used pictures and words. The first day concluded with a discussion about teachers concerns about the recommended practices. Concerns about how children would learn English arose, as well as about children who didn't speak Spanish, and whether they would feel left behind or confused. All of these were discussed between the workshop leaders and the teachers in whole group format. A portion of this section was also devoted to creating and awareness among the teachers to support parents and families on the importance of home language maintenance as well. Teachers were provided with strategies to involve parents in the classroom in ways other than reading a story and to ensure that an attractive lending library was present with books in the home language for families to borrow. Specifically they were told to encourage parents to use their strongest language at home and to insist that they know that these practices help children to learn English and succeed in school.

Language and content-rich classrooms. The second day began with the presentation of supports for content-rich classrooms for DLLs. The premise of this portion was to encourage intentionality of teaching through deep exploration of themes or

topics with opportunities for teachers to repeat and revisit vocabulary and concepts over time. Teachers were also given strategies for developing vocabulary. Teachers were asked to analyze talk samples of both teachers and children to identify scaffolding strategies for increasing language production in both English and Spanish.

Supporting English acquisition. The final part of day two, focused entirely on strategies for helping DLLs to learn English. This part was given a heavy emphasis as while home language supports were seen as important, it was also true that most of the lead teachers were not Spanish speakers. To begin, the idea of *comprehensible input* was introduced. Teachers were given specific strategies for providing this support in different ways. Teachers were also reintroduced to Tabors' (2008) stages of second language acquisition, in an activity where they read a vignette, and identified the stage of language acquisition of the child. A long time was also spent on strategies for read alouds in English. Teachers were given time to select a book and plan a detailed read-aloud for use in their classroom. Planning included identifying key vocabulary, questions for before, during and after the story. The goal of this activity was to emphasize the need for advanced planning and intentional practice for DLLs. Following this activity teachers were presented with information about the need for similar planning and scaffolds with small groups. Teachers were shown a video example of a small group experience with children and then identified and discussed the strategies they observed in the clip. Teachers were also given vignettes of small group interactions that modeled some of the strategies presented. The final topic of the day was about use of intentional language to support acquisition and language maintenance during independent play times. Teachers

were given time to plan for interactions during independent play routines to get them thinking about vocabulary and questions that could potentially be used as children play.

Module Two: Introduction of a Tool for Supporting Reflective Practice

The second training module was delivered in October to introduce a professional development tool called the, *Self-Evaluation of Supports for Emergent Bilingual Acquisition* (SESEBA: Frede, Freedson, & Figueras-Daniel, 2009) which would be used by coaches and teachers to self-assess on their support for the social, cognitive and linguistic development of the DLLs, in their classrooms. This was our attempt to foster a sustainable professional development model that could be practiced and turn-keyed and implemented by the staff themselves, without the support of researchers. The self-assessment measure focused on language and literacy, and so did not contain any kind of quantifying system with which to derive a score. The SESEBA, the PD module and a parallel research tool (CASEBA, which will be discussed under measures) were all developed intentionally to complement each other. Coaches and teachers were asked to use the *SESEBA* to guide themselves in a "reflexive-coaching" style, which is the statewide default coaching model used by the state's Office of Early Childhood Education department. Though we reviewed this process with the coaches, we assumed, based on our knowledge of statewide practices, that all coaches were familiar with and using the model effectively. For our purposes we emphasized that the *SESEBA* was to be conducted initially, with teachers' self-assessment of their own classroom and teaching practices. Teachers were instructed to document evidence that specifically and directly illustrated the criterion listed by each of the items in the measure. The aim of the collection of these data by the teacher and coach was to provide a springboard for discussions between

teachers and coaches as they worked together to continually improve teaching and learning. Ongoing focused observation and coaching feedback sessions were to be completed to measure progress toward meeting the objectives. To ensure proper use of the instrument, the research project coordinator accompanied each master teacher/coach between early October and mid-November 2009 to observe their respective teachers and to have follow-up discussions of the observations with their collaborating teachers. Initial observations conducted between coaches and teachers were returned to the researchers by the end of November.

Module Three: Use of Data to Inform Ongoing Development

A second full day of training was conducted in November to review the SESEBA results and to address some of the concerns that arose from discussions with teachers in the workshops and the Fall 2009 data collection on classroom level quality and supports for DLLs. One of the concerns raised was that teachers who did not speak Spanish needed support with a list of “survival” school-related words/phrases in Spanish to use with their students. Other topics of the training included "importance of content-rich curriculum for DLLs", "building language through independent play," "designing dramatic play centers," and "enhancing literacy supports through group charts and read-alouds".

Ongoing Efforts

Outside of the whole-group professional development efforts described above, key personnel from NIEER also held monthly meetings for 2 hours with coaches to debrief and to comment on progress made by their teachers. The goal of these meetings was to support coaches in their effort to support teachers in their typical duties but with

DLL supports as a focus. Given that the modules were lead by NIEER staff, the goal of this part of the intervention was to build capacity within regular district positions, to ensure sustainability of the practices introduced via the study. This was done systematically every month from September 2009 through June 2010.

Qualitative Anecdotes of Personal Involvement

My personal involvement in this study included two separate roles. The first involved all coordination efforts related to data collection. Included in my responsibilities were hiring, training and assignment of observations to data collectors. I also logged progress and data as it was returned from the field. In addition, I coordinated the entry of data into spreadsheets and data bases and ensuring that all data was correct and clean for analysis. The second was delivering pieces of the workshops and attending all meetings with coaches and teachers. This allowed me to see how teachers received the suggestions of the PD, which they largely viewed as new. Specifically, the content of the PD that teachers considered new, was the idea that use of home language for instruction was a support for DLLs, and that they should (when possible) encourage home language development. More about this is described in the results section.

Data Collection

In keeping with the literature, and the conceptual framework, classroom quality and teacher attitudes were evaluated both pre-intervention and post-intervention along with child outcomes. Child outcome measures included tests of receptive vocabulary, math skills, self regulation skills and literacy skills in both English and Spanish. Parallel testing in English and Spanish was used on all measures for all children to ascertain whether children in each respective group made gains in one or both languages given

their teachers' staff language arrangements and participation in professional development. Classrooms were assessed on three scales of classroom quality, one specific to supports for emergent bilingual acquisition, one in math supports and one of general quality.

Classroom Measures

The *Classroom Assessment of Supports for Emergent Bilingual Acquisition* (CASEBA; Freedson, Figueras & Frede, 2009) served as the main measure of the quality of language and literacy supports offered by the teachers with a specific focus on DLLs and home language maintenance. The CASEBA was a newly developed research tool designed by the research team (NIEER) to assess the degree to which preschool teachers and classrooms are providing support for the social, cognitive and linguistic development of Dual Language Learners (DLLs), with a focus on language and literacy. The underlying premise of the measure is that use of high quality and meaningful interactions in the home language along with intentional and well planned strategies for English language learning is the best approach to teaching preschool aged DLLs. The CASEBA consists of 26 research-based items which cluster around six broad aspects of the early childhood curriculum: 1) gathering background information, 2) cultural inclusion, 3) curriculum content, 4) supports for home language and English acquisition, 5) social-emotional supports and classroom management, and 6) assessment. Items are rated on a 1-7 scale and depend completely on observation with some exceptions to ask the teacher interview questions. Some items relate directly to the lead teacher's interactions with parallel items to record the same concepts for the assistant teacher. Table 4 below presents an overview of each item in the CASEBA.

A validity study of the CASEBA was conducted in classrooms in New Jersey (Freedson, Figueras-Daniel, Frede, Jung & Sideris, 2011). This study utilizing confirmatory factor analysis found a five factor solution: (1) supports for English acquisition, (2) supports for English print literacy, (3) supports for home language, (4) culturally responsive environment, and (5) knowledge of child background (Freedson, et al., 2011). Concurrent validity of the CASEBA was also assessed by estimating correlations between CASEBA and ECERS-R scores. They found a weak correlation between the CASEBA's supports for home language factor and language interactions measured by the ECERS-R, suggesting that the CASEBA captures language supports for DLLs in different ways from the ECERS-R. Using data from the same preliminary study for exploratory and confirmatory factor analysis Valentino (2015) found support for a four factor structure: (1) assistant teacher home language (2) lead teacher home language and (3) English language development and (4) classroom, structure/environment. Valentino (2015) also found some evidence of the predictive validity, with the CASEBA predicting growth in DLLs' vocabulary and executive function skills on classrooms scoring using a threshold analysis.

In one recent review of measures of early education quality, Peisner-Feinberg and colleagues (2014) found that although widely used measures of classroom quality behave similarly for DLLs and monolingual children, only those observation measures that were expressly designed to measure supports for DLLs actually capture dimensions of the environment that are uniquely important for DLLs. This review suggests that although general measures of quality fare well for DLLs, more specifically designed measures will provide better insights as to what particular instructional practices and environmental

features support DLLs' development across multiple domains, and their school readiness skills. In this review, only two studies reviewed by Peisner-Feinberg and colleagues (2014) utilized measures specifically designed to capture supports for DLLs in both English and the home language: the Supports for English Language Learners Classroom Assessment (SELLCA; NIEER 2005) and the Early Language and Literacy Classroom Observation- Addendum (ELLCO-A; Castro, 2005) which measures literacy supports and environments.

Given these findings, the use of CASEBA in this study presents a very unique opportunity as it has been noted that in part, data on DLL policies are missing due to lack of available measures through which to collect the information (Castro, Espinosa & Paez, 2011). The CASEBA has been highlighted as a valuable tool to focus on the extent to which teacher practices and classroom quality specifically address the needs of DLL children (Castro, Espinosa & Paez, 2011). In addition, the structure of the CASEBA in its ability to examine the practices of teachers and assistant teachers independently makes for perfect match for examining the staff language configuration related questions of the study. Table 6 below presents individual CASEBA items.

Table 6.

CASEBA items.

1.	The teacher and/or center collect systematic information on the language and cultural background of each child in the classroom.
2.	The lead teacher knows the language and cultural background of each child in the classroom
3.	The cultural backgrounds and life experiences of the DLL children are incorporated into the life of the classroom.
4.	The lead teacher uses a home language of the DLL children for instructional purposes
5.	The paraprofessional or assistant teacher uses a home language of the DLL children for instructional purposes.
6.	The lead teacher attempts to learn and use the home language/s spoken by the DLL children in the classroom, although she/he lacks proficiency in the language.
7.	The lead teacher uses high quality talk in the students' home language.
8.	The assistant teacher uses high quality talk in the students' home language.
9.	Teaching staff use effective strategies during group instruction to support on-going development of the home language.
10.	Teaching staff provide rich Read-aloud experiences in the home language.
11.	Teaching staff interact with one on one DLL children in ways that support the development of the home language
12.	Teaching staff expand children's repertoire of concepts and vocabulary in the home language.
13.	Books, print, and literacy props are available in the DLL children's home language/s
14.	Teaching staff support the learning of print-related early literacy skills in the DLL children's home language/s.
15.	The lead teacher uses high quality talk in English.
16.	The assistant teacher uses high quality talk in English.
17.	Teaching staff use effective strategies to scaffold children's comprehension of instructional content in English.
18.	Teaching staff use effective strategies during group instruction to build children's communicative skills in English.
19.	Teaching staff provide rich Read-aloud experiences in English.
20.	Teaching staff interact one on one with DLL children in ways that support the acquisition of English
21.	Teaching staff expand children's repertoire of concepts and vocabulary in English.
22.	Books, print and literacy props are available in English.
23.	Teaching staff support the learning of print-related early literacy skills in English.
24.	Teaching staff provide a warm, emotionally supportive and low-anxiety classroom environment for English language learners.
25.	Teaching staff create a content-rich curriculum that offers meaningful opportunities to acquire and use new language skills
26.	Teaching staff help DLL parents support their children's language and literacy development at home.
27.	Teaching staff use appropriate assessment practices to identify children's language strengths and needs in their home language and in English.

A factor analysis of CASEBA was conducted to establish what items of the tool belonged to an underlying dimension. Using a maximum likelihood factor analysis, four factors were identified. The factors identified include: 1) Assessment, 2) Language Supports, 3) English Language development, 4) Structure/Classroom Environment.

Factor scores based on these loadings are used in subsequent analyses to understand whether particular sets of practices as defined by the factors are related to the dependent variables. Table 7 presents the results of the factor analysis.

Table 7.

Factor loadings and coefficients from maximum likelihood factor analysis

	Factor 1 (Assessment)	Factor 2 (Language Supports)	Factor 3 (English Language Development)	Factor 4 (Structure/ Classroom Environment)
1. The teacher and/or center collect systematic information on the language and cultural background of each child in the classroom.	.404 (.018)			
2. The teacher knows the language and cultural background of each child in the classroom				.162 (.045)
3. The cultural backgrounds and life experiences of the ELL children are incorporated into the life of the classroom.				.483 (.189)
4. The lead teacher uses a home language of the ELL children for instructional purposes		.323 (.025)		
5. The paraprofessional or assistant teacher uses a home language of the ELL children for instructional purposes.		.625 (.232)		
6. The teacher attempts to learn and use the home language/s spoken by the ELL children in the classroom, although she/he lacks proficiency in the language.*		.491 (.054)		
7. The lead teacher uses high quality talk in the students' home language.		.123 (.026)		
8. The assistant teacher uses high quality talk in the students' home language.		.679 (.247)		
9. Teaching staff use effective strategies during group instruction to support on-going development of the home language.		.597 (.187)		
10. Teaching staff interact with individual ELL children in ways that support on-going development of the home language		.701 (.196)		
11. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in the home language.		.557 (.196)		
12. Books, print, and literacy props are available in the ELL children's home language/s				.367 (.153)
13. Teaching staff support the learning of word-level early literacy skills in the ELL children's home language/s.				.425 (.166)
14. Teaching staff encourage ELL parents to maintain children's home language.				.420 (.152)
15. The lead teacher uses high quality talk in English.		.394 (-.004)		
16. The assistant teacher uses high quality talk in English.			.339 (.099)	
17. Teaching staff use effective strategies to scaffold children's comprehension of instructional content in English.		.558 (.018)		

	Factor 1 (Assessment)	Factor 2 (Language Supports)	Factor 3 (English Language Development)	Factor 4 (Structure/ Classroom Environment)
18. Teaching staff use effective strategies during group instruction to build children's communicative skills in English.			.465 (.195)	
19. Teaching staff interact with individual ELL children in ways that support the acquisition of English		.556 (.005)		
20. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in English.		.422 (-.016)		
21. Books, print and literacy props are available in English.		.268 (.002)		
22. Teaching staff support the learning of word-level early literacy skills in English.			.398 (.130)	
23. Teaching staff provide a warm, emotionally supportive and low-anxiety classroom environment for English language learners.		.402 (.040)		
24. Teaching staff foster a calm and respectful learning environment in which ELL children are able to hear adult talk				.067 (.017)
25. Teacher staff create a content-rich curriculum that offers meaningful opportunities to acquire and use new language skills			.341 (.061)	
26. Teaching staff use appropriate assessment practices to identify children's language strengths and needs in their home language and in English.	.999 (.991)			

The *Early Childhood Environmental Rating Scale - Revised* (ECERS-R*;* Harms, Clifford and Cryer, 2005) also was used to provide a global measure of preschool classroom quality during Spring 2009 and Spring 2010. With 43 items that cover a broad range of quality considerations from safety to teacher-child interaction to parent involvement, the study utilized items 1-37 which covered all of the aspects of the instrument with the exception of the teacher self report items at the end. The ECERS-R is widely used and has been extensively studied. Research on reliability and validity has found that there is 70% agreement at the indicator, item and total score levels. Chronbach's alpha for the ECERS-R is above 0.90. Though the ECERS-R may not add to

data about practices specific to DLLs, its established reputation for measuring quality of early childhood environments allows for scores to serve as a control in this study. In short, ECERS-R scores will be used to understand whether quality in the staffing structures varies at a more basic level, and whether DLL supports as measured by CASEBA are different because of teacher practices or language proficiency.

The *Teacher Questionnaire on English Language Learners* (Cuellar-Klitzke, 2009) was developed to assess teacher attitudes and beliefs around home language practices in school and at home. The self-administered questionnaire includes 16 items all scored on a 5-point Likert scale where scores of 1 on an item indicates strong disagreement and 5 indicates strong agreement. Questions on the questionnaire mainly revolve around two factors; 1) the use of Spanish for instruction in the classroom 2) the idea that home language maintenance is important, which will be used in subsequent analyses. Teachers and assistant teachers completed the questionnaires independently. There is currently no reliability or validity information on this measure.

A factor analysis was conducted on these data to determine the degree to which items were related to each other as well as for in subsequent analyses. Given that the survey has obvious themes, a factor extraction was conducted through a maximum likelihood analysis of both the pre- and post test teacher and assistant teacher surveys. Two factors were hypothesized and confirmed. The first contained items relating to the prevalence of positive attitudes towards the use of Spanish in the classroom as a means of strengthening opportunities for English language acquisition, including for instruction. The second, included items generally associated with the notion that home language maintenance is important for young dual language learners and also contained all of the

reverse coded items that are negatively stated in the survey. For the purpose of this dissertation, Factor 1 will be referred to as "attitudes and beliefs about use of Spanish for instruction" and Factor 2 as "attitudes and beliefs about home language maintenance through school." Factor loadings of the analysis are presented in Table 8.

Table 8.

Factor loadings for Teacher Questionnaire on English Language Learners

Factor 1: Attitudes and Beliefs about Use of Spanish for Instruction	*p*-value
3. I am well prepared to teach in a way that meets my ELL children's needs	.324
5. I speak or attempt to speak Spanish in the classroom because it helps children learn English	.470
9. Children should learn both English and Spanish at school	.575
10. I incorporate the children's cultural background in my classroom	.651
11. ELL parents should be encouraged to speak to their children in Spanish whenever possible	.519
12. I teach or attempt to teach children academic topics in both English and Spanish	.506
13. I support my children's acquisition of Spanish in the classroom to help them learn English	.798
14. Enough books and other props from al children's home languages and cultures are present in the classroom	.532
15. I know which languages are spoken in my children's homes	.697
16. I know the amount of English exposure in the home that my ELL children receive	.392
Factor 2: Attitudes and Beliefs about Home Language Maintenance through School	*p*-value
1.* Learning two languages in the classroom might be confusing for young children	.525
2.* Spanish should be used to give directions but not for instructional purposes	.531
4.* I speak only in English in the classroom so that children to better academically	.428
6.* ELL parents should be encouraged to speak to their children in English whenever possible	.325
7.* ELL children should primarily learn Spanish at home and English at school	.514
8.* Teachers should not speak Spanish in the classroom unless they speak it fluently	.351

Child Level Measures

Children's receptive vocabulary were assessed at the beginning and end of the school year and children were tested in both English and Spanish. Assessments were conducted one-on-one in the child's school, and were scheduled to avoid meal, nap and outdoor play times. Testing sessions lasted from 20 to 30 minutes. Given the research on appropriate assessment practices for DLLs, a parallel format was utilized in order to

capture what children knew conceptually versus just language proficiency. In short, this meant that children were tested in both English and Spanish when possible. Though the same sequence was used for tests, the language for testing was separated and children were tested on different days in each of the languages. This process also helped in avoiding the problem of determining which language was dominant for the children either by the assessor, or the teacher (Barrueco, Lopez, Ong, & Lozano, 2012). Family background information was obtained from school district records, and teacher background information was collected via an interview.

The Peabody Picture Vocabulary Test – Third Edition (PPVT – III) and Test de Vocabulario en Imagenes Peabody (TVIP) - The PPVT–III (Dunn & Dunn, 1997) is a 204-item test of receptive vocabulary in standard English. The Spanish language counterpart to this measure, the TVIP (Dunn, Lugo, Padilla, & Dunn, 1986) uses 125 translated items from the PPVT to assess receptive vocabulary acquisition of Spanish-speaking and bilingual students. These instruments were normed on separate populations of native language speakers and have established split/half and test/retest reliability as well as concurrent and predictive validity (Dunn, Lugo, Padilla, & Dunn, 1986).

Procedures

Classroom observations were conducted in Spring of 2009 (prior to any professional development offerings), Fall of 2009 (following summer professional development), and Spring of 2010. These observations were conducted using the CASEBA and ECERS-R. In addition, teachers and assistant teachers were surveyed in Fall of 2009 and in Spring of 2010 on their attitudes regarding practices relating to DLLs and the use of Spanish in formal school settings.

Classroom observers were trained by NIEER on CASEBA, and ECERS-R. All observers were also required to be bilingual as the instruments hoped to capture interactions in both English and Spanish. Training for both instruments was conducted over the course of one week in a classroom setting, and was followed by reliability visits with already reliable observers. Each observer was held to a standard of 80 percent agreement with respective reliable observers. Observers were required to achieve these levels of agreement on all three measures three times. All observers were expected to conduct the observations simultaneously and were therefore held to this expectation, even during reliability visits. Observations were conducted as much as possible in the same order and by the same observer from fall to spring. In addition all observations were conducted within a six week timeframe at each time (e.g., for the Fall between the last week in September and the second week in November and in the Spring between the last week in April and the first week in June).

Child assessors were trained on each child assessment in the fall of 2009, just prior to the start of data collection. Training consisted of one day of in-classroom learning time to learn the measures, and one day of one-on-one shadow scoring to ensure 100 percent accuracy. A one-day refresher training on all assessment measures took place in late spring, just prior to the final round of child assessments. Training was used only as a refresher, since all data collectors were returning from the fall, and were therefore already trained to reliability.

Analytic Strategy

Research Question 1

To answer the first research question about whether the professional development focused on supporting DLL students in the preschool classroom produced change a one-way analysis of covariance was used for classroom level outcomes and multilevel modeling to test hypotheses for child outcomes. This examined whether the professional development intervention was associated with a significant improvement in teaching practices related to dual language acquisition by treatment teachers (E-S experimental group) relative to control teachers (E-S control group) over the course of one school year. The CASEBA was the measure that most accurately described the quality of classroom practices around home language maintenance and English acquisition, and thus, served as the dependent variable ($CASEBA_{Spring}$). Individual CASEBA factor scores were also used as dependent variables ($CASEBA\_F1_{Spring,}$ $CASEBA\_F2_{Spring,}$ $CASEBA\_F3_{Spring,}$ and $CASEBA\_F4_{Spring}$). The ECERS-R will also be used as a dependent variable ($ECERS_{Spring}$) to measure for impacts of PD on general quality and served as a comparison to analysis between classrooms who did and did not receive DLL focused PD as measured by CASEBA. The independent variable, $\gamma_1 PD$ denotes whether the teacher received the professional development intervention or not (coded 0 for controls and 1 for the treatment group). Control variables included teacher characteristics such as years of experience, highest degree earned and attitudes. Classroom level controls included pre-test CASEBA scores from Spring 2009. The equation for this model was as follows:

$$CASEBA_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$$

$$CASEBA\_F1_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$$

$CASEBA\_F2_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$
$CASEBA\_F3_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$
$CASEBA\_F4_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$
$ECERS_{Spring} = \gamma_0 + \gamma_1 PD + \gamma_2(Teacher\ Characteristics) + \gamma_3(Classroom\ Characteristics) + u_{i.}$

To answer the research question concerning whether the learning gains of DLLs differed between the group of teachers who received PD and of control group teachers that did not receive it, a two-level Hierarchical Linear Model (HLM) was estimated. This model is specified in the following two equations:

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j}(Pre\text{-}test) + \beta_{2j}(Student\ Characteristics) + r_{ij}$
Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(PD) + \gamma_{02}(Teacher\ Characteristics) + \gamma_{03}(Classroom\ Characteristics) + u_{0j}$

In level-1, Y_{ij} is the academic outcome assessment score (PPVT or TVIP) for child i^{th} in classroom j^{th}, β_{1j} (*Pre-test*) is the pretest score on the respective academic outcome assessment score for child *i* in classroom *j*, β_{2j} (*Student Characteristics*) is a vector of *j* child and family characteristics including child gender, child race/ethnicity, child's age, and parental education. r_{ij} is the random error term for the i^{th} student in the j^{th} classroom. For the level-2 (classroom-level) equation, γ_{02} (*Teacher Characteristics*) and γ_{03} (*Classroom Characteristics*) are coefficients for vectors of teacher classroom level conditions and u_{0j} is a random error term.

Research Question 2

To answer the second research question about whether observed classroom quality differed among staffing models, ANCOVA was also used. The model follows:

$CASEBA_{Spring} = \gamma_0 + \gamma_1(S\text{-}E\ Group) + \gamma_2(S\text{-}S\ Group) + \gamma_3(Classroom\ Characteristics) + \mu_{i.}$

Again $CASEBA_{Spring}$ served as the dependent variable. The independent variables γ_1 (*S-E Group*) and γ_2(*S-S Group*), represented staffing arrangements where the lead teacher was the Spanish speaker and the English speaker was the assistant (S-E), or when both the lead and assistant teachers spoke Spanish (S-S). The omitted group here were those where the lead teacher is the English speaker and was paired with a Spanish speaking assistant teacher (E-S), as this was the most usual staffing arrangement. Use of this model helped to distinguish whether supports as measured by the CASEBA varied with different staff language arrangements.

The second portion of this question addressed the effects of the staffing models on the vocabulary gains of preschoolers. This question investigated the impact of staff language on children's gains in vocabulary. To account for the nested structure of the data, Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) was employed as the analytical estimation technique. The model was as follows:

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j}$(*Pre-test*) + β_{2j} (*Student Characteristics*) + r_{ij}
Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}$ (*S-E Group*) + γ_{02} *(S-S Group)* + γ_{03}(*Teacher Characteristics*) + γ_{04}(*Classroom Characteristics*) + u_{0j}

The dependent variable Yij in each of these analyses represented scores in receptive vocabulary for the i^{th} student in the j^{th} classroom. β_{0j} is the mean outcome for the j^{th} classroom. β_{1j}(*Pre-test*) and β_{2j} (*Student Characteristics*) were the coefficients for pre-test and student characteristics, and r_{ij} was the random error term for the i^{th} student in the j^{th} classroom.

At the classroom level (level 2), γ_{00} was the predicted grand mean outcome for all students with γ_{01} and γ_{02} as the random effect associated with the j^{th} classroom. γ_{01} (*S-E Group*) and γ_{02} *(S-S Group)* were the coefficients for teacher staff language groups (S-E

and S-S), with E-S omitted. γ_{03}(*Teacher Characteristics*) and γ_{04}(*Classroom Characteristics*) were the coefficients for vectors of teacher and classroom characteristics such as education, years experience and pre-test CASEBA scores. Finally, u_{0j} was the random effect associated with the j^{th} classroom.

CHAPTER 4

Findings

The two main questions posed by this dissertation essentially required two separate, but closely related studies. Therefore, this chapter presents analyses and their results for each research question separately even though the analyses for the two questions draw upon some of the same data. Classroom level data include observations using the CASEBA and ECERS-R that were conducted at three time points: spring of 2009, fall of 2009, and spring of 2010. Question 1 analyses use data from the first and last observation. Question 2 analyses use data from the second two observations. Analyses for both questions also use data on teacher attitudes and children's language development (PPVT and TVIP). Table 9 summarizes the outcome measures analyzed by time of data collection for both research questions.

Analyses for research Question 1 estimated the effects of professional development on classroom quality, teacher attitudes, and children's language development. For the analyses of effects on classroom level outcomes, observation and attitude measures in spring of 2009 provided the baseline or pre-test assessment as these were obtained prior to the treatment, which occurred in the summer. Observation and attitude measures in fall of 2009 provided the immediate post-tests. Observation and attitude measures in spring of 2010 provided the distal post-tests. For the analyses of effects on children's language development, pretests were provided by data collected in fall of 2009 and post-tests by data collected in spring of 2010.

Analyses conducted for research Question 2 tested for associations between staff language configuration (Spanish-English, Spanish-Spanish, and English-Spanish) and

classroom quality and children's language development. For classroom quality measures there are no "pre-tests" as this question is not about change but only examines the association between staff language configuration and quality. However, it is assessed at two different time points during the same school year. For analyses of the association with children's language development over the year, pretests were provided by data collected in fall of 2009 and post-tests by data collected in spring of 2010.

Table 9.

Outcome measures by research question and time.

	Spring 2009	Fall 2009	Spring 2010
Research Question 1 (PD)			
CASEBA	X		X
ECERS-R	X		X
Teacher Attitude Survey		X	X
PPVT		X	X
TVIP		X	X
Research Question 2 (Staffing Language)			
CASEBA		X	X
ECERS-R			X
Teacher Attitude Survey		X	X
PPVT		X	X
TVIP		X	X

Research Question 1: Professional Development Intervention Study

The following section presents findings for the first research question: Does a professional development intervention focused on DLL supports improve classroom quality and result in greater learning gains for children? With respect to classroom quality, three measures are analyzed: CASEBA, ECERS-R, and a survey of teacher attitudes. Analyses of children's learning focuses on two measures of language development, PPVT and TVIP. To address this question only the English-Spanish group teachers (N= 43) and their students are included in the analyses as they were the only ones randomly assigned to treatment or control professional development conditions.

Note that if the intervention did significantly improve teaching and learning for the treatment group then this would have to be taken into account in the analyses for Research Question 2 as it would introduce a difference in the English-Spanish configuration that would not otherwise exit.

Classroom Quality Descriptives. The post-test CASEBA overall mean and factor scores are the primary classroom quality outcomes of interest. The other teacher-level dependent variables examined are the ECERS-R mean and subscale scores and teacher attitudes. Pre-treatment assessments on each measure provide a baseline against which to measure change over time and control variables include teacher characteristics. Table 10 presents statistic descriptives for each of these sets of variables as they pertain to Research Question 1 about classroom level differences between treatment and control groups. Both full sample and analytic sample data (classrooms with a pre- and post-test data) are presented, though only the analytic sample is used for all subsequent analyses. ANOVA was conducted to test for group differences at pre-test for each sample. These indicate that there were no pre-test differences between treatment and control on either of the classroom observation tools on attitudes, or in the teachers' background characteristics. Descriptives for the full sample (treatment and control combined) on the same variables are presented in Table 1 in the Appendix.

While no significant differences are noted between the treatment and control groups, the means on the CASEBA factors indicate that the highest scores for both groups at pretest were for "Assessment." This factor contains two CASEBA items. The first is for teacher's awareness of the group's cultural and linguistic characteristics and the other is that the teacher assesses children's proficiency in both of their languages. All

other factor scores have averages between 3 and 4, which are considered to be just above minimal in quality. Mean scores by item for each group are presented in Table 2 in the Appendix.

Table 10.1

Descriptive statistics for classroom level variables at baseline.

	Full Sample				Analytic Sample			
	Treatment	Control	ES	*p*-value	Treatment	Control	ES	*p*-value
	M (SD)	M (SD)			M (SD)	M (SD)		
Variable	N=22	N=21			N= 21	N= 20		
CASEBA Spring 2009								
Factor 1: Assessment	4.23 (1.49)	4.83 (1.20)	-0.44	0.15	4.17 (1.49)	4.80 (1.22)	-0.46	0.146
Factor 2: Lang & Vocab Supports	3.53 (.69)	3.86 (1.07)	-0.36	0.231	3.46 (.62)	3.88 (1.09)	-0.47	0.131
Factor 3: Eng Lang Dev	3.51 (.78)	3.31 (.77)	0.26	0.401	3.54 (.80)	3.33 (.79)	0.26	0.4
Factor 4: Structure & Clsrm Envt	3.93 (.48)	3.90 (.67)	0.05	0.878	3.97 (.46)	3.93 (.68)	0.07	0.811
Overall CASEBA Mean	3.63 (.47)	3.83 (.72)	-0.33	0.279	3.60 (.46)	3.85 (.73)	-0.41	0.19
ECERS-R Spring 2009								
Space & Furnishings	5.39 (.87)	5.42 (.83)	-0.04	0.889	5.39 (.88)	5.40 (.85)	-0.01	0.978
Personal Care Routines	5.09 (1.32)	4.93 (1.34)	0.12	0.688	5.15 (1.31)	4.92 (1.37)	0.17	0.578
Language & Reasoning	4.45 (1.07)	4.60 (.95)	-0.15	0.652	4.42 (1.08)	4.59 (.98)	-0.16	0.599
Activities	5.00 (.64)	4.80 (.56)	0.33	0.305	5.00 (.65)	4.81 (.58)	0.31	0.305
Interactions	5.98 (.68)	5.68 (1.06)	0.34	0.262	6.05 (.62)	5.64 (1.08)	0.47	0.141
Program Structure	6.06 (.73)	5.88 (.92)	0.22	0.501	6.08 (.75)	5.88 (.94)	0.24	0.463
Overall ECERS-R Mean	5.27 (.55)	5.16 (.63)	0.18	0.572	5.29 (.56)	5.15 (.64)	0.23	0.473

*$p < .05$, **$p < .01$

Table 10.2

Descriptive statistics for teacher level variables at baseline.

Pre-Test Teachers Attitude Survey					N=20	N=20		
Factor 1: Spanish for instruction	4.05 (.66)	4.15 (.50)	-0.17	0.578	4.02 (.73)	4.17 (.53)	-0.24	0.471
Factor 2: Home language maintenance through school	4.05 (.70)	3.93 (.68)	0.17	0.56	4.20 (.63)	3.88 (.65)	0.5	0.117
Pre-Test Assistant Teachers					N=14	N=16		
Factor 1: Spanish for instruction	4.13 (.59)	4.26 (.84)	-0.18	0.588	4.24 (.40)	4.30 (.42)	-0.15	0.648
Factor 2: Home language maintenance through school	3.90 (.68)	3.70 (.69)	0.29	0.373	3.89 (.62)	3.73 (.55)	0.27	0.457
Independent								
Lead Teacher Yrs of Exp	8.69 (5.83)	6.42 (2.94)		0.092	9.26	6.83 (2.83)		
Lead Teacher highest degree	2.44 (.51)	2.50 (.51)		0.699				
Assistant Teacher Yrs of Exp	5.88 (2.41)	6.67 (5.51)		0.513	6.00	6.95 (5.91)		
Assistant Teacher highest degree	1.36 (.99)	1.76 (.70)		0.127				

*$p < .05$, **$p < .01$

Attitudes Survey Descriptives. Means and standard deviations for Attitude Survey factors at pretest for teachers and assistant teachers are also reported in Table 10 above. ANOVA was conducted to test group differences between treatment and control teachers and assistants at pretest. None of the factors were significantly different between treatment and control teachers or assistants at pretest. Tables 3.1 and 3.2 in the Appendix present the descriptive statistics for teachers and assistants by group for each individual survey item at pretest. Means for both groups indicate that teachers and assistants generally had positive attitudes about the use of Spanish for instruction in the classrooms.

All averages were well above a 3.0 which would indicate positive attitudes about Spanish language use in the classroom.

Results for Classroom Quality Measures

CASEBA. ANCOVA was conducted to estimate effects of the professional development on the treatment groups classroom practices and attitudes. The overall post test (spring 2010) CASEBA mean and factor scores were dependent variables. Because some teachers entered and some left the study after pretest, two sets of ANCOVAs are conducted. One set maximizes the sample by excluding pretest measures of classroom quality and attitudes relying on random assignment to ensure group equivalence. The other set includes pretest measures to adjust for incidental differences. Teacher group is a factor and teacher characteristics are used as covariates (coded as dummy variables) in all models. Tables 11 and 12 summarize all results. While no significant effects of treatment were found for the overall CASEBA mean, a modest effect of treatment was found on Factor 4, *Structure and Classroom Environment*. Full individual ANCOVA results for each factor can be found in Tables 4.1-4.5 (without pretest) and Tables 7.1-7.5 (with pretest) in the Appendix.

ECERS-R. ANCOVA was conducted on ECERS-R scores to investigate whether there were any general differences in classroom quality between treatment and control groups. No treatment effects were expected for the ECERS-R as the Professional Development (discussed in chapter 3) was focused only on specific supports for increasing language abilities of DLLs. The ECERS-R examines more general aspects of the classroom including space and materials, as well as interactions with children and is not at all specific to practices to support DLL children's language development in

particular. Unexpectedly, overall ECERS-R mean scores were higher for the control group when pre-test was used as a covariate with significance at the p<.05 level. This was evident as a trend in the ANCOVA without a pre-test as well. This difference was most evident with the personal care, and language and reasoning and program structure subscale effect sizes. Results of each ANCOVA can be found in Tables 9 and 10. Results of the 24 individual ECERS-R item ANCOVAs (including with and without pretests) can be found in the Appendix in Tables 5.1-5.7 (without pretest) and Tables 8.1-8.7 (with pretest).

Table 11.

ANCOVA results without pretest means by group, effect size and significance (p-value)

	N	Treatment M(SD)	N	Control M(SD)	ES	*p*-value
CASEBA						
Factor 1: Assessment	23	5.65 (1.00)	20	5.55 (1.06)	.09	.985
Factor 2: Language and Vocabulary Supports	23	3.95 (.67)	20	3.86 (.75)	.13	.904
Factor 3: English Language Development	23	3.58 (.84)	20	3.38 (.82)	.24	.593
Factor 4: Structure & Classroom Environment	23	4.52 (.46)	20	4.19 (.69)	.56	.036*
Overall CASEBA Mean	23	4.06 (.49)	20	3.94 (.53)	.24	.550
ECERS-R						
Space & Furnishings	23	5.13 (.81)	20	5.51 (.78)	-.45	.080
Personal Care Routines	23	4.73 (1.07)	20	5.25 (1.11)	-.48	.225
Language & Reasoning	23	4.60 (.93)	20	5.01 (1.11)	-.40	.059
Activities	23	4.67 (.66)	20	4.79 (.73)	-.19	.460
Interactions	23	5.95 (.81)	20	5.92 (.86)	.04	.900
Program Structure	23	5.95 (.77)	20	6.07 (1.00)	-.13	.464
Overall ECERS-R Mean	23	5.07 (.57)	20	5.33 (.58)	-.45	.085
Teacher Attitude Survey						
Factor 1	17	4.21 (.37)	17	4.28 (.45)	-.15	.971
Factor 2	17	4.03 (.76)	17	3.86 (.77)	.22	.366
Assistant Teacher Attitude Survey						
Factor 1	14	4.24 (.40)	13	4.32 (.44)	-.19	.818
Factor 2	16	3.76 (1.00)	14	3.53 (1.14)	.21	.339

*$p < .05$, **$p < .01$

Table 12.

ANCOVA results with pretest means by group, effect size and significance (p-value)

	N	Treatment M(SD)	N	Control M(SD)	ES	*p*-value
CASEBA						
Factor 1: Assessment	21	5.67 (1.00)	17	5.58 (1.06)	.09	.610
Factor 2: Language and Vocabulary Supports	21	4.03 (.55)	17	3.97 (.74)	.09	.302
Factor 3: English Language Development	21	3.69 (.77)	17	3.54 (.71)	.20	.521
Factor 4: Structure & Classroom Environment	21	4.53 (.42)	17	4.35 (.59)	.35	.049*
Overall CASEBA Mean	21	4.11 (.37)	17	4.06 (.46)	.12	.214
ECERS-R						
Space & Furnishings	21	5.24 (1.93)	17	5.65 (1.32)	-.25	.102
Personal Care Routines	21	4.83 (1.08)	17	5.38 (.90)	-.55	.336
Language & Reasoning	21	4.70 (.94)	17	5.28 (.91)	-.63	.074
Activities	21	4.72 (.66)	17	5.00 (.52)	-.39	.260
Interactions	21	6.12 (.62)	17	6.00 (.71)	.18	.321
Program Structure	21	5.91 (.80)	17	6.25 (.71)	-.45	.094
Overall ECERS-R Mean	21	5.14 (.55)	17	5.50 (.32)	-.80	.035*
Teacher Attitude Survey						
Factor 1	16	4.21 (.38)	17	4.28 (.45)	-.17	.893
Factor 2	16	4.03 (.78)	17	3.86 (.77)	.21	.878
Assistant Teacher Attitude Survey						
Factor 1	12	4.26 (.42)	10	4.31 (.50)	-.11	.649
Factor 2	12	3.65 (1.05)	10	3.46 (1.33)	.09	.497

*$p < .05$, **$p < .01$

Attitude Survey. Two sets of ANCOVA, with and without pretests, also were conducted on attitude scores. Teacher and assistant teacher characteristics were used as controls in all analyses respectively. Summary results of each of these can also be found in Tables 11 and 12 above, though no significant effects of treatment were found for teachers or assistant teacher attitudes in with or without covariates. Complete ANCOVA tables for each analysis are presented in the Appendix in Tables 6.1-6.4 (without pretest) and Tables 9.1-9.4 (with pretest).

Child Level Results

Descriptives. All children were randomly assigned to either treatment or control classrooms in the professional development study. This sample includes 209 children, with 120 in treatment classrooms and 89 in control classrooms. Most of the children were Hispanic (87%) and 66 percent spoke Spanish at home while another 14 percent spoke Spanish and English at home. Table 13 presents the descriptive statistics for the entire sample as well as for the analytic sample which is smaller because 20 children lacked outcome measures. Table 11 also makes it clear that the analytic and initial samples do not differ in their family backgrounds. Table 13 also presents the results of ANOVA conducted to test for group differences at pre-test. Individual ANOVA tables are found in Appendix Tables 10.1-10.8.

Table 13.

Child sample demographic descriptives and comparisons.

	Full Sample				Analytic Sample			
	Full Sample (N=209)	Treatment (N=120)	Control (N=89)	*p*-value	Full Sample (N=189)	Treatment (N=109)	Control (N=80)	*p*-value
Gender (percent female)	52.6%	52.5%	52.8%	.965	52.4%	52.3%	52.5%	.978
Ethnicity				.842				.984
Asian	3.3	4.2	2.2		3.7	4.6	2.5	
Black	4.8	4.2	5.6		5.3	4.6	6.3	
Hispanic	87.1	86.7	87.6		88.9	87.2	91.3	
White	1.9	3.3	-		1.6	2.8	-	
Other	-	-	-		-	-	-	
Missing	2.9	1.7	4.5		.5	.9	-	
Child's HL				.496				.280
English	12.9	12.5	13.5		12.7	11.9	13.8	
Spanish	66.0	65.8	66.3		67.7	66.1	70.0	
English & Spanish	13.9	14.2	13.5		14.3	14.7	13.8	
Other	4.8	5.8	3.4		4.8	6.4	2.5	
Missing	2.4	1.7	3.4		.5	.9	-	
Mother's Education				.696				.868
Less than HS	27.7	29.2	25.9		28.0	28.5	27.5	
HS or Equivalent	43.5	41.7	46.0		45.5	43.1	48.8	
Some College	18.7	19.9	16.9		20.6	22.0	18.8	
Missing	10.0	9.2	11.2		5.8	6.4	5.0	

*$p < .05$, **$p < .01$

Table 14 below presents descriptive statistics for each of the variables in the analytic samples used to investigate whether the treatment results in differences on the receptive vocabulary test scores in English or Spanish. The only statistically significant difference present between treatment and control groups was that of children's age, with the treatment group being slightly older than the control group. Similarly, the groups did not differ on any of the control variables which ensures that randomization of children to classrooms was successful. Individual ANCOVA results can be found in Appendix Tables 11.1-11.6.

Table 14.

Descriptive statistics and comparisons for all analyzed child level variables[+]

	N	Treatment *M*(SD)	N	Control *M*(SD)	ES	*p*-value
Dependent Variables						
ppvt_ss_pre	107	65.50 (17.94)	80	63.61 (17.94)	.103	.488
tvip_ss_pre	111	79.50 (11.79)	80	80.24 (11.69)	-.063	.667
Covariates						
% Female	111	48.00	81	47.00		.910
HL child (%Span)	110	81.00	81	83.00		.751
Mom's ed. (%>HS)	104	30.70	77	30.00		.897
Child's age	111	47.02	81	44.26		.004*

[+]Based on sample including only children with pre- and post-test TVIP
*$p < .05$, **$p < .01$

Child Level Results. All analyses used the standardized scores for the PPVT and TVIP and have a mean of 100 and a standard deviation of 15. ANCOVA using post-test standard PPVT and TVIP was used to determine whether the professional development intervention influenced child outcome scores. PPVT and TVIP post-test scores were used as dependent variables with pre-test and child characteristics as covariates (see Table 15 below). No statistically significant effects of treatment were found on either outcome in any analysis. To account for missing data associated with child characteristics an ANCOVA using PPVT and TVIP post-test scores as dependent variables without child

characteristics was also conducted. A summary of results from ANCOVA with and without child characteristics can be found below in Table 13. Tables 12.1-12.4 in the Appendix present the full ANCOVA for each outcome respectively.

Table 15.

ANCOVA summary table of child outcome results.

	N	Treatment M (SD)	Control M (SD)	E-S	*p*-value
With covariates					
PPVT	176	74.28 (17.18)	71.74 (18.70)	.15	.430
TVIP	177	76.80 (12.44)	77.87 (11.50)	-.09	.792
Without covariates					
PPVT	187	74.39 (16.94)	71.00 (18.69)	.13	.273
TVIP	189	77.61 (12.72)	78.19 (11.37)	-.05	.842

*$p < .05$, **$p < .01$

Hierarchical linear modeling (HLM) was conducted with post-test standard scores on the PPVT and TVIP as dependent variables controlling for pre-test and child characteristics including age, gender, home language, and mother's education (all coded as dummy variables). Ethnicity was not included due to its lack of variation and overlap with home language. As there were missing data for mother's education, analyses were repeated without this variable. Treatment was entered as a classroom level variable. The HLM accounts for the clustered structure of the data in which children are nested within classrooms. None of the models found significant effects of treatment on children's PPVT or TVIP scores. Findings are summarized in Table 16. Complete results of each HLM are provided in Tables 13.1-13.6 in the Appendix.

Table 16.

Multilevel results: Treatment/child outcome scores

	(1) PPVT	(2) PPVT	(3) PPVT	(4) TVIP	(5) TVIP	(6) TVIP
Age	.33*	.30*	.30*	-.22	-.28	-.29
	(.13)	(.12)	(.12)	(.12)	(.11)	(.10)
Female	2.25	.99	.74	.81	.21	.39
	(1.61)	(1.51)	(1.48)	(1.29)	(1.191)	(1.14)
Hispanic	2.48	3.37		-1.31	1.72	
	(4.15)	(3.75)		(3.41)	(3.00)	
Spanish HL	-1.51	-3.45	-1.60	10.40**	9.29**	8.77**
	(3.40)	(3.02)	(2.11)	(2.73)	(2.40)	(1.59)
Mother's Education	-3.01	-1.87		-1.64	-1.27	
	(1.82)	(1.72)		(1.44)	(1.34)	
Pre-test	.58**	.58**	.59**	.43**	.41**	.42**
	(.05)	(.04)	(.04)	(.07)	(.06)	(.06)
LT Yrs of Exp	-.23	-.05	-.09	.11	.12	.08
	(.21)	(.20)	(.20)	(.15)	(.14)	(.14)
LT Degree	-3.32	-3.13	-2.85	-1.80	-1.25	-1.18
	(1.85)	(1.76)	(1.71)	(1.34)	(1.21)	(1.17)
AT Yrs of Exp	-.40			-.38		
	(.24)			(.18)		
AT Degree	-3.69			1.36		
	(1.92)			(1.41)		
Treatment	.53	-.95	-1.22	.05	-.47	-.57
	(2.17)	(1.99)	(1.94)	(1.58)	(1.39)	(1.34)
Const	26.59**	26.62**	24.97**	47.78**	50.77**	51.18**
	(8.63)	(7.71)	(7.57)	(9.48)	(8.52)	(8.34)
Observations	265	306	322	266	307	324

*$p < .05$, **$p < .01$

Research Question 2: Staff Language Group Study

Research Question 2 investigates whether differences in staff language configuration are associated with differences in classroom quality and children's language development. The configurations studied were English speaking lead teacher with Spanish speaking assistant (E-S), Spanish speaking lead teacher and assistant (S-S), and Spanish speaking lead teacher with English speaking assistant (S-E). To answer this question for the CASEBA and the ECERS-R, analyses were conducted using ANCOVA at the classroom level. Teacher characteristics were included to control for observable differences in years of experience and highest degree earned for both teachers and

assistants. To examine whether gains in receptive vocabulary scores of children differ among staff language groups (E-S, S-S, S-E) multilevel modeling was conducted.

Classroom Level Descriptives. The overall CASEBA mean and factor scores are the primary outcomes of interest at the classroom level though ECERS-R overall and subscale scores are also examined as dependent variables. Independent variables including teacher characteristics serve as controls on all analyses as do baseline observations. Table 15 presents means and ANOVAs for all the variables of interest for RQ 2 focused on classroom level differences by staff language configuration. Table 14 in the Appendix provides the descriptive statistics on all variables of interest for the full sample (all groups combined). Between fall 2009 and spring 2010 staffing configurations remained largely the same at each data collection point though it can be noted that 3left the E-S group and the S-E group gained two teachers. In the case of the S-E group, both teachers were out on maternity leave at the beginning of the year, but back in the spring. In the E-S group two teachers left for maternity leave, and one teacher left the district permanently.

Part of the purpose of CASEBA is to tease out very specific supports for DLLs. Though overall CASEBA scores were examined for each staff language group, factor scores were also generated (see factor analysis results in Chapter 3) so as to be able to closely look at specific types of supports for DLLs. The resulting means and standard deviations of the factors also are included in Table 15 at both data collection points.

What can be seen from Table 17 is that average score is highest for Factor 1 (Assessment) at both time points and across the groups. The third factor (English language development) is the lowest scoring factor on average at both time points across

all the three staff language groups. All of the individual CASEBA item score means and standard deviations by staff language group and factor scores are presented in Appendix Table 15.

To test for differences at each time point, a one-way analysis of variance (ANOVA) was conducted. Post-hoc analyses were conducted to identify which groups differed from each other. In the fall of 2009, overall CASEBA mean scores, CASEBA factor 2 scores, and CASEBA factor 4 scores were statistically significantly higher for the Spanish-Spanish group of teachers and on CASEBA factor 3, the Spanish-English group was highest. In the spring, CASEBA factor 2 and the overall CASEBA mean were significantly different among the groups with S-S scoring the highest. Examination of the means shows that the other groups improved on the other factor scores, but that for factor 2, the S-S group remained significantly higher despite growth among the E-S and S-E group.

Table 17.

Descriptive statistics and comparisons for all analyzed classroom level variables.

	N	E-S M (SD)	N	S-S M (SD)	N	S-E M (SD)	*p*-value
Fall 2009	51		10		23		
Mean CASEBA Fall 2009		3.96 (.41)		4.42 (.37)		3.98 (.47)	.008**
CASEBA Fall Factor 1		5.23 (1.02)		5.50 (.78)		5.30 (.90)	.707
CASEBA Fall Factor 2		4.13 (.59)		4.76 (.50)		3.94 (.63)	.002**
CASEBA Fall Factor 3		2.82 (.74)		3.13 (.70)		3.25 (.80)	.067
CASEBA Fall Factor 4		3.82 (.49)		4.37 (.62)		4.08 (.62)	.009**
Spring 2010	48		10		25		
CASEBA Mean Spring 10		3.99 (.51)		4.44 (.46)		4.25 (.53)	.018*
CASEBA Spring Factor 1		5.61 (1.03)		5.95 (1.04)		5.68 (1.03)	.647
CASEBA Spring Factor 2		3.89 (.70)		4.55 (.62)		4.08 (.74)	.025*
CASEBA Spring Factor 3		3.51 (.86)		3.68 (1.00)		3.79 (.85)	.409
CASEBA Spring Factor 4		4.33 (.65)		4.67 (.52)		4.57 (.62)	.147
ECERS Mean Spring 10		5.18 (.59)		5.23 (.46)		5.38 (.53)	.380
ECERS-R Space/Furn.		5.33 (.79)		5.31 (.59)		5.62 (.63)	
ECERS-R Personal Care		4.95 (1.12)		5.05 (1.06)		5.25 (1.23)	.561
ECERS-R Lang/Reasoning		4.78 (1.04)		4.85 (1.22)		4.92 (.96)	.853
ECERS-R Activities		4.72 (.68)		4.68 (.68)		4.89 (.62)	.529
ECERS-R Interactions		5.91 (.83)		6.14 (.40)		5.88 (1.06)	.710
ECERS-R Program Structure		5.96 (.91)		5.91 (1.16)		6.24 (.67)	.395
Independent Variables							
LT Yrs. Exp.	51	7.62 (4.79)	10	8.60 (2.59)	24	5.67 (2.94)	.091
LT highest deg.	51	2.47 (.50)	10	2.10 (.32)	24	2.46 (.66)	.133
AT Yrs. Exp.	50	6.26 (4.16)	9	4.06 (2.81)	20	4.80 (2.55)	.136
AT highest deg.	46	1.54 (.89)	8	1.88 (.35)	18	1.06 (1.00)	.056

*$p < .05$, **$p < .01$

Classroom Level Results. A multivariate analysis of variance (MANOVA) was conducted with both the fall 2009 and spring 2010 overall CASEBA and factor scores. None of the covariates were included as analyses using them revealed no significant influences. Results reveal that the staff language group variable was significantly associated with CASEBA overall quality each time. Staff language group was also significantly related to higher scores on Factor 2 in the fall and spring. Additionally factor 4 was also significant by staff language groups in the fall. To examine which groups were differenct, post-hoc Bonferroni and Tukey tests were conducted and reveal that significant differences in CASEBA scores are due to S-S classrooms being higher than the other two groups in the fall and higher than the E-S group in the spring.

Differences between the S-S and S-E groups were not significant in the spring. Results of these analyses are presented in Table 18 below. Effect size comparisons are also presented to show differences between groups where Tukey tests indicated that S-S scores were higher than E-S and S-S. The results of the MANOVA are presented in Appendix Tables 16.1-16.2.

Table 18.

Summary of MANOVA results of CASEBA score differences by staffing with post hoc tests.

	E-S M(SD)	S-S M(SD)	S-E M(SD)	*p*	*ES*	Tukey HSD
Fall 2009						
CASEBA Mean	3.96(.41)	4.42(.37)	3.98(.47)	.008**	-1.18, -1.04	ES<SS SE<SS
CASEBA Factor 1	5.22(1.02)	5.50(.78)	5.30(.47)	.707	-.30	
CASEBA Factor 2	4.13(.59)	4.76(.50)	3.94(.63)	.002*	-1.15, -1.62	ES<SS SE<SS
CASEBA Factor 3	2.82(.74)	3.13(.70)	3.25(.80)	.067	-.43	
CASEBA Factor 4	3.82(.49)	4.37(.62)	4.08(.62)	.009**	-.98	ES<SS
Spring 2010						
CASEBA Mean	3.99(.51)	4.43(.46)	4.24(.53)	.018*	-.93	ES<SS
CASEBA Factor 1	5.56(1.03)	5.95(1.04)	5.68(1.03)	.647	-.33	
CASEBA Factor 2	3.89(.70)	4.56(.62)	4.08(.74)	.025*	-1.00	ES<SS
CASEBA Factor 3	3.51(.86)	3.68(1.00)	3.79(.85)	.409	-.18	
CASEBA Factor 4	4.33(.65)	4.67(.52)	4.57(.62)	.147	-.58	

*$p < .05$, **$p < .01$

A Multivariate Analysis of Variance (MANOVA) was also conducted to test whether group differences could be detected among the different staff language groups on the ECERS-R in the post-test (spring 2010). Table 16.3 in the Appendix shows that the ECERS-R did not capture any significant differences related to staff language groups in the spring 2010. This indicates that the general structural quality of all the groups was the same as expected by the ECERS-R. Subscale analyses were not repeated given that overall mean scores were did not differ among the groups.

Staff Language Study Child Level Results

Descriptives. A total of 376 three- and four-year old children were included in the overall sample for this RQ#1 (see Table 19). Fifty-two percent of children were female, and 88.3% were Hispanic. Sixty-four percent of children were reported as being from homes where Spanish is spoken, while only 17.6% reported using both Spanish and English at home. About a quarter of children had mothers with less than a high school degree and 43.6 percent reported that mothers had a high school degree or equivalent. A total of 284 children were three-year-olds and 92 were four- year olds. The average age of children was 45.48 months at pre-testing in fall of 2009. The larger number of three-year olds stems from the sampling strategy that aimed to include only children who were new to the program, rather than any children who had participated in a previous year as three-year olds. Given the high rate of preschool enrollment in the school district, only a total of 92 new four year olds could be added to the sample. While the E-S group included 209 children, the S-E group had 129 and the S-S group only 38.

Table 19.

Child sample demographic descriptives.

	Full Sample (N=376)	E-S (N=209)	S-S (N=38)	S-E (N=129)
Gender (% female)	52.2	52.6	65.8	47.3
Ethnicity				
Asian	2.7	3.4	5.4	.8
Black	4.3	4.9		4.8
Hispanic	88.3	89.7	91.9	93.5
White	1.3	2.0	2.7	.8
Other	0.3	-	-	-
Missing	3.2	-	-	-
Home Language of Child				
English	12.2	13.2	8.1	12.6
Spanish	64.4	67.6	59.5	64.6
Both English & Spanish	17.6	14.2	24.3	22
Other	3.7	4.9	8.1	.8
Missing	2.1	-	-	-
Mother's Education				
Less than HS	26.8	30.8	31.4	27.4
HS or equivalent	43.6	48.4	45.8	48.7
Some college	19.9	20.7	22.9	24.0
Missing	9.6	-	-	-

All children were given both the PPVT and TVIP at both pre- and post testing. Descriptive statistics for all variables used in the analyses of child level outcomes as they pertain to the second half of RQ #2 are presented in Table 20 below. Also included are ANOVA comparisons by group for each variable. A descriptive table of the full group and individual groups showing means, SDs and ranges on the child outcome measures can be found in Appendix Table 17.

ANOVA comparisons showed that both lead and assistant teacher years of experience and highest degree received are significantly different among the staffing groups. Consequently subsequent analyses will control for these two variables. For these analyses, teacher and assistant teacher education variables were coded as dummies where assistant teacher education was coded a "1" if the had a BA and teacher education was a coded a "1" if they had an MA. Comparisons using ANOVA for both child outcome

assessments revealed that there were no significant differences among children's scores among any of the three staffing groups at the beginning of the study year on either the PPVT or TVIP. This finding ensures that groups of children were not different from each other by staff language groups at the beginning. Further analyses using controls will investigate as to whether there were any differences associated with staff language groups at post-test with children.

Table 20.

ANOVA of child and teacher characteristic independent variables among staffing groups

	N	E-S *M* (SD)	N	S-S M (SD)	N	S-E *M* (SD)	*p*-value
Dependent Variables							
ppvt_ss_pre	205	64.15 (18.58)	38	66.89 (18.77)	127	66.61 (19.21)	.439
tvip_ss_pre	208	79.71 (11.51)	37	82.35 (10.56)	127	80.16 (10.55)	.410
ppvt_ss_post	191	73.01 (17.66)	33	69.64 (17.65)	116	74.41 (17.22)	.379
tvip_ss_post	190	77.78 (12.16)	34	80.12 (14.68)	116	79.56 (12.50)	.371
Independent Variables							
% Female	209	47	38	34	129	53	.131
HL child (%Spanish)	204	82	38	92	124	94	.525
Age in months	209	45.88 (6.56)	38	44.42 (4.57)	128	45.16 (6.24)	.326
Mother's Ed. (% > HS)	188	30	35	31	117	27	.827
LT Yrs. Exp.	209	7.68 (5.12)	38	8.5 (2.20)	117	6.09 (2.88)	.001**
LT highest deg. (% ≥MA)	209	48	38	2.6	117	37	.000**
AT Yrs. Exp.	207	6.36 (4.05)	34	4.88 (2.60)	103	4.91 (2.39)	.001**
AT highest degree (% ≥ BA)	202	61	28	79	90	42	.001**

*$p < .05$, **$p < .01$

Child Level Results

HLM was used to estimate differences in child outcomes between staff language configuration groups coded as dummy variables at the classroom level. At the child level controls are included for age gender, home language, and mother's education (all coded as dummy variables). Ethnicity was not included due to its lack of variation and overlap with home language. As there were more missing data for mother's education than other variables, analyses were repeated without this variable. At the classroom level, control variables are entered for teacher and assistant education levels and years of experience.

Due to higher levels of missing data for assistant teachers, analyses are repeated without the assistant teacher variables. Findings are presented in Table 21. No significant effects of staff language configurations were found for either English or Spanish vocabulary development. However, looking at effect sizes the Spanish-Spanish teacher group's students' gains in English were more than a third of a standard deviation smaller than the English-Spanish group and even farther behind the Spanish-English group's gains. Also, students of teachers with Masters degrees gained significantly less in English vocabulary.

Table 21.

Multilevel results: Staff language configurations/child outcome scores.

	(1) PPVT	(2) PPVT	(3) PPVT	(4) PPVT	(5) TVIP	(6) TVIP	(7) TVIP	(8) TVIP
S-E	1.310	1.612	0.808	0.462	1.401	1.435	0.503	0.536
	(2.03)	(2.00)	(1.87)	(1.82)	(1.53)	(1.51)	(1.33)	(1.28)
S-S	-5.590	-5.100	-5.100	-5.433	0.361	0.218	1.611	1.048
	(3.13)	(3.10)	(2.88)	(2.83)	(2.40)	(2.37)	(2.07)	(2.02)
LT Yrs. Exp.	-0.174	-0.237	0.016	-0.012	0.136	0.113	0.104	0.087
	(0.20)	(0.20)	(0.19)	(0.19)	(0.15)	(0.15)	(0.14)	(0.14)
LT highest deg.	-4.179*	-3.624*	-4.057*	-3.916*	-1.690	-1.554	-0.926	-1.031
	(1.87)	(1.81)	(1.79)	(1.73)	(1.40)	(1.35)	(1.26)	(1.21)
AT Yrs. Exp.	-0.422	-0.395			-0.351*			
	(0.23)	(0.23)			(0.17)			
AT highest deg.	-2.667	-3.238			1.549			
	(1.85)	(1.80)			(1.42)			
HL	-0.546	-0.953	-1.795	-1.772	9.420**	8.617**	9.244**	8.742**
	(2.43)	(2.38)	(2.16)	(2.10)	(1.90)	(1.83)	(1.68)	(1.59)
Mother's Ed	-2.819		-1.775		-1.575		-1.204	
	(1.81)		(1.72)		(1.44)		(1.34)	
Age	0.315*	0.324*	0.291	0.299	-0.220	-0.238*	-0.270	-0.283*
	(0.13)	(0.13)	(0.12)	(0.12)	(0.11)	(0.11)	(0.11)	(0.10)
Female	2.043	1.784	0.780	0.464	0.722	0.520	0.276	0.399
	(1.62)	(1.60)	(1.51)	(1.48)	(1.30)	(1.27)	(1.19)	(1.15)
Pre-test	0.575**	0.584**	0.581**	0.597**	0.429**	0.437**	0.410**	0.420**
	(0.05)	(0.05)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)
_cons	29.144**	27.885**	25.551**	23.760**	46.882**	47.613**	49.275**	49.529**
	(7.82)	(7.68)	(7.01)	(6.85)	(8.97)	(8.79)	(8.13)	(7.97)
N	265	274	306	322	266	276	307	324

*$p < .05$, **$p < .01$

Summary of Key Findings

All of the analyses presented here aimed to answer each research question respectively. In response to research question 1 about the use of PD to improve classroom quality, teacher attitudes and children's language development, only one significant change was found among treatment classrooms in comparison with control. This change included a slight improvement among treatment classrooms on one factor of the CASEBA related to the structure and classroom environment set-up for young DLLs. One other small change was noted in a small rise of control classroom scores on the overall mean of ECERS-R scores. Child outcomes did not show any significant

differences between treatment and control groups at post-test indicating that the PD did not differentially impact PPVT or TVIP scores for the children of teachers who received the intervention.

For the second research question regarding the associations of staff language configuration and classroom quality, and children's language development, results were more robust for the CASEBA. The S-S and S-E classrooms showed significantly higher scores on some factors of the CASEBA in addition to the overall CASEBA score. No differences were found among staff language configurations on the ECERS-R, suggesting that while general quality for the groups did not differ, the CASEBA was able to detect other characteristics of classroom quality that the ECERS-R could not. Analyses on child outcomes using HLM found that there were no significant differences relative to staff language configurations on children's receptive vocabulary in English or Spanish, though there was at least one concerning trend and an unexpected finding regarding teacher education level.

CHAPTER 5

Discussion

The current study explored two separate research questions concerning issues of professional development and quality of language supports provided by teachers of preschool DLLs. Though the sample sizes were modest, this is one of the first studies to address these issues using a data collection tool (CASEBA) specifically designed to gather and examine DLL pertinent classroom level data and to focus on assistant teachers as well as lead teachers. The study and its findings present a gateway for subsequent studies regarding teacher language use and quality of language interactions and environments in classrooms serving young DLLs. As the United States is home to a larger number of migrants than any other nation--one in five migrants globally lives in the United States and the largest single group of these is from Mexico--the importance of these issues cannot be underestimated and it is likely it will continue to grow (Dimock, 2016). In this chapter, the results for each research question and their interpretation are discussed separately in light of the study's limitations before moving on to discuss implications for practice and future research together in depth.

Research Question 1: Professional Development Study

This study question sought to investigate the effects of a professional development intervention focused on DLL supports for both observed classroom quality and children's vocabulary development for a Hispanic DLL population. The design randomly placed teachers into either an experimental or control group. Experimental group members received a series of professional development (PD) modules focused on the acquisition of a second language in early childhood and strategies to support language

acquisition in English and Spanish. Though the original plans included the use of district coaches to provide ongoing support to teachers regarding the content presented in the PD modules, the version of coaching the district actually used in practice departed from what was originally intended. This converted the treatment into a largely one-shot approach to professional development that was not found to have been effective in raising classroom quality scores and consequently children's outcome scores.

Effects of PD on observed classroom quality. The first question addressed through the first study was whether a professional development intervention focused on supports for DLLs was effective in changing teacher attitudes and observable classroom quality as measured by the CASEBA, which focused on supports for DLLs and, secondarily on the ECERS-R which measures classroom quality more generally. Specifically, the PD aimed to increase teachers' understanding of language acquisition in English and Spanish for young DLLs with a major focus on theoretical and research-based approaches to the use of Spanish for instructional purposes. Attitudes and beliefs were measured based on notions of these being antecedents of actual practice. To this end teachers were assigned to either treatment or control groups, and classroom quality and attitudes were assessed both before and after treatment to allow for estimates of the PD program's impact over time.

No differences between treatment and control groups on classrooms as measured by the CASEBA at pre-test indicate that random assignment of teachers was successful and that all teachers started at similar levels of quality. At post-test, one small difference between treatment and control classrooms was found on the Structure and Classroom Environment Factor of the CASEBA which includes items that address the extent to

which the environment reflects the children in the class, with particular regard to linguistic differences, such as labels, books and other print, but only one of five items comprising this factor entail the active use of a home language. This indicates that, as in other studies of PD interventions, changes in classroom environments are the first to occur in the initial phases (or year one) of a professional development intervention (Wasik & Hindman, 2011). It should be noted that on only one of the factors of the CASEBA (Assessment) did classrooms score above 5 even for the PD group, on a scale where 5.0 is defined as "good" and 7.0 "excellent" quality. Generally, this indicates that strategies specific to DLLs deemed to be potentially important for child outcomes were not highly evident in the practice of the classrooms observed.

The ECERS-R was also used to assess whether general quality and more specifically, structural quality of classrooms was similar between treatment and control groups. Overall results of the ECERS-R as well as by subscale also showed that both the treatment and control groups were similar at pre-test. ECERS-R scores were higher than those of CASEBA with all classrooms scoring at almost a 5.0 or just above on all subscales and overall. This indicates that structurally, the classrooms were near good, and that the PD on DLL supports had a reasonable foundation of good general practice.

The findings regarding effects of PD on classroom quality can best be described as unexpected. Only one small difference in post-intervention scores on the CASEBA or ECERS-R was found that favored the experimental group relative to classroom structure. The most unexpected finding was a significantly higher post-test score for the control group on the ECERS-R. Possibly, this was due to the in-district PD delivered as a placebo to the control group in lieu of PD on DLL. Specifically, the district offered

control teachers PD relating to general practice on days in which the treatment group received the DLL-related PD. Alternatively, something about the PD on DLL supports led teachers to perform worse at post-test.

The findings here suggest that the PD provided to the treatment teachers was not effective enough to support their growth on many classroom practices as measured by the CASEBA over the course of one academic school year, but it was enough to begin to see change in the classroom structure. These results are not surprising as the literature on professional development aimed at improving teacher-child interactions strongly suggests that continuous coaching over time rather than sporadic workshops is better able to improve teacher practice as it helps teachers to transfer knowledge into practice (Wasik & Hindman, 2011; Rush & Sheldon, 2011). Further, studies also suggest that use of a standardized tool can help to pinpoint specific practices in action that when observed can serve as s the focus of very specific conversations between teachers and coaches (Pianta, LaParo, & Hamre, 2008). Though monthly meetings were held with coaches in the present study, these were more a debrief session regarding things that had come up with teachers, it was clear that most of the work that they were doing did not involve coaching cycles with teachers.

Recently, use of the Classroom Assessment Scoring system (CLASS; Pianta, LaParo & Hamre, 2008) as a monitoring tool in Head Start for example, has provided some evidence for the kind of coaching described above. In one study use of the CLASS along with one-hour weekly coaching sessions and monthly communities of practice meetings for coaches, helped to increase CLASS scores on the all three domains (emotional supports, classroom organization and instructional supports) significantly in

one year (Vartuli, Bolz, & Wilson, 2014). In one other study seeking to assess the impact of a professional development intervention on classroom quality for DLLs, also found significant growth from a pre-test to a post-test though it also included individual coaching sessions bi-monthly in addition to workshops and community of practice meetings with teachers and coaches too participated in weekly reflective supervision meetings as a group (Buysse, Castro, & Peisner-Feinberg, 2010).

Other factors that may have contributed to the results might also include the tremendous breadth of information provided to teachers in the workshops that were offered. This may have been too much too quickly for it to be absorbed in a way that would influence practice. When thinking specifically about increasing supportive practices for DLLs, there is not only the area of knowledge relative to language acquisition for teachers to learn (content), but also application of skills that relate to the differentiation of instruction tailored to DLLs and their individual development. There are two major takeaways relative to this point. The first is that as with other research that has explored PD interventions with preschool teachers, focusing on too many things makes change less likely (Mendive, Weiland, Yoshikawa, & Snow, 2016). The low scores on CASEBA at pre-test clearly indicate that teachers were not aware of many of the features of high-quality supports for DLLs across all factors. Change clearly would have had to focus on one area at a time. The second, is based on research on science learning in elementary grades, that has explored methods that aim to build on teachers content knowledge finding it to necessary to be mastered before pedagogical content knowledge (appropriate use of teaching skills) can be implemented (Minor, Desimone, Lee, & Hochberg, 2016). The findings in the current study further substantiate the call of

many to prioritize differentiated PD for teachers (Diamond, Maerten-Rivera, Rohrer & Lee, 2014).

Finally, it is important to note that the experiment was conducted with teaching teams in which all lead teachers spoke English. It is possible that bilingual teachers might have benefitted more from the PD. Though assistant teachers did participate in the initial and longest PD offering, the differences in their qualifications and roles from lead teachers, or the lack of ongoing and embedded PD, could have limited the effects on classroom quality as measured by the CASEBA.

In conclusion, while the professional development workshops given to teachers were loaded with information about the acquisition of languages, and strategies for building home language and acquiring English and provided a reflection tool for the purpose of coaching interactions, the extent to which that coaching followed was not well documented or consistently monitored for fidelity in this study. Though coaches were excited about the underlying premise of the workshops and their content, the information for them was also new, and not all of the coaches were bilingual. In addition, based on discussions with coaches, it appears that their regular job requirements of observing teachers on other tools of classroom quality to remain in compliance with district requirements and other bureaucratic activities took most of their time. The resulting lack of follow through on the intended coaching was unexpected as the study design assumed that coaches had more time to spend in classrooms observing and reflecting on teachers actual practices.

PD effects on teacher attitudes. The PD intervention was not found to have significant effects on teacher or assistant teacher attitudes. This may be partly explained

by the fact that both teachers and assistants began with very positive attitudes toward Spanish language use for instruction. However, as in other research (Swayer, Hammer, Cycyk, Lopez, Blair, Sandilos, & Komaroff, 2016; Sanchez, 2011), teachers' positive self-reported attitudes about use of Spanish for instruction were not associated with better practice. On none of the items in the CASEBA (4-14) regarding use of Spanish in the classroom did the classrooms on average score above a 4.0 (see Appendix Table 3.1 and 3.2). Again this raises questions about the extent to which the teachers inability to speak Spanish may hinder the effectiveness of their supports for DLLs. However, it is also possible that the attitude survey used did not accurately measure important true underlying beliefs about home language use and the acquisition of two languages for young children.

Effects of PD on Children's Receptive Vocabulary. Based on prior research findings that improved teacher practice by way of in-service professional development can lead to increased student outcomes, it was hoped that children would make greater gains in language development (Powell, Diamond, Burchinal, & Koehler, 2010). Of course, the absence of significant impacts on observed classroom quality as measured by the CASEBA and on measured attitudes substantially reduces expectations of benefits for children. The one indication of higher ECERS-R scores for the group might even have been a warning about possible negative consequences for children. However, no significant differences were found on children's language development in English or Spanish. In this respect the study's findings are consistent with those of an earlier study of a professional development intervention focused on DLLs and improving language child outcomes that found no impacts on children's gains on the PPVT and TVIP

(Buysse, Castro, and Piesner-Feinberg, 2010). The authors of that study speculated that perhaps one-year of teacher intervention is not long enough to change practice meaningfully (Buysse, Castro & Peisner-Feinberg, 2010).

Summary of Limitations. The first and perhaps most obvious limitation of this study is the approach to professional development. Potential problems with the approach include trying to inform teachers on too many topics at once and the lack of embedded ongoing coaching with teachers. One limitation is that this study did not systematically measure ongoing coaching. In one study dedicated to unpacking similar findings of a study investigating PD effects on classrooms and children, researchers (Mendive, Weiland, Yoshikawa, & Snow, 2015) suggested that an intensive effort was needed to measure intervention fidelity sufficiently to be able to understand the impacts (or lack of impacts) of PD. Even though this study was designed to include in-district coaches as a way to sustain and develop concepts introduced in the modules in classrooms, it did not systematically document the coaching interactions of both groups throughout the year. Monthly meetings between the research staff and the coaches were designed to facilitate ongoing PD through conversations and reflections, but based on my informal observation and discussion with coaches they did not consistently use the tool they were given to engage in the reflective coaching cycle with teachers regarding DLL supports. In addition, the coaches in the study were basically learning the concepts and strategies in which they were to train teachers for the first time themselves, and during the monthly meetings they raised many questions about when and how much to use Spanish with the children.

A second limitation of the study is the length of time available to capture change in practice. This is particularly important due to the nature of the content provided, which relates to many beliefs, attitudes, and teaching habits that may have been long held. It may simply take longer than the one year observed in this study for teachers and assistants to fully absorb all of the information and understand it well enough to change their practice.

A related issue is that even though the district was fully invested in the approach introduced to teachers regarding use of the home language to foster growth in English as well as Spanish, teachers were hesitant to believe that the district really supported this approach as official and de facto policy. More specifically, up until the start of our study, many teachers understood that the district policy was *not* to use Spanish for instruction. Though this decision to use Spanish was made with the support of district leadership and our workshops continuously reinforced the idea that the district was aware of our suggestions, I observed considerable hesitation, and anxiety continued to be expressed by teachers. It may be that teacher willingness to change practice would increase as more time passed and teachers more fully trusted that the change in policy was real and (reasonably) permanent.

Two very obvious limitations are that of sample size and the sample's generalizability. With only 43 classrooms, the study's power to detect small differences in classroom practice and child outcomes, which might be all that would occur in the first year, is limited. Also, while the modest findings about change in classroom structure are promising, the sample is from a single district in one state and its specific population

(across districts, teachers, and children with different backgrounds), which limits generalizability.

Finally, one very important limitation relative to child outcomes is that the PPVT and TVIP have been suggested by some to be problematic for Spanish speakers as they have been normed on monolingual populations in English and Spanish respectively, which largely differ from those of DLLs in the U.S. Some contend that a problem with this lies in the fact that monolingual norming groups may set standards that are too high for DLLs suggesting that their language abilities are underestimated on these tests (Bedore, et. al., 2012). Though the PPVT and TVIP are widely used in research with DLLs to date, it is fair to acknowledge that they may not be the best tool to use to capture the language learning trajectory as it occurs for young DLLs within the context of the U.S. This would not likely prevent these tools from detecting improvements in the children's vocabulary, however. In this study which finds no effects on classroom practice, it is reasonable to conclude that there were, in fact, no significant impacts of the PD on children's vocabulary acquistion.

Research Question 2: Teaching Team Language Configuration Study

The second study aimed at furthering understanding of the impacts of staff language configurations and whether different configurations yielded higher quality learning environments for young DLLs. Teacher and assistant teacher pairs were defined as English speaking lead teacher with Spanish speaking assistant (E-S), Spanish speaking lead and Spanish speaking assistant (S-S) and Spanish speaking lead and English speaking assistant (S-E). Classroom quality was assessed using a new tool expressly designed to measure quality of supports offered in English and Spanish under the premise

that home language development buttresses English acquisition as well as helping children to develop more positive identities. In short, this study sought to capture impacts on features of classroom quality that existing classroom observation tools do not assess, and the study provides insights into the extent to which such tools may be necessary for creating a lens through which to view practices, as well as on the research question *per se*. The staff language configuration study is also policy relevant as it can shed light on workforce development issues regarding the importance of recruiting and developing minority language speakers for lead and assistant early childhood teaching roles.

Effects of staff language groups on classroom quality. Given the well-documented shortage of Spanish speaking teachers, and the potential importance of staff language configuration (E-S, S-S, or S-E) it is noteworthy that there have been no prior preschool studies that have sought to investigate the relationship of staff language configuration to classroom quality and learning for young DLLs. Though studies have found that use of Spanish in classrooms with DLLs has had positive impacts on children, particularly with respect to Spanish language acquisition, none have explored the quality of language based on who the deliverer of Spanish was in environments that use a lead and assistant teacher for instruction (Burchinal, Field, Lopez, Howes & Pianta, 2012; Farver, Lonigan & Eppe, 2009; Gormley, 2008; Barnett, et al., 2007).

Classrooms with a lead Spanish speaking teacher (SS, SE) scored higher on the CASEBA than those in which an English speaking lead was paired with a Spanish speaking assistant. In the fall of 2009, S-S and S-E classrooms scored higher on the overall CASEBA and on three factors individually, as well. The largest difference was seen in Factor 2 (Language Supports) of the CASEBA with the S-S group scoring highest

of the three. This factor includes all of the items that consider language supports in both English and the home language. It is interesting that they scored higher on supports in English as well as the home language. Similarly, they scored higher on Factor 4 (Structure/Classroom Environment), which includes items that address the extent to which the environment reflects the children in the class, with particular regard to linguistic differences, such as labels, books and other print, but only one of five items comprising this factor entail the active use of a home language.

The way in which the CASEBA is scored could contribute to the pattern of findings because as long as no instruction is offered in Spanish, a total of 10 items cannot be scored more than a 1.00. This is not to say that if assistant teachers are the ones providing the instruction that it can not count towards the score, but unless someone is offering home language instruction, scores will remain low. This is, of course, consistent with theories that assert that approaches using English and the home language together in teaching are the most effective way to instruct DLLs (Tabors, 2008).

Another interesting point is that no differences were found in the spring of 2010 on the ECERS-R which was administered to examine more general features of quality in the classrooms. There were no differences by staff language group for any ECERS-R subscale as well was for the total scores. This indicates that using the ECERS-R does not pick up on the differences in classroom practice captured by the CASEBA which appears to highlight specific aspects of classroom practice that would go unnoticed in commonly used measures of "global" quality.

One important limitation of this study is that all of the Spanish speaking teachers in the study received the same PD as the half of the ES teachers who constituted the

experimental group in the PD study. The study's null findings regarding the impacts of PD can be taken as an indication that the PD was irrelevant as it failed to produce any change in classroom practice. However, it is possible that Spanish speaking teachers benefited more or more quickly for the PD. Given the reasons put forward to explain the PD's failure, however, it seems unlikely that it would have been significantly more effective for the Spanish speaking teachers. Moreover, there was no significant change in scores for the Spanish speaking lead teachers over time.

This study is unique in that at the time of data collection it utilized a newly created tool to measure observed quality regarding supports for young DLLs. Though an earlier version of the tool was used in a research study to measure supports offered in Spanish (SELLCA) this tool added a way measure supports offered in English as well with both expressly aimed at helping children to acquire English. This goal was to identify specific areas of classroom stimulation regarding DLLs that are not captured by more global measures such as the ECERS-R or the CLASS. As the tool which equally prioritizes the languages used in the classroom, the presence of at least one Spanish speaking teaching staff in the classroom should increase the likelihood that classrooms score higher. This study provides no insights into what scores would look like in configurations with no Spanish speaker.

Considerations of this tool as an assessment of teaching quality are important given increased awareness of the relationship between quality and child outcomes and whether measures of classroom quality can adequately predict outcomes as the nation's children have become more linguistically diverse (Zaslow, et. al., 2016). Researchers have asserted that perhaps what is needed to see stronger associations between classroom

quality and children's outcomes are tools that are "domain specific" as opposed to ones that measure what is considered to be "global quality" (Zaslow, et. al., 2016). This tool seeks to provide more domain specificity for language with DLL populations, though more is needed to understand its psychometric properties.

In this study's findings, three things are clear. First, when classrooms were looked at through a very specific lens, supports for DLLs were more pronounced in classrooms where a lead teacher spoke Spanish. Second, in classrooms where an assistant teacher also spoke Spanish, the classroom quality outcomes were even better. Finally, the availability of a tool designed to measure these supports that is sensitive enough to capture these types of interactions consistently is necessary to identify these differences; measures like the ECERS-R do not capture them.

Effects of staff language groups on children. Despite the finding that staffing configurations were associated with different classroom quality scores on the CASEBA, no statistically significant associations with staff language configuration were found for the TVIP or PPVT. In fact, though not statistically significant, there is some evidence that children in S-S classrooms did less well on the PPVT than children in the other two language groups, and the estimated effect size was not trivial. This finding is consistent with those of other researchers who find that use of Spanish used for instruction sometimes can have negative effects on child outcomes and largely, with the suggestion that positive outcomes are found only when high quality instruction was delivered in Spanish (Vitiello, Downer, & Williford, 2011). However, unlike the current study, Vitiello, Downer, and Williford (2011) only employed a tool that measures frequency of language use and not quality of classroom practice or supports for language acquisition

more generally. In the current study, while the S-S group scored better that the E-S group on the CASEBA, its highest overall average score was only a 4.44 which indicates that the overall quality was below what is considered "good" on the CASEBA.

Ultimately, the most likely reason for the lack of association between staff configuration and child outcomes is that even the highest performing group did not reach a threshold of quality that is associated with increased child outcomes. In light of recent work on the analysis of thresholds of quality and their associations with child outcomes, this study begins to answer such questions regarding thresholds for a domain specific measure of quality, the CASEBA (Zaslow, et. al., 2016).

This study's findings indicate that just the presence of a Spanish speaker, even as a lead teacher can have modest impacts on observed quality, but still have no positive effects on children's language development in the home language. Teacher language and cultural background are no guarantee of well planned and intentional interactions backed by knowledge about how DLLs learn a second language and what needs to be done to promote both languages well. This suggests that a structured dual language model is needed together with knowledgeable coaches and administrators to support strong implementation by teachers working with DLL populations.

Another interesting and unanticipated finding of this study is that teachers with higher levels of education (MA and above) were associated with lower PPVT and TVIP scores for children. While this finding is not unique to this study (Early, Bryant, Pianta, Clifford, Burchinal, Ritchie, et al,. 2006), it also suggests that teacher educational attainment per is not a sufficient indicator of their teaching quality. In the current study though teachers were asked if they held an MA, they were not asked about the content of

this degree. In part the content of the degree could explain why teachers with more education were less effective if in fact the degrees were in content areas not related to teaching practice (e.g supervision) or indicated a lack of interest in teaching practice. This finding certainly suggests a problem with common district policies that pay more to teachers who hold graduate degrees or post-graduate credits regardless of other considerations. Further, the finding also underscores the suggestion of researchers who have noted the great need for increased opportunities for teachers to be mentored in the classroom as a means of improving practices in ways predictive of better child outcomes (Bogard, Traylor, & Takanishi, 2008).

Summary of Limitations of Staff Language Configuration Study. There are several limitations. First, the samples of both teachers and children are modest and restricted to a single district. A larger sample would provide greater power to test for an association, and a more diverse sample across more districts (and perhaps even other states) might have generated a greater range of scores with more variability in practices and, in particular, more scores at the high end of the distribution. Though the S-S group did score higher on the CASEBA, it is important to acknowledge that this group included only 10 teachers and that as a group they did not score especially well on the CASEBA compared to what the authors considered good to excellent practice.

Second, the staff language configurations were determined by the school district, and they do not mean that teachers and assistants were highly proficient in Spanish because they were identified as speaking that language. Anecdotally[3] teachers expressed feeling uneasy about being asked to instruct in Spanish based on their marking

[3] Anecdotal information on this was gathered by me during PD follow up modules in conversation with teachers.

"bilingual" on a job application at hire. Teachers felt that while they had marked that they were bilingual, that they were not asked about their level of proficiency or comfort conducting instruction in Spanish. In addition, the district did not have any policy about use of proficiency testing of teachers and assistants at time of hire nor was this done for the purpose of the study. Furthermore, no information was available about the actual English language proficiencies of teachers and assistants, which might be expected to affect the English language development of their students.

A final limitation is that though researchers and the intervention emphasized a model of dual language instruction, there was no consistent guidance beyond the initial PD on how or when to use Spanish for instruction within the school day. This question surfaced often in my weekly discussions with teachers as they expressed uncertainty regarding the times of day (large group, small group, free choice) that would be most important to use Spanish. As result it would not be surprising if Spanish language instruction happened haphazardly. Frequency of Spanish use was not a key question of this study, but some items in the CASEBA do assess the overall amount of time that Spanish was used in an observation period. A qualitative addition to the study that systematically sought out teachers' views of challenges or anxieties regarding the implementation of Spanish for instruction and supports for English acquisition could have revealed much useful information about teachers needed or wanted as well as more details about this aspect of their teaching.

While, the CASEBA is a promising tool for the field, it must be acknowledged that this study employed the alpha version of the tool without prior analysis to determine its predictive abilities with respect to child outcomes. While, the goal of the study was

not to assess the predictive validity of the tool with respect to child outcomes, it is clear that latent dimensions of the tool are closely tied to staff language inputs. One caution to keep in mind here is that the PPVT and the TVIP used in this study may not be sensitive enough measures (especially for bilinguals) to capture aspects of language development that might be predicted by variations in CASEBA scores.

Implications for Practice

Research has consistently found that teachers serving high need populations of children do not provide sufficient language and literacy instruction (Hindman & Wasik, 2015; Dickinson & Porsche, 2011, Justice, Mashburn, Hamre, & Pianta, 2008). Though far reaching claims can not be made from the current study given the limitations of preschool classrooms, it is clear that teachers in this study need more preparation regarding DLLs and strategies that best support the development of home language and the acquisition of English. In short, there are three major implications for practice. The first is that teachers lack content specific training on appropriate use of strategies and linguistically responsive supports for working with young DLLs to acquire English. The second is that the existing bilingual workforce (teachers and/or assistants) needs training on home language use theories and why dual language approaches to instruction are beneficial. The third is that comprehensive and well aligned guidance to outline expectations for teaching DLLs at both the local and state level is needed.

Addressing Teacher Content Knowledge

Content knowledge for preschool teachers of DLLs includes the ways in which teachers understand the acquisition of two languages simultaneously in early childhood, and how to support learning of the less dominant language (Zepeda, Castro & Cronin,

2011). As noted in the recent IOM and NRC report on the workforce (Allen, 2015), this is an area in need of attention for both pre-service teacher preparation and in-service initiatives of teachers serving DLLs regardless of their own language backgrounds. While there is widespread consensus in the field about use of the home language to bolster English learning, the field must also acknowledge the difficulty of fulfilling this recommendation due to a lack of sufficient bilingual teachers. The need for monolingual teachers to know specific strategies and competencies seems likely to continue to be very important (Espinosa & Magruder, 2016).

In the current study, teachers executed specific supports for DLL children's English language development only minimally regardless of their language abilities. In large part, it is suspected that this was due to a lack of real understanding of what supports were needed and when to offer them. These findings resonate with a recent study where researchers examined 222 teachers with respect to content knowledge, knowledge for use, education and experience, and beliefs associated with instructional approaches (Schachter, Spear, Piasta, Justice, & Logan, 2016). Though not specifically about instruction with DLLs, the study focused on language and literacy instructional opportunities and much of the sample was Head Start which would be expected to include many DLLs. Of the features measured. The authors found that the only predictive feature of observed classroom quality (outside of teacher education level) they measured regarding teachers, was that of *content knowledge* which had slightly more positive effects on the amount of instruction they provided on oral language development and vocabulary instruction (Schachter, et. al., 2016). As with the current study, Schachter and colleagues (2016) also found that teacher's beliefs about language and literacy

opportunities were not aligned to their practice. Findings of the current study highlight that despite PD and the introduction of concepts related to language acquisition, teachers did not employ strategies consistently enough to raise scores on a measure of related quality, despite their positive attitudes/beliefs about use of home language for instruction in the classroom. In sum both teacher preparation and ongoing in-service efforts for professional development need to address these teacher competencies.

Addressing Bilingual Teachers Use of Spanish for Instruction

Though many have documented the shortage of bilingual teachers as a problem for supporting a home language for DLLs in preschool (Liebtag & Haugen, 2015), this study suggests that the presence of a bilingual teacher only means value-added when they are knowledgeable about, and supported in implementing, best practices for use of the home language for instruction. For example, though S-S classrooms did better than the other staff language configurations, they did not always do better than the S-E group and the S-E group did not always do better than the E-S group. The findings of this study further underscore the great need for embedded coaching to model and individualize supports for all preschool teachers and assistant teachers (Williams, Garcia, Connally, Cook & Dancy, 2016). In the context of a study by Sawyer, Hammer, Cycyk, Lopez, Blair, Sandilos & Komaroff (2016) the implications of this part of the current study regarding linguistic capabilities of the staff are interesting. In their study of 72 teachers, Sawyer et. al., (2016) examined the extent to which linguistically responsive practices were used with DLLs and how they were associated with teacher-level factors including their own bilingualism. As in the current study, mean scores on items rating linguistically responsive practices were low for all teachers, and though higher for Spanish speaking

teachers, the authors described all the scores as "deficient" on the scale (ELLCO-DLL) used to observe classrooms (Sawyer, et. al., 2016). The authors' conclusions linked both a lack of sufficient knowledge focused on teaching DLLs and low administrative support for using Spanish for instruction to the low observation scores.

Finally, the study also points to the need for well articulated policy at the program level that is able to guide teachers, coaches, principals and others consistently. Specifically, this entails the implementation of "explicit language goals" to orient all levels of a program in like directions (Espinosa & Magruder, 2015). In addition, this also includes considerations for hiring bilingual staff, ensuring that programmatic language goals are explicit and that staff are comfortable with use a home language for instruction. Though New Jersey is particularly good at the state-level of creating policy that supports home language use for English development of DLLs, there is likely much variability regarding de facto policies and practices within districts. While some may, for example, employ a dual approach in small and large group routines, others may not. At the time of this study, the participating district did not provide teachers with specific guidance in this regard. Teachers expressed the need for more specific guidance on how much and when. While in preschool the flexible schedule of daily activities in many classrooms can make it difficult to use home language in very intentional ways, policy that is articulated to teachers can help to provide specific and concrete guidance that teachers can use to inform their teaching more consistently.

Implications for Future Research

When taken together, the results for each question in this study provide important implications for future research directions. These include the replication of studies

already conducted with global measures of quality using a tool like CASEBA to begin to understand the intricacies of teaching that might best increase the achievement of young DLLs in preschool. In addition, it would be useful for such studies to examine the content provided in pre-service and in-service development for teachers of DLLs. Each of these suggestions is discussed in more detail below.

Domain-Specific Quality Measurement Tools

Future research is clearly needed to further investigate the validity of the CASEBA to determine if its constructs and items are able to reliably inform practice in very specific ways. The IOM and NRC report (Allen, 2015) specifically outlines the need for "assessments to gauge the quality of the learning environment" for DLLs (p. 285; Allen, 2015). The CASEBA is designed to identify specific strategies that are supportive of DLLs in English or Spanish in ways that other studies have not been able to do because they have lacked the tool to measure relevant practices in sufficient detail. Such a tool is especially needed as this and other studies suggest that teachers do not provide the amount of linguistically responsive instruction needed to strongly support young DLLs learning of English or maintenance of Spanish (Sawyer et. al., 2016). While Sawyer et.al. (2016) use a measure of language and literacy (Early Language and Literacy Classroom Observation-DLL (ELLCO-DLL; Castro, 2005) the tool mostly assesses the literacy environment (presence of bilingual books, use of gestures, props during book reading etc.) and whether the teacher reads to DLLs individually, in small groups, or in large groups in any language. Even though this tool is specific to assessing supports for DLLs, the CASEBA is much more nuanced aiming to capture very specific

language interactions in multiple contexts throughout the day with DLLs. More work is needed to assess the psychometrics of the CASEBA, however.

Pre-Service Programs for Teachers of DLLs

Though some information exists about the extent to which programs in higher education prepare teachers to work with DLLs, much of this information is outdated. More research is needed to examine the quality, content and experience that pre-service teachers receive in undergraduate programs regarding strategies for working with DLLs. In addition, more research is needed on the ways in which higher education programs align their content with the needs of young DLLs and who the delivers this content. For student teachers to practice instructional supports of DLLs in the home language through reading, questioning, and general interactions, a supervising professor might also need to be bilingual and cooperating teachers/schools would also need to be identified as willing and able to incorporate the approach.

In-Service Development for Teachers of DLLs

As mentioned previously, prior studies using observation tools to inform coaching have only focused on tools that assess global quality in early childhood settings (e.g., Pianta, LaParo, & Hamre, 2008). More work is needed to investigate the effects of coaching teachers on DLL specific strategies using domain specific tools like the CASEBA. In addition, as universities experiment with online learning resources that include video exemplars and access to resources, research investigating the efficacy of such approaches to teacher support is also needed. Specifically, studies investigating users, dosage, and implementation of concepts learned can provide information about ways to enhance practice despite personnel shortages and limited training in pre-service

settings. Answers to these questions will help to determine if over time we can better guide both coaches and teachers and ultimately help to increase achievement for young DLLs.

While it is evident that teachers need ongoing guidance to support DLLs in home language development, it is not yet well documented that the coaches who work with DLL teachers are well informed in this respect, and the coaches probably need guidance themselves. Research on the educational background and content knowledge of coaches relating to DLL supports is needed. Similarly, research on school level administrators and teacher leaders responsible for the instructional leadership and the evaluation of teachers and programs would also be revealing.

Given that this study took place in a public school district with high policy-driven requirements for teacher and assistant teacher preparation and standards, research investigating the full range of experience and education among the workforce in a wide range of settings is also needed regarding how they can (and do or do not) support young DLLs. Within this field of study, more intervention based research is needed to explore the role of the assistant teacher and what supports they need to increase their contributions to the classrooms. The findings of this study clearly show that despite the presence of bilingual assistants in all the staff language configurations, classrooms with bilingual lead teachers scored better on classroom quality scores, indicating that the inputs from assistant teachers were not enough by themselves to bolster scores to even the disappointingly low levels attained with bilingual lead teachers.

The findings regarding teacher assistants in this study are interesting in the face of a recent report entitled *Multilingual Paraprofessionals: An Untapped Resource for*

Supporting American Pluralism, which asserts that assistant teachers are more likely to speak a home language other than English and that they are a viable alternative to filling the gap in Spanish speaking teachers needed for young DLLs (Williams, et. al., 2016). Williams et al. (2016) report that more than one-fifth of paraprofessionals or teacher assistants speak a non-English language at home while only one-eighth of pre-K through twelve teachers does. The report further points to this differential in workforce diversity as a means to increasing the availability of bilinguals into classrooms, while noting that professional development and pathways to higher education are needed (Williams, et. al., 2016). The current study suggests that one useful approach to be taken would be to prepare bilingual assistants to be lead teachers. To this end, states like Illinois, Oregon and Minnesota have instituted programs that aim to grow assistants into licensed teachers by providing financial support to subsidize education costs (Garcia, 2016; Williams, et. al., 2016). Research to document the efficacy of such programs is needed as there are many challenges to success, not all of which may be financial (e.g., lack of familiarity with higher education that makes it hard to navigate, inadequate preparation to succeed in college academically).

Finally, research is needed that uses designs that might provide greater insight into the causal effects of teacher roles and bilingualism with respect to DLL children's achievement in early childhood and over time. This will require much more detailed measures of teacher characteristics, larger samples, and experimental manipulation of some teacher characteristics. Part of this should include measures of teacher language proficiency (in English as well as other languages) and expressed comfort levels with instructing children in a home language, prior to the start of a study. Though the Sawyer

et al. (2016) study did investigate associations between teacher beliefs, bilingualism and instructional practices, that study does not provide a basis for strong causal inferences about the bilingual abilities of teachers and lacked a valid tool of observed classroom quality. Further teacher language ability was measured through a self-reported measure.

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APPENDIX

Research Question 1: Professional Development Intervention

Table 1. Descriptive statistics for all analyzed classroom level variables for treatment and control analyses.

	N	Mean	SD	Minimum	Maximum
Dependent Variables					
CASEBA Spring Factor 1	48	5.6146	1.03266	4.00	7.00
CASEBA Spring Factor 2	48	3.8880	0.70098	2.00	5.17
CASEBA Spring Factor 3	48	3.5052	0.85752	1.50	5.25
CASEBA Spring 1 Factor 4	48	4.3264	0.64592	2.50	5.50
Mean CASEBA Spring 2010	48	3.9904	0.51125	2.54	4.73
ECERS Mean Spring 10	48	5.1841	0.59305	3.75	6.38
Pre-Test					
Attitudes_Spring_Teacher_F1	40	4.2358	0.40751	3.60	5.00
Attitudes_Spring_Teacher_F1	40	3.9625	0.73136	2.00	5.00
Attitudes_Spring_AstTeacher_F1	38	4.1944	0.71309	1.50	5.00
Attitudes_Spring_AstTeacher_F2	38	3.7487	1.00805	1.80	5.00
Mean CASEBA Spring 2009	43	3.7318	0.60700	2.27	4.92
CASEBA Spring 1 Factor 1	43	4.5233	1.37128	2.00	7.00
CASEBA Spring 1 Factor 2	43	3.6902	0.90159	2.15	5.54
CASEBA Spring 1 Factor 3	43	3.4128	0.77706	1.75	5.00
CASEBA Spring 1 Factor 4	43	3.9186	0.56971	2.83	5.50
Controls					
Lead teacher years of experience	51	7.6176	4.79227	1.00	26.00
Lead teacher highest degree earned	51	2.4706	0.50410	2.00	3.00
Assistant teacher years of experience	50	6.2600	4.16893	1.00	28.00
Assistant teacher highest degree revised	46	1.5435	0.88711	0.00	3.00

Table 2. Means and standard deviations for CASEBA items by treatment group.

	Full Sample			Control			Treatment		
	Spring *M* (SD) N=43	Fall, *M* (SD) N=51	Spring *M* (SD) N=48	Spring *M* (SD) N=21	Fall, *M* (SD) N=24	Spring *M* (SD) N=23	Spring *M* (SD) N=22	Fall, *M* (SD) N=27	Spring *M* (SD) N=25
1. The teacher and/or center collect systematic information on the language and cultural background of each child in the classroom.	3.53 (1.28)	4.53 (1.16)	5.54 (1.37)	3.761 (1.26)	4.458 (.93)	5.391 (1.41)	3.31 (1.29)	4.59 (1.34)	5.68 (.135)
2. The teacher knows the language and cultural background of each child in the classroom	5.46 (1.73)	5.16 (1.74)	6.15 (1.37)	5.619 (1.77)	5.043 (1.87)	6.00 (1.35)	5.31 (1.73)	5.25 (1.65)	6.28 (1.40)
3. The cultural backgrounds and life experiences of the ELL children are incorporated into the life of the classroom.	3.33 (.75)	3.35 (.82)	3.77 (.88)	3.238 (.77)	3.166 (.87)	3.695 (1.06)	3.41 (.73)	3.52 (.75)	3.84 (.69)
4. The lead teacher uses a home language of the ELL children for instructional purposes	1.67 (.92)	1.96 (.94)	1.83 (.86)	1.666 (1.02)	1.791 (.98)	1.608 (.84)	1.68 (.84)	2.11 (.89)	2.04 (.84)
5. The paraprofessional or assistant teacher uses a home language of the ELL children for instructional purposes.	3.72 (1.72)	5.31 (1.33)	4.37 (1.51)	4.095 (1.95)	4.833 (1.58)	4.173 (1.47)	3.36 (1.43)	5.74 (.90)	4.56 (1.56)
6. The teacher attempts to learn and use the home language/s spoken by the ELL children in the classroom, although she/he lacks proficiency in the language.	2.51 (1.52)	2.82 (1.52)	2.76 (1.13)	2.368 (1.54)	2.695 (1.69)	2.619 (1.07)	2.64 (1.52)	2.93 (1.38)	2.88 (1.19)
7. The lead teacher uses high quality talk in the students' home language.	1.23 (.92)	1.63 (1.41)	1.25 (.73)	1.380 (1.24)	1.583 (1.35)	1.173 (.65)	1.09 (.43)	1.67 (1.49)	1.32 (.802)
8. The assistant teacher uses high quality talk in the students' home language.	3.14 (2.07)	4.61 (1.77)	4.00 (1.71)	3.571 (2.34)	4.958 (1.60)	3.826 (1.75)	2.72 (1.72)	4.29 (1.87)	4.16 (1.70)
9. Teaching staff use effective strategies during group instruction to support on-going development of the home language.	2.65 (1.46)	3.27 (.92)	3.13 (1.27)	2.761 (1.55)	3.00 (.88)	2.956 (1.30)	2.54 (1.41)	3.52 (.89)	3.28 (1.24)

10. Teaching staff interact with individual ELL children in ways that support on-going development of the home language	3.05 (1.63)	3.45 (.90)	3.23 (1.08)	3.19 (1.78)	3.416 (.78)	3.043 (1.22)	2.91 (1.51)	3.48 (1.01)	3.40 (.913)
11. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in the home language.	2.02 (1.46)	2.43 (1.49)	1.77 (.91)	2.142 (1.46)	2.75 (1.48)	1.565 (.79)	1.91 (1.48)	2.15 (1.46)	1.96 (.978)
12. Books, print, and literacy props are available in the ELL children's home language/s	3.63 (.87)	4.08 (1.26)	4.48 (.97)	3.714 (.90)	3.75 (1.42)	4.260 (1.05)	3.55 (.86)	4.37 (1.04)	4.68 (.852)
13. Teaching staff support the learning of word-level early literacy skills in the ELL children's home language/s.	1.42 (.73)	1.53 (.83)	1.77 (.91)	1.476 (.87)	1.333 (.64)	1.695 (.93)	1.36 (.58)	1.70 (.95)	1.84 (.898)
14. Teaching staff encourage ELL parents to maintain children's home language.	3.42 (1.16)	2.38 (1.71)	4.08 (1.86)	3.333 (1.11)	2.304 (1.71)	3.173 (1.70)	3.50 (1.22)	2.44 (1.74)	4.92 (1.605)
15. The lead teacher uses high quality talk in English.	5.00 (1.62)	5.08 (1.66)	5.21 (1.49)	5.047 (1.69)	5.458 (1.53)	5.478 (1.44)	4.95 (1.58)	4.74 (1.72)	4.96 (1.51)
16. The assistant teacher uses high quality talk in English.	2.47 (1.86)	2.90 (1.79)	3.15 (1.90)	2.286 (1.87)	3.458 (1.74)	3.521 (2.15)	2.64 (1.87)	2.41 (1.72)	2.80 (1.58)
17. Teaching staff use effective strategies to scaffold children's comprehension of instructional content in English.	4.91 (1.38)	5.63 (1.18)	5.29 (1.18)	5.047 (1.53)	5.625 (1.24)	5.521 (1.12)	4.77 (1.23)	5.63 (1.15)	5.08 (1.22)
18. Teaching staff use effective strategies during group instruction to build children's communicative skills in English.	4.26 (1.20)	4.49 (1.33)	4.33 (1.39)	4.428 (1.25)	4.583 (1.41)	4.347 (1.58)	4.09 (1.15)	4.41 (1.28)	4.32 (1.22)
19. Teaching staff interact with individual ELL children in ways that support the acquisition of English	5.02 (1.20)	5.10 (1.30)	4.54 (11.36)	5.238 (1.34)	5.083 (1.28)	4.913 (1.47)	4.81 (1.05)	5.11 (1.34)	4.20 (1.16)
20. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in English.	3.40 (1.58)	2.90 (1.50)	3.08 (1.47)	3.666 (1.77)	3.166 (1.24)	3.173 (1.53)	3.14 (1.36)	2.67 (1.69)	3.00 (1.44)
21. Books, print and literacy props are available in English.	5.65 (.87)	5.88 (.91)	5.98 (.93)	5.857 (.73)	6.00 (.88)	5.913 (1.08)	5.45 (.96)	5.78 (.93)	6.04 (.79)

22. Teaching staff support the learning of word-level early literacy skills in English.	4.37 (1.11)	3.61 (.70)	4.27 (1.11)	4.428 (1.16)	3.583 (.71)	4.304 (1.19)	4.31 (1.09)	3.63 (.69)	4.24 (1.05)
23. Teaching staff provide a warm, emotionally supportive and low-anxiety classroom environment for English language learners.	5.91 (1.17)	6.02 (1.33)	5.75 (1.44)	6.047 (1.28)	6.166 (1.24)	5.608 (1.37)	5.78 (1.06)	5.89 (1.42)	5.88 (1.51)
24. Teaching staff foster a calm and respectful learning environment in which ELL children are able to hear adult talk	6.26 (1.03)	6.43 (.92)	5.71 (1.09)	6.047 (1.12)	6.25 (.99)	5.695 (1.10)	6.45 (.91)	6.59 (.84)	5.72 (1.10)
25. Teacher staff create a content-rich curriculum that offers meaningful opportunities to acquire and use new language skills	3.39 (1.42)	2.35 (1.52)	2.52 (1.43)	3.190 (1.50)	2.208 (1.41)	2.434 (1.38)	3.59 (1.33)	2.48 (1.63)	2.60 (1.50)
26. Teaching staff use appropriate assessment practices to identify children's language strengths and needs in their home language and in English.	5.51 (1.76)	5.92 (1.30)	5.69 (1.19)	5.904 (1.51)	6.166 (1.05)	5.652 (1.11)	5.14 (1.93)	5.70 (1.46)	5.72 (1.28)
Overall CASEBA	3.76 (.61)	3.96 (.41)	3.99 (.51)	3.83 (.72)	3.960 (.44)	3.918 (.53)	3.63 (.47)	3.95 (.38)	4.06 (.491)

Table 3.1. Lead teacher attitude survey responses.+

	Pre-Test Treatment N=27	Control N=24	Post-Test Treatment N=27	Control N=24
1*. Learning two languages in the classroom might be confusing for young children	48.0	20.8	35.0	31.6
2*. Spanish should be used to give directions but not for instructional purposes	56.0	50.0	61.9	52.6
3. I am well prepared to teach in a way that meets my ELL children's needs	24.0	16.7	28.6	26.3
4*. I speak only in English in the classroom so that children do better academically	64.0	58.3	50.0	36.8
5. I speak or attempt to speak Spanish in the classroom because it helps children learn English	40.0	54.2	35.0	47.4
6*. ELL parents should be encouraged to speak to their children in English whenever possible	32.0	20.8	20.0	31.6
7*. ELL children should primarily learn Spanish at home and English at school	52.0	29.2	30.0	31.6
8*. Teachers should not speak Spanish in the classroom unless they speak it fluently	44.0	50.0	65.0	42.1
9. Children should learn both English and Spanish at school	44.0	30.4	35.0	47.4
10. I incorporate the children's cultural background in my classroom	56.0	70.8	66.7	63.2
11. ELL parents should be encouraged to speak to their	52.0	58.3	45.0	52.6

children in Spanish whenever possible				
12. I teach or attempt to teach children academic topics in both English and Spanish	50.0	45.8	61.9	47.4
13. I support my children's acquisition of Spanish in the classroom to help them learn English	52.0	66.7	60.0	68.4
14. Enough books and other props from all children's home languages and cultures are present in the classroom	20.0	45.8	33.3	36.8
15. I know which languages are spoken in my children's homes	76.0	70.8	76.2	94.7
16. I know the amount of English exposure in the home that my ELL children receive	52.0	45.8	42.9	57.9

+Questions are presented exactly the way in which they were presented to teachers and their assistants. Negatively worded questions have been reverse-coded to reflect positive or desirable responses for all items (*). All percentages represent teachers' strong agreement with positive attitudes/practices.

Table 3.2. Assistant teacher attitude survey responses.

	Pre-Test Treatment N=27	Control N=24	Post-Test Treatment N=27	Control N=24
1*. Learning two languages in the classroom might be confusing for young children	52.9	60.0	60.0	72.2
2*. Spanish should be used to give directions but not for instructional purposes	50.0	45.0	73.7	44.4
3. I am well prepared to teach in a way that meets my ELL children's needs	41.2	57.9	57.9	52.9
4*. I speak only in English in the classroom so that children do better academically	72.2	70.0	80.0	52.9
5. I speak or attempt to speak Spanish in the classroom because it helps children learn English	47.1	50.0	45.0	47.1
6*. ELL parents should be encouraged to speak to their children in English whenever possible	29.4	25.0	20.0	43.8
7*. ELL children should primarily learn Spanish at home and English at school	27.8	10.0	40.0	29.4
8*. Teachers should not speak Spanish in the classroom unless they speak it fluently	58.8	75.0	40.0	58.8
9. Children should learn both English and Spanish at school	50.0	65.0	45.0	70.6
10. I incorporate the children's cultural background in my classroom	68.8	80.0	84.2	58.8
11. ELL parents should be encouraged to speak to their children in Spanish whenever possible	44.4	60.0	50.0	66.7
12. I teach or attempt to teach children academic topics in both English and Spanish	61.1	60.0	60.0	77.8
13. I support my children's acquisition of Spanish in the classroom to help them learn English	72.2	65.0	45.0	61.1
14. Enough books and other props from all children's home languages and cultures are present in the classroom	50.0	45.0	60.0	52.9
15. I know which languages are spoken in my children's homes	83.3	100.0	88.9	94.4
16. I know the amount of English exposure in the home that my ELL children receive	38.9	21.1	44.4	50.0

Table 4.1. ANCOVA Results of CASEBA factor 1 scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	5.682[a]	5	1.136	1.104	0.375
Intercept	157.420	1	157.420	152.886	0.000
Lead Teacher Yrs. Exp.	1.362	1	1.362	1.323	0.257
Lead Teacher Highest Ed.	0.996	1	0.996	0.967	0.332
Assistant Teacher Yrs. Exp.	0.774	1	0.774	0.752	0.392
Assistant Teacher Highest Ed.	3.254	1	3.254	3.160	0.084
Treatment	0.000	1	0.000	0.000	0.985
Error	38.097	37	1.030		
Total	1394.500	43			
Corrected Total	43.779	42			

a. R Squared = .130 (Adjusted R Squared = .012)
*p<.05, **p<.01

Table 4.2. ANCOVA Results of CASEBA factor 2 scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	p-value
Corrected Model	3.526a	5	0.705	1.516	0.208
Intercept	39.306	1	39.306	84.498	0.000
Lead Teacher Yrs. Exp.	3.054	1	3.054	6.566	0.015
Lead Teacher Highest Ed.	0.033	1	0.033	0.071	0.791
Assistant Teacher Yrs. Exp.	0.226	1	0.226	0.485	0.491
Assistant Teacher Highest Ed.	0.398	1	0.398	0.856	0.361
Treatment	0.007	1	0.007	0.015	0.904
Error	17.211	37	0.465		
Total	676.559	43			
Corrected Total	20.738	42			

a. R Squared = .170 (Adjusted R Squared = .058)
*p<.05, **p<.01

Table 4.3. ANCOVA Results of CASEBA factor 3 scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	4.516[a]	5	0.903	1.369	0.258
Intercept	30.241	1	30.241	45.841	0.000
Lead Teacher Yrs. Exp.	1.288	1	1.288	1.952	0.171
Lead Teacher Highest Ed.	1.851	1	1.851	2.806	0.102
Assistant Teacher Yrs. Exp.	0.881	1	0.881	1.336	0.255
Assistant Teacher Highest Ed.	0.027	1	0.027	0.041	0.841
Treatment	0.192	1	0.192	0.291	0.593
Error	24.408	37	0.660		
Total	550.438	43			
Corrected Total	28.924	42			

a. R Squared = .156 (Adjusted R Squared = .042)
*p<.05, **p<.01

Table 4.4. ANCOVA Results of CASEBA factor 4 scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	2.181[a]	5	0.436	1.267	0.299
Intercept	60.439	1	60.439	175.546	0.000
Lead Teacher Yrs. Exp.	0.008	1	0.008	0.023	0.880
Lead Teacher Highest Ed.	0.296	1	0.296	0.859	0.360
Assistant Teacher Yrs. Exp.	0.365	1	0.365	1.059	0.310
Assistant Teacher Highest Ed.	0.510	1	0.510	1.480	0.231
Treatment	1.626	1	1.626	4.722	0.036
Error	12.739	37	0.344		
Total	835.417	43			
Corrected Total	14.920	42			

a. R Squared = .146 (Adjusted R Squared = .031)
*p<.05, **p<.01

Table 4.5. ANCOVA Results of CASEBA overall score (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	2.026[a]	5	0.405	1.737	0.150
Intercept	45.122	1	45.122	193.431	0.000
Lead Teacher Yrs. Exp.	1.266	1	1.266	5.426	0.025
Lead Teacher Highest Ed.	0.246	1	0.246	1.056	0.311
Assistant Teacher Yrs. Exp.	0.284	1	0.284	1.216	0.277
Assistant Teacher Highest Ed.	0.207	1	0.207	0.889	0.352
Treatment	0.085	1	0.085	0.365	0.550
Error	8.631	37	0.233		
Total	698.978	43			
Corrected Total	10.657	42			

a. R Squared = .190 (Adjusted R Squared = .081)
*p<.05, **p<.01

Table 5.1. ANCOVA results of Space and Furnishings subscale scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	7.061[a]	5	1.412	2.574	0.043
Intercept	74.740	1	74.740	136.218	0.000
Lead Teacher Yrs. Exp.	4.760	1	4.760	8.675	0.006
Lead Teacher Highest Ed.	0.001	1	0.001	0.001	0.972
Assistant Teacher Yrs. Exp.	0.848	1	0.848	1.545	0.222
Assistant Teacher Highest Ed.	0.510	1	0.510	0.929	0.341
Treatment	1.784	1	1.784	3.251	0.080
Error	20.301	37	0.549		
Total	1238.313	43			
Corrected Total	27.362	42			

a. R Squared = .258 (Adjusted R Squared = .158)
*p<.05, **p<.01

Table 5.2. ANCOVA results of Personal Care Routines subscale scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	7.161[a]	5	1.432	1.183	0.336
Intercept	79.984	1	79.984	66.051	0.000
Lead Teacher Yrs. Exp.	0.092	1	0.092	0.076	0.784
Lead Teacher Highest Ed.	0.318	1	0.318	0.263	0.611
Assistant Teacher Yrs. Exp.	3.358	1	3.358	2.773	0.104
Assistant Teacher Highest Ed.	0.006	1	0.006	0.005	0.946
Treatment	1.842	1	1.842	1.521	0.225
Error	44.805	37	1.211		
Total	1115.662	43			
Corrected Total	51.966	42			

a. R Squared = .138 (Adjusted R Squared = .021)
*p<.05, **p<.01

Table 5.3. ANCOVA results of Language and Reasoning subscale scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	13.328[a]	5	2.666	3.178	0.017
Intercept	51.334	1	51.334	61.194	0.000
Lead Teacher Yrs. Exp.	8.316	1	8.316	9.914	0.003
Lead Teacher Highest Ed.	0.596	1	0.596	0.711	0.405
Assistant Teacher Yrs. Exp.	2.222	1	2.222	2.649	0.112
Assistant Teacher Highest Ed.	0.023	1	0.023	0.028	0.869
Treatment	3.193	1	3.193	3.807	0.059
Error	31.038	37	0.839		
Total	1031.250	43			
Corrected Total	44.366	42			

a. R Squared = .300 (Adjusted R Squared = .206)
*p<.05, **p<.01

Table 5.4. ANCOVA results of Activities subscale scores (spring 2010) without pretest scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	4.969[a]	5	0.994	2.478	0.049
Intercept	56.157	1	56.157	140.025	0.000
Lead Teacher Yrs. Exp.	2.515	1	2.515	6.272	0.017
Lead Teacher Highest Ed.	0.691	1	0.691	1.723	0.197
Assistant Teacher Yrs. Exp.	1.826	1	1.826	4.553	0.040
Assistant Teacher Highest Ed.	0.107	1	0.107	0.268	0.608
Treatment	0.224	1	0.224	0.557	0.460
Error	14.839	37	0.401		
Total	980.151	43			
Corrected Total	19.808	42			

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

Table 5.5. ANCOVA results of Interactions subscale scores (spring 2010) without pre-test scores Treatment v Control.

Source	SS	df	MS	F	*p*-value
Corrected Model	.387[a]	5	0.077	0.102	0.991
Intercept	130.741	1	130.741	172.341	0.000
Lead Teacher Yrs. Exp.	0.155	1	0.155	0.204	0.654
Lead Teacher Highest Ed.	0.058	1	0.058	0.077	0.783
Assistant Teacher Yrs. Exp.	0.012	1	0.012	0.016	0.900
Assistant Teacher Highest Ed.	0.219	1	0.219	0.288	0.595
Treatment	0.012	1	0.012	0.016	0.900
Error	28.069	37	0.759		
Total	1544.225	43			
Corrected Total	28.455	42			

a. R Squared = .014 (Adjusted R Squared = -.120)

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

Table 5.6. ANCOVA results of Program Structure subscale without pre-test.

Source	SS	df	MS	F	*p*-value
Corrected Model	9.270[a]	5	1.854	2.985	0.023
Intercept	88.829	1	88.829	143.030	0.000
Lead Teacher Yrs. Exp.	5.559	1	5.559	8.952	0.005
Lead Teacher Highest Ed.	0.749	1	0.749	1.206	0.279
Assistant Teacher Yrs. Exp.	3.142	1	3.142	5.059	0.031
Assistant Teacher Highest Ed.	0.098	1	0.098	0.158	0.693
Treatment	0.340	1	0.340	0.547	0.464
Error	22.979	37	0.621		
Total	1582.250	43			
Corrected Total	32.249	42			

a. R Squared = .287 (Adjusted R Squared = .191)

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

Table 5.7. ANCOVA results of overall ECERS score without pre-test

Source	SS	df	MS	F	*p*-value
Corrected Model	4.533[a]	5	0.907	3.449	0.012
Intercept	75.275	1	75.275	286.358	0.000
Lead Teacher Yrs. Exp.	2.471	1	2.471	9.398	0.004
Lead Teacher Highest Ed.	0.085	1	0.085	0.325	0.572
Assistant Teacher Yrs. Exp.	1.409	1	1.409	5.358	0.026
Assistant Teacher Highest Ed.	0.110	1	0.110	0.420	0.521
Treatment	0.822	1	0.822	3.126	0.085
Error	9.726	37	0.263		
Total	1174.539	43			
Corrected Total	14.259	42			

a. R Squared = .318 (Adjusted R Squared = .226)

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

Table 6.1. ANCOVA results of LT attitudes factor 1 without pretest

Source	SS	df	MS	F	*p*-value
Corrected Model	.489[a]	3	0.163	0.981	0.415
Intercept	133.318	1	133.318	803.104	0.000
Lead Teacher Yrs. Exp.	0.307	1	0.307	1.850	0.184
Lead Teacher Highest Ed.	0.240	1	0.240	1.449	0.238
Treatment	0.000	1	0.000	0.001	0.971
Error	4.980	30	0.166		
Total	618.178	34			
Corrected Total	5.469	33			

a. R Squared = .089 (Adjusted R Squared = -.002)
*p<.05, **p<.01

Table 6.2. ANCOVA results of LT attitudes factor 2 without pretest

Source	SS	df	MS	F	*p*-value
Corrected Model	1.092[a]	3	0.364	0.614	0.611
Intercept	121.069	1	121.069	204.260	0.000
Lead Teacher Yrs. Exp.	0.750	1	0.750	1.265	0.270
Lead Teacher Highest Ed.	0.247	1	0.247	0.416	0.524
Treatment	0.499	1	0.499	0.842	0.366
Error	17.782	30	0.593		
Total	548.306	34			
Corrected Total	18.873	33			

a. R Squared = .058 (Adjusted R Squared = -.036)
*p<.05, **p<.01

Table 6.3. ANCOVA results of AT attitudes factor 1 without pretest

Source	SS	df	MS	F	*p*-value
Corrected Model	.121[a]	3	0.040	0.216	0.884
Intercept	84.480	1	84.480	451.144	0.000**
Assistant Teacher Yrs. Exp.	0.041	1	0.041	0.218	0.645
Assistant Teacher Highest Ed.	0.032	1	0.032	0.172	0.682
Treatment	0.010	1	0.010	0.054	0.818
Error	4.307	23	0.187		
Total	498.322	27			
Corrected Total	4.428	26			

a. R Squared = .027 (Adjusted R Squared = -.099)
*p<.05, **p<.01

Table 6.4. ANCOVA results of AT attitudes factor 2 without pretest

Source	SS	df	MS	F	*p*
Corrected Model	2.458[a]	3	0.819	0.716	0.551
Intercept	65.123	1	65.123	56.943	0.000**
Assistant Teacher Yrs. Exp.	0.176	1	0.176	0.154	0.698
Assistant Teacher Highest Ed.	1.916	1	1.916	1.676	0.207
Treatment	1.085	1	1.085	0.949	0.339
Error	29.735	26	1.144		
Total	432.233	30			
Corrected Total	32.192	29			

a. R Squared = .076 (Adjusted R Squared = -.030)
*p<.05, **p<.01

Table 7.1. ANCOVA Results of CASEBA factor 1 scores with pre-test Treatment v Control

Source	SS	df	MS	F	p
Corrected Model	8.944a	6	1.491	1.572	0.189
Intercept	45.921	1	45.921	48.424	0.000**
Lead Teacher Yrs. Exp.	3.546	1	3.546	3.739	0.062
Lead Teacher Highest Ed.	1.536	1	1.536	1.620	0.213
Assistant Teacher Yrs. Exp.	0.916	1	0.916	0.966	0.333
Assistant Teacher Highest Ed.	1.789	1	1.789	1.887	0.179
CASEBA SpringF1_2009	1.508	1	1.508	1.590	0.217
Treatment	0.252	1	0.252	0.266	0.610
Error	29.398	31	0.948		
Total	1243.500	38			
Corrected Total	38.342	37			

a. R Squared = .233 (Adjusted R Squared = .085)

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

Table 7.2. ANCOVA Results of CASEBA factor 2 scores with pre-test Treatment v Control

Source	SS	df	MS	F	p
Corrected Model	3.697[a]	6	0.616	1.712	0.151
Intercept	3.179	1	3.179	8.830	0.006
Lead Teacher Yrs. Exp.	1.851	1	1.851	5.141	0.030
Lead Teacher Highest Ed.	0.038	1	0.038	0.105	0.748
Assistant Teacher Yrs. Exp.	0.470	1	0.470	1.304	0.262
Assistant Teacher Highest Ed.	0.874	1	0.874	2.428	0.129
CASEBA SpringF2_2009	1.560	1	1.560	4.335	0.046
Treatment	0.397	1	0.397	1.103	0.302
Error	11.160	31	0.360		
Total	622.908	38			
Corrected Total	14.857	37			

a. R Squared = .249 (Adjusted R Squared = .103)

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

Table 7.3. ANCOVA Results of CASEBA factor 3 scores with pre-test Treatment v Control

Source	SS	df	MS	F	p
Corrected Model	2.876[a]	6	0.479	0.869	0.528
Intercept	8.138	1	8.138	14.759	0.001**
Lead Teacher Yrs. Exp.	0.046	1	0.046	0.083	0.775
Lead Teacher Highest Ed.	2.092	1	2.092	3.794	0.061
Assistant Teacher Yrs. Exp.	0.120	1	0.120	0.218	0.644
Assistant Teacher Highest Ed.	0.065	1	0.065	0.118	0.734
CASEBA SpringF3_2009	0.530	1	0.530	0.961	0.335
Treatment	0.233	1	0.233	0.422	0.521
Error	17.093	31	0.551		
Total	519.313	38			
Corrected Total	19.969	37			

a. R Squared = .144 (Adjusted R Squared = -.022)

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

Table 7.4. ANCOVA Results of CASEBA factor 4 scores with pre-test Treatment v Control

Source	SS	df	MS	F	p
Corrected Model	3.133[a]	6	0.522	2.590	0.038
Intercept	2.949	1	2.949	14.627	0.001**
Lead Teacher Yrs. Exp.	0.013	1	0.013	0.066	0.800
Lead Teacher Highest Ed.	0.215	1	0.215	1.067	0.310
Assistant Teacher Yrs. Exp.	0.093	1	0.093	0.461	0.502
Assistant Teacher Highest Ed.	1.081	1	1.081	5.361	0.027
CASEBA SpringF4_2009	1.565	1	1.565	7.763	0.009**
Treatment	0.844	1	0.844	4.186	0.049
Error	6.250	31	0.202		
Total	762.472	38			
Corrected Total	9.384	37			

a. R Squared = .334 (Adjusted R Squared = .205)

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

Table 7.5. ANCOVA Results of CASEBA overall score with pre-test Treatment v Control

Source	SS	df	MS	F	p
Corrected Model	1.273[a]	6	0.212	1.323	0.277
Intercept	2.933	1	2.933	18.286	0.000**
Lead Teacher Yrs. Exp.	0.402	1	0.402	2.509	0.123
Lead Teacher Highest Ed.	0.178	1	0.178	1.107	0.301
Assistant Teacher Yrs. Exp.	0.188	1	0.188	1.172	0.287
Assistant Teacher Highest Ed.	0.565	1	0.565	3.524	0.070
CASEBA SpringMean_2009	0.437	1	0.437	2.727	0.109
Treatment	0.258	1	0.258	1.608	0.214
Error	4.972	31	0.160		
Total	641.636	38			
Corrected Total	6.245	37			

a. R Squared = .204 (Adjusted R Squared = .050)

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

Table 8.1. ANCOVA Results of ECERS-R Space and Furnishings subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	25.709[b]	5	5.142	1.940	0.115
Intercept	401.162	1	401.162	151.346	0.000**
Lead Teacher Yrs. Exp.	13.349	1	13.349	5.036	0.032
Lead Teacher Highest Ed.	0.457	1	0.457	0.172	0.681
Assistant Teacher Yrs. Exp.	2.082	1	2.082	0.785	0.382
Assistant Teacher Highest Ed.	3.209	1	3.209	1.210	0.279
Treatment	7.497	1	7.497	2.829	0.102
Error	84.820	32	2.651		
Total	6191.533	38			
Corrected Total	110.530	37			

a. Weighted Least Squares Regression - Weighted by ECERS pre test Spring 09

b. R Squared = .233 (Adjusted R Squared = .113)

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

Table 8.2. ANCOVA results of ECERS-R Personal Care Subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	7.376[a]	6	1.229	1.197	0.334
Intercept	9.515	1	9.515	9.261	0.005**
Lead Teacher Yrs. Exp.	0.508	1	0.508	0.494	0.487
Lead Teacher Highest Ed.	0.687	1	0.687	0.668	0.420
Assistant Teacher Yrs. Exp.	1.688	1	1.688	1.643	0.209
Assistant Teacher Highest Ed.	0.113	1	0.113	0.110	0.742
ECERS SpringPC_2009	1.432	1	1.432	1.394	0.247
Treatment	0.979	1	0.979	0.953	0.336
Error	31.848	31	1.027		
Total	1018.107	38			
Corrected Total	39.224	37			

a. R Squared = .188 (Adjusted R Squared = .031)

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

Table 8.3. ANCOVA results of ECERS-R Language and Reasoning subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	10.466[a]	6	1.744	2.461	0.046
Intercept	6.431	1	6.431	9.072	0.005**
Lead Teacher Yrs. Exp.	4.080	1	4.080	5.756	0.023*
Lead Teacher Highest Ed.	0.376	1	0.376	0.530	0.472
Assistant Teacher Yrs. Exp.	1.837	1	1.837	2.591	0.118
Assistant Teacher Highest Ed.	0.049	1	0.049	0.070	0.794
ECERS SpringLR_2009	2.345	1	2.345	3.308	0.079
Treatment	2.426	1	2.426	3.423	0.074
Error	21.975	31	0.709		
Total	967.500	38			
Corrected Total	32.441	37			

a. R Squared = .323 (Adjusted R Squared = .192)

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

Table 8.4. ANCOVA results for ECERS-R Activities subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	3.368[a]	6	0.561	1.685	0.158
Intercept	5.442	1	5.442	16.339	0.000**
Lead Teacher Yrs. Exp.	0.669	1	0.669	2.008	0.166
Lead Teacher Highest Ed.	0.813	1	0.813	2.441	0.128
Assistant Teacher Yrs. Exp.	0.865	1	0.865	2.596	0.117
Assistant Teacher Highest Ed.	0.220	1	0.220	0.659	0.423
ECERS SpringAct_2009	0.242	1	0.242	0.726	0.401
Treatment	0.439	1	0.439	1.317	0.260
Error	10.325	31	0.333		
Total	905.394	38			
Corrected Total	13.693	37			

a. R Squared = .246 (Adjusted R Squared = .100)

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

Table 8.5. ANCOVA results of ECERS-R Interaction Subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	3.508[a]	6	0.585	1.472	0.220
Intercept	7.097	1	7.097	17.868	0.000**
Lead Teacher Yrs. Exp.	0.342	1	0.342	0.861	0.361
Lead Teacher Highest Ed.	0.314	1	0.314	0.791	0.381
Assistant Teacher Yrs. Exp.	0.004	1	0.004	0.011	0.917
Assistant Teacher Highest Ed.	1.662	1	1.662	4.184	0.049*
ECERS SpringInt_2009	1.177	1	1.177	2.962	0.095
Treatment	0.404	1	0.404	1.018	0.321
Error	12.313	31	0.397		
Total	1413.985	38			
Corrected Total	15.821	37			

a. R Squared = .222 (Adjusted R Squared = .071)

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

Table 8.6. ANCOVA results of ECERS-R Program Structure Subscale with pre-test

Source	SS	df	MS	F	p
Corrected Model	7.691[a]	6	1.282	2.798	0.027*
Intercept	13.604	1	13.604	29.690	0.000**
Lead Teacher Yrs. Exp.	4.548	1	4.548	9.926	0.004**
Lead Teacher Highest Ed.	0.481	1	0.481	1.050	0.313
Assistant Teacher Yrs. Exp.	1.688	1	1.688	3.684	0.064
Assistant Teacher Highest Ed.	0.016	1	0.016	0.035	0.854
ECERS SpringPS_2009	0.001	1	0.001	0.001	0.972
Treatment	1.367	1	1.367	2.983	0.094
Error	14.204	31	0.458		
Total	1419.049	38			
Corrected Total	21.895	37			

a. R Squared = .351 (Adjusted R Squared = .226)

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

Table 8.7. ANCOVA Results of ECERS overall mean score with pre-test

Source	SS	df	MS	F	p
Corrected Model	3.847a	6	0.641	3.950	0.005**
Intercept	3.358	1	3.358	20.686	0.000**
Lead Teacher Yrs. Exp.	0.496	1	0.496	3.054	0.090
Lead Teacher Highest Ed.	0.043	1	0.043	0.264	0.611
Assistant Teacher Yrs. Exp.	0.850	1	0.850	5.237	0.029*
Assistant Teacher Highest Ed.	0.262	1	0.262	1.616	0.213
ECERS SpringMean_2009	1.062	1	1.062	6.544	0.016*
Treatment	0.785	1	0.785	4.835	0.035*
Error	5.032	31	0.162		
Total	1076.575	38			
Corrected Total	8.879	37			

a. R Squared = .433 (Adjusted R Squared = .324)

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

Table 9.1. ANCOVA results of LT attitudes factor 1 with pre-test

Source	SS	df	MS	F	p
Corrected Model	1.814[a]	4	0.453	3.476	0.020
Intercept	3.884	1	3.884	29.774	0.000**
Lead Teacher Yrs. Exp.	0.003	1	0.003	0.026	0.872
Lead Teacher Highest Ed.	5.667	1	5.667	0.000	0.984
Teacher Attitudes_Fall_F1	1.323	1	1.323	10.143	0.004**
Treatment	0.002	1	0.002	0.018	0.893
Error	3.653	28	0.130		
Total	600.538	33			
Corrected Total	5.467	32			

a. R Squared = .332 (Adjusted R Squared = .236)

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

Table 9.2. ANCOVA results of LT attitudes on factor 2 with pre-test

Source	SS	df	MS	F	p
Corrected Model	11.865a	4	2.966	11.856	0.000**
Intercept	0.037	1	0.037	0.148	0.703
Lead Teacher Yrs. Exp.	0.343	1	0.343	1.370	0.252
Lead Teacher Highest Ed.	0.076	1	0.076	0.304	0.586
Teacher Attitudes_Fall_F2	10.775	1	10.775	43.066	0.000**
Treatment	0.006	1	0.006	0.024	0.878
Error	7.005	28	0.250		
Total	532.306	33			
Corrected Total	18.870	32			

a. R Squared = .629 (Adjusted R Squared = .576)

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

Table 9.3. ANCOVA results of AT attitudes on factor 1 with pre-test

Source	SS	df	MS	F	p
Corrected Model	1.217[a]	4	0.304	1.724	0.191
Intercept	6.918	1	6.918	39.195	0.000**
Assistant Teacher Yrs. Exp.	0.002	1	0.002	0.014	0.908
Assistant Teacher Highest Ed.	0.001	1	0.001	0.006	0.939
Assistant Teacher Attitudes_Spring_F1	1.128	1	1.128	6.389	0.022
Treatment	0.038	1	0.038	0.215	0.649
Error	3.001	17	0.177		
Total	407.184	22			
Corrected Total	4.218	21			

a. R Squared = .289 (Adjusted R Squared = .121)

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

Table 9.4. ANCOVA results of AT attitudes factor 2 with pre-test

Source	SS	df	MS	F	p
Corrected Model	4.051[a]	4	1.013	0.710	0.596
Intercept	2.611	1	2.611	1.831	0.194
Assistant Teacher Yrs. Exp.	0.124	1	0.124	0.087	0.771
Assistant Teacher Highest Ed.	3.126	1	3.126	2.192	0.157
Assistant Teacher Attitudes_Spring_F2	0.256	1	0.256	0.180	0.677
Treatment	0.686	1	0.686	0.481	0.497
Error	24.242	17	1.426		
Total	307.919	22			
Corrected Total	28.292	21			

a. R Squared = .143 (Adjusted R Squared = -.058)

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

Research Question 1: Child Level Results

Table 10.1. ANOVA results of gender by treatment group for full sample.

Source	SS	*df*	MS	F	*p*
Corrected Model	.000[a]	1	.000	.002	.965
Intercept	45.819	1	45.819	182.027	.000**
Treatment	.000	1	.000	.002	.965
Error	52.105	207	.252		
Total	99.000	209			
Corrected Total	52.105	208			

a. R Squared = .000 (Adjusted R Squared = -.005)
*p<.05, **p<.01

Table 10.2. ANOVA results of ethnicity by treatment group for full sample.

Source	SS	df	MS	F	*p*
Corrected Model	.008a	1	.008	.040	.842
Intercept	713.801	1	713.801	3584.911	.000**
Treatment	.008	1	.008	.040	.842
Error	40.022	201	.199		
Total	774.000	203			
Corrected Total	40.030	202			

a. R Squared = .000 (Adjusted R Squared = -.005)
*p<.05, **p<.01

Table 10.3. ANOVA results of children's HL by treatment group for full sample.

Source	SS	df	MS	F	*p*
Corrected Model	.216a	1	.216	.466	.496
Intercept	241.941	1	241.941	523.189	.000**
Treatment	.216	1	.216	.466	.496
Error	93.412	202	.462		
Total	344.000	204			
Corrected Total	93.627	203			

a. R Squared = .002 (Adjusted R Squared = -.003)
*p<.05, **p<.01

Table 10.4. ANOVA results of mother's education by treatment group for full sample.

Source	SS	df	MS	F	*p*
Corrected Model	.367a	1	.367	.154	.696
Intercept	1627.601	1	1627.601	681.066	.000**
Treatment	.367	1	.367	.154	.696
Error	444.500	186	2.390		
Total	2107.000	188			
Corrected Total	444.867	187			

a. R Squared = .001 (Adjusted R Squared = -.005)

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

Table 10.5. ANOVA results of gender by treatment group for analytic sample.

Source	SS	df	MS	F	*p*
Corrected Model	.008a	1	.008	.030	.863
Intercept	42.186	1	42.186	167.373	.000**
Treatment	.008	1	.008	.030	.863
Error	47.636	189	.252		
Total	91.000	191			
Corrected Total	47.644	190			

a. R Squared = .000 (Adjusted R Squared = -.005)

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

Table 10.6. ANOVA results of ethnicity by treatment group for analytic sample.

Source	SS	df	MS	F	p
Corrected Model	.005a	1	.005	.023	.880
Intercept	666.763	1	666.763	3142.434	.000**
Treatment	.005	1	.005	.023	.880
Error	39.890	188	.212		
Total	722.000	190			
Corrected Total	39.895	189			

a. R Squared =.000 (Adjusted R Squared = -.005)

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

Table 10.7. ANOVA results of HL by treatment group for analytic sample.

Source	SS	df	MS	F	p
Corrected Model	.560a	1	.560	1.216	.272
Intercept	221.612	1	221.612	481.431	.000**
Treatment	.560	1	.560	1.216	.272
Error	86.540	188	.460		
Total	317.000	190			
Corrected Total	87.100	189			

a. R Squared = .006 (Adjusted R Squared = .001)

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

Table 10.8. ANOVA results of mother's education by treatment group for analytic sample.

Source	SS	df	MS	F	p
Corrected Model	.134a	1	.134	.055	.816
Intercept	1584.534	1	1584.534	645.622	.000**
Treatment	.134	1	.134	.055	.816
Error	436.861	178	2.454		
Total	2051.000	180			
Corrected Total	436.994	179			

a. R Squared = .000 (Adjusted R Squared = -.005)

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

Table 11.1. ANOVA results of pre-test PPVT by treatment group for analytic sample.

Source	SS	df	MS	F	p
Corrected Model	163.891a	1	163.891	.482	.488
Intercept	763132.896	1	763132.896	2246.018	.000
PDTC	163.891	1	163.891	.482	.488
Error	62857.735	185	339.772		
Total	845704.000	187			
Corrected Total	63021.626	186			

a. R Squared = .003 (Adjusted R Squared = -.003)

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

Table 11.2. ANOVA results of pre-test TVIP by treatment group for analytic sample.

Source	SS	df	MS	F	p
Corrected Model	25.597a	1	25.597	.185	.667
Intercept	1186229.911	1	1186229.911	8595.132	.000
PDTC	25.597	1	25.597	.185	.667
Error	26084.235	189	138.012		
Total	1242597.000	191			
Corrected Total	26109.832	190			

a. R Squared = .001 (Adjusted R Squared = -.004)

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

Table 11.3 ANOVA results of gender by treatment group for analytic sample

Source	SS	df	MS	F	p
Corrected Model	.003a	1	.003	.013	.910
Intercept	41.962	1	41.962	166.561	.000**
PDTC	.003	1	.003	.013	.910
Error	47.867	190	.252		
Total	91.000	192			
Corrected Total	47.870	191			

a. R Squared = .000 (Adjusted R Squared = -.005)

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

Table 11.4 ANOVA results of Spanish home language by treatment group for analytic sample

Source	SS	df	MS	F	p
Corrected Model	.015a	1	.015	.101	.751
Intercept	124.895	1	124.895	826.187	.000**
PDTC	.015	1	.015	.101	.751
Error	28.571	189	.151		
Total	156.000	191			
Corrected Total	28.586	190			

a. R Squared = .001 (Adjusted R Squared = -.005)

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

Table 11.5 ANOVA results of mother's education by treatment group for analytic sample

Source	SS	df	MS	F	p
Corrected Model	.004a	1	.004	.017	.897
Intercept	16.269	1	16.269	76.067	.000**
PDTC	.004	1	.004	.017	.897
Error	38.284	179	.214		
Total	55.000	181			
Corrected Total	38.287	180			

a. R Squared = .000 (Adjusted R Squared = -.005)

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

Table 11.6 ANOVA results of children's age by treatment group for analytic sample

Source	SS	df	MS	F	p
Corrected Model	356.397a	1	356.397	8.283	.004**
Intercept	390150.460	1	390150.460	9067.141	.000**
PDTC	356.397	1	356.397	8.283	.004**
Error	8175.520	190	43.029		
Total	412232.000	192			
Corrected Total	8531.917	191			

a. R Squared = .042 (Adjusted R Squared = .037)

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

Table 12.1. ANCOVA results of PPVT with covariates.

Source	SS	df	MS	F	p
Corrected Model	23376.932a	6	3896.155	20.362	.000**
Intercept	7133.349	1	7133.349	37.280	.000**
Pre-test	17005.663	1	17005.663	88.875	.000**
Gender	519.629	1	519.629	2.716	.101
Hispanic	185.767	1	185.767	.971	.326
HL Spanish	398.592	1	398.592	2.083	.151
Mother's Ed.	147.032	1	147.032	.768	.382
Treatment	119.602	1	119.602	.625	.430
Error	32337.249	169	191.345		
Total	998296.000	176			
Corrected Total	55714.182	175			

a. R Squared = .420 (Adjusted R Squared = .399)
*p<.05, **p<.01

Table 12.2. ANCOVA results of TVIP with covariates.

Source	SS	df	MS	F	p
Corrected Model	8247.748a	6	1374.625	13.580	.000**
Intercept	3854.026	1	3854.026	38.074	.000**
Pre-test	5224.369	1	5224.369	51.611	.000**
Gender	.816	1	.816	.008	.929
Hispanic	53.182	1	53.182	.525	.470
HL Spanish	1118.540	1	1118.540	11.050	.001
Mother's Ed.	.859	1	.859	.008	.927
Treatment	7.056	1	7.056	.070	.792
Error	17208.298	170	101.225		
Total	1081985.000	177			
Corrected Total	25456.045	176			

a. R Squared = .324 (Adjusted R Squared = .300)
*p<.05, **p<.01

Table 12.3. ANCOVA results of PPVT without covariates.

Source	SS	df	MS	F	p
Corrected Model	23209.851a	2	11604.926	60.428	.000**
Intercept	16027.005	1	16027.005	83.454	.000**
Pre-test	22683.012	1	22683.012	118.112	.000**
Treatment	232.341	1	232.341	1.210	.273
Error	35336.502	184	192.046		
Total	1053464.000	187			
Corrected Total	58546.353	186			

a. R Squared = .396 (Adjusted R Squared = .390)
*p<.05, **p<.01

Table 12.4 *ANCOVA results of TVIP without covariates*

Source	SS	df	MS	F	p
Corrected Model	7428.696a	2	3714.348	34.066	.000**
Intercept	4704.728	1	4704.728	43.149	.000**
tvip_ss_pre	7413.557	1	7413.557	67.993	.000**
PDTC	4.321	1	4.321	.040	.842
Error	20280.447	186	109.035		
Total	1173377.000	189			
Corrected Total	27709.143	188			

a. R Squared = .268 (Adjusted R Squared = .260)
*p<.05, **p<.01

Research Question 2: Staff Language Results

Table 14. Means and standard deviations for CASEBA items by staffing group.

	Full Sample		ES		SS		SE	
	Fall, *M* (SD) N=84	Spring, *M* (SD) N=83	Fall, *M* (SD) N=51	Spring, *M* (SD) N=48	Fall, *M* (SD) N=10	Spring, *M* (SD) N=10	Fall, *M* (SD) N=23	Spring *M* (SD) N=25
1. The teacher and/or center collect systematic information on the language and cultural background of each child in the classroom.	4.595 (1.13)	5.638 (1.38)	4.529 (1.16)	5.542 (1.37)	4.6 (97)	5.9 (1.37)	4.739 (1.18)	5.72 (1.45)
2. The teacher knows the language and cultural background of each child in the classroom	5.506 (1.60)	6.265 (1.32)	5.16 (1.74)	6.146 (1.37)	6.3 (.95)	6.6 (.84)	5.913 (1.31)	6.36 (1.38)
3. The cultural backgrounds and life experiences of the ELL children are incorporated into the life of the classroom.	3.511 (.81)	3.916 (1.07)	3.353 (.82)	3.770 (.88)	3.7 (.48)	3.9 (1.29)	3.783 (.85)	4.2 (1.29)
4. The lead teacher uses a home language of the ELL children for instructional purposes	3.11 (1.83)	3.120 (1.78)	1.961 (.94)	1.833 (.86)	5.3 (1.25)	5 (.94)	4.74 (1.39)	4.84 (1.11)
5. The paraprofessional or assistant teacher uses a home language of the ELL children for instructional purposes.	4.286 (2.13)	3.699 (1.83)	5.314 (1.33)	4.375 (1.51)	5.3 (1.16)	5 (.94)	1.565 (1.34)	1.88 (1.24)
6. The teacher attempts to learn and use the home language/s spoken by the ELL children in the classroom, although she/he lacks proficiency in the language.*	2.820 (1.52)	2.756 (1.13)	2.82 (1.52)	2.756 (1.13)	-	-	-	-
7. The lead teacher uses high quality talk in the students' home language.	2.821 (2.16)	2.687 (2.01)	1.627 (1.41)	1.25 (.73)	4.3 (2.11)	4.7 (1.42)	4.826 (1.64)	4.64 (1.50)
8. The assistant teacher uses high quality talk in the students' home language.	3.679 (2.14)	3.265 (1.89)	4.608 (1.77)	4 (1.71)	4.6 (1.51)	4.3 (.95)	1.217 (.74)	1.44 (1.083)
9. Teaching staff use effective strategies during group instruction to support on-going development of the home language.	3.548 (1.02)	3.554 (1.36)	3.275 (.92)	3.125 (1.27)	4.2 (.79)	4 (.94)	3.870 (1.14)	4.2 (1.41)
10. Teaching staff interact with individual ELL children in ways that support on-going development of the home language	3.536 (.97)	3.446 (1.16)	3.451 (.91)	3.229 (1.08)	4.3 (.95)	3.8 (1.40)	3.391 (1.03)	3.72 (1.17)
11. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in the home language.	2.560 (1.48)	2.181 (1.19)	2.431 (1.49)	1.770 (.91)	2.6 (1.58)	2.3 (1.16)	2.826 (1.47)	2.92 (1.35)
12. Books, print, and literacy props are available in the ELL children's home language/s	4.226 (1.29)	4.759 (1.03)	4.078 (1.26)	4.479 (.96)	4.3 (1.34)	4.8 (.92)	4.5212 (1.34)	5.28 (1.02)
13. Teaching staff support the learning of word-level early literacy skills in the ELL children's home language/s.	1.548 (.84)	1.855 (.91)	1.529 (.833)	1.771 (.91)	1.7 (1.06)	2.1 (.88)	1.522 (.79)	1.92 (.95)
14. Teaching staff encourage ELL parents to maintain children's home language.	2.530 (1.84)	4.145 (1.91)	2.38 (1.71)	4.083 (1.86)	3.6 (2.22)	5.1 (1.73)	2.391 (1.88)	3.88 (2.05)
15. The lead teacher uses high quality talk in English.	4.560 (1.86)	4.867 (1.61)	5.078 (1.66)	5.21 (1.49)	3.4 (1.84)	4.5 (1.58)	3.913 (1.93)	4.36 (1.75)
16. The assistant teacher uses high quality talk in English.	3.262 (1.84)	3.476 (1.96)	2.902 (1.79)	3.146 (1.89)	2.6 (2.17)	2.3 (1.95)	4.348 (1.34)	4.625 (1.58)

17. Teaching staff use effective strategies to scaffold children's comprehension of instructional content in English.	5.524 (1.15)	5.133 (1.29)	5.627 (1.18)	5.292 (1.84)	5.5 (1.18)	4.9 (1.37)	5.304 (1.06)	4.92 (1.44)
18. Teaching staff use effective strategies during group instruction to build children's communicative skills in English.	4.310 (1.34)	4.337 (1.38)	4.490 (1.33)	4.333 (1.39)	4.8 (1.32)	4.4 (1.17)	3.696 (1.22)	4.32 (1.49)
19. Teaching staff interact with individual ELL children in ways that support the acquisition of English	4.75 (1.39)	4.349 (1.34)	5.098 (1.30)	4.541 (1.35)	5.1 (1.20)	3.8 (1.48)	3.826 (1.27)	4.2 (1.23)
20. Teaching staff intentionally expand children's repertoire of concepts and vocabulary in English.	2.905 (1.41)	2.976 (1.56)	2.902 (1.50)	3.083 (1.47)	2.9 (.86)	2.6 (1.71)	2.913 (1.44)	2.92 (1.71)
21. Books, print and literacy props are available in English.	5.917 (.84)	6.060 (.86)	5.882 (.91)	5.979 (.93)	5.9 (.74)	6.1 (.88)	6.00 (.74)	6.2 (.71)
22. Teaching staff support the learning of word-level early literacy skills in English.	3.738 (.73)	4.265 (1.06)	3.608 (.70)	4.271 (1.11)	4.1 (.74)	4.6 (1.27)	3.870 (.76)	4.12 (.88)
23. Teaching staff provide a warm, emotionally supportive and low-anxiety classroom environment for English language learners.	5.976 (1.35)	5.735 (1.40)	6.020 (1.33)	5.75 (1.43)	6.3 (1.25)	6.00 (1.41)	5.739 (1.45)	5.6 (1.35)
24. Teaching staff foster a calm and respectful learning environment in which ELL children are able to hear adult talk	6.429 (.99)	5.699 (1.06)	6.431 (.92)	5.708 (1.09)	6.6 (.97)	5.5 (.97)	6.348 (1.19)	5.76 (1.05)
25. Teacher staff create a content-rich curriculum that offers meaningful opportunities to acquire and use new language skills	2.342 (1.53)	2.554 (1.60)	2.3523 (1.52)	2.520 (1.43)	2.2 (1.54)	2.7 (2.00)	2.391 (1.62)	2.56 (1.78)
26. Teaching staff use appropriate assessment practices to identify children's language strengths and needs in their home language and in English.	5.964 (1.17)	5.710 (1.10)	5.922 (1.30)	5.688 (1.19)	6.4 (.84)	6 (.94)	5.870 (.97)	5.64 (1.00)
Overall CASEBA	4.019 (.45)	4.122 (.53)	3.957 (041)	3.990 (.51)	4.424 (.37)	4.436 (.46)	3.980 (.47)	4.248 (.53)

* Item 6 is considered N/A for teachers who already speak the home language of most of the children in the classroom.

Table 15. CASEBA unstandardized factor score means and standard deviations by staffing group.

	Full Sample		E-S		S-E		S-S	
	Pre- *M* (SD) N=84	Post *M* (SD) N=83	Pre- *M* (SD) N=51	Post *M* (SD) N=48	Pre- *M* (SD) N=23	Post *M* (SD) N=25	Pre- *M* (SD) N=10	Post *M* (SD) N=10
Factor 1: Assessment	5.28	5.67	5.23	5.61	5.30	5.68	5.5	5.95
(Items 1 & 26)	(.96)	(1.03)	(1.02)	(1.03)	(.90)	(1.03)	(.78)	(1.04)
Factor 2: Lang and Vocab Supports	4.15	4.03	4.13	3.89	3.94	4.07	4.76	4.56
(Items 4-11, 15, 17, 19-21 & 23)	(.63)	(.73)	(.59)	(.71)	(.63)	(.74)	(.50)	(.62)
Factor 3: Eng Lang Dev	2.97	3.61	2.82	3.51	3.25	3.79	3.13	3.68
(Items 16, 18, 22 & 25)	(.77)	(.87)	(.74)	(.86)	(.80)	(.85)	(.70)	(1.00)
Factor 4: Structure & Clsrm Envrn	3.96	4.44	3.82	4.33	4.08	4.57	4.37	4.67
(Items 2, 3, & 12-14)	(.57)	(.63)	(.49)	(.65)	(.62)	(.62)	(.62)	(.52)

Table 16.1. MANOVA results for Fall CASEBA Scores.

Source	Dependent Variable	SS	df	MS	F	p	Partial Eta Squared
Corrected Model	CASEBA Fall Factor 1	.649a	2	.325	.348	.707	.009
	CASEBA Fall Factor 2	4.715b	2	2.358	6.780	.002**	.143
	CASEBA Fall Factor 3	3.185c	2	1.593	2.795	.067	.065
	CASEBA Fall Factor 4	2.933d	2	1.466	4.960	.009	.109
Intercept	CASEBA Fall Factor 1	1575.583	1	1575.583	1689.769	.000**	.954
	CASEBA Fall Factor 2	1009.369	1	1009.369	2902.654	.000**	.973
	CASEBA Fall Factor 3	518.455	1	518.455	909.739	.000**	.918
	CASEBA Fall Factor 4	923.136	1	923.136	3122.222	.000**	.975
staffing	CASEBA Fall Factor 1	.649	2	.325	.348	.707	.009
	CASEBA Fall Factor 2	4.715	2	2.358	6.780	.002**	.143
	CASEBA Fall Factor 3	3.185	2	1.593	2.795	.067	.065
	CASEBA Fall Factor 4	2.933	2	1.466	4.960	.009**	.109
Error	CASEBA Fall Factor 1	75.526	81	.932			
	CASEBA Fall Factor 2	28.167	81	.348			
	CASEBA Fall Factor 3	46.161	81	.570			
	CASEBA Fall Factor 4	23.949	81	.296			
Total	CASEBA Fall Factor 1	2417.750	84				
	CASEBA Fall Factor 2	1481.829	84				
	CASEBA Fall Factor 3	792.403	84				
	CASEBA Fall Factor 4	1343.028	84				
Corrected Total	CASEBA Fall Factor 1	76.176	83				
	CASEBA Fall Factor 2	32.882	83				
	CASEBA Fall Factor 3	49.347	83				
	CASEBA Fall Factor 4	26.882	83				

a. R Squared = .009 (Adjusted R Squared = -.016)
b. R Squared = .143 (Adjusted R Squared = .122)
c. R Squared = .065 (Adjusted R Squared = .041)
d. R Squared = .109 (Adjusted R Squared = .087)
*p<.05, **p<.01

Table 16.2. MANOVA results for Spring CASEBA scores.

Source	Dependent Variable	SS	df	MS	F	p	Partial Eta Squared
Corrected Model	CASEBA Spring Factor 1	.932a	2	.466	.437	.647	.011
	CASEBA Spring Factor 2	3.813b	2	1.906	3.846	.025	.088
	CASEBA Spring Factor 3	1.379c	2	.690	.904	.409	.022
	CASEBA Spring 1 Factor 4	1.534d	2	.767	1.966	.147	.047
Intercept	CASEBA Spring Factor 1	1848.968	1	1848.968	1734.394	.000**	.956
	CASEBA Spring Factor 2	975.074	1	975.074	1967.388	.000**	.961
	CASEBA Spring Factor 3	748.262	1	748.262	980.886	.000**	.925
	CASEBA Spring 1 Factor 4	1143.209	1	1143.209	2929.435	.000**	.973
Saffing	CASEBA Spring Factor 1	.932	2	.466	.437	.647	.011
	CASEBA Spring Factor 2	3.813	2	1.906	3.846	.025	.088
	CASEBA Spring Factor 3	1.379	2	.690	.904	.409	.022
	CASEBA Spring 1 Factor 4	1.534	2	.767	1.966	.147	.047
Error	CASEBA Spring Factor 1	85.285	80	1.066			
	CASEBA Spring Factor 2	39.649	80	.496			
	CASEBA Spring Factor 3	61.027	80	.763			
	CASEBA Spring 1 Factor 4	31.220	80	.390			
Total	CASEBA Spring Factor 1	2759.000	83				
	CASEBA Spring Factor 2	1388.491	83				
	CASEBA Spring Factor 3	1144.938	83				
	CASEBA Spring 1 Factor 4	1668.806	83				
Corrected Total	CASEBA Spring Factor 1	86.217	82				
	CASEBA Spring Factor 2	43.462	82				
	CASEBA Spring Factor 3	62.407	82				
	CASEBA Spring 1 Factor 4	32.754	82				

a. R Squared = .011 (Adjusted R Squared = -.014)
b. R Squared = .088 (Adjusted R Squared = .065)
c. R Squared = .022 (Adjusted R Squared = -.002)
d. R Squared = .047 (Adjusted R Squared = .023)
*p<.05, **p<.01

Table. 16.3. MANOVA results of ECERS-R spring outcomes (subscale and overall scores).

Source		SS	df	MS	F	p
Corrected Model	ECERS post test SF Spring 10	1.502[a]	2	0.751	1.442	0.243
	ECERS post test PC Spring 10	1.526b	2	0.763	0.582	0.561
	ECERS post test LR Spring 10	.346c	2	0.173	0.159	0.853
	ECERS post test Act Spring 10	.564[d]	2	0.282	0.641	0.529
	ECERS post test Inter Spring 10	.525[e]	2	0.262	0.343	0.710
	ECERS post test Prgm Structure Spring 10	1.459[f]	2	0.730	0.940	0.395
	ECERS Mean Spring 10	.620[g]	2	0.310	0.979	0.380
Intercept	ECERS post test SF Spring 10	1645.127	1	1645.127	3157.54	0.000**
	ECERS post test PC Spring 10	1446.353	1	1446.353	1102.67	0.000**
	ECERS post test LR Spring 10	1315.569	1	1315.569	1211.18	0.000**
	ECERS post test Act Spring 10	1270.204	1	1270.204	2889.39	0.000**
	ECERS post test Inter Spring 10	1998.480	1	1998.480	2614.46	0.000**
	ECERS post test Prgm Structure Spring 10	2037.704	1	2037.704	2625.10	0.000**
	ECERS Mean Spring 10	1550.611	1	1550.611	4900.67	0.000**
Staffing	ECERS post test SF Spring 10	1.502	2	0.751	1.442	0.243
	ECERS post test PC Spring 10	1.526	2	0.763	0.582	0.561
	ECERS post test LR Spring 10	0.346	2	0.173	0.159	0.853
	ECERS post test Act Spring 10	0.564	2	0.282	0.641	0.529
	ECERS post test Inter Spring 10	0.525	2	0.262	0.343	0.710
	ECERS post test Prgm Structure Spring 10	1.459	2	0.730	0.940	0.395
	ECERS Mean Spring 10	0.620	2	0.310	0.979	0.380
Error	ECERS post test SF Spring 10	41.681	80	0.521		
	ECERS post test PC Spring 10	104.934	80	1.312		
	ECERS post test LR Spring 10	86.895	80	1.086		
	ECERS post test Act Spring 10	35.169	80	0.440		
	ECERS post test Inter Spring 10	61.152	80	0.764		
	ECERS post test Prgm Structure Spring 10	62.099	80	0.776		
	ECERS Mean Spring 10	25.313	80	0.316		
Total	ECERS post test SF Spring 10	2478.685	83			
	ECERS post test PC Spring 10	2225.357	83			
	ECERS post test LR Spring 10	2022.188	83			
	ECERS post test Act Spring 10	1922.061	83			
	ECERS post test Inter Spring 10	2977.518	83			
	ECERS post test Prgm Structure Spring 10	3087.667	83			
	ECERS Mean Spring 10	2311.859	83			
Corrected Total	ECERS post test SF Spring 10	43.184	82			
	ECERS post test PC Spring 10	106.460	82			
	ECERS post test LR Spring 10	87.241	82			
	ECERS post test Act Spring 10	35.732	82			
	ECERS post test Inter Spring 10	61.677	82			
	ECERS post test Prgm Structure Spring 10	63.558	82			
	ECERS Mean Spring 10	25.932	82			

a. R Squared = .035 (Adjusted R Squared = .011)
b. R Squared = .014 (Adjusted R Squared = -.010)

c. R Squared = .004 (Adjusted R Squared = -.021)
d. R Squared = .016 (Adjusted R Squared = -.009)
e. R Squared = .009 (Adjusted R Squared = -.016)
f. R Squared = .023 (Adjusted R Squared = -.001)
g. R Squared = .024 (Adjusted R Squared = -.001)
*p<.05, **p<.01

RQ2: Child Level Results

Table 17. Means, standard deviations, minimum, maximum for child outcome data on full sample for RQ2.

Full Sample		N	Mean	SD	Minimum	Maximum
	ppvt_ss_pre	370	65.28	18.809	40	108
	ppvt_ss_post	340	73.16	17.507	40	114
	tvip_ss_pre	372	80.12	11.096	55	120
	tvip_ss_post	340	78.62	12.542	55	114
E-S						
	ppvt_ss_pre	205	64.15	18.582	40	108
	ppvt_ss_post	191	73.01	17.656	40	113
	tvip_ss_pre	208	79.71	11.511	55	120
	tvip_ss_post	190	77.78	12.156	55	114
S-S						
	ppvt_ss_pre	38	66.89	18.774	40	98
	ppvt_ss_post	33	69.64	17.653	40	102
	tvip_ss_pre	37	82.35	10.555	55	98
	tvip_ss_post	34	80.12	14.678	55	106
S-E						
	ppvt_ss_pre	127	66.61	19.208	40	105
	ppvt_ss_post	116	74.41	17.220	40	114
	tvip_ss_pre	127	80.16	10.548	55	113
	tvip_ss_post	116	79.56	12.501	55	107

Table 18.1. ANCOVA results of child characteristics, pre-test PPVT and staffing as predictors of post-test PPVT.

Source	SS	df	MS	*F*	*p*
Corrected Model	41409.091[a]	6	6901.515	38.934	.000**
Intercept	2182.318	1	2182.318	12.311	.001**
HL	365.178	1	365.178	2.060	.152
Mother's Ed.	100.273	1	100.273	0.566	.453
Age	1025.075	1	1025.075	5.783	.017*
ppvt_ss_pre	31315.991	1	31315.991	176.663	.000**
staffing	663.574	2	331.787	1.872	.156
Error	54951.773	310	177.2638		
Total	1812919.000	317			
Corrected Total	96360.864	316			

R Squared = .430 (Adjusted R Squared = .413)
*p<.05, **p<.01

Table 18.2. ANCOVA results of lead teacher characteristics, pre-test PPVT and staffing as predictors of post-test PPVT.

Source	SS	df	MS	*F*	*p*
Corrected Model	42051.412a	5	8410.282	46.548	.000**
Intercept	21551.050	1	21551.050	119.277	.000**
ppvt_ss_pre	41310.414	1	41310.414	228.637	.000**
LT Yrs Exp	5.360	1	5.360	0.030	.863
LT Highest Degree	1251.743	1	1251.743	6.928	.009*
staffing	1082.824	2	541.412	2.997	.051
Error	57456.548	318	180.681		
Total	1816627.000	324			
Corrected Total	99507.960	323			

R Squared = .423 (Adjusted R Squared = .414)
*p<.05, **p<.01

Table 18.3. ANCOVA results of assistant teacher characteristics, pre-test PPVT and staffing as predictors of post-test PPVT.

Source	SS	df	MS	*F*	*p*
Corrected Model	34968.945[a]	5	6993.789	37.988	.000**
Intercept	19802.980	1	19802.980	107.564	.000**
AT Yrs. Exp	404.064	1	404.064	2.195	.140
AT Highest Degree	598.422	1	598.422	3.250	.073
ppvt_ss_pre	31363.235	1	31363.235	170.356	.000**
staffing	896.233	2	448.117	2.434	.090
Error	49523.942	269	184.104		
Total	1555960.000	275			
Corrected Total	84492.887	274			

R Squared = .414 (Adjusted R Squared = .403)
*p<.05, **p<.01

Table 18.4. ANCOVA results of child characteristics, pre-test TVIP and staffing as predictors of post-test TVIP.

Source	SS	*df*	MS	*F*	*p*
Corrected Model	15813.273[a]	6	2635.546	23.678	.000**
Intercept	3953.913	1	3953.913	35.523	.000**
HL	3832.281	1	3832.281	34.430	.000**
Mother's Ed.	161.527	1	161.527	1.451	.229
Age	718.059	1	718.059	6.451	.012*
tvip_ss_pre	4893.460	1	4893.460	43.964	.000**
staffing	146.771	2	73.385	0.659	.518
Error	34616.110	311	111.305		
Total	1999520.000	318			
Corrected Total	50429.383	317			

R Squared = .314 (Adjusted R Squared = .300)
*p<.05, **p<.01

Table 18.5. ANCOVA results of lead teacher characteristics, pre-test TVIP and staffing as predictors of post-test TVIP.

Source	SS	df	MS	*F*	*p*
Corrected Model	12005.512[a]	5	2401.102	20.431	.000**
Intercept	6565.105	1	6565.105	55.861	.000**
LT Yrs Exp	22.704	1	22.704	0.193	.661
LT Highest Degree	27.543	1	27.543	0.234	.629
tvip_ss_pre	11733.549	1	11733.549	99.839	.000**
staffing	88.598	2	44.299	.377	.686
Error	37607.939	320	117.525		
Total	2057879.000	326			
Corrected Total	49613.451	325			

R Squared = .242 (Adjusted R Squared = .230)
*p<.05, **p<.01

Table 18.6. ANCOVA results of assistant teacher characteristics, pre-test TVIP and staffing as predictors of post-test TVIP.

Source	SS	df	MS	F	p
Corrected Model	11593.020a	5	2318.604	19.257	.000**
Intercept	6322.776	1	6322.776	52.514	.000**
AT Yrs. Exp	316.338	1	316.338	2.627	.106
AT Highest Degree	207.654	1	207.654	1.725	.190
tvip_ss_pre	10293.697	1	10293.697	85.495	.000**
staffing	266.906	2	133.453	1.108	.332
Error	32628.677	271	120.401		
Total	1769978.000	277			
Corrected Total	44221.697	276			

R Squared = .262 (Adjusted R Squared = .249)
*p<.05, **p<.01