IMPROVING THE EDUCATION OF HISPANIC ENGLISH LANGUAGE LEARNERS: EXAMINING EDUCATIONAL RESILIENCE AND EFFECTIVE INSTRUCTIONAL PRACTICES

A Dissertation

by

MELISA SUE VALLE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2009

Major Subject: Curriculum and Instruction

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ABSTRACT

Improving the Education of Hispanic English Language Learners: Examining Educational Resilience and Effective Instructional Practices. (May 2009)

Melisa Sue Valle, B.S., Texas A&M University; M.Ed., Texas A&M University

Chair of Advisory Committee: Dr. Hersh C. Waxman

This dissertation includes empirical studies of educational achievement and resilience of Hispanic ELL. The dataset used is the Early Childhood Longitudinal Study-Kindergarten Cohort and Birth Cohort. In the first study, we investigated whether there were differences of instructional practices between ELLs and non-ELLs and the type of classrooms they attended. A 2-way *ANOVA* indicated ELLs were being exposed more often to teacher-directed, whole-classroom instruction than non-ELLs. In respect to classroom types, the results from this study suggest that student-selected activities and amount of workbook and media instruction differed significantly. The multiple regression results indicated that teacher-directed, small-group instruction, use of workbooks, and 3rd-grade reading achievement significantly ($p < .05$) influence the ELLs 5th-grade achievement.

The second study focused on the 5th-grade mathematics achievement of Hispanic ELLs, Hispanic non-ELLs, and White non-ELLs. The findings of this study indicate that 5th -grade students are receiving more teacher-directed, whole-class instruction and using more mathematics worksheets. Student-selected activities and the use of computers are being used

the least. The results also indicate that the use of textbooks or worksheets and computers for solving mathematics problems significantly ($p < .05$) influence ELLs' mathematic achievement. Our study also revealed that third-grade mathematics achievement directly impacts the student's fifth-grade achievement. Furthermore, Hispanic ELLs learned more when exposed to blackboards and overheads for solving problems.

The final study analyzed the resilience and academic achievement of preschool Hispanic students. The MANOVA results indicated the resilient group had a more active home learning environment, greater socioeconomic status, higher cognitive scores, and higher parental expectations.

These studies emphasize the need of future research to include longitudinal studies of Hispanic, ELLs from Preschool through upper-level grades to investigate (a) resilience development, patterns, and changes, (b) consistency and variance of effective instructional practices in different types of classroom, and (c) development of achievement in mathematics and reading. Hispanic ELLs face many educational challenges, but the three studies reported here suggest that promoting resilience and implementing effective instructional practices may increase Hispanic ELLs academic achievement as well as positively enhance their home and school environment. The educational and policy implications of our studies suggest more student-centered instruction is needed in the classrooms because not enough effective instruction is being implemented in diverse classrooms. Our findings also suggest that classrooms and policies should focus on early intervention and prevention fostering resilient characteristics, as well as consistent and effective instructional practices.

DEDICATION

I dedicate this dissertation to my parents, Diana and Antonio Valle.

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Trust in God with all your heart, and lean not on your own understanding; In all your ways acknowledge Him, And He shall direct your paths (Proverbs 3:5-6).

Let not the wise man boast in his wisdom, let not the mighty man boast in his might, let not the rich man boast in his riches, but let him who boasts boast in this, that he understands and knows me, that I am the LORD who practices steadfast love, justice, and righteousness in the earth. For in these things I delight, declares the LORD (Jeremiah 9:23-24).

I never imagined during this long journey I would face the academic and personal challenges that I did. The expected is just what keeps us steady, still, standing. The expected is the beginning. The unexpected is what changes our lives. I am able to complete this chapter of my life because of my faith and persistence, blessings from God, and support from many who entered my life. Thank you to everyone who supported me.

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CHAPTER I

INTRODUCTION: THE IMPORTANCE OF RESILIENCE AND EFFECTIVE INSTRUCTIONAL PRACTICES

The educational status of Hispanic students in the United States is one of the most challenging educational issues. Although the number of Hispanic students in public schools has increased dramatically in recent decades, Hispanic students as a group have the highest dropout rate and lower reading and math achievement compared to mainstream students (Abedi, 2002; Artiles, Trent, & Palmer, 2004; Donahue, Donne, & Grigg, 2003; Jencks & Phillips, 1998; Lee, 2002; Reardon & Galindo, 2008). Furthermore, conditions of poverty, health, and other social problems have made it difficult for Hispanics to improve their educational status (Waxman, Padrón, & Garcia, 2007). This dissertation addresses some of the critical educational problems facing Hispanic students and includes three studies that focus on home environment and instructional practices that improve the academic achievement of Hispanic, ELLs. It specifically includes three empirical studies that examine the extent that home environment and instructional practices improve ELLs school readiness and academic achievement. All three studies use the Early Childhood Longitudinal Study-Kindergarten Cohort and Birth Cohort dataset. The representation of ELLs in these datasets provided the opportunity to study the Hispanic, ELL population at

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This dissertation follows the style of *Teaching and Teacher Education.*

the national level. In these studies, ELLs are defined by the Improving America's Schools Act (IASA) and NCLB federal definition of ELLs as those individuals whose (a) language background is other than English, and (b) level of English language proficiency negatively affects their ability to succeed academically (Rivera & Collum, 2004).

Hispanic, English Language Learners (ELLs) are the fastest and largest growing minority population in the United Stations (Carrasquillo & Rodriguez, 2002). The minority population attending public schools has rapidly increased from 22% in 1972 to 43% in 2006 (Planty, Hussar, Snyder, Provasnik, Kena, Dinkes, Kewal-Ramani, & Kemp, 2008). Among the minority students, Hispanic students are the fastest growing population in US schools (Carrasquillo & Rodriguez, 2002). Of the immigrant population in US public schools, 43% are Hispanic limited English proficient students (Capps, Fix, & Murray, Ost, Passel, & Herwantoro, 2006), and of Hispanic population in US public schools, 72.7% are ELLs (Chang, 2008). As a result of the rapid growing population of ELLs and Hispanics, many schools across the nation are now faced with the challenge of educating larger groups of Hispanics and English Language Learners (ELLs). There remains, however, a lack of research examining approaches to improve the educational outcomes for ELL, minority students (Schmid, 2001). The studies included in this dissertation all focus on Hispanic, Spanish-speaking ELLs because they are the most prominent and underachieving population of school-aged children (Abedi & Lord, 2001; Capps, 2004; Chang & Singh, 2006; Moschkovich, 2009).

Hispanic, ELLs are faced with various educational problems ranging from the home environment to the school environment. Taking a socio-ecological perspective is a

comprehensive approach that tries to address these students' needs effectively. The home environment of Hispanic students can impact their academic and social development (Waxman, Padrón, & Garcia, 2007). Poverty, for example, creates difficult situations and puts the child in a disadvantaged position. Students who experience poverty are more likely to be attending schools with peers of low socioeconomic and lack of adequate resources of teaching, professional development, safety, and nutrition. According to Liagas and Snyder (2003), Hispanic children are three times more likely to come from poverty households as compared to their white peers. In low socioeconomic status households, the child is more likely to lack proper nutrition, adequate housing, safety, and good health services. Despite the fact that Hispanic parents have high academic expectations for their children, Hispanic parents often are less involved with their child's academic progress (e.g., reading to them and helping with homework) because both parents are employed and work long hours in order to provide for their families (Téllez & Waxman, 2006b). In addition, parents may not be proficient in English, lack formal education, or fear of deportation due to legal status will decrease the chances a parent will be involved in the child's school environment and academic progress.

In addition to the home environment, the school environment also impacts the educational achievement and attainment of Hispanic students (Waxman, Padrón, & Garcia, 2007). When students are entering kindergarten, they often are presented with new experiences and the challenges of school work, classroom structure, English language demands, and social play. In addition, Hispanic children entering kindergarten generally have lower school readiness than their White peers (Duncan & Mahnuson, 2005; Fryer & Levitt, 2004; Reardon, 2003; Rumberger & Arellano, 2004). More specifically, researchers

have found that Hispanic students are entering kindergarten with lower mathematics and literacy skills compared to non-Hispanic, White peers (Reardon & Galindo, 2008).

Hispanic students typically face different challenges (e.g., simultaneously learning a second language and learning in traditional academic content) and have different needs (e.g., maintaining their culture and interactional instruction) than typical White students (Gersten & Jimenez, 1998; Waxman, Padrón, & Garcia, 2007). School can be a stressful environment for students, especially for some ELLs who are learning a new language. The school environment can foster a student's resilience and impact their academic development while reducing stressful factors (Perry, 2002; Waxman & Chen, 2006).

The instructional and school environment has the ability to improve Hispanic student's education and opportunities by developing a positive learning environment targeting Hispanic student's needs and support common goals of Hispanic student's success. Research has found, for example, that there are several effective instructional practices in the classroom that promote Hispanic students' academic achievement, such as (a) frequently encouraging students, (b) more time spent on questioning, cueing, and prompting students to respond, (c) increasing student involvement, (d) less passive, whole-class instruction, (e) high expectations for students, (f) implementing their culture, (g) technology-enriched instruction, (i) instructional conversation, (j) cognitively guided instruction, and (k) cooperative learning (Waxman, Padrón, & Garcia, 2007).

Another educational problem Hispanic ELLs are facing is the achievement gap in comparison to their peers. Historically, ELLs have lower reading and mathematics achievement than mainstream, White students (Abedi, 2002; Artiles, Trent, & Palmer, 2004; Jencks & Phillips, 1998; Lee, 2002; Reardon & Galindo, 2008). Several studies have found

a large mathematics and reading gap between Hispanic and White (Donahue, Danne, & Grigg, 2003; Jencks & Phillips, 1998; Lee, 2002). In the 2007 National Assessment of Educational Progress, for example, Hispanic fourth grade students scored 21 points below their white counterparts in the area of mathematics, and the Hispanic eight grade students scored 26 points below Whites (U.S. Department of Education, 2007). This low achievement was revealed in previous years as well. In a similar study, when compared to their white peers, ELLs have not been meeting the standards of mathematic achievement across the nation. In a recent national assessment, only 11% of 4th-grade ELLs scored at or above average on mathematics national assessment (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006). In 2005 the National Report Card reported that 46% of 4th-grade ELLs scored below basic in mathematics, and 71% of 8th-grade ELLs scored below basic level of mathematics skills (National Center for Educational Statistics, 2005).

Historically, ELLs have also performed lower in reading compared to native English speakers (August & Hakuta, 1997; Bialystok, 2002; Fry, 2007; Perie, Grigg, & Donahue, 2005). In 2005, a national reading comprehension assessment indicated 7% of 4th grade ELLs were at or above the standard mean native English speakers (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006). This indicates that ELLs are not performing at the same level of reading as native English speakers. Despite the evidence documenting the large achievement gaps, there is limited research on approaches that narrow the achievement gaps for Hispanics and ELLs (Fry, 2007).

The No Child Left Behind (NCLB) legislation was enacted to improve students' academic achievement, hold teachers accountable, and emphasize effective evidence-based teaching methods to increase students achievement. Under NCLB, all students, regards of

race and English language proficiency, need to be proficient in math and science by 2014. The No Child Left Behind Act requires academic standards to close the achievement gap between high-performing and low-performing children, especially minority and non-minority students, and between disadvantaged children and their more advantaged peers (U.S. Department of Education, 2002a). However, this has also put a great emphasis across the nation on high-stakes standardized to increase the achievement of Hispanic students (Waxman, Padrón, & Lee, 2008). There is now less consistent and effective instruction being implemented in diverse classrooms, because teachers are focusing on test preparation and low-level basic skills of instruction (McNeil, 2000; National Institute of Child Health and Human Development [NICHD], 2005; Pianta, 2007a, 2007b; Pianta, Belsky, Houts, & Morrison, NICHD, 2007; Waxman, Padrón, & Lee, 2008). Minority students, such as ELLs, are of particular concern because research has found that achievement gaps persist among minority students and English language learners (Paik & Walberg, 2007; Waxman, Padrón, & Garcia, 2007).

Study 1: Classroom Differences among Fifth-Grade Reading Classroom Serving English Language Learners and Non-English Language Learners

One purpose of this dissertation is to contribute to the emerging literature of effective instructional practices in increasing 5th -grade mathematical and reading achievement for Hispanic, ELLs and their peers. ELLs have a different culture and language compared to White, non-ELL students. Still Hispanic, ELLs have to meet the state standards of literacy and mathematics in English while simultaneously learning grade-specific content. For the past few decades, researchers have noticed the prevalence of workbooks and seatwork. In 1984, for example, Osborn reported students spent the most class time working

on workbooks. Today, passive instruction, such as workbooks, continues being used for reading and mathematical instructional practices (Pianta, 2007b). Research on increasing academic achievement through instructional practices for Hispanic, ELLs is still scarce (Calderon, 2002; Waxman & Padrón, 2002). Thomas and Collier (2001), for example, have found that ELLs in predominantly non-ELL classrooms decrease reading and math achievement by 5th -grade. There have been few studies, however, that have examined different types of classrooms (i.e., predominantly Hispanic, ELL; integrated; predominantly White, non-ELL) and the impact of instructional practices on academic achievement, as well as comparing ELLs and ethnicity (i.e., White, non-ELL; Hispanic, ELL; Hispanic, non-ELL). This first dissertation study will further explore the effects of ELL status, ethnicity, and type of classroom on student-centered to teacher-centered instructional practices.

The goal of the first study is to examine the effectiveness of instructional practices among ELLs and non-ELLs and the impact of student's reading performance. The first study looks at the significant differences between ELLs and non-ELLs and type of classroom (i.e., predominantly ELLs, integrated, non-ELLs) on how much time students engage in the following instructional variables during their 5th -grade reading class. The instructional variables examined are: (a) teacher-directed, whole-class activities, (b) teacher-directed, small-group activities, (c) teacher-directed, individual activities, (d) teacher-directed, student-selected activities, (e) students working on reading workbooks or worksheets, and (f) students are involved in media activities. The study also examines the relations between (a) teacher-directed, whole-class activities, (b) teacher-directed, small-group activities, (c) teacher-directed individual activities, (d) teacher-directed, student-

selected activities, (e) workbooks/worksheets, and (f) media activities on ELLs reading skills between 3rd-grade and 5th -grade.

Study 2: The Influence of Instruction on Mathematics Achievement among Fifth-grade White and Hispanic Non-English Language Learners and Hispanic English Language Learners

The purpose of the second study is to provide empirical education research of effective instructional practices among ELLs and the impact of student's mathematics achievement. It examines whether there are significant differences in mathematics instructional practices among (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic-ELLs. It also investigates the effects of the mathematical instructional practices on 5th-grade mathematics achievement for (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic ELLs.

Today, "passive" instruction (e.g., whole-class instruction and workbooks) continues being used implemented for reading and mathematics learning. Unfortunately, research has shown students need more "active" instruction to enhance their learning process. Identifying effective instructional practices may allow educators and policymakers to develop and maintain a positive learning environment and increase the class time for effective learning for all students and stop the historical pattern of educational failure for ELLs. Effective instruction will simultaneously meet the needs of the diverse student population, such as White, non-ELL and Hispanic, ELL, and Hispanic, non-ELL) found across public school. In return, it will reduce the achievement gap while increasing minority student's achievement (Pianta, Belsky, Houts, Morrison, & NICHD, 2007).

Study 3: Cognitive Skills, Family Demographics, Child-Care, and Home Learning Environment Factors Differentiating Resilient and Non-Resilient Hispanic Preschoolers

Despite coming from at-risk home and school environments, many Hispanic students are successful in school. These students are often referred to as "resilient" because they have overcome many obstacles and become successful in school and life. Resilient students are able to succeed in school, social life, and future endeavors despite being at-risk due to factors such as limited English proficiency, home environment, lack of resources, and other factors hindering their opportunities. Therefore, the degree to which protective factors, such as cognitive skills, home learning environment, child care arrangements, parental expectations, language exposure, and family demographics, influence or predict resilience is examined in this study. This study defines educational resilience as "the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences" (Wang, Haertel, & Walberg, 1994; p. 46).

More specifically, the third dissertation study examines certain risk and protective factors that may distinguish resilient and nonresilient Hispanic students. Some of the negative risk factors that have been found to promote negative outcomes are: (a) temperament problems (i.e., temper tantrums), (b) not being engaged in school work (i.e., difficulty concentrating), and (c) social problems and disruptive behavior (i.e., annoys other children, destroys other things, physically aggressive, gets angry easily, and acts impulsive) (Benard, 2004; Condly, 2006). On the other hand, some of the protective factor that have been found to promote positive outcomes include: (a) socially apt (i.e., tries to understand others, makes friends easily, invites other children to play, shares with others, invited to play

with others, liked by others, comforts other children), (b) engaged and attentive during school (i.e., keeps working until finished and pays attention well), (c) eagerness to learn new things, and (d) working or playing independently (Benard, 2004; Condly, 2006). This study will also identify cognitive skills (i.e., mathematics and literacy), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics differences between resilient and non-resilient Hispanic children in preschool. Similarly to effective instructional practices for Hispanic ELLs and different types of classrooms, there is limited information on preschool, Hispanic, ELLs resilience, resilient and non-resilient comparison (Israelashvili & Wegman-Rozi, 2003; Judge, 2005; Lynch, Geller, & Schmidt, 2004; Waxman, Huang, & Padrón, 1997; Werner, 2000).

Summary

Early school years are critical for cognitive and social skills development because from an early age children are continually faced with new developmental cognitive, motor, social, and emotional challenges (Chang, 2008; Perry, 2002). ELLs have the potential to do as well in school as any other student (Callahan & Gandara, 2004; Walqui, 2000). Hispanic, ELLs educational achievement and building resilience begins from an early age is crucial for their future success. The literature on educational achievement and resilience provides an important context for understanding how students are increasing the achievement and how resilience is promoted. Improving the education (e.g., implementing effective instructional practices in the classroom and enhancing school readiness at an early age) of Hispanic ELLs and early childhood will promote resilience and prevent academic decline (Gordon & Mejia, 2006; Rivera & Waxman, 2007). For example, Waxman, Rivera, and Powers (2006) examined 4th-grade and 5th-grade Hispanics in reading class. The instructional practice

implemented most often in the classrooms was teacher-directed, whole class instruction with few teacher and student interaction. Resilient students were more on-task and competitive compared to nonresilient students. Resilient Hispanic students were also found to have higher self-esteem with their reading skills. Nonresilient students exhibited more difficulty with their school work. Similar researchers have found the often used whole-classroom instruction is only beneficial for resilient students, while it is hindering the nonresilient student's academic achievement and psycho-social behaviors (Chang & Waxman, 2004; Rivera & Waxman, 2007; Waxman, Huang, & Wang, 1997). It is evident instructional practices in the classroom are directly impacting resilient and nonresilient students while fostering resilient characteristics in students.

The findings of these three dissertation studies can be used for promoting effective instructional practices in different types of classrooms, and evaluating educational interventions and early childhood programs (Crosnoe, 2005; Lynch, Geller, & Schmidt, 2004; McMahon, 2007; Waxman, Huang, & Padrón, 1997). Furthermore, the findings may help educational policymakers, teachers, and school personnel understand what makes some students succeed despite similar, at-risk home and school environments.

CHAPTER II

CLASSROOM INSTRUCTION DIFFERENCES AMONG FIFTH-GRADE READING CLASSROOMS SERVING ENGLISH LANGUAGE LEARNERS AND NON-ENGLISH LANGUAGE LEARNERS

Introduction

By year 2030, approximately 40% of students in the U.S. will be English Language Learners (ELLs) (National Center for Education Statistics [NCES], 2007). In grades Kindergarten through eighth grade, Hispanic (20%) and Asian (18%) students constitute the largest group of students with English difficulties (NCES, 2007b). Among the minority group of students, Hispanic ELLs are the fastest growing population in US schools (Carrasquillo & Rodriguez, 2002). As the population of ELLs continues to grow, schools are challenged to provide ELLs with high-quality education, because they do not have the information or skills that they need to improve instruction for ELLs (DeCapua, Smathers, & Tang, 2007).

Schools across the nation need to be prepared to meet Hispanic ELLs academic needs (e.g., limited English proficiency, modifications, and accommodations) in order for the student to progress academically as their same-aged peers. No Child Left Behind (NCLB), a legislation enacted in order to improve students' academic achievement. It was designed to hold schools and teachers accountable as well as emphasize effective evidence-based teaching methods. Despite this legislation, there is evidence that teachers are not

using or being held accountable for using effective teaching methods, such as effective instructional practices (Waxman, Padrón, & Lee, 2008), for all students.

Effective instructional practices have been found to reduce the achievement gap and contribute to the student's achievement growth (Pianta, Belsky, Houts, Morrison, & NICHD, 2007). Instructional practices also need to promote academic achievement for all students, despite their entry skills or English language proficiency. There have been many studies focusing on teacher's qualifications and characteristics, but few studies have looked at instructional practices in classrooms for ELLs (Calderon, 2002; Waxman & Padrón, 2002). Furthermore, there is a lack of educational research investigating teachers' instruction in predominately ELL, integrated, and non-ELL classrooms. The failure to address the importance of classroom instruction has resulted in many schools under-educating ELLs (DeCapua, et al., 2007; Thomas & Collier, 2002).

The purpose of this study is to examine ELLs' content-specific achievement in relation to instructional practices, and the extent to which teachers are implementing effective instruction in their classrooms to meet their student's needs in predominately ELL, integrated, and predominantly Non-ELL classrooms. Although research has found various instructional practices influence student outcomes, the present study focuses on the following classroom instructional practices: how much time students spend during reading class in (1) teacher-directed whole-class, (2) teacher-directed small-group activities, (3) teacher-directed individual activities, and (4) student-selected activities. We also investigate how often the student engaged in (5) media activities (i.e., watching movies, videos, filmstrip, and television or listening to tapes, compact discs, or records) as part of reading. Finally, we examine how often the student engaged in a (6) reading workbook or worksheet

activity. The present study will specifically focus on Hispanic, Spanish-speaking ELLs because it is the most prominent ELL population in the US schools and are among the highest underachieving minority group.

Identifying ELLs

There is an inconsistency in operationally defining and having specific guidelines to identify ELLs (Rivera, Stansfield, Scialdone, & Sharkey, 2000). The Improving America's Schools Act (IASA) and NCLB provide a federal definition of ELLs as those individuals whose (a) language background is other than English, and (b) level of English language proficiency negatively affects their ability to succeed academically (Rivera & Collum, 2004). ELLs have also been identified as individuals in which their first, home, or dominant language is a language other than English and who is in the process of learning English and in need of English as a second language support services. ELLs are also referred to as LEP, language minority, ESL, or culturally and linguistically diverse (CLD). For the purpose of the present study, the term ELL will be used because it is the term used by the US Department of Education and commonly used with educators and researchers.

Instructional Practices

In a national study, children were found to spend more time in teacher-directed, whole-group instruction or individual work in the classroom rather than receiving small group activities and opportunities to interact with the teacher and students (NICHD, 2005; Pianta 2007b; Pianta, et al., 2007; Rimm-Kaufmann, et al., 2005). Teacher-directed, whole-class instruction requires less management from the teacher and lowers the demands of the student's understanding, thus lowering expectations and participation from students.

Students mostly engage in less-interactive activities, such as individual seatwork, vocabulary worksheets, rote activities, whole-group and teacher-directed, and observing the teacher (National Institute of Child Health and Human Development [NICHD], 2005; Pianta, et al., 2007; Rimm-Kaufmann, et al., 2005). In a large-scale national study focusing on classroom quality, third- grade classrooms were found to be less engaging than first grade classrooms (NICHD, 2005). Overall, students were found rarely engaging in collaborative work with peers, such as small-group activities and cooperative learning (DeCapua, et al., 2007; NICHD, 2005; Pianta, et al., 2007; Rimm-Kaufmann, et al., 2005).

Furthermore, a national study of 1st-grade through 5th-grade students found that students received more basic-skill instruction than problem solving and reasoning skill instruction (NICHD, 2005; Pianta, et al., 2007). Pianta and colleagues (2007) found students are rarely receiving immediate, individual feedback (Pianta, et al., 2007). Students are also typically exposed to one type of instruction, such as rote activities, rather than multiple instructional approaches (Pianta, et al., 2007). Despite these being ineffective instructional approaches, teachers conveniently continue implementing teacher-directed, whole-class instruction of basic skills in their classrooms. This may be a result of the national emphasis of standardized assessment and convenience of multiple-choice testing (Pianta, et al., 2007).

All students need to be exposed to high quality curriculum (LaCelle-Peterson & Rivera, 1994). Teachers also should be encouraged to be innovative and flexible in order to provide diverse and effective instruction. Unfortunately, some students, especially ELLs, are not receiving equal educational opportunities despite their needs, such as receiving consistent and effective instruction in the classroom (National Institute of Child Health and

Human [NICHD], 2005; Pianta, 2007a, 2007b; Pianta, Belsky, Houts, Morrison, & NICHD, 2007).

Effective Instructional Practices for ELLs

Public schools in U.S. remain increasingly segregated by socioeconomic status and ethnicity (Perez, 2005; Valencia, Menchaca, & Donato, 2002). ELLs attending predominately non-ELLs classrooms are faced with different challenges compared to ELLs in classrooms of predominately ELLs. Two of these challenges include cultural and language differences. These challenges can make ELLs often feel alienated from non-ELLs (Russell, 2007). There are many other factors, such as teacher qualification, structural factors, school climate, and family characteristics that can impact students' opportunity to receive effective classroom instruction.

Instruction in many classrooms with Hispanic ELLs and other minority students has been characterized as "pedagogy of poverty" (Padrón, Waxman, & Rivera, 2003). The pedagogy of poverty has been described as teacher-directed, whole class instruction, where teachers control the discussion, implement passive learning techniques, and have low expectations, and provide little encouragement for students (Haberman, 1991; Padrón & Waxman, 1999; Padrón, Waxman, & Rivera, 2002). These ineffective instructional practices have been found to contribute to low motivation and low academic performance of Hispanic students (Padrón, Waxman, & Rivera, 2003).

Waxman, Huang, and Padrón (1995), for example, found Hispanic students in predominantly Hispanic classrooms are typically involved in whole-class instruction. Students were rarely found to select their own instructional activities or be engaged in small group activities. Teachers also were found to spend more time explaining concepts than

cueing, prompting, and questioning (Padrón, Waxman, & Rivera, 2003). The ultimate goal is for educators to move away from this pedagogy of poverty for the benefit of all students, especially ELLs.

Evidence-based research has found various effective instructional strategies to increase student's participation and performance. Successful instructional strategies for ELLs are guided by clear, explicit learning goals, and meaningful interactions in challenging content (LaCelle-Peterson & Rivera, 1994). The instructional environment, for example, for ELLs should be supportive and include modifications. This will allow students to help each other, feel comfortable asking questions, and communicate and interact (Fillmore & Snow, 2002; Lenski, Ehlers-Zavala, Daniel, & Sun-Irminger, 2006). Modifications may include modeling, multiple representation, gestures, repetition, media (e.g., music and video), and visual aids (e.g., charts, graphs, time lines, and Venn diagrams) to influence the decoding process and comprehension during reading. Some common modifications being used in the classroom include visual aids, multi-sensory approaches, use of objects and hands-on material for practicing skills (Facella, Rampino, & Shea, 2005; Mathes, Pollard-Durodola, Cardenas-Hagan, Linan-Thompson, & Vaughn, 2007). In addition to practicing effective instructional practices for ELLs, teachers also need to be an advocate for English Language Learner education policies (Waxman, Téllez, & Walberg, 2006).

Specific Effective Reading Instruction for ELLs

Historically, ELLs have performed lower in reading compared to native English speakers (August & Hakuta, 1997; Bialystok, 2002). In 2005, a national reading comprehension assessment indicated 7% of 4th grade ELLs were performing the same or better as native English speakers (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006). This

indicates ELLs are not at the same level of reading performance compared to native English speakers. Therefore, ELLs have an academic disadvantage and teachers need to target more effective ways to teach ELLs the essential reading skills.

Saunders and Goldenberg (1999) found that the reading achievement of 5th and 6th grade students in Spanish to English transitional program increased with effective instruction of dialogue. Saunders and Goldenberg (1999) found that students who completed literature logs and participated in instructional conversation groups demonstrated a higher achievement in story comprehension. From the students who participated in the study, ELLs had the highest achievement increase (Saunders & Goldenberg, 1999). Pianta and colleagues (2007) found ELLs benefited from more exposure to literacy activities and extended social support than from home and school environments with limited literacy and social support. Similarly, social interaction can be used for students to learn from their peers in a social context of reading. Almaguer's (2005) study suggested dyad reading groups increased students reading fluency and comprehension. Cooperative peer-assisted reading activities, such as dyad reading, should be implemented during reading instruction for ELLs (Carrasquillo & Rodriguez, 2002; Eldredge, 1995; Eldredge, 1990; NICHHD, 2000).

Since the population of ELLs is the fastest growing school-age group in the U.S., (Dodson, 2008; Kindler, 2002) strategies to effectively teach ELLs cannot be ignored. Since teachers are likely to have more than one ELL in their classroom, they need to be knowledgeable of effective instructional practices that will increase their ELLs' reading achievement, since literacy skills are the foundation of academic development and achievement (Almaguer, 2005).

Purpose of the Study

The lack of research and attention to specific pedagogy for ELLs has negatively impacted the academic achievement and growth of ELLs (Téllez & Waxman, 2006a). Teachers understanding of the ELLs needs, effective instructional strategies for ELLs, and content-specific instruction targeting ELLs needs are critical for teachers' planning, implementation, and managing of instructional practices (Téllez & Waxman, 2006b). The present study identifies current instructional practices in predominantly ELL, integrated, and non-ELL classrooms and its impact on reading achievement. The different types of classrooms allow us to examine achievement gaps and patterns of instructional practices between ELLs and non-ELLs. Examining different types of classrooms that ELLs and non-ELLs are placed in for the school year, addresses the question whether teachers are targeting the academic needs of both ELLs and non-ELLs and high-quality education in the classrooms? Does the type of classroom (i.e., predominantly ELLs, integrated, non-ELLs), for example, determine the instructional practices the ELL and non-ELL is exposed to? Also, will an ELL in a predominantly non-ELL classroom be exposed to less effective instructional practice and hence given a learning disadvantage? Furthermore, identifying effective instructional practices may allow us to develop and maintain a positive learning environment for all students and stop the historical pattern of educational failure for ELLs. The purpose of the present study is to examine the effectiveness of instructional practices among ELLs and non-ELLs and the impact of student's reading performance.

The following research questions are addressed:

(1) Are there significant differences in instructional practices between ELLs and non-ELLs depending on the type of classrooms (i.e., predominantly ELLs, integrated,

non-ELLs) they attend. More specifically there are differences on how much time students engage in the following instructional variables during their daily reading class?

a. Teacher-directed, whole-class activities
b. Teacher-directed, small-group activities
c. Teacher-directed, individual activities
d. Teacher-directed, student-selected activities
e. Students working on reading workbooks or worksheets
f. Students are involved in media activities (i.e., watching movies, videos, filmstrips, television, or listen to tapes, discs, or records)

(2) What are the relations between (a) teacher-directed, whole-class activities, (b) teacher-directed, small-group activities, (c) teacher-directed individual activities, (d) teacher-directed, student-selected activities, (e) workbooks/worksheets, and (f) media activities on ELLs reading skills between 3rd -grade and 5th-grade?

Methods

Importance of Secondary, Large-scaled Data

The Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) is an example of a secondary, large-scaled database that has been used by several researchers of different disciplines. Various qualified experts collaborated to develop the ECLS-K database and conduct research, such as educators, policymakers, psychometric researchers, translators, and early childhood development professionals (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). Several steps were taken to create ECLS-K as a valid and reliable resource for researchers. Qualified professionals, for example, participated in the

development, stratification methods, over sampling, training, field-testing, and multi-step translations (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). There were also qualified (e.g., bilingual, extensively trained, and non-bias) data collectors for the ECLS-K (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). In addition, there were resources to follow most of the students who moved in order to decrease missing data. This large-scale data project had the recourses to recruit and retain participants, including over-sampling of minority populations.

Importance of Using ECLS-K

The ECLS-K, sponsored by the U.S. Department of Education and National Center for Education Statistics (NCES), is a longitudinal, large-scale, national study following students from Kindergarten to 8th grade (Kaplan & Walpole, 2005; Magnuson, Lahaie, & Waldfogel, 2006). ECLS-K is the first national representative sample focusing on early school experiences association to future development (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

The ECLS-K allows researchers to examine more than individual cases (Paik, 2003) because it addresses family, school, community, and student factors associated with school performance (Chatterji, 2006; Kainz & Vernon-Feagans, 2007; Magnuson, Ruhm, & Waldfogel 2007; Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006; Rathbun, West, & Walston, 2005). Data are obtained from school personnel (e.g., care centers, teachers, and administrators), guardians, and students (e.g., self-reports and cognitive/achievement performance). Therefore, researchers can also examine school and home factors related to cognitive and social development and experiences (Hong & Raudenbush, 2005; Kaplan &

Walpole, 2005; Rathbun, et al., 2005; Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Research using this data can focus on a particular a target group, such as language minority children, due to over-sampling. Data collected at various periods in the child's development, allowing longitudinal analysis and causal inference (Hong & Raudenbush, 2005; Paik, 2003). Overall, the data of the ECLS-K promotes educational productivity and changes in education practice and policy (Paik, 2003).

Research Design

The present study examines instructional practices experienced by ELLs and non-ELLs in 5th-grade predominately ELL, integrated, and non-ELL reading classes. The design for this study is a non-experimental, randomized research design focusing on reading achievement and instructional practices in reading.

Instruments

The data for this study was retrieved from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) of the National Center for Education Statistics. The ECLS-K database provides information from several parent, teacher, caregiver, and school administrator surveys. The 5th-grade direct cognitive reading assessment, teacher questionnaire, reading teacher questionnaire, parent interview, and school administrator questionnaire were used.

The 3rd-grade and 5th-grade direct cognitive reading assessment are used to assess the student's reading achievement in 3rd-grade and 5th-grade. The direct cognitive assessment was individually administered to children in a quiet and testing appropriate environment (e.g., school classroom or library). Direct cognitive assessments were mostly conducted at

the end of the school year, from March through June 2004, to increase the chances the exposure to instruction was relatively the same for all children in the school (Tourangeau, Le, & Nord, 2005). The reading assessment of 100 items was in a booklet format because of the length of reading passages, and an easel for the presentation of questions was used in 5th -grade (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). Thirty minutes were allocated to complete the reading assessment (Pollack, Atkins-Burnett, Najarian, & Rock, 2005). The administrator entered all responses into a computer during the administration (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

The direct cognitive reading assessment consists of various, selected items from the Children's Cognitive Battery, Peabody Individual Achievement Test-Revised, the Peabody Picture Vocabulary Test of Cognitive Skills, the Woodcock-Johnson Psychoeducational Battery-Revised (Kaplan, 2002). Since these are copyrighted batteries, individual items from the direct child reading assessment are not available for review, but the following descriptive information is available.

The 5th-grade direct cognitive reading assessment measured basic skills (e.g., letter recognition, decoding multisyllabic words and letter recognition), vocabulary knowledge (e.g., receptive), and passage comprehension (e.g., listening comprehension, words in context) (Denton & West, 2002; Kaplan, 2002; Pollack, Atkins-Burnett, Najarian, & Rock, 2005; West, Denton, Germino-Hausken, 2000). The comprehension items measured skills, modified from the NAEP Reading Framework, in initial understanding, developing interpretations, personal reflection, and critical stance (Denton & West, 2002; Pollack, Atkins-Burnett, Najarian, & Rock, 2005). Many items in the 3rd-grade and 5th-grade assessment required various skills in order to answer the items correctly. Some of the

assessment items were also repeated within a grade and across grades in order to support longitudinal scale development (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006; Pollack, Atkins-Burnett, Najarian, & Rock, 2005).

The direct cognitive assessment used an adaptive process. During the first stage, the students were administered an 18 to 25 item routing test to approximate the student's skills. This determined the difficulty level of the subsequent tests (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The 5th-grade routing test form had a reliability of 79 percent to 88 percent (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). This maximized the accuracy of achievement measurement, thus, increasing the reliability of individual assessment scores by removing the floor and ceiling effects (Pollak, Najarian, Rock, Atikins-Burnett, & Germino-Hausken, 2005).

Additional measures were taken to establish the reliability of the direct cognitive assessments. The trained assessors were observed two different times by supervisors. The supervisors completed the Assessment Observation Form in which rated the assessor in key areas of the direct cognitive assessment. Inter-rater reliability was overall high on all the forms, in which the reading forms had the lowest agreement of a 95.7% (Tourangeau, Le, & Nord, 2005).

Validity of the direct cognitive assessment was obtained from several sources, such as collaboration of curriculum experts and teachers on test specifications, reviewing national and state standards and assessments, and comparing reading field-test item pool scores to an established instrument (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). In addition, the NAEP fourth-grade framework was modified for the ECLS-K third-grade and fifth-grade framework. There were also required percentages of content strands within each

subject area to be included in the assessments. Expert early elementary educators and curriculum specialists from different regions examined the assessment items for content relevance and framework application across the nation. The Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA) was used as another method of evaluating construct validity. The results indicated that MBA and ECLS-K reading assessment were measuring closely related skills (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Information regarding reading instruction, classroom characteristics, and services for English as a Second Language were obtained from the 5th-grade, child-level questionnaire of the reading teacher. The Reading Teacher Questionnaire included the Academic Rating Scale of language and literacy, child-specific information, reading classroom and student characteristics, and reading instructional activities and curricular focus.

Additional child, family, and school data was collected from the 5th-grade Parent Interview, 5th-grade Teacher Questionnaire Form B, and 5th-grade School Administrator Questionnaire. Data was collected from school administrators, regular classroom teachers from February through June 2004 (Tourangeau, Le, & Nord, 2005). The Teacher Questionnaire Form B consisted of instructional activities and focus; classroom resources; student evaluation; school and staff activities; views on teaching, school climate, and environment; teacher background; and teaching assignment. This questionnaire was included in this study to specifically obtain teacher background information. The School Administrator Questionnaire information consisted of school characteristics, school facilities and resources, community characteristics and school safety, school policies and practices, staffing and teaching characteristics, school governance and climate, and principal

characteristics. We focused on the school, staffing, and teacher characteristics provided in this school administrator questionnaire.

The parent interview was administered between February and June 2004 mostly by telephone interview using computer-assisted interviewing, and it ranged between 30 minutes to 53 minutes to complete 330 questions covering 5th-grade school experiences, child care, parent characteristics, and child health (Tourangeau, Le, & Nord, 2005). This study focused on parent education and parent income information provided through the parent interview. The child's mother was the primary respondent (81%) of the interviews (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). For a validity measure, the field supervisor called 10% of the parents who were interviewed to verify the child's name, date of birth, sex, and seven questions from the parent interview. This validation process took approximately five minutes and was conducted by telephone (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Variables

Unique variable definition. There are certain variables that are unique to this study and need to be clarified.

1. English language learners (ELLs) were indicated with the variable ELL (1 = ELL, 0 = nonELL). The ECLS-K 5th-grade Reading Teacher Questionnaire item that served as the data source for this variable was reading teacher's response to if the student was receiving in-class or pull-out English as a Second Language service in 5th-grade (G6PLLESL, G6INCESL). If they were receiving ESL services then the student was labeled as ELL, and the student was labeled non-ELL if they were not receiving ESL

services. Second, only Hispanic ELLs were selected for this study. The variable of race was used to select Hispanic ELLs (R6RACE = 3 or 4).

2. The type of classroom of each student was indicated with the variable CLTYPE (0 = predominantly nonELL classroom, 1 = integrated classroom, 2 = predominantly ELL classroom). The ECLS-K 5th-grade Reading Teacher Questionnaire item that served as the data source for this variable was the number of Limited English Proficient (LEP) student in the classroom and the total number of males and females in the classroom (G6NUMLE, G6TOTGEN). The percentage of ELLs in a classroom was determined by dividing the number of LEP students in a classroom by the total number of students in the classroom (G6NUMLE / G6TOTGEN = % LEP in the classroom). The classrooms that had 10% or less ELLs were identified as predominantly non-ELL classrooms. The integrated type of classroom had 20%-70% ELLs. Predominantly ELL classrooms had 90% or more ELLs in the classroom.

The additional variables used in the analysis were as follows:

1. Amount of reading instructional practices provided daily: reading teachers response to questions regarding how much time students spend on whole class, small group, individual activities, and child selected activities instructional practices related to reading material, on a five-category scale: 1 = no time a day, 2 = half an hour or less a day, 3 = about one hour a day, 4 = about two hours a day, 5 = three hours or more a day (G6WHLCLS, G6MLGRP, G6INDVDL, G6CHCLDS).
2. Frequency of reading instructional practices: reading teachers response to questions regarding how often the child engaged in reading workbooks or on a worksheet, and

how often the child engaged in watching movies, videos, filmstrips, television, or listen to tapes, compact discs, or records, on a four-category scale: 1 = almost every day, 2 = once or twice a week, 3 = once or twice a month, 4 = never or hardly ever (G6WKBKSH, G6MMEDIA).

3. 3rd-grade (C5R3RSCL) and 5th-grade (C6R3RSCL) IRT reading scores:

   The IRT is a criterion-reference measure that will provide information of the student's mastery and proficiency level at each level and also indicate where on the scale the child is gaining (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). Therefore, IRT scaled scores allows researchers to examine achievement gains across time and relating gains to variables. The Item Response Theory (IRT) scaled score of reading was used for 3rd –grade and 5th-grade reading achievement, because the IRT is a longitudinal measure of gain in achievement over time, despite time of administration and different assessments. The IRT scaled score estimated the student's performance if they would have been given all the items assessment by using patterns of correct and incorrect answers that are comparable across different assessments (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The IRT scale scores of reading had a reliability ranging from 87 percent to 96 percent (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

4. Descriptive: Parents, reading teachers, and school administrators responded to descriptive questions of race, gender, socioeconomic status, parent education, ESL certified, type of school (public or private), and percent minority in school (R6RACE, R6GENDER, W5SESQ5, W5PARED, J61ESLCT, S6PUPRI, S6MINOR). These

variables were used for a descriptive analysis of ELL and non-ELL and the different types of classrooms.

5. Composite scores: Fifth-grade composite variables for race, gender, socioeconomic status, parent education, private and public school, school enrollment of 5th-grade, percent minority in school, percent free lunch in school, and percent reduced lunch in school were obtained from the ECLS-K database (R6RACE, R6GENDER, W5SESQ5, W5PARED, S6PUPRI, S6MINOR). See Appendix 1 for 5th-grade composite variables descriptions.

Sample Extraction

First, we obtained a sample with complete data that was relevant to the research objectives. Therefore, we excluded students who did not have information on whether or not he/she received ESL services in 5th-grade, because we were unable to determine if the student was ELL or non-ELL. We, furthermore, excluded those students whose teacher indicated the ESL service was not available for students in 5th-grade, because we could not determine if the student needed ESL service to be classified as an ELL. Then, we excluded students who did not know how many LEP students where in the class or if the teacher did not indicate the total number of students in the class, because we needed this information to create the type of classroom variable. We also excluded students whose reading teacher did not respond to the instructional practice variables on the questionnaire, and those students who did not have 3rd-grade or 5th-grade IRT scaled scores of reading achievement based on the reading assessment.

Furthermore, we excluded students who did not have a response for any of the following descriptors; gender, type of school (public or private), race of the student, and

percent minority in the student's school. We removed some students who did not provide information for socioeconomic status, certified ESL teacher, and parent's highest education. Some ELLs in predominantly non-ELL classrooms and non-ELLs in predominantly ELL classrooms had missing values for socioeconomic status, certified ESL teacher, and parent's highest education level. These cases were, however, included in order to obtain a minimum of 50 participants in these categories. Table 2.1 reports the size of each type of classroom by non-ELLs and ELLs.

Table 2.1

Complete Sample of Non-ELLs and ELLs by Type of Classroom

	Non-ELLs	ELLs	Total
Predominantly Non-ELL classroom	5540	50	5590
Integrated classroom	340	100	440
Predominately ELL classroom	50	90	140
Total	5930	240	6170

Once we obtained the most complete sample possible, we attempted to stratify our sample based on race of the student, socioeconomic status, parent education, and type of school. This resulted in some type of classrooms having less than 50 ELLs and non-ELLs. Specifically, when selecting for only White non-ELL and Hispanic non-ELL, predominantly ELL classrooms only had 40 non-ELLs. Secondly, when stratifying our sample by socioeconomic status, we removed the fifth quintile in which resulted to loosing 2 from a sample of 50 (40 cases SES quintile known) non-ELLs in predominantly ELL classrooms. In our complete sample, we have 51 non-ELLs in predominantly ELL classrooms. From this

sample, 50 non-ELLs are in public schools and 10 non-ELLs were in private schools. We, therefore, were not able to remove any students from private school in order to not reduce our sample size to less than 50 non-ELLs in predominantly ELL classrooms. Finally, when we attempted to stratify our sample by removing those students whose parents had a doctorate or professional degree, masters degree, or some graduate or professional education there were only 50 ELLs in predominantly non-ELL classrooms. There are 50 cases of ELLs in predominantly non-ELL classrooms, of which only 40 cases are known the parent's highest education level. From this sample, there is one ELL whose parents have some graduate education and one ELL whose parents have a Masters degree. Removing these two levels would reduce the overall sample to 50 cases (40 known value of parent education) of ELLs in predominantly non-ELL classrooms. We, therefore, were not able to stratify our sample of ELLs and type of classrooms. Appendix 2 through Appendix 8, further illustrates the descriptors for the complete sample from which a random sample was selected for this study.

A two-way ANOVA was conducted with a random sample of 150 ELLs and 150 non-ELLs that was obtained from this sample of 6160 participants. Specifically, 50 non-ELLs in predominantly non-ELL reading classroom were randomly selected from a sample of 5540 non-ELLs in predominantly non-ELL classroom. Fifty non-ELLs in integrated classrooms were randomly selected from a sample of 340 non-ELLs in integrated classrooms. Then 50 non-ELLs in predominantly ELL classrooms were selected from a sample of 50 non-ELLs in predominantly ELL classrooms. The same steps were conducted to obtain a random sample for ELLs in each type of classroom. First, 50 ELLs were selected from a sample of 100 ELLs in integrated reading classrooms. Then 50 ELLs were randomly

obtained from a sample of 90 ELLs in predominantly ELL reading classrooms. There was no random selection for ELLs in predominantly non-ELL classrooms because there were exactly 50 ELLs in this type of reading classroom.

The exclusion of students, through planned eliminating methods and random sampling, from the study raises concerns between our sample and the original ECLS-K sample. First, ECLS-K weights were not used in this study because the analytic weights were created for non-random attrition (Magnuson, Ruhm, & Waldfogel, 2007). Second, the findings of this study should be cautiously generalized because our sample is not a national representative to all U.S. 5th-graders.

Participants

A subset of data from the Early Childhood Longitudinal Study-Kindergarten Cohort was used in this study. Three hundred participants of this study were randomly selected from 6,160 students in 5th-grade. There are 150 non-ELLs and 150 Hispanic, ELLs. Table 2.2 reports the sample composition by type of classroom.

Table 2.2

Sample Description

	ELL	Non-ELL	Total
Predominantly Non-ELL classroom	50	50	100
Integrated classroom	50	50	100
Predominately ELL classroom	50	50	100
Total	150	150	300

These 300 students reading teachers, school administrators, and parents also participated in this study. Appendix 9 through Appendix 15 reports the descriptive data for

ELLs and non-ELLs in predominantly non-ELL classrooms, integrated classrooms, and predominantly ELL classrooms.

Data Analyses

We conducted a two-way ANOVA to examine the differences by ELL status and type of classroom on the quality of instruction variables: (a) teacher-directed whole class activities, (b) teacher-directed small group activities, (c) teacher-directed individual activities, (d) student-selected activities, (e) workbooks, and (f) media. If significant differences were found, then a post-hoc test was conducted to see which type of classroom differed in instruction practices.

For the second research objective, we conducted a multiple regression analysis in order to examine the effects of the instructional practices (i.e., the independent variable) on ELLs reading achievement (i.e., the dependent variable) in 5th-grade, after statistically controlling for 3rd-grade achievement.

Operational Definitions

English Language Learners (ELLs): Students who are receiving English as a second language (ESL) support services (pull-out or/and in-class ESL programs) in 5th-grade. The federal definition provided by both *IASA* and *NCLB* define ELLs as individuals whose (A) language background is other than English, and (B) level of English language proficient negatively affects their ability to succeed academically (Rivera & Collum, 2004).

Non-English Language Learners (non-ELLs): Students who are not receiving ESL support services (pull-out or/and in-class ESL programs) in 5th-grade.

Predominately ELL classrooms: 90% or more of the students in the classroom are English Language Learners.

Integrated classrooms: Between 20% and 70% of the students are English Language Learners.

Predominately non-ELL classrooms: 10% or less of the students in the classroom are ELLs.

Results

Table 2.3 reports the means and standard deviations of instructional practices across type of classrooms. The overall means for teacher-directed, whole-class (M = 2.96, SD = 1.001), small group (M = 2.34, SD = .795), and individual activities (M = 2.18, SD = .698), indicate students were engaging approximately an hour daily in these instructional practices. Teacher-directed, student-selected activities (M =12.84, SD = .577) were not implemented in reading class, with the exception of ELLs in predominantly non-ELL classrooms (M = 2.00, SD = .571) receiving 30 minutes or less of student-selected reading instruction during the day.

The most prevalent teaching strategy is teacher-directed, whole-class in predominately non-ELL (M = 2.96, SD = 1.053), integrated (M = 2.96, SD = .984), and predominately ELL (M = 2.96, SD = .974) classrooms. ELLs (M = 3.20, SD = 1.010) were taught more teacher-directed, whole-class instruction compared to non-ELLs (M = 2.72, SD = .935). In addition, the students were most often engaged in workbook and worksheet activities almost every day in predominately non-ELL (M = 1.90, SD = .823), integrated (M =1.60, SD =.791), and predominately ELL (M=1.82, SD=.783) classrooms. Similar to whole-class instruction, ELLs (M = 1.76, SD = .730) were engaged more in workbook and worksheet activities than non-ELLs (M = 1.79, SD = .879).

Instructional practices of teacher-directed, whole-class instruction, and teacher-directed, student-selected activities reflect the pedagogy of poverty that teachers need avoid while teaching, especially while teaching ELLs.

The least prevalent teaching strategy is teacher-directed, student-selected activities in predominately non-ELL (*M*=1.89, *SD*=.584), integrated (*M*=1.92, *SD*=.580), and predominately ELL (*M*=1.72, *SD*=.552) classrooms. ELLs (*M*=1.90, *SD*=.588) received more teacher-directed, student-selected activities than non-ELLs (*M*=1.79, *SD*=.563). The 5th-grade reading classes were rarely (*M*=3.00, *SD*=.743) engaged in media activities as a part of reading instruction. Non-ELLs (*M*=3.03, *SD*=.759) were exposed once or twice a month to media activities for reading. ELLs (*M*=2.97, *SD*=.727), were engaged in more media activities but there is not much difference between both groups.

Table 2.3

Instructional Practices Results Between Predominantly Non-ELL, Integrated, and Predominantly ELL Classrooms

	Predominantly Non-ELL (n = 100)		Integrated (n = 100)		Predominantly ELL (n = 100)		ANOVA	Probability
Instructional Practices	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	
Teacher-directed, whole-class[a]	2.96	.053	2.96	.984	2.96	.974	.000	.999
Teacher-directed, small-group[a]	2.31	.837	2.40	.816	2.30	.732	.478	.621
Teacher-directed, individual[a]	2.19	.692	2.19	.734	2.15	.672	.110	.896
Student-selected activities[a]	1.89a	.584	1.92a	.580	1.72b	.552	3.566*	.029
Workbooks activities[b]	1.90a	.823	1.60b	.791	1.82a	.783	3.741*	.025
Media activities[b]	2.89	.790	3.06	.695	3.04	.737	3.226	.041

*p<.05

Note: Means with the same letter are not significantly different from each other
Key: [a] Means close to 5 indicate instruction is implemented 3 or more hours a day.
Means close to 1 indicate the instruction is not implemented.
[b] Means close to 4 indicate instruction is implemented hardly ever or never. Means close to 1 indicated instruction is implemented almost every day.

A two-way ANOVA was conducted determine if there were difference by ELL status (ELL or non-ELL) and type of classroom (predominantly non-ELL, integrated, predominantly ELL) on the instructional practices (teacher-directed, whole-class; teacher-directed, small-group; teacher-directed, individual; teacher-directed, student-selected activities; workbooks/worksheets; and media).

The two-way ANOVA of teacher-directed, whole-class instruction is reported in Table 2.4 and Table 2.5. The Levene's Test of Equality of Error Variances for teacher-directed, whole-class instruction was not significant (p =.218, df = 5, 294, F = 1.417), thus homogeneity of variances can be assumed. The interaction effect of ELL and type of classroom was not significant (p = .221, df = 2, 294, F = 1.417). We, therefore, can safely interpret the main effects. There is a significant main effect of ELL status (p <.001, df = 1, 294, F = 18.186), resulting in a difference of how often ELLs and non-ELLs are exposed to teacher-directed, whole-class instruction. ELLs (M = 3.20) were receiving more teacher-directed, whole-class instruction than their non-ELL peers (M = 2.72). This is further reported in Table 2.4. The main effect of type of classroom was not significant (p = .999, df = 2, 294, F = 1.515).

Table 2.4

Analysis of Variance of Teacher-Directed, Whole-Class Instruction by ELL Status and Type of Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Squared*
ELL	1	17.280	18.186*	.000	.058
CLTYPE	2	0.000	0.000	.999	.000
(ELL)(CLTYPE)	2	1.440	1.515	.221	.010
Error	294	.950			

*p<.001

Table 2.5

Teacher-Directed, Whole-Class Instruction Results Between Predominantly Non-ELL, Integrated, and Predominantly ELL Classrooms

	Predominantly Non-ELL (n = 100)		Integrated (n = 100)		Predominantly ELL (n = 100)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Non-ELLs	2.72	1.051	2.84	.976	2.60	.756
ELLs	3.20	1.010	3.08	.986	3.32	1.039

The two-way ANOVA of teacher-directed, small-group instruction is reported in Table 2.6.

Table 2.6

Analysis of Variance of Teacher-Directed, Small-Group Instruction by ELL Status and Type of Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Square*
ELL	1	.403	.636	.426	.002
CLTYPE	2	.303	.478	.621	.003
(ELL)(CLTYPE)	2	.703	1.108	.332	.007
Error	294	.635			

The Levene's Test of Equality of Error Variances for teacher-directed, small-group instruction was significant (p = .043, df = 5, 294, F = 2.328), and violating the homogeneity of variances assumption. Thus, the variance of small-group instruction across the groups of ELL status and type of classrooms is not equal. The main effect of

ELL for predicting teacher-directed, small-group instruction in the ANOVA was not significant (p = .426, df = 1, 294, F = .636). The main effect of type of classroom was also not significant (p = .621, df = 2, 294, F = .478). The interaction effect of ELL status and type of classroom was not significant (p=.332, df = 2, 294, F = 1.1.08).

The two-way ANOVA of teacher-directed, individual instruction, as reported in Table 2.7, did not have any significant values.

Table 2.7

Analysis of Variance of Teacher-Directed, Individual Instruction by ELL Status and Type of Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Squared*
ELL	1	.563	1.157	.283	.004
CLTYPE	2	.053	.110	.896	.001
(ELL)(CLTYPE)	2	.893	1.834	.162	.012
Error	294	.487			

The Levene's Test of Equality of Error Variances was not significant (p = .415, df = 5, 294, F = 1.005). The main effect of ELL for predicting teacher-directed, individual instruction was not significant (p = .283, df = 1, 294, F = 1.157), and the main effect of type of classroom was not significant (p = .896, df = 2, 294, F =.110). The interaction of ELL status and type of classroom was also not significant (p =.162, df = 2, 294, F = 1.834). The two-way ANOVA of student-selected instruction results are reported in Table 2.8.

Table 2.8

Analysis of Variance of Student-Selected Activities by ELL Status and Type of Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Squared*
ELL	1	.963	2.953	.087	.010
CLTYPE	2	1.163	3.566*	.029	.024
(ELL)(CLTYPE)	2	.223	.685	.505	.005
Error	294	.326			

*p<.05

The Levene's Test of Equality of Error of Variances was significant (p = .014, df = 5, 294, F = 2.909), thus violating the assumption of homogeneity of variance. The main effect of ELL predicting student-selected activities was not significant (p = .087, df = 1, 294, F = 2.953). Similarly, the interaction effect of ELL and type of classroom was not significant (p = .505, df = 2, 294, F=.685). The main effect of type of classroom predicting student-selected activities in the ANOVA was significant (p = .029, df = 2, 294, F = 3.566), resulting in a difference of how often student-selected activities are implemented in predominantly non-ELL classrooms, integrated classrooms, and predominantly ELL classrooms. The Post Hoc Test of Games-Howell was conducted to compare differences of student-selected activities across the type of classrooms (predominantly non-ELL, integrated, and predominantly ELL). Games-Howell was used because according to the Levene's Test equal variance cannot be assumed. Games-Howell results suggest significant (p =.035) differences of how often student-selected

activities were implemented in integrated reading classrooms and predominantly ELL reading classrooms.

The Levene's Test of Equality of Error Variances for instructional practice of workbooks and worksheets was not significant (p =.158, df = 5, 294, F = .158), thus following the homogeneity of variances assumption. Table 2.9 reports the results of the two-way ANOVA of workbook instruction.

Table 2.9

Analysis of Variance of Workbook Instruction by ELL and Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Squared*
ELL	1	.053	.083	.774	.000
CLTYPE	2	2.413	3.741*	.025	.025
(ELL)(CLTYPE)	2	.013	.021	.980	.000
Error	294	.645			

The main effect of ELL status predicting workbook instruction was not significant (p = .774, df = 1, 294, F = .083). In contrast, the main effect of type of classroom predicting workbook instruction was significant (p = .025, df = 2, 294, F = 3.741), resulting in a difference of the frequency reading workbooks and worksheets are implemented in predominantly non-ELL classrooms, integrated classrooms, and predominantly ELL classrooms. A Sidak Post Hoc Test was conducted to investigate which type of classrooms had significant differences in the frequency workbooks were implemented into classroom instruction. Sidak was chosen for the Post Hoc Test because equal variance can be assumed across the groups and there were equal numbers of participants in each group. The Sidak Post Hoc results suggest significant (p =.026)

differences in the frequency workbooks and worksheets are used as part of instruction in integrated reading classrooms and predominantly non-ELL reading classrooms. The interaction effect of ELL and type of classroom predicting workbook instruction was not significant (p=.980, df = 2, 294, F =.021).

The results of the two-way ANOVA of instruction with media (audio and visual aid) are reported in Table 2.10.

Table 2.10

Analysis of Variance of Media Instruction by ELL Status and Type of Classroom

Source	*df*	*MS*	*F*	*Probability*	*Partial Eta Squared*
ELL	1	.270	.498	.481	.002
CLTYPE	2	.863	1.591	.205	.011
(ELL)(CLTYPE)	2	1.750	3.226*	.041	.021
Error	294	.543			

*p<.05

The Levene's Test of Equality of Error Variances for media instruction was not significant (p =.651, df = 5, 294, F = 1.417), thus, equal variance across groups can be assumed. The main effect of ELL predicting media instruction in the ANOVA was not significant (p = .481, df = 1, 294, F = .481). Similarly, the main effect of type of classroom predicting media instruction was not significant (p =.205, df = 2, 294, F = 1.591).

The interaction effect of ELL and type of classroom was significant (p = .041, df = 2, 294, F = 3.226) in the two-way ANOVA analysis of media instruction. Figure 2.1 displays the interaction effect of ELL and type of classroom with media instruction. This indicates there is a significant difference in the effect of type of classroom on media instruction for ELLs and non-ELLs.

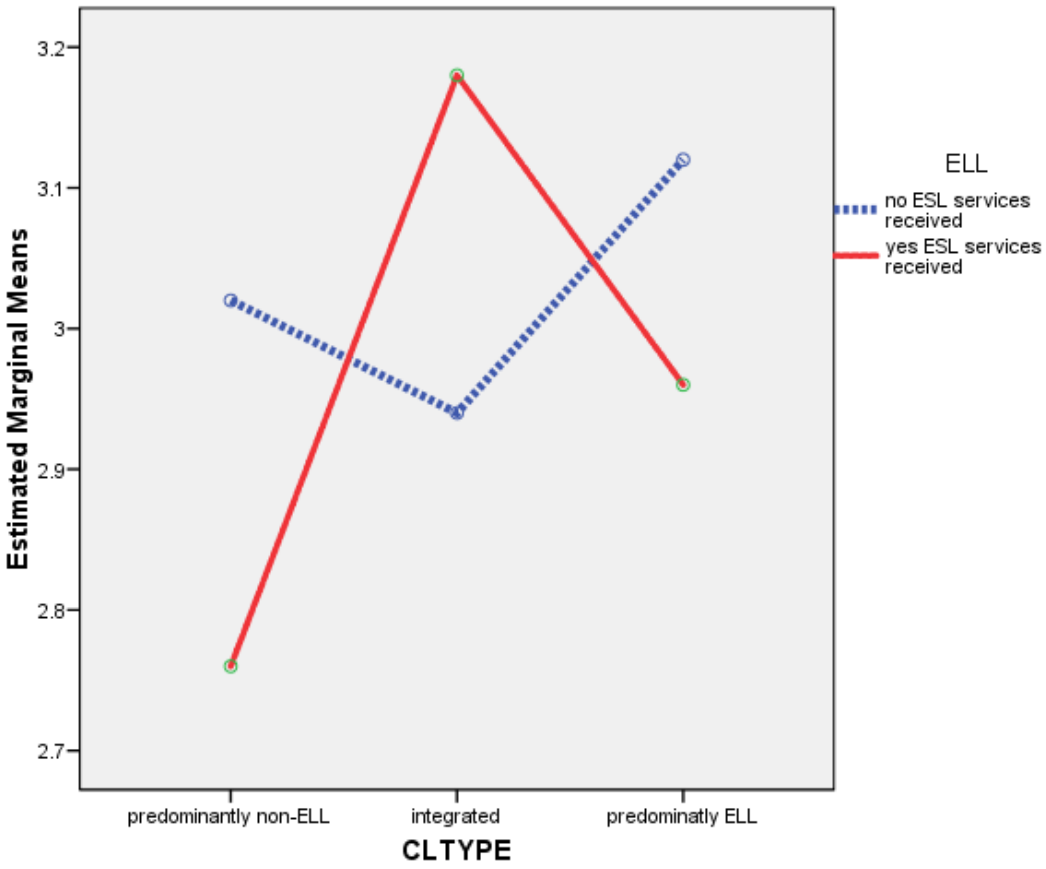

Fig. 2.1. Estimated marginal means of classroom type by ELL status of media instruction

Although, as reported in Table 2.11, non-ELLs in predominantly non-ELL classrooms (*M* = 3.02) and predominantly ELL classrooms (*M* = 3.12) are receiving less frequently media instruction compared to ELLs in predominantly non-ELL classrooms (*M* = 2.76) and predominantly ELL classrooms (*M* = 2.96). However, ELLs are receiving less media instruction in integrated classrooms (*M* = 3.18) than non-ELLs in integrated classrooms (*M* = 2.94). As indicated by the *eta-squared* value, the ELL status by type of classroom interaction accounts for 2.1% of the total variance.

Table 2.11

Media Instruction Results Between Different Types of Classroom

	Predominantly Non-ELL (*n* = 100)		Integrated (*n* = 100)		Predominantly ELL (*n* = 100)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Non-ELLs	3.02	.795	2.94	.740	3.12	.746
ELLs	2.76	.771	3.18	.629	2.96	.727

To explore our second research question, a multiple regression was used to assess the ELLs 5th-grade reading achievement predicted by reading instructional practices, after statistically controlling for 3rd-grade reading achievement. Multicollinearity is not assumed due to the Tolerance and VIF results reported on Appendix 2.16.

The Casewise Diagnostics suggested removing case number 77 to increase the explained variance from 63.3% to 65.3% of the variance accounted for. Table 2.12 reports the model summary after the cases were removed. Furthermore, we examined the influence to determine if individual cases were impacting the results of beta weight. The results, shown in Appendix 2.10 and Appendix 2.17, indicated there were no individual cases impacting the beta weights.

Table 2.12

Model Summary 2 After Casewise Diagnostics

R	***R Square***	***Adjusted R Square***	***Std. Error of the Estimate***
.808	.653	.636	12.375818

The correlations between the dependent variable, 5th-grade reading achievement, and independent variables, instructional practices and 3rd-grade reading achievement, were not significant. The Beta standardized coefficients from 5th-grade reading achievement to 3rd-grade reading achievement was significant (*Beta* = .785, *t* = 15.673, *p*<.001). The 3rd-grade reading achievement (*Beta* = .785) of ELLs contributes the most to the explained 5th-grade reading achievement. Also, the beta weight from 5th-grade reading achievement to teacher-directed, small group was significant (*Beta* = -.176, *t* = -2.669, *p*=.009). This implies the teacher-directed, small group instruction does not increase ELLs 5th-grade reading achievement. The standardized beta coefficients indicate

workbooks and worksheets (*Beta* = -.012) contributed the least to ELLs 5th-grade reading achievement.

Discussion

In this study, we investigated whether there were instructional practices differences between ELLs and non-ELLs and the type of classrooms they attended. Then, we examined if there was a relationship between instructional practices and the ELLs reading skills in 5th-grade.

In the descriptive analysis, as many other researchers (Pianta, 2007a; Pianta 2007b; Waxman, Padrón, & Lee, 2008; Rimm-Kaufmann, et al., 2005) have found teacher-directed, whole-class instruction was the most prevalent teaching strategy across all types of classroom. Similar to other researchers (Waxman, Huang, & Padrón, 1995; Waxman, Padrón, & Lee, 2008), ELLs in this study were taught reading skills more often through teacher-directed, whole-class instruction compared to their non-ELLs peers. In addition, students engaged almost every day in workbook activities. These results are similar to other researchers who have found students engage mostly in less-interactive activities (NICHD, 2005; Pianta, et al., 2007; Rimm-Kaufman, et al., 2005). Similar to teacher-directed, whole class, the findings of this study indicated ELLs were engaged more often in workbooks than non-ELLs. This may hinder the ELLs reading comprehension because it minimizes "real-world" experience, reduce the variation of instruction, and eliminates their choices (Guthrie & Davis, 2003; MacIver, et al, 2002; Sheroff, et al., 2003). Pincus (2005) observed students were receiving at least five worksheets per day in the classroom instruction. Another concern of teacher-directed, whole class instruction and a lack of interactive instruction, such as small-groups, is the

student's progress will be a short-term gain and they will not learn the skills needed for long-term achievement (Fullan, Hill, & Crévola, 2006).

The least prevalent teaching strategy was teacher-directed, student-selected activities. In specific, ELLs in predominantly non-ELL classrooms were receiving the least student-selected reading instruction. Wang & Goldschmidt (1999) support minimizing the use of student-selected activities because it hinders the ELL progress because students will select less demanding tasks.

We began with an analysis of ELLs status and type of classroom using a 2-way *ANOVA* method. The results indicated several significant instructional practices between the types of classroom the student was placed in and whether the student was ELL or non-ELL. Results indicated ELLs were being exposed more often to teacher-directed, whole-classroom instruction than non-ELLs. This should be of concern to educators and researchers, because teacher-directed, whole class instruction is requiring less teacher management and decreasing the demand of participation, expectations, and understanding (NICHD, 2005; Pianta, 2007b). In specific, this could hinder the ELL reading achievement because it does not allow the teacher flexibility to provide individual instruction and there is the increasing likelihood that the student can fall behind (Chang, 2008; Lou, et al., 1996; Schumn, Moody, & Vaughn, 2000). It is important for educators to refrain from using often teacher-directed, whole-class instruction, as has been seen in this study it is often used and not as effective as other instructional practices to increase the student's reading achievement. Schumn, Moody, & Vaughn (2000) found that 3rd-graders with low achievement had little academic progress in whole-class instruction. Therefore, these students would fall further behind. It is essential to target the needs of

students immediately in order to consistently enhance their achievement. On the contrary to most researchers, a few studies have found that teacher-directed, whole-class instruction increases the student's academic performance (Kutnick, et al., 2005; Zahorik, Halfback &Ehrle, 2003).

The results also indicated that teacher-directed, small-group instruction was a significant instructional practice for the student's 5th-grade reading achievement. Similar to our results, researchers have also found ELLs reading improved with small-group instruction (Kamps et al., 2007; Linan-Thompson, et al., 2006; Taylor, Pressley, & Pearson, 2002). Also Saleh, Lazonder, & De Jong (2005) found small group instruction provided the students with advantages to learning, because the students were engaged in the learning process and participated in discussions and teachers were flexible to make changes.

In respect to classroom types, the results from this study suggest that student-selected activities differed between integrated classrooms and predominantly ELL reading classrooms. Students in integrated and predominantly non-ELL reading classrooms were receiving significantly different amount of workbook instructions. This suggests instructional differences in classrooms and, thus, inequalities opportunities of learning (Rivera & Waxman, 2007). Similar, the findings of this study also indicate that media instruction had a differential significant effect in the type of classroom the student attended and whether the student was ELL or non-ELL. Furthermore, non-ELLs in predominantly non-ELL classrooms and predominantly ELL classrooms were receiving less media instruction compared to non-ELLs in integrated classrooms. In contrast, ELLs in integrated classrooms were receiving the least media instruction.

We then analyzed specifically how instructional practices were impacting ELLs reading skills in 5th-grade. The multiple regression findings from this study indicate that teacher-directed, small-group instruction negatively influences the ELLs 5th-grade reading achievement. These findings contradict other researcher's findings of the importance of using small-group instruction for ELLs because it is more active, attentive, and accommodating to ELLs' specific needs (Haidet, Morgan, O'Malley, Moran, & Richards, 2004; Kamps, et al., 2007; Linan-Thompson, et al., 2006; Saleh, Lazonder, & De Jong, 2005; Taylor, Pressley, & Pearson, 2002; Waxman, Padrón, & Lee, 2008). However, Blumenfield, Marx, Soloway, and Krajick (1996) found that small-groups made minority students feel incompetent and the minority students were often ignored by their peers and teachers. The results of this analysis also indicated that workbooks contributed the least and had a negative impact on ELLs 5th-grade reading achievement. This suggests educators may want to consider using workbooks and worksheets less because it is not enhancing student's reading skills.

As expected, the results from this study also suggest that 3rd-grade reading achievement directly influences the students 5th-grade reading achievement. Similar results were found in a longitudinal study, where kindergarteners with low reading achievement increased their reading skills by 3rd-grade through consistent instructional practices from kindergarten through 3rd-grade (O'Conner, 2005).

Limitations of the Study

We faced two common limitations when working with this secondary, large-scaled database (i.e., ECLS-K). First, the statistical analysis approach taken may affect the results when using secondary data, and there may be several statistical methods to

answer a research question that may affect the results differently. In this study, the statistical analysis violated the assumption of normality. In addition, the sample of this study was randomly selected from subgroups and weights were not used during the statistical analysis. It should also be noted that the group of ELLs in predominantly non-ELL classrooms were not randomly selected because there were exactly 50 ELLs in this group remaining after this studies selection criterion. For these reasons caution should be taken when interpreting the results because it does not represent the 5th-grader population in the U.S. Associations made during this analysis may be a result of omitted variable bias and may not reflect a causal relationship. Due to the lack of causal inference, policy recommendations are limited in this study (Hong & Raudenbush, 2005; Kainz & Vernon-Feagans, 2007; McCoach, O'Connell, Reis, & Levitt, 2006; Paik, 2003).

Missing data is a second common limitation when working with secondary, large-scaled database. Missing data can be attributed to limited language proficiency, mobility, refusal of participation, no response, not applicable to the individual, and missed appointments. This is one of the limitations of conducting longitudinal analyses (Chatterji, 2006; Kainz & Vernon-Feagans, 2007; McCoach, et al., 2006; Son & Meisels, 2006). We excluded, as explained in methods, several participants who did not have the necessary data instead of statistically compensating for missing data, such as imputation of variables.

In particular, this study was limited to school factors of reading achievement and instructional practices in a 5th-grade classroom. As previously stated, reading achievement was determined by the difference of 3rd-grade reading and 5th-grade reading IRT scaled scores of the reading assessment. We do not know, however, the influence of

the previous exposure of quality content-specific instruction on reading achievement. We were not able to conduct longitudinal analysis of instructional practices because the teacher questionnaires did not provide specific content-based instructional practices for previous grades. Future studies should explore content-specific (e.g., reading, math, and science) instructional practices for additional grades, especially early education. Reading achievement may also not be reflective of instructional practices but of other external or/and internal factors in 5th-grade. Familial and child development factors that affect the schooling of ELLs needs to be examined in future studies.

Future research should include consecutive classroom observations of instructional practices and frequency implemented by the teacher and the student's reception (e.g., time on-task, eagerness, understanding, and motivation) the instructional practices. We were limited to use collected classroom data from the teacher and school administrator questionnaires. Researchers have investigated data obtained, however, through teacher questionnaires to be more valid in comparison to observations (Camburn & Barnes, 2004). The 5th-grade teachers responded to questionnaires with extensive items, but teachers did not have the opportunity to provide additional information or reply to open-ended questions. There is also a potential for teacher's response to be biased if the teacher had a lack of experience of working with ELLs.

Our sample of ELLs had some limitations. The ECLS-K has limited information of language minority children in comparison to the nation's population of ELLs. In part this because of the exclusion of reading and general knowledge assessments of English Language Learners until they were able to pass the English proficiency screening, the Oral Language Development Scale (OLDS) (Magnuson, et al. 2006; Rathbun, West, &

Walston, 2005). During kindergarten and 1st-grade, if the student could not pass the OLDS and their dominant language was Spanish they were given a Spanish battery of mathematics, psychomotor, height, and weight. If they did not pass the English screening and their dominant language was not Spanish, then just their height and weight was taken and did not participate in the cognitive assessments. This further excluded language-minority, non-Spanish students from the study. Approximately, 50% of the students who were administered the OLDS in the fall of kindergarten passed and approximately 37% passed the OLDS in the spring of kindergarten (Ready & Tindal, 2006). Since ELLs did not have a literacy measure until they were able to pass the OLDS, this is another reason why a longitudinal analysis from kindergarten to 5th-grade is difficult to conduct.

As previously indicated, students were classified in this study as ELL if they were receiving ESL services in 5th-grade, and ELLs were limited to only Hispanic students. ELLs were also not included, as explained in the methods, because (a) their 5th-grade reading teachers could not ascertain if they were currently receiving pull-out ESL service (n = 210, 1.8%) or in-class ESL service (*n* = 210, 1.8%), (b) pull-out ESL service were not provided in the school for 5th-grade (*n* = 2,540, 21.5%), (c) in-class ESL service were not provided in the school for 5th-grade (*n* = 2,730, 23.1%), and (d) other missing data needed for the study. Due to a historical pattern of misclassification (for example, because of parental refusal of service, mobility, transfer, loss of records, lack of ESL program, and mandated exit), it is likely some students are not proficient in English but classified and receiving services within the school as non-ELL. Future research should include Language minority, English proficient students and Language minority, non-English proficient students.

The ECLS-K provides the information of whether a student in kindergarten through 5th-grade is receiving ESL services. This information, however, is not longitudinally valid for this study, because the researcher cannot account for mobility/transfer, exit policies, and program availability for each school and student across kindergarten through fifth grade, especially taking into account data was not collected for 2nd or 4th grade. In tracing the students history of receiving ESL service, various subgroups of ELLs, such as ELLs exit in 3rd and ELLs that never received services, developed significantly different ratios. In addition, when examined ELLs longitudinally from kindergarten to 5th-grade, there was a significant amount of ELLs lost in comparison to ELLs receiving ESL services in 5th-grade.

This study did not include the language of reading instruction in 5th-grade, because there was a significantly small percentage (see Table 2.13) of 5th-grade students receiving reading instruction in a language other than English.

Table 2.13

Language of Reading Instruction in 5th Grade

	Unweighted Frequency	**Percent**
English	10, 760	91
Spanish	170	1.4
Asian	10	0.1
Middle Eastern	10	0.1
Other Language	20	0.2

This limited amount of ELL and type of classrooms in which could not be accounted for different language of reading instruction. Due to the limited information available, including this variable would not lead to any significant findings.

This study is also limited to 5th-grade instructional practices of (a) teacher-directed whole class activities, (b) teacher-directed small group activities, (c) teacher-directed individual activities, (d) student-selected activities, (e) students working on reading workbooks or worksheets, and (f) students engaged in media activities. These 5th -grade instructional practices are content specific to reading. Unfortunately, the database did not include content specific instructional practices of previous grades. This prohibited the researcher to conduct longitudinal analysis, measure consistency of effective instructional practices, and determine the student's exposure to effective instructional practices. These instructional practices were chosen to be examined in response to a national study, indicating students were receiving more teacher-directed, whole-group instruction and individual activities in the classroom than receiving small group activities and opportunities to interact with the teacher and students (NICHD, 2005; Pianta 2007b; Pianta, et al., 2007; Rimm-Kaufmann, et al., 2005). It is important to investigate if ELLs are receiving particular instructional practices that are effective in meeting their specific needs. Engaging ELLs, for example, in media activity provides supplemental instruction and/or modifications for language development, different representation of context (oral, visual, and written), and translations. Despite being limited to these seven instructional practices, they highlight the common and uncommon practices in classrooms across the nation and empirically-based effective and ineffective instructional practices for non-ELLs and ELLs. With this information, we are able to further support research for

effective instructional practices for achievement and the need to emphasize certain instructional practices more in the 5th-grade classrooms of ELLs and non-ELLs.

Researchers should continue examining additional effective instructional practices for ELLs such as modifications, immediate feedback, discussions, and authentic learning. In addition, a social-ecological framework should be adapted to examine the family and child development factors impacting their reception to classroom instruction and reading achievement. Future longitudinal research is needed in content-specific instructional practices from early education onward. In addition to quantitative data collected through surveys and questionnaires, consecutive classroom observations of instructional practices, frequency of implementation, and student's receptiveness will be beneficial to determine what is impacting the student's reading achievement.

Conclusion

Several studies have found that teachers treat some groups of students differently during classroom instruction, thus, these inequitable patterns result in differential learning outcomes for students (Rivera & Waxman, 2007). By the end of the century, language minority students will make up almost 42% of the total public school enrollment and Spanish-speakers are the fastest growing population (Carrasquillo & Rodriguez, 2002). Hispanics ELLs constitute most of the students enrolled in programs for the limited English proficient (Padrón, Waxman, & Rivera, 2003; Kindler, 2002). This increases the demands on teachers, administrators, and educational policy makers to meet the needs of ELLs. For this reason, our study focuses on ELLs exposure to effective instructional practices and their reading achievement.

There remains a significant achievement gap exists between Hispanic students and White students (Donahue, Danne, & Grigg, 2003). In the 2005 National Assessment of Educational Progress Reading Test, 46% of Hispanic students in 8th grade scored at or above the basic level of proficiency, and 76% of the White students scored at or above the basic level of proficiency (Perie, Grigg, & Donahue, 2005). Furthermore, teachers who have large numbers of ELLs in their classrooms are experiencing difficulty in supporting these students to close the achievement gap between White and Hispanic students. Again this emphasizes the importance to investigate the instructional practices in predominantly ELL classrooms, integrated classrooms, and predominantly non-ELLs to ensure high quality and equity of education is occurring.

Policies and educators have the power to be advocates for improving the educational circumstances for ELLs (Baca & Escamilla, 2002; Stritikus, 2006; Waxman, Téllez, & Walberg, 2006). Education policies need to focus on the defining what is an effective instructional practice for ELLs, how it should be implemented in the classroom, and implement consistent evaluation of effective instructional practices. Policies, for example, should emphasize more student-centered instruction and small group instruction. The goal for policies and educators needs to be to ensure all the students are receiving high-quality education, and teachers are accurately evaluated or held accountable for effective instructional practices.

Instructional practices at this level must promote high levels of growth and achievement for all students, despite English language proficiency. To summarize, our study did reveal that small-group instruction is beneficial for ELLs reading achievement, while the use of workbooks in a classroom hinders ELLs' achievement. Similar to other

research, prior reading achievement (i.e., 3rd-grade) also influences ELLs reading achievement in continuing grades (i.e., 5th-grade) because teachers are building on prior knowledge.

Due to the consistent growth of ELLs in public schools, there needs to be an emphasis on implementing effective learning strategies, such as instructional practices, in all classrooms to increase ELLs reading achievement (Carrier, 2003; Furner, Yahya, Duffy, 2005; Kamp, 2007; LaCelle-Peterson & Rivera, 1994; Mathes, et al., 2007). Meeting ELLs' needs can no longer be ignored. An important step for educators would be to be implementing effective instructional practices for the entire classroom despite the percentage of ELLs in the classroom. It is also beneficial for preservice teacher education to incorporate ELL education strategies, such as specific effective instructional practices for ELL, since it continues to be a growing population in schools (Padrón, Waxman, & Rivera, 2003). Professional development in the long-term can also address needs of ELLs (Padrón, Waxman, & Rivera, 2003), as well as implementing in the curriculum research-based practices for ELLs. In addition, when working with ELLs, it is essential to consider the effects of out-of-school factors, such as home environment and community support, impacting their school environment and achievement. Collaboration between teachers, administrators, and the home is needed in order to promote student success.

CHAPTER III

THE INFLUENCE OF INSTRUCTION ON MATHEMATICS ACHIEVEMENT AMONG FIFTH-GRADE WHITE AND HISPANIC NON-ENGLISH LANGUAGE LEARNERS AND HISPANIC ENGLISH LANGUAGE LEARNERS

Introduction

In the past three decades, there has been a rapid change in the racial makeup of the student body in U.S. public schools. According to Planty, Hussar, Snyder, Provasnik, Kena, Dinkes, Kewal-Ramani, and Kemp (2008), the percentage of minority students attending public schools has increased from 22 % in 1972 to 43 % in 2006. Among the minority groups, the number of Hispanic and ELLs has also significantly increased. As a result many schools are now faced with the challenge of educating larger groups of Hispanics and English Language Learners (ELLs). One area that is of particular concern is teaching mathematics to ELLs (Winsor, 2008). The term ELLs have been defined several ways. In this study, our definition of ELLs is based on the America's Schools Act (IASA) and NCLB federal definition of ELL as those individuals whose (1) language background is other than English and (2) level of English language proficiency negatively affects their ability to succeed academically (Rivera & Collum, 2004).

For quite some time, the mathematics achievement gap between Hispanic students and their white peers have been researched and reported (Jencks & Phillips, 1998; Lee, 2002). The National Assessment of Educational Progress (NAEP), which assesses students' performance in the areas of reading and mathematics, has reported the gaps in achievement. In the 2007 NAEP, for example, Hispanic fourth graders scored 21 points below their white counterparts in the area

of mathematics, and the Hispanic eight graders scored 26 points below Whites (U.S. Department of Education, 2007).

Moreover, the circumstances for ELLs are less encouraging. The National Report Card of 2005, reported that 46% of 4th-grade ELLs scored below basic in mathematics (the lowest level possible), and 71% of 8th-grade ELLs scored below basic level of mathematics skills (National Center for Educational Statistics, 2005). When compared to their white peers, ELLs have not been meeting the standards of mathematic achievement across the nation. In a recent national assessment, only 11% of 4th-grade ELLs scored at or above average on mathematics national assessment (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006). In addition, there has not been much research on ELLs achievement gap and its consequences (Fry, 2007). For this reason, the present study will focus on which instructional approaches are more effective for improving the mathematical achievement of ELLs.

The literature has referenced many instructional methods to serve the needs of ELLs in order to improve their mathematical achievement. Various studies have found that effective classroom instruction can increase ELLs mathematics performance and help ELLs overcome academic challenges, such as understanding directions, additional time to complete task, able to ask questions, receive immediate feedback, interaction with peers and teacher, and opportunities to explore mathematical solutions to problems (Ernst-Slavit & Slavit, 2007; Ganesh & Middleton, 2006; NMAP, 2008). It has been shown, for example, that ELLs develop more mathematic skills if they are provided with contextual, visual, and structural support (Ganesh & Middleton, 2006; Khisty, 2001). To increase students' mathematical achievement, especially ELLs, it is imperative that teachers implement more effective instructional practices in their classrooms.

Other effective instructional practices that have been found to enhance ELLs mathematics performance are to incorporate the students culture into mathematics instruction and building from the students prior experiences (Ernst-Slavit & Slavit, 2007). Furner, Yahya, and Duffy (2005), for example, found that Chinese ELLs prior knowledge of using abacus for calculations increased ELLs self-esteem and cooperation in the classroom. The authors explained that these were because prior knowledge was being connected with new knowledge, thus making new mathematical concepts more manageable for the student to learn (Ernst-Slavit & Slavit, 2007; Furner, Yahya, & Duffy, 2005).

Furthermore, applying mathematics skills in the real world has been found to give the student a meaningful purpose to their mathematical skills. The National Mathematics Advisory Panel reported several high-quality studies suggesting "real-world" contexts of mathematics improved mathematic performance involving similar "real-world" problems (NMAP, 2008). Restaurants menus, for example, can be used for addition, multiplication, and division problems (Furner, Yahya, & Duffy, 2005). When mathematics activities reflect the ELLs "real-world" environment, ELLs are able to relate and apply their skills to their immediate environment.

It has been found to benefit ELLs students mathematical performance when teachers explain directions clearly (e.g., bold sections of written directions and due dates) and repeat the main idea in various forms (Khisty, 2001; NMAP, 2008). Studies also have found that contextual support (e.g., drawings, cue cards, diagrams written form, modeling, examples, and manipulatives) will develop the student's mathematical comprehension (Furner, Yahya, & Duffy, 2005; NMAP, 2008). Khisty's (2001) study found that 5th-grade ELLs demonstrated perimeters by placing themselves around an object to support the mathematic concept. Group work has been found to increase ELLs mathematical understanding and communication (Winsor,

2008). Mathematical games in the classroom will also engage students to explore mathematical ideas, create dialogue, and respond to teacher's high-level questions (Olson, 2007). Researchers continue to emphasize the need to engage students in their own learning process.

Furthermore, ELLs have been found to enhance their understanding of mathematics when placed in active learning environments (Ernst-Slavit & Slavit, 2007). One aspect of an active learning environment is the engagement of students in discussion (through small groups, pair group, teacher-student dialogue), which has been found to provide the student with opportunities to talk through the decisions they make and steps they take (Moschkovich, 1999; NMAP, 2008). Through these mathematical discussions, teachers are aware of the student's thinking process and understanding, providing students with immediate feedback and extensive feedback will emphasize explicit instruction and enhance the student's understanding and performance (NMAP, 2008). Students also benefit from discussions, as they express themselves they review strategies and mathematical concepts (Winsor, 2008). Fifth grade ELLs, for example, were working in small groups and found that while interacting with each other, students and teachers were helping each other understand the mathematic problems (Khisty, 2001; National Mathematics Advisory Panel [NMAP], 2008). An active learning environment is implementing interaction and participation in the lessons rather than enforcing the typical route instructions.

Researchers have emphasized that technology, such as computer games, can be interactive in teaching mathematics skills (Ernst-Slavit & Slavit, 2007; Furner, Yahya, & Duffy, 2005). Instructional software (e.g., drill and practice and tutorial technology programs) has suggested positive effects on student's mathematic performance (NMAP, 2008). Some research has indicated that teaching student's computer programming will increase mathematic achievement of concepts, applications, and problem solving (NMAP, 2008). Hickey, Moore, and

Pellegrino (2001) conducted an empirical investigation exploring the effects of innovative technology, such as computer and information technology, when implemented into the curriculum of disadvantaged third- and fifth-grade students. Their findings suggests in comparison of third grade and fifth grade mathematics achievement, the students significantly increased their mathematics achievement in 5th-grade in the areas of problem solving and data interpretation, concepts and estimation, and furthermore their interest in mathematics increased with the use of computers (Hickey, Moore, Pellegrino, 2001). Thus, emphasizing that mathematics achievement was directly influenced by teacher's instructional practices of time devoted to teacher, directed instruction or effective technology use. Overall, research has shown that technology-based drill and practice and tutorials increase students' mathematics achievement by developing their understanding of concepts, applications, and problem solving skills (NMAP, 2008).

Mathematics skills can also be applied in other content areas. For example, maps from social studies can be used learn geography but also use various scales and measure distance. This also gives students the opportunity to connect new knowledge with prior knowledge. Khristy (2001) demonstrated 5th-grade teachers combining mathematics with literacy by having students write how to solve mathematic problems, while teachers provided literacy and mathematic help (e.g., guiding questions and specific, verbal feedback). This allowed students to practice their writing skills and mathematic skills simultaneously.

Lastly, teachers should not limit their instructional practices with ELLs, since multiple instructional approaches will promote ELLs academic development and achievement (Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Khisty, 2001). Khristy (2001) findings suggest ELLs understanding of mathematics increased when teachers used meaningful questions and

explanations with multiple opportunities for students to visualize and perform mathematic skills. Students also need to receive several opportunities to practice new information, strategies, and skills.

It is essential for classroom instructional practices to be positively influencing ELLs learning of mathematics. The National Mathematics Advisory Panel (NMAP) reported (2008) that neither student-centered instruction, when the students are primarily doing the teaching, or teacher-directed instruction, when the teacher is primarily communicating to the students directly should be avoided. A combination of both types of instructional approaches would be most beneficial, especially incorporating ELLs teaching strategies. Effective instruction of mathematics will provide ELL with an opportunity to learn and develop mathematic skills and knowledge. Students need an environment in which will allow the student to solve, understand, and explain mathematical problems. ELLs also may need additional instruction to increase their mathematical performance as they gain proficiency in English. Teachers can create this environment by implementing various research-based instructional approaches into their mathematical instruction allowing students to reach their maximum potential.

Purpose of the Study

No Child Left Behind (NCLB), a federal legislation, was developed to improve all students' academic achievement, especially in early years for future achievement. NCLB holds schools and teachers accountable for the student's achievement, but schools are not accountable on how they arrive to the student's achievement. Meaning teachers are not being held accountable for effective and equity teaching methods despite this legislation emphasizing effective evidence-based teaching methods. Consequently, there remains a lack of educational

research investigating the effectiveness of instructional approaches for ELLs (Calderon, 2002; Waxman & Padrón, 2002).

Instructional practices need to promote academic achievement for all students, despite their entry skills or English language proficiency. Effective instructional practices reduce the achievement gap and contribute to the student's achievement growth (Pianta, Belsky, Houts, Morrison, & NICHD, 2007). Little is known, however, about content-specific achievement in relation to instructional practices, and if teachers are actually implementing high quality instruction effectively in their classrooms to meet their students needs. There are several studies focusing on teacher's qualifications and classroom practices, but few studies have looked at instructional practices in the classroom for ELLs. Furthermore, studies on mathematical instructional practices have been limited to small sample sizes, however, the present study 5th - grade students at a national level. Teachers understanding of ELLs' needs, effective instructional strategies for ELLs, and content-specific instruction targeting ELLs needs is critical for teachers planning, implementation, and managing of instructional practices (Téllez & Waxman, 2006b).

The present study will exam current instructional practices in 5th-grade mathematic classrooms and its impact on mathematic achievement of ELLs. The purpose of the present study is to exam effective instructional practices among ELLs and the impact of student's mathematics achievement.

The following research questions are addressed:

(3) Are there significant differences in mathematics instructional practices among (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic-ELLs?

(4) What are the effects of the mathematical instructional practices on 5th-grade mathematics achievement for (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic ELLs?

Methods

Research Design

This study examines (a) White non-ELLs and (b) Hispanic non-ELLs, and (c) Hispanic ELLs in 5th-grade mathematics classrooms. It is a non-experimental, randomized research design that focuses on mathematics achievement and instructional practices.

Instruments

The data for this study was retrieved from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) of the National Center for Education Statistics. The ECLS-K database provides information from several parent, teacher, caregiver, and school administrator surveys. The 5th-grade instruments of mathematics assessment, teacher questionnaire, mathematics teacher questionnaire, parent interview, and school administrator questionnaire were used.

The 3rd-grade and 5th-grade direct cognitive mathematics assessment is used to assess the student's mathematics achievement in 3rd-grade and 5th-grade. The direct cognitive mathematics assessment was individually administered to children in a quiet and testing appropriate environment (e.g., school classroom or library). Direct cognitive assessments were mostly conducted at the end of the school year, from March through June 2004, to increase the chances the exposure to instruction was relatively the same for all children in the school (Tourangeau, Le, & Nord, 2005). The administrator entered all responses into a computer during the administration (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

The ECLS-K instruments (i.e., direct cognitive assessments, parent interview, and teacher questionnaire) are derived from various sources such as professional curriculums and national, commercial, and state assessments (Pollack, Atkins-Burnett, Najarian, & Rock, 2005). The

National Assessment of Educational Progress (NAEP) 1992, 1994, and 1996 frameworks were used as models for the 5th-grade ECLS-K assessments (Pollack, Atkins-Burnett, Najarian, & Rock, 2005). In specific, the mathematics assessment was based on the 1996 NAEP Mathematics Framework in which focused on the curriculum standards from the Commission on Standards for School Mathematics of the National Council of Teachers of Mathematics 1989 (Pollack, Atkins-Burnett, Najarian, & Rock, 2005). The ECLS-K mathematics assessment of 100 items content included five different measurements: (a) number sense, properties, and operations, (b) measurements, (c) geometry and spatial sense, (d) data analysis, statistics, and probability, and (e) patterns, algebra, and functions (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Many items in the 3rd-grade and 5th-grade assessment required various skills in order to answer the items correctly. Some of the assessment items were also repeated within a grade and across grades in order to support longitudinal scale development (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006; Pollack, Atkins-Burnett, Najarian, & Rock, 2005).

The direct cognitive assessment used an adaptive process. During the first stage, the students were administered an 18 to 25 item routing test based on the student's skills. This determined the difficulty level of the subsequent tests (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The 5th-grade routing test form had reliability of 79% to 88 % (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The floor and ceiling effects were removed on the routing tests to increase the reliability of individual assessment scores and maximize the accuracy of achievement measurement (Pollak, Najarian, Rock, Atikins-Burnett, & Germino-Hausken, 2005).

Additional measures were taken to establish the reliability of the direct cognitive assessments. The trained assessors were observed two different times by supervisors. The supervisors completed the Assessment Observation Form in which rated the assessor in key areas of the direct cognitive assessment. Inter-rater reliability was overall high on all the forms, in which the mathematics forms had the highest agreement of a 98% or better (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The reliability of item response theory-based scores (IRT scale scores, T-scores, and proficiency probabilities) was .94 for the mathematics assessment (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Validity of the direct cognitive assessment was obtained from several sources, such as collaboration of curriculum experts and teachers on test specifications, reviewing national and state standards and assessments, and comparing mathematics field-test item pool scores to an established instrument (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). In addition, the NAEP fourth grade framework was modified for the ECLS-K third and fifth grade framework. There were also required percentages of content strands within each subject area to be included in the assessments. Expert early elementary educators and curriculum specialists from different regions examined the assessment items for content relevance and framework application across the nation. The Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA) was used as another method of evaluating construct validity. The reliability coefficient of MBA for the mathematics assessment indicated a value of .61 and .68, suggesting that MBA and ECLS-K mathematics assessment were measuring closely related skills (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Information regarding mathematics instruction, classroom characteristics, and services for English as a Second Language were obtained from the 5th-grade, child-level questionnaire of

the mathematics teacher. The Mathematics Teacher Questionnaire included the Academic Rating Scale of language and literacy, child-specific information, mathematics classroom and student characteristics, and mathematics instructional activities and curricular focus. In specific, this mathematics questionnaire was used for the child-specific information and mathematics instructional activities and curricular focus. All the teachers in this study were given a reading questionnaire to complete but only half of those teachers were asked to complete a mathematics questionnaire, thus, only half of the participants of the ECLS-K have mathematic instructional and curricular ratings from their mathematics teacher.

Additional child, family, and school data was collected from the 5th-grade Parent Interview, 5th-grade Teacher Questionnaire Form B, and 5th-grade School Administrator Questionnaire. Data was collected from school administrators, regular classroom teachers from February through June 2004 (Tourangeau, Le, & Nord, 2005). The Teacher Questionnaire Form B consisted of instructional activities and focus; classroom resources; student evaluation; school and staff activities; views on teaching, school climate, and environment; teacher background; and teaching assignment. This questionnaire was included in this study to specifically obtain teacher background information. The School Administrator Questionnaire information consisted of school characteristics, school facilities and resources, community characteristics and school safety, school policies and practices, staffing and teaching characteristics, school governance and climate, and principal characteristics. We focused on the school, staffing, and teacher characteristics provided in this school administrator questionnaire. The instructional variables were considered interval variables.

The parent interview was administered between February and June 2004. Interviews were primarily telephone interviews using computer-assisted interviewing. Interviews ranged

between 30 minutes to 53 minutes to complete the 330 questions covering 5th-grade school experiences, childcare, parent characteristics, and child health (Tourangeau, Le, & Nord, 2005). This study focused on parent education and parent income information provided through the parent interview. The child's mother was the primary respondent (81%) of the interviews (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). For a validity measure, the field supervisor called 10% of the parents who were interviewed to verify the child's name, date of birth, sex, and seven questions from the parent interview. This validation process took approximately five minutes and was conducted by telephone (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).

Variables

Unique variable definition

There are certain variables that are unique to this study and need to be clarified.

1. English language learners (ELLs): ELLs were indicated with the variable ELL (1 = ELL, 0 = nonELL). The ECLS-K 5th-grade Mathematics Teacher Questionnaire item that served as the data source for this variable was mathematics teacher's response to if the student was receiving in-class or pull-out English as a Second Language service in 5th grade (G6PLLESL, G6INCESL). If they were receiving ESL services then the student was labeled as ELL, and the student was labeled non-ELL if they were not receiving ESL services. Second, only Hispanic ELLs were selected for this study. The variable of race was used to select Hispanic ELLs (R6RACE = 3 or 4).
2. Grouping: Three different groups of 5th-grade students in mathematics classrooms were developed. Group 0 was composed of White, non-ELLs 5th-grade students. Group 1 was Hispanic, non-ELLs 5th-graders in mathematics classrooms. Group 2 was composed of

5th-graders who were Hispanic and ELLs. The variable race (R6RACE = 1) and ELL (ELL = 0) was used to create Group 0. The variable race (R6RACE = 3 or 4) and ELL (ELL = 0) was used to create Group 1. The variable race (R6RACE = 3 or 4) and ELL (ELL = 0) was used to create Group 2.

Additional variables

3. Amount of mathematics instructional practices provided daily: mathematics teachers response to questions regarding how much time in a typical day do students spend on (a) teacher-directed, whole class activities (M6WHLCLS); (b) teacher-directed, small group activities (M6MLGRP); (c) teacher-directed, individual activities (M6INDVDL); and (d) student-selected activities (M6CHCLDS) instructional practices related to mathematics material, on a five-category scale: 1 = no time a day, 2 = half an hour or less a day, 3 = about one hour a day, 4 = about two hours a day, 5 = three hours or more a day.
4. Frequency of mathematics instructional practices as part of mathematics instruction: mathematics teachers response to questions regarding how often the student (e) solved mathematics problems from textbooks or worksheets (M6TEXTS); (f) solved mathematics problem from blackboards or overheads (M6PROBLM); (g) solved mathematics problems in small groups or with a partner (M6GRPPTN); (h) worked with measuring instruments, such as rulers (M6MSINST); (i) worked with manipulatives, such as geometric shapes (M6MANIPU); (j) wrote a few sentences about how to solve a mathematics problem (M6MWRITE); (k) discussed solutions to mathematics problems with other children (M6MDISC); (l) worked on and discussed mathematics problems that reflected real-life situations (M6PRBLIF); (m) used a computer for mathematics(M6MCOMP); and (n) used visual representation, such as models, tables,

and diagrams (M6VISUAL). Teachers rated these items on a four-category scale: 1 = almost every day, 2 = once or twice a week, 3 = once or twice a month, 4 = never or hardly ever.

5. 3rd-grade (C5R3MSCL) and 5th-grade (C6R3MSCL) IRT mathematics scores: The IRT is a criterion-reference measure that will provide information of the student's mastery and proficiency level at each level and also indicate where on the scale the child is gaining (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). Therefore, IRT scaled scores allows researchers to examine achievement gains across time and relating gains to variables. The Item Response Theory (IRT) scaled score of mathematics was used for 3rd-grade and 5th-grade mathematics achievement, because the IRT is a longitudinal measure of gain in achievement over time, despite time of administration and different assessments. The IRT scaled score estimated the student's performance if they would have been given all the items assessment by using patterns of correct and incorrect answers that are comparable across different assessments (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006).
6. Descriptive: Parents, mathematics teachers, and school administrators responded to descriptive questions of race, gender, socioeconomic status, parent education, ESL certified, type of school (public or private), and percent minority in school (R6RACE, R6GENDER, W5SESQ5, W5PARED, J61ESLCT, S6PUPRI, S6MINOR). These variables were used for a descriptive analysis of ELL and non-ELL and the different types of classrooms.
7. Composite scores: Fifth grade composite variables for race, gender, socioeconomic status, parent education, private and public school, school enrollment of 5th-grade,

percent minority in school, percent free lunch in school, and percent reduced lunch in school were obtained from the ECLS-K database (R6RACE, R6GENDER, W5SESQ5, W5PARED, S6PUPRI, S6MINOR). See Appendix 3.1 for 5th-grade composite variables descriptions.

Sample Extraction

First, we wanted to obtain a sample with complete data that was relevant to the research objectives. For example, we excluded students for which there was no information on whether or not he/she received ESL services in 5th-grade. We, furthermore, excluded those students whose teacher indicated the ESL service was not available for students in 5th-grade. Since we could not determine if the student needed ESL service to be classified as an ELL the student was excluded from the data set. We also excluded students whose mathematics teacher did not respond to the instructional practice variables on the questionnaire, and those students who did not have 3rd grade or 5th-grade IRT scaled scores of mathematics achievement based on the mathematics assessment.

Furthermore, we excluded students who did not have a response for any of the following descriptors; gender, type of school (public or private), and race of the student. We removed some students who did not provide information for socioeconomic status, certified ESL teacher, and parent's highest education.

Once we obtained the most complete sample possible, we attempted to stratify our sample based on race of the student, socioeconomic status, parent education, and type of school. Specifically, we selected (a) White, non-ELL (n=100), (b) Hispanic, non-ELL (n=100), and (c) Hispanic, ELL (n=100) students. Secondly, when stratifying our sample by socioeconomic status, we removed the fourth and fifth quintile. From this sample, we removed all the students

in private schools. Finally, we excluded those students whose parents had a doctorate or professional degree, masters degree, or some graduate or professional education. Appendix 3.2 and Appendix 3.3 further reports the descriptors of the random sample selected for this study.

A random sample of 100 White, non-ELLs and 100 Hispanic, non-ELLs and 100 Hispanic, ELLs was obtained from a sample of 3, 490 fifth grade student participants. One Hundred White, non-ELLs were randomly selected from a stratified sample of 750 White, non-ELLs. One Hundred Hispanic, non-ELLs were randomly selected from a stratified sample of 330 Hispanic, non-ELLs. One Hundred Hispanic, ELLs were randomly selected from a stratified sample of 110 Hispanic, ELLs.

The exclusion of students, through planned eliminating methods and random sampling, from the study raises concerns between our sample and the original ECLS-K sample. First, ECLS-K weights were not used in this study because the analytic weights were created for non-random attrition (Magnuson, Ruhm, & Waldfogel, 2007). Second, findings of this study should not be generalized because our sample is not a national representative of all U.S. 5^{th}-graders.

Participants

A subset of data from the Early Childhood Longitudinal Study-Kindergarten Cohort was used in this study. Three hundred participants of this study were randomly selected from 3,490 students in 5^{th}-grade. There are 100 White, non-ELLs and 100 Hispanic, non-ELLs and 100 Hispanic, ELLs. One hundred students were randomly selected for each group because after stratification there were only 100 Hispanic, ELL students to randomly select from. These 300 students' mathematics teachers, school administrators, and parents also participated in this study. Table 3.1 describes the sample size of ELLs and Non-ELLs by ethnicity.

Table 3.1

Random Sample of Non-ELLs and ELLs by Ethnicity

	Non-ELLs	ELLs	Total
White	100	0	100
Hispanic	100	100	200
Total	200	100	300

Statistical Procedure

We conducted a one-way ANOVA to examine the differences between (a) White non-ELLs and (b) Hispanic non-ELLs and (c) Hispanic ELLs and the quality of mathematics instruction they were receiving. If significant differences were found, then a post-hoc test was conducted to see which type of classroom differed in instructional practices.

For second research objective we conducted three different multiple regression analyses to examine the effects of the instructional practices, the independent variable, on (a) White non-ELLs and (b) Hispanic non-ELLs and (c) Hispanic ELLs mathematics achievement, the dependent variable, in 5^{th}-grade, after statistically controlling for 3^{rd}-grade achievement. We also conducted an overall multiple regression to examine the effects of instructional practices in which included all three groups of (a) White non-ELLs and (b) Hispanic non-ELLs and (c) Hispanic ELLs.

Operational Definitions

English Language Learners (ELLs): Students who are receiving English as a second language (ESL) support services (pull-out or/and in-class ESL programs) in 5th -grade. The federal definition provided by both *IASA* and *NCLB* define ELLs as individuals whose (A) language background is other than English, and (B) level of English language proficient negatively affects their ability to succeed academically (Rivera & Collum, 2004).

Non-English Language Learners (non-ELLs): Students who are not receiving ESL support services (pull-out or/and in-class ESL programs) in 5th-grade.

Results

This study examined the differences in mathematics instructional practices and effects of instructional practices on 5th-grade mathematics achievement among (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic-ELLs. As previously discussed, random sample of 300 students in 5th-grade mathematic classrooms was retrieved from the Early Childhood Longitudinal Study-Kindergarten Cohort.

Our first research question was to investigate if there are significant differences in mathematical instructional practices between the three groups of (a) White Non-ELLs and (b) Hispanic Non-ELLs and (c) Hispanic, ELLs. A one-way ANOVA was conducted to determine if there were significant differences by groups on the dependent variable of instructional practices (visual, computer, real-life, discussion, writing, manipulative, measuring, mathematics groups, blackboard, textbooks, student-selected activities, individual activities, teacher-directed small group, and teacher-directed whole class).

Table 3.2 reports the mean distribution of instructional practices conducted during mathematics class. The results indicate that the mean values are low (e.g., 1.0-2.0) for all the

instructional practices, suggesting there is not a lot of high-quality instruction being implemented in mathematics. There is also a great deal of variation of instruction between classrooms as evident by the large standard deviations.

Table 3.2

Instructional Practices Results Between Hispanic ELLs, White Non-ELLs, and Hispanic Non-ELLs

	Hispanic ELLs (n = 100)		White Non-ELLs (n = 100)		Hispanic Non-ELLs (n = 100)		ANOVA	
Instructional Practices	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	Probability
Teacher-directed, whole-class [a]	2.43	.807	2.47	.834	2.46	.673	.072	.930
Teacher-directed, small-group [a]	1.98	.635	2.04	.680	2.02	.603	.228	.797
Teacher-directed, individual [a]	1.89	.665	2.10	.704	2.00	.725	2.263	.106
Student-selected activities [a]	1.51	.577	1.52	.611	1.49	.611	.065	.937
Textbooks or worksheets [b]	1.21	.518	1.13	.338	1.14	.427	1.009	.366
Use of blackboard or overhead [b]	1.43	.742	1.40	.651	1.43	.769	.057	.944
Small groups or partner [b]	1.64	.835	1.80	.752	1.82	.845	1.476	.230
Measuring instruments [b]	2.44	.770	2.49	.674	2.50	.689	.204	.816
Manipulatives [b]	2.52	.810	2.43	.728	2.56	.820	.715	.490
Writing [b]	2.33	.888	2.43	.935	2.36	.990	.299	.742
Discussion with peers [b]	1.82	.936	1.78	.786	1.75	.857	.166	.847
Reflection of real-life situations [b]	1.86	.817	1.86	.817	1.94	.862	.308	.735
Use of computer [b]	3.23	.827	3.13	.928	3.13	1.070	.372	.690
Visual representation [b]	1.81	.775	2.03	.703	1.98	.841	2.216	.111

Key: [a] Means close to 5 indicate instruction is implemented 3 or more hours a day. Means close to 1 indicate the instruction is not implemented.

[b] Means close to 4 indicate instruction is implemented hardly ever or never. Means close to 1 indicated instruction is almost everyday.

The instructional practices of how much time the student's teacher spent on (a) teacher-directed, whole-class, (b) teacher-directed, small-group, (c) teacher-directed, individual activities, and (d) student-selected activities were rated on a 5-point Likert scale; 1= no time, 2 = half an hour or less, 3 = about an hour, 4 = about two hours, 5 = three or more hours. Teacher-directed, whole-class instruction demonstrated to have the highest mean (*M* = 2.45) and standard deviation (*M*=.772) in comparison to the other 5-point scale instructions. Hispanic ELLs had a mean of 2.43 (*SD* =.807), White Non-ELLs had a mean of 2.47 (*SD* =.834), Hispanic Non-ELLs had a mean of 2.46 (*SD* =.673). This suggests that mathematic teachers spent the most time implementing teacher-directed, whole-class instruction. Student-selected activities had the lowest mean (*M*=1.51, *SD*=.598) thus, indicating that it was used the least in the mathematic classrooms.

The instructional practices of how often students learned math with (e) textbooks or worksheets, (f) blackboards or overhead, (g) small groups or partner, (h) measuring instruments, (i) manipulatives, (j) writing, (k) discussion with other children, (l) mathematics problems reflect real-life situations, (m) computer, and (n) visual representation were rated by mathematic teachers on a 4-point Likert scale; 1=almost every day, 2=once or twice a week, 3 = once or twice a month, 4 = never or hardly ever used. Textbooks or worksheets were used the most for mathematics instruction (*M*=1.16, *SD* =.434) in comparison to the other 4-point Likert scale instructions. Specifically, Hispanic ELLs had a mean of 1.21 (*SD* = .518), White Non-ELLs had a mean of 1.13 (*SD* = .338), Hispanic Non-ELLs had a mean of 1.14 (*SD* = .427). This suggests that mathematic teachers spent the most time implementing textbooks for mathematics instruction than they were using more effective instructional practices. Computer activities had the lowest mean (*M*=3.16, *SD* =.945) and thus indicates that it was used the least in the

mathematic classrooms. The mean distributions among the groups also suggest there are little variances among the use of instructional practices.

The Levene's Test of Equality of Error Variances for textbook activities was significant (p=.021, df =2, 297, F =3.923), thus indicating homogeneity of variance cannot be assumed. Similarly, the Levene's Test of Equality of Error Variances for computer activities was significant (p=.003, df = 2, 297, F = 5.803). Table 3.3 reports the findings of Levene's Test of Equality of Error Variances.

Table 3.3

Levene's Test of Homogeneity of Variances

Instructional Practices	Levene Statistic	df1	df2	Probability
Teacher-directed, whole-class	.937	2	297	.393
Teacher-directed, small-group	.033	2	297	.968
Teacher-directed, individual	.438	2	297	.646
Student-selected activities	.256	2	297	.774
Textbooks or worksheets	3.923	2	297	.021*
Use blackboard or overhead	.697	2	297	.499
Small groups or partner	.833	2	297	.436
Measuring instruments	1.164	2	297	.314
Manipulatives	1.208	2	297	.300
Writing	1.164	2	297	.314
Discussion with peers	.925	2	297	.398
Reflection of real-life situations	.049	2	297	.952
Use computers	5.803	2	297	.003*
Visual representation	2.720	2	297	.068

*p<.05, significant

Table 3.4

One-way Analysis of Variance of Mathematical Instructional Practices

		SS	df	Mean Square	F	Probability	Eta Square
Teacher-directed, Whole class	Between Groups	.087	2	.043	.072	.930	0.0004
	Within Groups	178.260	297	.600			
	Total	178.347	299				
Teacher-directed, Small group	Between Groups	.187	2	.093	.228	.797	0.0015
	Within Groups	121.760	297	.410			
	Total	121.947	299				
Teacher-directed, Individual	Between Groups	2.207	2	1.103	2.263	.106	0.0150
	Within Groups	144.790	297	.488			
	Total	146.997	299				
Child selected	Between Groups	.047	2	.023	.065	.937	0.0004
	Within Groups	106.940	297	.360			
	Total	106.987	299				
Textbooks or Worksheets	Between Groups	.380	2	.190	1.009	.366	0.0067
	Within Groups	55.940	297	.188			
	Total	56.320	299				
Blackboard or Overhead	Between Groups	.060	2	.030	.057	.944	0.0003
	Within Groups	155.020	297	.522			
	Total	155.080	299				
Small groups or partners	Between Groups	1.947	2	.973	1.476	.230	0.0098
	Within Groups	195.800	297	.659			
	Total	197.747	299				
Measuring Instruments	Between Groups	.207	2	.103	.204	.816	0.0013
	Within Groups	150.630	297	.507			
	Total	150.837	299				
Manipulatives	Between Groups	.887	2	.443	.715	.490	0.0048
	Within Groups	184.110	297	.620			
	Total	184.997	299				
Writing	Between Groups	.527	2	.263	.299	.742	0.0020
	Within Groups	261.660	297	.881			
	Total	262.187	299				
Discussion with peers	Between Groups	.247	2	.123	.166	.847	0.0011
	Within Groups	220.670	297	.743			
	Total	220.917	299				
Reflect real-life situations	Between Groups	.427	2	.213	.308	.735	0.0020
	Within Groups	205.720	297	.693			
	Total	206.147	299				
Use computers	Between Groups	.667	2	.333	.372	.690	0.0025
	Within Groups	266.330	297	.897			
Visual representations	Total	266.997	299				
	Between Groups	2.660	2	1.330	2.216	.111	0.0147
	Within Groups	178.260	297	.600			
	Total	180.920	299				

Table 3.4 reports the results for the one-way ANOVA examining differences on mathematics instructional practices by student group. The results indicate that there were no significant differences by group on any of the instructional practices.

For the second research question, we conducted a multiple regression analysis to examine the effects of the instructional practices, the independent variable, on the 5th-graders mathematics achievement, the dependent variable, in 5th-grade, after statistically controlling for 3rd-grade mathematic achievement. Three different multiple regression analyses were conducted to examine the three different groups of students; (a) White non-ELLs, (b) Hispanic non-ELLs, (c) Hispanic ELL separately. Then we conducted an additional multiple regression analysis in which all groups were combined to examine the effects of instructional practices on mathematics achievement. Multicollinearity is not assumed due to the Tolerance and VIF result shown on Appendix 3.4 for the overall multiple regressions. There was no Casewise Diagnostic suggested any of the four multiple regressions.

The multiple regression examining the instructional practices and 3rd-grade mathematics achievement influence on White, non-ELLs mathematics achievement in 5th-grade was significant ($p<.001$, $df = 15, 84$, $F=17.099$) and 75.3% of the variance is explained. Table 3.5 reports the coefficients of this multiple regression.

Table 3.5

Non-ELLs, White Multiple Regression: Coefficients

	Unstandardized Coefficients B	Standardized Coefficients Beta	T	Probability	Tolerance
3rd grade mathematics	.934	.872	14.51	.000	.814
Teacher-directed, whole class	-1.801	-.071	-.94	.348	.514
Teacher-directed, small group	-1.796	-.058	-.72	.473	.453
Teacher-directed, individual	.682	.023	.34	.736	.650
Student-selected activities	.514	.015	.21	.831	.608
Textbooks or worksheets	-.764	-.012	-.19	.849	.716
Blackboards or overheads	-.134	-.004	-.07	.947	.769
Small groups or partner	-1.057	-.038	-.46	.645	.442
Measuring instruments	.731	.023	.33	.745	.572
Manipulatives	1.059	.037	.49	.629	.515
Writing	.579	.026	.41	.681	.755
Discussion with peers	-2.379	-.089	-1.10	.276	.447
Reflection of real-life situation	.306	.012	.15	.880	.479
Computer	-.041	-.002		.977	.776
Visual representations	-.519	-.017	-.25	.807	.589

$R^2 = .753$

The Beta standardized coefficients for 3rd-grade mathematics achievement was the only variable found to be statistically significant (*Beta* = .872, *t* = 14.514, *p*<.001). In other words, the 3rd-grade mathematics achievement (*Beta* = .872) of White, non-ELLs contributes the most to the explained 5th-grade mathematics achievement. The standardized beta coefficients indicate

solving problems from the blackboard or overhead (*Beta* = -.004) and using computers for mathematics (*Beta* = -.002) contributed the least to White, non-ELLs 5th-grade mathematics achievement.

In the second multiple regression, Hispanic, non-ELLs mathematic achievement in 5th grade was significant ($p<.001$, df =15, 84, F=23.394) and 80.7% of the variance is explained. Table 3.6 reports the coefficients.

Table 3.6

Results for Non-ELLs, Hispanic Multiple Regression

	Unstandardized Coefficients B	**Standardized Coefficients Beta**	**t**	**Probability**	**Tolerance**
3rd grade mathematics	.914	.859	16.662	.000	.865
Teacher-directed, whole class	3.812	.114	1.896	.061	.631
Teacher-directed, small group	.213	.006	.095	.924	.638
Teacher-directed, individual	-1.770	-.057	-.896	.373	.564
Student-selected activities	.706	.019	.345	.731	.738
Textbooks or worksheets	-2.884	-.055	-1.019	.311	.791
Blackboard or overhead	-1.788	-.061	-1.055	.295	.680
Small groups or partner	.247	.009	.162	.872	.696
Measuring instruments	2.250	.069	1.209	.230	.703
Manipulatives	-1.683	-.062	-1.011	.315	.619
Writing	- 1.224	-.054	-.926	.357	.675
Discussion with peers	-.973	-.037	-.475	.636	.375
Reflect real-life situations	.337	.013	.167	.868	.381
Computer	-.876	-.042	-.757	.451	.753
Visual representations	1.720	.065	1.039	.302	.596

R^2 = .807

The Beta standardized coefficients for 3rd-grade mathematic achievement was the only variable that was found to be statistically significant (*Beta* = .914, *t* = 16.662, *p*<.001). In other words, the 3rd-grade mathematics achievement (*Beta* = .914) of Hispanic, non-ELLs contributes the most to the explained 5th-grade mathematic achievement. The standardized beta coefficients indicate teacher-directed, small group (*Beta* = .006) and mathematics group activities (*Beta* = .009) contributed the least to Hispanic, non-ELLs 5th-grade mathematics achievement.

Findings of the third multiple regression suggest Hispanic, ELLs mathematic achievement in 5th-grade was significant (*p*<.001, *df*=15, 84, *F*=14.379) and 72% of the variance is explained. Table 3.7 reports the coefficients.

The Beta standardized coefficients for 3rd-grade mathematic achievement was significant (*Beta* = .913, *t* = 13.019, *p*<.001). Solving mathematics problems from the blackboard or overhead was also significant (*Beta* = -.148, *t* = -2.266, *p*=.026). There is a negative correlation indicating the 5th-grade student's achievement in solving mathematics problems decreased with the use of blackboard or overhead projectors. The 3rd-grade mathematics achievement (*Beta* = .913) of Hispanic, ELLs contributes the most to the explained 5th-grade mathematic achievement. The standardized beta coefficients indicate teacher-directed, individual activities (*Beta* = .004) and working with manipulatives (*Beta* = -.001) contributed the least to Hispanic, ELLs 5th-grade mathematics achievement.

A final multiple regression was conducted to examine if instructional practices in the 5th - grade mathematics classroom influenced the student's mathematics achievement, and all groups were combined in this analysis to represent 5th-graders who were White, non-ELL and Hispanic, non-ELL and Hispanic, ELL. The groups mathematic achievement in 5th-grade was significant

(p<.001, df =15, 284, F=63.620) and 77.1% of the variance is explained. Table 3.8 reports the multiple regression results.

Table 3.7

Results for Hispanic, ELLs Multiple Regression

	Unstandardized Coefficients B	**Standardized Coefficients Beta**	**t**	**Probability**	**Tolerance**
3rd grade mathematics	.913	.797	13.019	.000	.889
Teacher-directed, whole class	-1.353	-.051	-.725	.471	.671
Teacher-directed, small group	1.828	.054	.712	.479	.572
Teacher-directed, individual	.130	.004	.055	.957	.610
Student-selected activities	2.631	.071	1.099	.275	.798
Textbooks or worksheets	3.296	.080	1.168	.246	.712
Blackboards or overheads	-4.273	-.148	-2.266	.026	.779
Small groups or partners	3.351	.131	1.693	.094	.558
Measuring instruments	1.083	.039	.488	.627	.523
Manipulatives	-.021	-.001	-.009	.993	.397
Writing	.931	.039	.459	.648	.469
Discussion with peers	-.955	-.042	-.473	.637	.427
Reflect real-life situations	-2.276	-.087	-1.018	.311	.457
Computer	-.732	-.028	-.395	.694	.650
Visual representations	-1.173	-.043	-.550	.584	.558

R^2 = .72

Table 3.8

Results for All Students Multiple Regression

	Unstandardized Coefficients B	*Standardized Coefficients Beta*	*t*	*Probability*	*Tolerance*
3rd grade mathematics	.947	.872	29.460	.000	.921
Teacher-directed, whole class	-.399	-.013	-.391	.696	.680
Teacher-directed, small group	.002	.000	.002	.999	.603
Teacher-directed, individual	-.143	-.004	-.126	.900	.665
Student-selected activities	.611	.016	.517	.606	.842
Textbooks or worksheets	-.321	-.006	-.199	.843	.857
Blackboard or overhead	-2.264	-.071	-2.308	.022	.845
Small groups or partner	1.274	.045	1.275	.203	.638
Measuring instruments	1.283	.040	1.146	.253	.667
Manipulatives	-1.331	-.046	-1.251	.212	.601
Writing	-.054	-.002	-.064	.949	.685
Discussion with peers	-1.578	-.059	-1.483	.139	.503
Reflect real-life situations	-.152	-.006	-.139	.889	.513
Computer	-.309	-.013	-.415	.679	.851
Visual representations	.187	.006	.183	.855	.673

$R^2 = .771$

The Beta standardized coefficients from 5th-grade mathematics achievement to 3rd-grade mathematic achievement was significant (*Beta* = .872, *t* = 29.460, *p*<.001). Solving mathematics problems from the blackboard or overhead was also significant (*Beta* = -.071, *t* = -2.308, *p*=.022). Again there is a negative correlation indicating the 5th-grade student's achievement in

solving mathematics problems decreased with the use of blackboard or overhead projectors. The 3rd-grade mathematics achievement (*Beta* = .872) contributed the most to the explained 5th-grade mathematic achievement. The standardized beta coefficients indicate teacher-directed, small group activities (*Beta* = .000) and how often students wrote a few sentences about how to solve a mathematic problem (*Beta* = -.002) contributed the least to the student's 5th-grade mathematics achievement.

Discussion

This research study emphasized how student's opportunities of learning mathematics are being limited through classroom instruction. The findings of this study suggest 5th-grade students are receiving more teacher-directed, whole-class instruction. In a similar study, Chang (2008) found students were exposed most of the time to whole-class instruction, but additional attention is needed for ELL students (Chang, 2008). It has been suggested that whole-class instruction is often present in classrooms and this type of "passive" instruction is not beneficial for students (Waxman, Padrón, & Lee, 2008). Similarly, students were also exposed almost every day to mathematics textbooks or worksheets in comparison to the other instructional practices examined in this study. The overuse of textbooks or worksheets has been reported by several researchers to hinder the student's mathematical understanding and performance (Bush & Johnstone, 2003; Guthrie, et al., 2004; Pincus, 2005). However, Pincus (2005) suggests if textbooks or worksheets will be used often in a classroom, then teachers need to ensure the textbooks or worksheets are effectively targeting the learning objective so the students can at least practice. Despite researcher's findings that workbooks and textbooks limit students, especially ELL, opportunities to learn, the ANOVA results of this study revealed workbooks and textbooks had a significant contribution to the student's mathematics achievement.

Following the same instructional emphases, student-selected activities and the use of computers are being used the least during mathematic instruction. Despite the lack of computer use, results revealed the use of computers for solving mathematics problems had a significant contribution to the student's mathematic achievement. Researchers have found that computer activities increase the student's achievement, interest in the subject, and problem-solving skills (Hickey, Moore, & Pellegrino, 2001; NAMP, 2008). Therefore, increasing the use of computers in the classroom will only continue to enhance the student's mathematic achievement. There is a need for further empirical studies of educational technology demonstrating effective ways to use new technology rather the conventional methods (Hickey, Moore, & Pellegrino, 2001).

Our study also found that student's mathematics achievement in previous grades directly impacts the student's achievement in future grades. If the student did poorly in third grade they were likely to follow the same pattern in 5^{th}-grade. These results were indicative for all three groups; (a) White non-ELLs, (b) Hispanic, non-ELLs, and (c) Hispanic ELLs. Furthermore, solving mathematics problems from the blackboard or overheard decreased Hispanic ELLs mathematical understanding and performance. This could be because Hispanic ELLs were nervous to perform in front a group or they did not understand the instruction. It was expected that manipulatives and individual activities would have a significant, positive impact on Hispanic, ELLs mathematics achievement. The results of this study, however, indicated individual activities and manipulatives contributed the least to Hispanic, ELLs mathematics achievement. Perhaps manipulatives did not help Hispanic, ELLs because these students have limited English language proficiency and did not understand the teaching target behind using the manipulatives despite increasing exposure to manipulatives (Alecio, 1998). In a similar study, Chang (2008) found individual activities slightly improved ELL mathematics achievement,

except for this Hispanic ELL. Chang (2008) also found that individual activities required more teacher time and support with ELL in order for the student to learn to the maximum potential Krashen and Terrell (1983) explain that ELLs need much exposure to math and English language in order to respond to the teacher's guidelines. ELLs typically go through a silent period to the listen and process information of mathematics.

The national standards need to ensure all students meet high academic standards, thus, we need to provide students with the opportunities to achieve high learning through effective instructional practices (e.g., using manipulates, computer activities, and discussions) and schools need to recognize and implement ways to help students meet these standards, such as through effective instruction (Burris, Heubert, & Levin, 2006). For Hispanic, non-ELL, Hispanic, ELL, and White, non-ELL small groups and writing a few sentences about how to solve mathematics problem contributed the least to their 5^{th} -grade mathematics achievement. These findings are similar to researchers statement that literacy and mathematics are directly correlated to the students 5^{th} -grade mathematics achievement (Digsi, 2005; Garcias, 2003; Winsor, 2007). These results are reflective on educators and future policymakers practices of effective instructional practices in the classroom. For example, more student-centered and small group instructional practices are needed.

Limitations

There are several limitations when working with secondary, large-scaled database, such as ECLS-K. The researcher, for example, needs to fully understand the purpose of the project, collection methods, the database variables the project involves, and familiarity with previous research. The researcher needs the statistical expertise to effectively evaluate the data; such as performing imputations for missing data, dummy coding variables, and using appropriate

weights. The statistical analysis approach taken may affect the results when using secondary data, and there may be several statistical methods to answer a research question that may affect the results differently. Correlational analysis is the typical statistical analysis conducted with secondary data (Chatterji, 2005; Chatterji 2006). Associations made during analysis may be a result of omitted variable bias and may not reflect a causal relationship. Due to the lack of causal inference, policy recommendations are limited (Hong & Raudenbush, 2005; Kainz & Vernon-Feagans, 2007; McCoach, O'Connell, Reis, & Levitt, 2006; Paik, 2003).

Missing data is often a problem when using secondary data, and this can make it difficult conduct longitudinal analyses (Chatterji, 2006; Kainz & Vernon-Feagans, 2007; McCoach, et al., 2006; Son & Meisels, 2006). Missing data can be attributed to limited language proficiency, mobility, refusal of participation, no response, not applicable to the individual, and missed appointments.

The use of teacher questionnaires is supported as researchers have investigated data obtained through teacher questionnaires to be more valid in comparison to observations (Camburn & Barnes, 2004). The 5^{th} -grade teachers responded to questionnaires with extensive items, but teachers did not have the opportunity to provide additional information or reply to open-ended questions. There is a potential for teacher's response to be bias if the teacher had a lack of experience of working with ELLs. The teacher questionnaires also did not provide specific content-based instructional practices for previous grades. Therefore, we were not able to conduct longitudinal analysis and focused on 5^{th} -grade, content-specific mathematics.

The results in this study suggest teachers are not using specific mathematic instruction and/or there is a lack of variance of mathematical instruction in the classroom. This may be a result of lack of professional development and strategic mathematic instruction. Teachers may

also have defined differently instructional practices. One teacher, for example, may have rated visual aide as students using textbooks rather than students being exposed to visual modifications (e.g., graphic imagery, charts, and drawing).

The ECLS-K has limited information of language minority children due to the exclusion of literacy assessments from English Language Learners (Magnuson, et al. 2006; Rathbun, West, & Walston, 2005). English proficiency screening excluded non-English proficient students from literacy assessments until they were able to pass the English screening. Some non-English proficient students were given Spanish mathematics assessment. The language of instruction in the classroom was omitted from this study because of the small percentage of students receiving a different language of instruction in 5th -grade. Less than 1.5% of the students in this study were receiving math instruction in Spanish.

This study concentrates on 5th -graders in order to include all ELLs mathematics performance and mathematics instructional practices. Future studies should explore content specific information of instructional practices for additional grades, especially early education. This study was also limited to school factors, but familial and child development factors that affect the schooling of ELLs needs to be examined. Furthermore, studies should be conducted to include specific qualitative data that cannot be collected through quantitative methods, such as student's classroom practices, behaviors, social skills, and time-on task. In addition, future studies should include exploring mathematics and literacy simultaneously for patterns and correlations between the two content-specific instructions. Researchers have indicated that language proficiency increases math skills and poor literacy skills (e.g., reading comprehension and vocabulary) will result in poor math skills (Chang, 2008; Ganesh & Middleton, 2006; Garcias, et al., 2003; Johanning, 2008; Winsor, 2007). Implications for future research and

practices include early school programs to assist with language development, transitions, and performance gaps. This study is a step forward for researchers and educators to promote and implement effective mathematical instruction in the mathematical classrooms for the academic achievement of ELLs and non-ELLs.

Conclusion

Although we expected differences in mathematics instructional practices among (a) White non-ELLs, (b) Hispanic non-ELLs, and (c) Hispanic-ELLs, the results did not support our hypothesis of significant effects in "active learning" instructional practices, such as discussions and computers (Ernst-Slavit & Slavit, 2007; Hickey, Moore, & Pellegrino, 2001; NAMP, 2008; Winsor, 2008). Our results may be a reflection of the prevalence use of these instructional practices across classrooms. Despite these results researchers need to continue to examine how ELL students improve their mathematics achievement. Is this because of effective instructional practices? It is because of drill-and-practice instruction in the classrooms? How are ELL students learning in a classroom to academically succeed? Education policies need to focus on the academic outcome of the student instead of the quality of education, such as effective instructional practices for the specific student population.

Mathematics is considered to be a universal language that requires students to master knowledge through practicing and processing abstract information (Gutierrez, 2002). ELLs, however, have different cultural and linguistic background compared to mainstream students in which require additional instruction Darling-Hammond, 2003. It is important for teachers to understand why certain instructional practices are effective and know how to implement effective teaching practices in the classroom in order to create a positive learning environment and promote high-quality learning for all students.

CHAPTER IV

COGNITIVE SKILLS, FAMILY EXPECTATIONS, CAREGIVER ARRANGEMENTS, AND HOME ENVIRONMENT FACTORS DIFFERENTIATING RESILIENT AND NON-RESILIENT HISPANIC PRESCHOOLERS

Introduction

The minority population attending public schools has rapidly increased from 22% in 1972 to 43% in 2006 (Planty, Hussar, Snyder, Provasnik, Kena, Dinkes, Kewal-Ramani, & Kemp, 2008). Among the minority students, Hispanics are the fastest growing population in US schools (Carrasquillo & Rodriguez, 2002). Unfortunately, many Hispanic students are underachieving in school and they often live in disadvantaged home environments (e.g., poverty, inadequate housing, and lack of nutrition) (Waxman, Padrón, & Garcia, 2007). For quite some time, the severe achievement gap between Hispanic students and their white peers have been researched and brought to attention (Jencks & Phillips, 1998; Lee, 2002). In the 2007 National Assessment of Educational Progress (NAEP), for example, Hispanic fourth grade students scored 21 points below their white counterparts in the area of mathematics, while Hispanic eight grade students scored 26 points below Whites (U.S. Department of Education, 2007). In addition, researchers have found that Hispanic students are entering kindergarten with lower mathematics and literacy skills than their non-Hispanic, White peers (Reardon & Galindo, 2008).

The educational achievement and attainment of Hispanic students is also impacted by the classroom instruction (Waxman, Padrón, & Garcia, 2007). Hispanic students, for example, face different challenges (e.g., simultaneously learning a second language and learning in traditional

academic content) and have different needs (e.g., maintaining their culture and interactional instruction) than typical White students (Gersten & Jimenez, 1998; Waxman, Padrón, & García, 2007). The different instructional needs of Hispanic students have required researchers to examine what constitutes effective instruction for Hispanic students. Research has found that it is important for Hispanic students to receive effective instructional practices in the classroom; such instructional includes: (a) frequently encouraging students, (b) spending more time on questioning, cueing, and prompting students to respond, (c) increasing student involvement, (d) providing instruction that is less passive, whole-class instruction, (e) having high expectations for students, (f) incorporating their culture, (g) providing technology-enriched instruction, (i) incorporating the use of instructional conversation, (j) using cognitively guided instruction, and (k) cooperative learning (Waxman, Padrón, & García, 2007). The instructional and classroom learning environment has the potential to improve Hispanic student's education and opportunities by developing a positive learning environment, targeting Hispanic student's needs and supporting common goals of Hispanic student's academic success.

In addition to the instructional and classroom learning environment, the home environment of Hispanic students also impacts their academic and social development. Poverty, for example, creates difficult situations and puts the child in a disadvantaged position. Students who experience poverty are more likely to be attending schools with peers of low socioeconomic and lack of adequate resources of teaching, professional development, safety, and nutrition. According to Liagas and Snyder (2003), Hispanic children are three times more likely to come from poverty households as compared to their white peers. In low socioeconomic status households, the child is more likely to lack proper nutrition, adequate housing, safety, and good health services. Despite the fact that Hispanic parents having high academic expectations for

their children, Hispanic parents often are less involved with their child's academic progress (e.g., reading to them and helping with homework) because both parents are employed and work long hours in order to provide for their families, lack formal education, or lack English proficiency (Téllez & Waxman, 2006b).

Despite coming from at-risk home and school environments, many Hispanic students are successful in school. These students are often referred to as "resilient" because they have overcome many obstacles and become successful in school and life. The following sections describe some of the recent research on educational resilience.

Educational Resilience Research

From an early age, children are continually faced with new developmental cognitive, motor, social, and emotional challenges (Perry, 2002). Some children, however, experience greater challenges than others; such as issues associated language development, English proficiency, poverty (lack health, safety, housing, nutrition), single-parent home, low-quality child care, segregated community/school, mental health problems in the family, substance abuse, home alone after school, and student teacher alienation. Researchers need to explore what makes some children tolerant of these challenges while other children do not do as well. There are a number of protective factors (list here), that have been reported to help children meet the challenges that they face in their live. These protective factors have been reported to help students overcome challenges in their life and become successful or resilient (Perry, 2002). Children are not born resilient, but rather they develop essential skills they need to overcome hardships and obstacles (Perry, 2002). They need to develop these skills and coping mechanisms in order to positively impact the development of peer relationships, academic achievement, and future life outcomes (Perry, 2002). Resilience is not limited to a single factor, but it is promoted

through positive interactions with the social-ecological environment of the child, family, peers, school, and community (Judge, 2005; Pianta & Walsh, 1998). There are individual attributes (e.g., temperament, belief in a bright future) in children that help him/her overcome difficult situations (Boyden & Mann, 2005). However, resilience is not a fixed attribute because children develop over time and can react differently to a given situation (Reis, Colbert, & Hebert, 2005). Resilience has been defined by many researchers as others as a transactional process in an ecological framework of the child, family, school, and community (Barton, 2005; Neihart. 2001).

There are various definitions and descriptions of resilience (Reis, Colbert, & Hebert, 2005). Waxman (1992), for example, argues that educational resilience must be present for some students in order for them to be successful in schools, especially schools that are at considered to be at risk educationally. Resilience has also been defined as an individual's ability to develop protective skills (e.g., communication, problem skills, coping mechanism, self-discipline, pro-social behavior, and self-control) and competence to attain a better or normal cognitive and social development, despite their exposure to risk and adverse conditions (LeBuffe, 2002; Lynch, Geller, & Schmidt, 2004; Waxman, Gray, & Padrón, 2004; Werner, 2000). Social-emotional and mental health also helps shape resilience in children. Conway and McDonough (2006), for example, found that resilient children were not associated with anxiety or depression in preschool.

Resilient children share similar characteristics, such as social competence (demonstrated through social interactions and friendships), good academic performance, participation in hobbies and activities, and reflective behaviors rather than impulsive behaviors. Werner (2000) found resilient boys and girls shared common traits, such as having: (a) various coping strategies,

(b) beliefs that they could positively impact the environment, (c) reflective behaviors, and (d) the ability to develop good relationships with peers and adults.

Judge (2005) found that resilient children often attended center-based child care, had parents who had high educational expectations, were frequently read to (home literacy environment), had good behavior, good social skills, internalize behaviors, and good interpersonal skills. Similarly, Bennett, Elliott, & Peters (2005) highlights the negative impact of low socioeconomic status, minority status, and single-parent household on the child's development of resilience. Resilience can be promoted by increasing their social skills, expectations, resources, challenges, parent involvement and opportunities, while simultaneously decreasing stressors, risk, and vulnerability (Waxman, Gray, & Padrón, 2004).

Resilience is also developed through the attention, encouragement, and positive praise of caregivers, family, and teachers (Perry, 2002). Werner (2000) found resilient children from an early age developed positive relationships with skilled peers and adults. Thus, resilience in students is fostered by various indicators, such as personal characteristics (e.g., behaviors), familial characteristics, supportive relationships, involvement of a caring adult, community support and involvement, high expectations, and school environments that are enhancing the student's opportunities in school and the future (Lynch, Geller, & Schmidt, 2004; McMahon, 2007; Werner, 2000).

Children need exposure to challenges in order to develop their skills and resiliency (Perry, 2002). Students, for example, should be involved in activities within the school and home environment that promote leadership skills, enhance self-esteem, and develop positive relationships (Westfall & Pispaia, 1994). Children engaging in activities (e.g., athletic, music, dance, drama, and art) and new experiences are more likely to develop resilient traits (Perry,

2002). In schools, teachers who provide students with high expectations in a supportive classroom environment foster children's skills and resilience (Reis, et al., 2005; Wang, 1998; Waxman, Gray, & Padrón, 2004).

The present study: (a) identifies protective and risk factors of resilient and non-resilient Hispanic preschool children, and (b) examines the extent that cognitive skills (literacy and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics differentiate resilient and non-resilient Hispanic preschoolers. Resilient students are able to succeed in school, social life, and future endeavors despite being at-risk due to factors such as limited English proficiency, home environment, lack of resources, and other factors hindering their opportunities. The degree to which protective factors, such as cognitive skills, home learning environment, childcare arrangements, parental expectations, language exposure, and family demographics, influence or predict resilience is examined in this study. The following sections will summarize some of the relevant resilience research in the areas of school environment, parents, caregivers, and students at-risk of academic failure.

Research on School Environment and Resilience

The No Child Left Behind Act requires academic standards to close the achievement gap between high-performing and low-performing children, especially minority and non-minority students, and between disadvantaged children and their more advantaged peers (U.S. Department of Education, 2002b). Minority students, such as English Language Learners, are of particular concern, because research has indicated that achievement gaps persist among minority students and English language learners (Paik & Walberg, 2007; Waxman, Padrón, & García, 2007).

School can be a stressful environment for students, especially for some Hispanic students such as English Language Learners (ELLs) who are learning a new language. When students are entering kindergarten, they often are presented with new experiences and the challenges of schoolwork, classroom structure, English language demands, and social play. The school environment can foster a student's resilience and impact their academic development while reducing stressful factors (Perry, 2002; Waxman & Chen, 2006).

In a study of fourth- and fifth-grade ELLs, for example, Padrón, Waxman, Powers, and Brown (2002) found that resilient students had higher academic competence, more positive relationship with their teachers, stronger reading strategies, higher self-concept, better attendance, and displayed more "on-task" behaviors compared to non resilient ELLs. In another classroom study of resilience, Bennett, Elliott, and Peters (2005) investigated kindergarten students' resilience in relation to classroom and family effects using the Early Childhood Longitudinal (ELCS) data. They found that good behavior in the classroom and adequacy of classroom supplies predicted student's resilience, and furthermore allowed students to overcome any adverse home conditions (Bennett, Elliot, & Peters, 2005).

Rouse's (2003) findings suggest resilient middle school children had more positive beliefs of their academic environment than nonresilient students. Similarly, in another study resilient ELLs perceived a more positive instructional learning environment than non-resilient students (Padrón, Waxman, Brown, & Powers, 2000). When students have a positive belief of their academic environment (e.g., support to achieve academic goals), they can positively impact their academic achievement, motivation, adaptability, and overcome challenges (Rouse, 2003). Perry (2002) also reported that resilient children feel they are special and believe in a positive future.

Research on Resilience and Parents and Caregivers

Parenting is one of the critical variables that can significantly affect the development of a child (Horning & Rouse, 2002). It has been suggested that authoritative parenting can promote resilience in children (Horning & Rouse, 2002). Parents of resilient children have been shown to have high expectations for their children, developed supportive relationships with their children, and involved in their child's academic learning through extracurricular activities and active home learning environment (LaForett, 2000).

Research, for example, has indicated when parents read to their children it has a positive effect on children's literacy outcomes (Denton, Reaney, & West, 2001; Snow, Burns, Griffin, 1998). In Judge's longitudinal study (2005) using Early Childhood Longitudinal Study (ECLS) data, she found that resilient children had attended center-based child-care, richer literacy home environments, and higher parental expectations than nonresilient children. Similarly, research has found that children who attended high-quality, center-based preschool arrive at kindergarten with higher achievement and children's experiences with early literacy activities, such as parents taking the children to the library and reading to them, had a significant impact on the child's cognitive and language development (Burchinal et al., 2000; Lee & Burkam, 2002; Ramey et al., 2000). Similarly, Bennett and colleagues (2005) found that children who read at home and had higher parental involvement had more positive social and behavior outcomes. This may be attributed to the parent's critical role in children's literacy development (Cairney & Munsie, 1995; Chomsky 1972; Snow et al., 1991).

Early in life, children learn how to connect and relate to others through social interaction. Conway and McDonough's (2006), for example, found that mother's sensitivity during infancy significantly impacted resilience during preschool. This interaction begins with the caregiver

and can serve as a support system to enhance future social and emotional connections. A child's capacity to deal with stressful situations, increase academic competence, and reducing behavior problems can be influenced by positive interaction with the caregiver or parent (Bennett, Elliott, & Peters, 2005; Perry, 2002). Furthermore, research has indicated that quality childcare can promote academic development (Burchinal, Roberts, Riggins, et al., 2000).

Students At Risk of Failure

Developing resilience is especially important for children from high-risk backgrounds and stressful environments (e.g., low socioeconomic status, limited English proficiency, parenting, and single-parent families) because they can use their skills and motivation to overcome any adversity. Bennett, Elliot, and Peters (2005) reported student's at-risk background factors of low socio-economic status and single-parent home predicted behavior problems and decrease of self-control. Furthermore, researchers have indicated a significant relation between educational success and family income (Paik & Walberg, 2007). Oades-Sese and Esquivel (2006) investigated resilience and vulnerability in socio-economically disadvantaged Hispanic preschool children by studying cognitive, psychosocial, and cultural-linguistic factors. Their findings suggest a within-group difference in resilience and a significant difference of the maintenance of home language in the children's social-emotional development (e.g., emotion regulation, decreased inhibition and negative emotion) (Oades-Sese & Esquivel, 2006). These and other studies suggest that children at risk can decrease negative influences through the assistance of environmental and individual factors (Lynch, Geller, & Schmidt, 2004).

Implications

Building or developing resilience skills through multiple protective factors in children is the responsibility of families, schools, and communities working together. Programs, for

example, can include after-school activities, mentoring for children (Israelashvili & Wegman-Rozi, 2003), supportive resources for parents (e.g., daycare, counseling, and parenting workshops), and opportunities to build relationships (Horning & Rouse, 2002). Multiple approaches need to be taken to build resilience because children are placed in different at risk situations, such as environmental, lack or resources, and lack of support.

Educators need to create and maintain school and classroom environments that will promote empowerment and resilience for all students, despite being socially or economically at risk. Teacher-implemented, classroom-based programs, for example, can increase protective factors in children (LeBuffe, 2002). Educators can also provide: (a) challenging and relevant curriculum, (b) emotional, academic, and social support, and (c) have high expectations for all students.

It is important for educators to create relationships and a supportive classroom environment for their students (Bennett, Elliott, & Peters, 2005). McMahon (2007) reports that students, parents, and teachers were significantly impacted by the relationships, connectedness, and feelings of the community in which the school portrayed. This emphasizes the importance for educators and parents to create a positive learning environment based through support, involvement, and relationships.

Early childhood and other educational interventions should decrease the exposure of risk factors, increase protective factors (e.g., activities, parental involvement, and high expectations), and increase resources in vulnerable children's lives. Early intervention programs, policies, and educators, however, need to target resources and protective factors for resilience development as early as possible (e.g., preschool or earlier) in order to create the foundation of academic skills and attainment of social-emotional skills (Bennett, Elliott, & Peters, 2005; Judge, 2005; Lynch,

Geller, & Schmidt, 2004). Early intervention promoting resilience can help students make a smooth transition to elementary school (Israelashvili & Wegman-Rozi, 2003). However, there is a lack of specific interventions promoting resilience in young children (Israelashvili & Wegman-Rozi, 2003). It is also essential that early intervention programs provide protective resources for young, vulnerable children (Lynch, Geller, & Schmidt, 2004; Werner, 2000).

Intervention can also be seen as a prevention program to reduce the impact of risk factors to a child's development. Lynch and colleagues' (2004) longitudinal study suggested an early prevention program, Al's Pals, helped children develop and practice self-regulation and problems skills. The findings also suggested the intervention, beginning in preschool through early elementary grades, promoted children's social-emotional competence and positive coping skills while suppressing their aggressive and anti-social behavior. Devereux Early Childhood Assessment (DECA) program is another example of a preschool prevention program designed to promote social and emotional well being in children, thus increasing resilience. DECA incorporated a social-ecological approach into the program by focusing on the classroom and child in the environment, activities, experiences, supportive interactions with children, and partnerships with families (LeBuffe, 2002). Le Buffe's (2002) findings suggest protective factors significantly increased and behavioral concerns decreased in preschool children. Overall, educational policies and programs can influence educational practices to foster resilience in all children, especially those at risk.

Resilient students generally come from the same disadvantaged social, economic, and educational environments as less-successful or nonresilient students. Resilient students, however, generally develop effective strategies to overcome adversities. Early intervention and prevention programs can aide in developing and maintaining resilience in all children. It is essential for

parents and educators to promote from an early age internal and external factors of resilience in children in order to positively impact the development of all children's competence and social skills.

Purpose of This Study

The purpose of this study is to examine the extent to which some Hispanic students demonstrate factors of resilience in preschool. More specifically, this study examines differences between resilient and non-resilient Hispanic preschool students on cognitive skills, school readiness, home learning environment, child-care arrangements, parental expectations, and family demographics. For the purpose of this study the most pertinent definition of educational resilience is "the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences" (p. 46; Wang, Haertel, and Walberg, 1994). More specifically, the present study examines certain risk and protective factors that may distinguish resilient and nonresilient Hispanic students. Some of the negative risk factors that have been found to promote negative outcomes are: (a) temperament problems (i.e., temper tantrums), (b) not being engaged in school work (i.e., difficulty concentrating), and (c) social problems and disruptive behavior (i.e., annoys other children, destroys other things, physically aggressive, gets angry easily, and acts impulsive) (Benard, 2004; Condly, 2006). On the other hand, some of the protective factor that have been found to promote positive outcomes include: (a) socially apt (i.e., tries to understand others, makes friends easily, invites other children to play, shares with others, invited to play with others, liked by others, comforts other children), (b) engaged and attentive during school (i.e., keeps working until finished and pays attention well), (c) eagerness to learn new things, and (d) working or playing independently (Benard, 2004; Condly, 2006).

Despite the ability for resilience to develop from an early age, most research on resilience has focused on older elementary grades and adolescence and few have studied resilience in preschool children and the extent that various factors promote resilience (Israelashvili & Wegman-Rozi, 2003; Lynch, Geller, & Schmidt, 2004; Werner, 2000). There are also limited investigations focusing on comparisons between resilient and nonresilient preschool children (Judge, 2005) and positive outcomes of resilient children. Similarly, there are few studies that have compared resilient and nonresilient Hispanic students (Waxman, Huang, & Padrón, 1997).

Another important contribution of this study centers on the identification of resilient students. The present study uses a composite of many variables that other studies have found to be characteristic of resilient students. Many of the prior studies on resilience have used single criteria to identify resilient students such academic achievement, student grades, or teacher nomination. Studies using single criteria, however, are often considered problematic because they may be dependent on narrow and/or unreliable measures (Rivera & Waxman, 2007).

This study may contribute to the research in this area by helping identify resilient factors that promote Hispanic preschool student's success. Subsequently, these factors may be used for developing educational interventions in early childhood programs (Crosnoe, 2005; Lynch, Geller, & Schmidt, 2004; McMahon, 2007; Waxman, Huang, & Padrón, 1997). Furthermore, the findings may help educational policymakers, teachers, and school personnel understand why some students are successful in school despite coming from stressful at-risk home and school environments.

The following research questions are addressed in the present study:

(1) Are there significant differences between resilient, average, and non-resilient Hispanic preschoolers on cognitive skills (literacy and mathematics), school readiness, home

learning environment, childcare arrangements, parental expectations, and family demographics?

(2) To what extent does cognitive skills (literacy and mathematics), school readiness, home learning environment, childcare arrangements, parental expectations, and family demographics discriminate resilient Hispanic students from non-resilient Hispanic students?

Methods

Importance of Using ECLS-B

The Early Childhood Longitudinal Study was designed to provide decision makers, researchers, childcare providers, teachers, and parents with detailed information about children's early life experiences. The Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), sponsored by the U.S. Department of Education and National Center for Education Statistics (NCES), is a longitudinal, large-scale database following students from birth through kindergarten (NCES, 2007b). This is a national representative sample of 14,000 children in kindergarten (NCES, 2007b). Different sub-sets of subjects can be examined to determine whether there are any relationships or differences. This can be accomplished because the ECLS-B is used to collect a wealth of information from over 10,000 individuals across the nation.

A researcher can address with this database a child's cognitive, social, emotional, and physical development, as well as home and school environment (NCES, 2007a). Data is collected through interviews, direct assessments, observations, questionnaires, and rating scales from multiple sources; children, parents/guardians/relatives, early education providers, schools, and child care providers (NCES, 2007a). The goal of ECLS-B data is to provide information on (1) how child are prepared for school through the home environment and early care and

education program and (2) the association of early education opportunities with child outcome (e.g., academic and social) from when the child is 9 months through kindergarten.

The ECLS-B allows researchers to examine more than individual cases because it addresses information from children who are monitored from birth through kindergarten (NCES, 2007a). Research can focus on a particular a target group, such as language minority children, due to over-sampling. Researchers can also examine school and home factors related to cognitive and social development (Hong & Raudenbush, 2005; Kaplan & Walpole, 2005; NCES, 2007a; Rathbun, West, & Walston, 2005). In addition, researchers can also examine school and personal factors related to cognitive and social development and experiences (Hong & Raudenbush, 2005; Kaplan & Walpole, 2005; Rathbun, et al., 2005; Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). This includes home learning environment, school readiness, childcare, family demographics, parental expectations, and cognitive skills.

Research Design

This study will examine Hispanic students in preschool using a non-experimental nonrandomized research design. The variables of cognitive skills, school readiness, home environment, childcare, parental expectations, family demographics, and social and emotional behaviors will be examined in the study. When the variables in the study are continuous, a non-experimental correlational design would be used to determine the linear relationship between the variables (Burns & Grove, 2005). This is because the purpose of the non-experimental correlational design is to determine whether the two variables are associated or vary with one another. In the context of this study, these variables would be the cognitive skills, school readiness, home environment, childcare, parental expectations, family demographics, and social and emotional behaviors of the participants.

The chosen research design is quantitative because an association will be made between variables (i.e. cognitive skills, school readiness, home environment, child care, parental expectations, family demographics, and social and emotional behaviors). This means that the researcher is able to quantitatively assign numerical values to the variables so that an association can be determined (Yaremko, Harari, Harrison, & Lynn, 1986). The ability to assign numerical values to the variables in the study allows for the quantification of the results by using different statistical procedures. This is appropriate since the survey instrument (*ECLS-B*) has been shown to be valid and reliable instruments for measuring the intended variables for this study.

The quantitative, non-experimental correlational design is appropriate for this study since the objective is to determine whether there are associations between combinations of variables. The quantitative research design is more appropriate for the proposed study than a qualitative design because with a qualitative design the researcher would not be able to assess a direct relationship between two variables as result of the open-ended questions (Creswell, 2009). This is because the responses that are provided to the open-ended questions have to be coded and themes or trends in the responses have to be determined. Similarly, the use of the *ECLS-B* instrument, which has been used previously, has been shown to be valid and reliable tool. For this reason, the use of the ECLS-B instrument allows for quantification of the results and findings.

Participants

Participants in this study are obtained from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B). Hispanic preschool children were obtained from a sample of approximately 14,000 children enrolled in preschool and their parents will participate in this study. Just over half of the participants in the study were male (51.1%) and 48.9% were female, while the

majority of the subjects were Hispanic with their race specified (70.5%) and 29.5% race not specified. The majority of the participants received the cognitive assessment in English (90.4%) with 2.4% having missing values. If there were missing values, these participants were not included in the subsequent analysis. The average age of the participants was 53.65 months (N = 1750, SD = 4.27), while the average literacy IRT score of the participant was 10.87 (N = 1450, SD = 5.92). The average literacy T-score was 45.57 (N = 1450, SD = 9.42). As for the math IRT score and the math T-score, the average scores were 20.22 (N = 1500, SD = 7.07) and 47.00 (N = 1500, SD = 9.63), respectively.

Sampling

For the purpose of the study, a convenience, sampling plan was used. The convenience, sampling plan is a form of non-probability sampling where the participants are selected based on the availability of their information (Urdan, 2005). The reason for choosing the convenience, sampling plan is because it has an advantage over a probability sampling method (i.e. random sampling technique). We would be able to obtain more participants for the study in a shorter period of time (Cozby, 2001). Similarly, the convenience, sampling plan is appropriate for this study since the participants were not randomly selected from the entire population. Rather the participants were selected based on whether they voluntarily completed the ECLS-B parent interview and cognitive assessments. The sample consisted of preschool Hispanics that had information for every variable. If they had missing observations for any variable then they were not included in the analysis.

For determining the resilience of the children in the study, the resilience was divided into three different categories. These categories included the (a) non-resilient group, (b) the average child, and then finally (c) the resilient group. To compute these variables, first the negative items

were recoded. Second, all of the items were summed together and then divided by the total number of items. This score was labeled as the composite score of the child's resilient. Third, a frequency of the composite resilient score was conducted. Fourth, based on the distribution of frequencies and percentages of the composite resilient scores, non-resilient Hispanic students have a composite resilient score of .96-3.50; average Hispanic students have a composite resilient score of 3.5-4; and resilient Hispanic students have a composite resilient score of 4-5. An exploratory factor analysis was conducted but the results did not yield meaning findings.

Instruments

The data for this study were retrieved from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) of the National Center for Education Statistics (NCES). The ECLS-B database provides information from the child's parents, teachers, caregiver, and school administrator. The following sections will explain the instruments used in this study.

The validity of the instrument described will be referring to how well the instrument does at representing the information that is collected (Cozby, 2001). In other words, the validity of the survey instrument illustrates the ability to accurately measure the desired variable or construct that is of interest. Face validity refers to how well the content of the survey instrument appears to measure the variable or construct that is being measured (Cozby). This is often shown by using a panel of experts in the field of interest.

A reliability analysis is used to determine how correlated a set of questions or variables are with one another when it comes to a latent variable (Nunnally, 1978). In the explanation of reliability of the instruments, Cronbach's alpha coefficients are used to provide information with respect to the internal consistency/reliability of the items, with a Cronbach's alpha of around .70 indicating that the questions or variables provide an adequate measurement for the variable or a

Cronbach's alpha of around .80 indicating that the questions or variables provide a good measurement for the variable (Salkind, 2006).

Parent Interview

The parent interview is conducted by a trained field interview with a household member that has the most knowledge about the child's care and education; biological mom, biological dad, or another parent or relative, or non-relative guardian. The preschool parent interview was composed of the following different topics: (a) socioeconomic status, (b) family literacy, (c) non-parental care, (d) household composition, (e) child's health, growth, and development, (f) family structure, (g) child literacy and school readiness, (h) childcare arrangement, (i) family health, (j) marriage and partner relationships, (k) community and social support, (l) respondent information, (m) spouse/partner information, (n) nonresidential fathers information, (o) welfare and other public assistance, (p) household income and assets, (q) neighborhood quality and safety, and (r) household food sufficiency.

The information obtained from parent interview for this particular study was also composed of items (i.e., resilience variables) from the *Social Skills Rating System* (Gresham & Elliot, 1990) and the *Preschool and Kindergarten Behavioral Scales-Second Edition* (PKBS-2). The parent interview also used the Parent computer-assisted personal interview (CAPI) instrument. Questions for the CAPI were also taken from the Quality of Life Scale is copyrighted by Life Innovations. The interview asked questions and then the respondent entered their answers into the computer program, Parent CAPI instrument. The CAPI was available in Spanish (approximately 8% took it in Spanish) and there were trained and certified bilingual field interviewers and interpreters. The parent audio computer-assisted self-interview (ACASI) was also part of the parent interview. This allowed the respondent to be asked sensitive questions

confidentially. It was not administered if there was an interpreter or the interview was conducted over the phone. The parent had head phones to hear the questions and then answered in the computer instrument ACASI. This section was also available in English and Spanish.

The ECLS-B interview is composed of closed-ended, multiple choice type questions. The parent interview was approximately 90 minutes long. The interviews with the parents were conducted using several different methods. These included interviewing the parent in their home, by using telephone interviews, using computer programs and by audiotapes. The information the parent provided was then entered by the individual conducting the interview with a computer program, CAPI and ACASI.

The content validity of the parent interview, literacy and math items on the ECLS-B was reviewed by a panel of experts (NCES, 2007a). These experts reviewed the conceptual definitions and operational definitions for each of the items on the parent interview, literacy and math items on the ECLS-B. The validity of the ECLS-B interview was also illustrated by using construct validity. For the parent interview, literacy and math items on the ECLS-B interview, the construct validity of the instrument was illustrated by using a pilot study. During the pilot study, the questions were updated and modified, such that each were not ambiguous and reflected the purpose of the study.

Direct Cognitive Assessments

The preschool direct cognitive assessments were uniquely developed for the ECLS-B to measure the child's early mathematics, literacy, and language abilities. It took approximately 30-40 minutes to administer the assessment. The assessments were adaptive in design, so that all the students did not receive all the items, and are based on item response theory (IRT). The IRT uses patterns of correct and incorrect answers to obtain estimates on a scale that may be compared

across assessment forms. The IRT scores were not developed to compare mathematics and literacy achievement (NCES, 2007a). Therefore, a researcher cannot compare mathematics and literacy achievement based on which mathematics IRT and literacy IRT was higher. The T-scores are norm-referenced measurements of achievement to compare the child's performance to their peers. For this reason we composed a composite of mathematics and literacy IRT and T scores.

The validity of these assessments was based on a specific framework for preschool cognitive development from which appropriate items were selected from other standardized assessments. Certain contents of the direct cognitive assessments were selected items from the Peabody Picture Vocabulary Test Third Edition (PPVT-III) (Dunn & Dunn, 1997); PreLAS (2000); Preschool Comprehensive Test of Phonological and Print Processing (Lonigan, Wagner, Torgesen, & Rashotte, 2002); Test of Early Mathematics Ability Third Edition (Ginsburg & Baroody, 2003); Family and Child Experiences Study (FACES) Color Names and Counting Test (Zill & Resnick, 1997). Then a field test was conducted to evaluate the potential items on a sample of 1,245 children ages 3 years to 5 years (NCES, 2007a). Only those students who passed the English-language proficiency screening were administered the remaining direct cognitive assessment items during the field test. Therefore, this field test is only a valid representation of children with English-language proficiency. The evaluation of the field test was based on psychometric characteristics, such as IRT, DIF, item ordering, timing, formats, and appearance (NCES, 2007a).

Direct Cognitive Assessment: Language

All the students English proficiency was determined before the administration of the literacy, mathematics, and language assessments. The English-language proficiency screening was from a portion of the direct cognitive language assessment. The direct cognitive language

assessment had a reliability of .83 (NCES, 2007a). English proficiency was based on the child's performance on the first 5 items of the (1) PreLAS Simon Says, (2) PreLAS Art Show, and (3) PPVT items; totalling 15 items.

If the student's score indicated he/she was fluent in English then they were given the English cognitive assessments. The cut-off for English fluency was marked low in order to include lower English proficient students in the English direct cognitive assessments (NCES, 2007a). Therefore, students with limited English proficiency may have had difficulty answering items, especially in challenging vocabulary items of the PPVT, and this in return lowered their achievement score.

If the student did not pass but was fluent in Spanish (based on what the parents reported), they were given the Spanish assessment of language, literacy, and mathematics. Approximately 1% of the respondents were routed to the Spanish assessments (NCES, 2007a). These students (*n* = 100) were given a Spanish translation of the math items, the Test de Vocabulario en Imagenes Peabody or TVIP (Dunn, Padilla, Lugo, & Dunn, 1986) and the Spanish PreLAS items (Duncan & De Avila, 1986). The reliability and statistics for these instruments were not provided because the sample size is too low (NCES, 2007a). If the student was not proficient in Spanish or English then he or she were not given any cognitive assessments.

Mathematics Assessment

The mathematics assessment items included in the preschool field test supported the design of a two-stage adaptive instrument. First the student was given a routing test with 28 items that all the students were given the same items. The routing test included items of counting, number recognition ordinarily, relative size and quantity, pattern matching, and continuing patterns of counters. Then the student was given one of two different supplementary

forms based on the child's ability level (i.e., if they did well in the routing test they were given a harder set of supplementary items). The supplementary form that measured a child with superior ability focused on word problems with counters, pictures and number sentences. The supplemental form given to children with low ability were examined on shapes, counting fingers, counting objects in pictures, and counting with counters.

The preschool mathematics framework focuses on mathematical content and cognitive demand by measuring (a) number sense, (b) counting, (c) operations, (d) geometry, (e) pattern understanding, and (f) mathematical measurements. Selected test items for the mathematics framework were taken from the *Test of Early Mathematics Ability* (3rd ed.) by Ginsburg and Baroody (2003). It was found that the Mathematics IRT scores were found to be reliable. The reliability of the Mathematics IRT scores was equal to .88 (NCES, 2007a). It should be noted that the IRT scores reliability is based on students who passed the language-screening test in English and answered at least 10 mathematics items.

Literacy Assessment

Emergent and early literacy was measured through the direct cognitive literacy assessment. Based on the field test, a single-form of literacy assessment was developed that included 35 scored items. The items that were included for the literacy component were selected test items from the *Peabody Picture Vocabulary Test Third Edition* (PPVTIII) © 1997 by Lloyd M. Dunn and Leota M. Dunn. Additional items were taken from the PreLAS® 2000 published by CTB/McGraw-Hill, a division as well as from the *Preschool Comprehensive Test of Phonological & Print Processing* of Educational and Professional Publishing Group of The McGraw-Hill Companies. The literacy assessment covered three constructs; phonological awareness, conventions to print, and letter recognition. It was found that the Literacy IRT scores

were found to be reliable. The reliability of the Literacy IRT scores was equal to .81 (NCES, 2007a).

Data Analysis

To address each of the research questions and hypotheses of this study, the following statistical tests were conducted. To construct the independent and dependent variables in the study, an exploratory factor analysis (EFA) was conducted. An exploratory factor analysis is often used as a data reduction technique. With an exploratory factor analysis one would be able to determine whether certain questions or variables can be used to measure an underlying or latent variable (e.g., IQ). This is often used when the variables for a study are comprised of Likert-type questions (or similar) on a survey instrument. The factor analysis finds the questions or variables that explain the largest amount of variation in the questions or variables. As a result of this, these questions or variables could be combined to provide a single measure for a latent variable.

The MANOVA is used to determine whether a single or multiple categorical variables significantly explain the variation in a combination of several continuous dependent variables. If there is a significant relationship between the independent variable(s) and the dependent variable then this would indicate that the independent variable(s) significantly explain the variation in the dependent variables. If it is found that there is a significant relationship between the independent and dependent variables then a post hoc test could be conducted to determine which categories of the independent variables significantly differed from one another with respect to the average scores of the dependent variables observed for each category.

Discriminant analysis also was used in this study. Discriminant analysis is used as a classification technique where continuous independent variables are used in order to determine

how well they discriminant or predict the targeted dependent variable, which is categorical in nature. For this study, the dependent variable was the resilience of the participants and the constructed independent variables were used to determine how well could classify the participants into the three different resilience groups (i.e., non-resilient, average, and resilient).

Variables

Unique variable definition. There are certain variables that are unique to this study and need to be clarified.

1. Resilience. The variables using to describe resilience are as follows; (a) Child invited by others to play, (b) Child shows eagerness to learn new things, (c) Child volunteers to help others, (d) Child is liked by others, (e) Child shares with others, (f) Child is physically aggressive*, (g) Child seems unhappy*, (h) Child comforts other children, (i) Child uses words to describe feelings, (j) Child gets angry easily*, (k) Child pays attention well, (l) Child works/plays independently, (m) Child acts impulsively*, (n) Child worries about things*, (o) Child is overly active*, (p) Child invites other children to play, (q) Child keeps working until finished, (r) Child stands up for others rights, (s) Child has temper tantrums*, (t) Child has difficulty concentrating*, (u) Child annoys other children*, (v) Child destroys others things*, (w) Child tries to understand others, (x) Child makes friends easily. The variables were provided in ECLS-B Preschool Interview (items derived from specific copyright instruments explained in methods instrument section). The items were based on how often the parent saw the child demonstrate the particular behavior. The items were rated on a five-category scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often. The negative items (indicated by *) were recoded to follow the five-category scale of

the remaining positive items. For each Hispanic, Preschooler, the 24 variables identifying resilience were added and then divided by the total sum. This created a composite score of resilience. Based on the five-category scale, the student was classified non-resilient if they had a composite with the range of .96-3.46; average students had a composite within the range of 3.5-3.96; resilient students had a composite within the range of 4-5.

The additional variables used in the analysis were as follows:

2. Home Learning Environment: Based on the parental interview, parents indicated if their child has ever participated (not during regular school day) in the following activities;

(a) organized athletic activities, (b) dance lessons, (c) music or singing lessons, (d) drama class, (e) art classes (e.g., painting, drawing, sculpting), (f) performing art programs (e.g., theatre, dance, choir), (g) craft class/lessons. All answers were based as a dichotomous variable of yes or no. Parents of the participants also responded to how often in a typical week does the parent; (h) read books to their child, (i) tell stories to their child, (j) sing songs to their child. These questions were based on a four-point category scale; 1= not at all, 2 = once or twice, 3 = 3 to 6 times, 4 = every day. In addition the parents responded if they have in the past month did they use the public library to (k) borrow books to read aloud or for the child to read, (l) borrow materials other than books (e.g., CD and video), (m) get information/material on parenting topics or concern, and (n) take their child to story hour or programs. All these answers were based as a dichotomous variable of yes or no.

3. Parental Expectation: The parents were asked in the parent interview, “Even though it may be a long way off, how far in school do you expect your child to go?” Their answer was based on a 6-category scale; 1= receive less than a high school diploma, 2= graduate from high school, 3= attend two or more years of college, 4 = finish a 4 or 5 year college degree, 5 = earn a master degree or equivalent, 6 = finish a PhD, MD, or other advanced degree.
4. School Readiness: Parents were asked in the parent interview questions reading the child’s school readiness. There were three items used in this study.
    a. “Can your child identify the colors red, yellow, blue, and green?” Answers were based on a 3-category scale; 1= all of them, 2= some of them, 3= none of them.
    b. “Is your child able to read story books on his/her own?” Answers were based on a dichotomous scale; yes or no.
    c. “Can he/she recognize letters of the alphabet?” Answers were based on a 4-category scale; 1= all of the letters of the alphabet, 2= most of them, 3= some of them, 4= none of them.
    d. “How high can your child count?” Answers were based on a 6-point category; 1= not at all, 2= up to five, 3= up to ten, 4=up to twenty, 5= up to fifty, 6= up to 100 or more.
5. Child Care Arrangements: Parents responded to dichotomous (yes or no) questions regarding childcare arrangements in the preschool parent interview.
    a. “Has your child ever attended a Head Start or Early Head Start program on a regular basis?”

   b. "Is your child receiving care from a relative other than a parent on a regular basis (not including Head Start program), for example from grandparents, brothers or sisters, or any other relative?"
   c. "Is your child receiving care from someone not related to him or her in your home or someone else's home on a regular basis, not including Head Start? This includes home child care providers, regular sitters, or neighbors, but does not include day care centers or preschools."
   d. "Is your child attending a center or preschool?"
6. Family Demographics: Parents responded in the parent interview to descriptive questions of student's race/ethnicity (X3CHRACE), student's gender (X3CHSEX), socioeconomic status (X3SESQ5), parent's education (X3PARED), family type-parents who reside in the household (X3HPARNT).
7. Direct, Cognitive Assessment: For each Hispanic preschooler, their cognitive literary and mathematics scores were used to develop a cognitive composite.
   a. Literacy - scaled IRT score (X3LITSC); Continuous, range 0-37
   b. Literacy - scaled T-score (X3LITTS); Continuous, range 0-100
   c. Mathematics- scaled IRT score (X3MTHSC); Continuous, range 0-28
   d. Mathematics –scaled T-score (X3MTHTS); Continuous, range 0-100
8. Composite scores: preschool composite variables for of student's race/ethnicity (X3CHRACE), student's gender (X3CHSEX), socioeconomic status (X3SESQ5), parent's education (X3PARED), family type-parents who reside in the household (X3HPARNT), literacy - scaled IRT score (X3LITSC), literacy - scaled T-score (X3LITTS), mathematics- scaled IRT score (X3MTHSC), and mathematics –scaled

T-score (X3MTHTS), were obtained from the ECLS-B database. See Appendix 1 for preschool composite variables descriptions.

Operational Definition

Resilience. This variable is operationalized as a categorical variable (nominal) and it is comprised of three different categories (i.e., non-resilient, average resilience and resilient). For the purpose of this study the most pertinent definition of educational resilience is "the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences" (p. 46; Wang, Haertel, and Walberg, 1994).

Home learning environment. These variables were operationalized as a continuous variable (interval). These variables will be comprised of the questions that refer to the home learning environment factor. An EFA was conducted to determine the different factors of the home learning environment. These included the library literacy, fine arts participation, performance participation, and literacy activity sub-scale scores. The way that these variables were operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the library for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the library, these scores were averaged. As a result the score for the library variable for this individual would be 3.6. A higher score would indicate that there is a higher library for that individual, whereas a lower score would indicate the opposite.

School readiness. This variable was operationalized as a continuous variable (interval). This variable will be comprised of the questions that refer to the school readiness factor. An EFA

was conducted to determine the different factors of school readiness. This included just one factor, school readiness. The way that this variable was operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the school readiness for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the school readiness these scores were averaged. As a result the score for the school readiness variable for this individual would be 3.6. A higher score would indicate that there is a higher school readiness for that individual, whereas a lower score would indicate the opposite.

Child care. These variables were operationalized as a continuous variable (interval). These variables will be comprised of the questions that refer to the childcare factor. An EFA was conducted to determine the different factors of the childcare. These included the relative and care sub-scale scores. The way that these variables were operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the relative sub-scale score for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the relative sub-scale score these scores were averaged. As a result the score for the relative sub-scale score variable for this individual would be 3.6. A higher score would indicate that there is a higher relative sub-scale score for that individual, whereas a lower score would indicate the opposite.

Family demographics. These variables were operationalized as a continuous variable (interval). These variables will be comprised of the questions that refer to the family demographics factor. An EFA was conducted to determine the different factors of the family

demographics. These included the SES and demographics sub-scale scores. The way that these variables were operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the SES sub-scale score for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the SES sub-scale score these scores were averaged. As a result the score for the SES sub-scale score variable for this individual would be 3.6. A higher score would indicate that there is a higher SES sub-scale score for that individual, whereas a lower score would indicate the opposite.

Cognitive assessment. This variable was operationalized as a continuous variable (interval). This variable will be comprised of the questions that refer to the cognitive assessment factor. An EFA was conducted to determine the different factors of cognitive assessment. This included just one factor, cognitive assessment. The way that this variable was operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the cognitive assessment for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the cognitive assessment these scores were averaged. As a result the score for the cognitive assessment variable for this individual would be 3.6. A higher score would indicate that there is a higher cognitive assessment for that individual, whereas a lower score would indicate the opposite.

Parental expectations. This variable was operationalized as a continuous variable (interval). This variable will be comprised of the questions that refer to the parental expectations factor. An EFA was conducted to determine the different factors of parental expectations. This

included just one factor, parental expectations. The way that this variable was operationalized as being continuous was to average the scores received from each item on the survey instrument. For example, say there are five questions on the survey instrument that are used to measure the parental expectations for that individual. The individual provides responses of 2, 5, 4, 3, and 4 for the questions on the survey. In order to obtain an overall measurement on the parental expectations these scores were averaged. As a result the score for the parental expectations variable for this individual would be 3.6. A higher score would indicate that there is a higher parental expectation for that individual, whereas a lower score would indicate the opposite.

Results

To address the research questions, several different statistical analyses were conducted. The first set of analyses that were conducted was a set of factor analyses. An exploratory factor analysis is often used as a data reduction technique. With an exploratory factor analysis one would be able to determine whether certain questions or variables can be used to measure an underlying or latent variable. This is often used when the variables for a study are comprised of Likert-type questions (or similar) on a survey instrument. The factor analysis finds the questions or variables that explain the largest amount of variation in the questions or variables. As a result of this, these questions or variables could be combined to provide a single measure for a latent variable. After all of the underlying or constructed variables were determined the descriptive statistics for these variables are presented. With the newly constructed variables, the research questions were addressed. These were addressed by using Pearson's correlation coefficients, MANOVA and discriminant analysis.

MANOVA is used to determine whether a single or multiple categorical variables significantly explain the variation in a combination of several continuous dependent variables. If

there is a significant relationship between the independent variable(s) and the dependent variable then this would indicate that the independent variable(s) significantly explain the variation in the dependent variables. If it is found that there is a significant relationship between the independent and dependent variables then a post hoc test could be conducted to determine which categories of the independent variables significantly differed from one another with respect to the average scores of the dependent variables observed for each category.

Finally, discriminant analysis is used to determine whether any of the (a) cognitive skills, (b) school readiness, (c) home learning environment, (d) child-care arrangements, (e) parental expectations, and (f) family demographics could be used to discriminate resilient Hispanic preschoolers from non-resilient Hispanic preschoolers. The purpose of the discriminant analyses is to use several measurements from each participant to determine whether one would be able to classify each participant based on their characteristics.

The results section is divided into the following sections. The first section is comprised of the descriptive statistics for the participants in the study. This included presenting the frequency and measures of central tendency for each participant in the study. This is then followed by the results of the factor analysis that is conducted for each of the home learning environment, school readiness, childcare, family demographics, and cognitive skills variables. This is then followed by the reliability analysis and then finally the results and findings from the statistical analyses conducted for this study.

Descriptive Results

The descriptive statistics for the independent variables of gender, race, ethnicity and marital status that were used in the study are presented in Table 4.1. This includes presenting the frequency and percentage of occurrences for the gender, race/ethnicity and the language used for

the cognitive assessment of the subjects in the study. Just over half of the participants in the study were male (51.1%), while the majority of the subjects were Hispanic with their race specified (70.5%). The majority of the participants received the cognitive assessment in English (90.4%) with 2.4% having missing values. The average age of the participants was 53.65 months (N = 1750, SD = 4.27), while the average literacy IRT score of the participant was 10.87 (N = 1400, SD = 5.92). The average literacy T-score was 45.57 (N = 1400, SD = 9.42). As for the math IRT score and the math T-score, the average scores were 20.22 (N = 1500, SD = 7.07) and 47.00 (N = 1500, SD = 9.63), respectively.

Table 4.1

Descriptive Statistics for Participants

Variable	Frequency (N = 1750)	Percent
Gender		
Male	900	51.1
Female	850	48.9
Race/Ethnicity		
Hispanic, Race Specified	1250	70.5
Hispanic, No Race Specified	500	29.5
Language Used for Cognitive Assessment		
English	1600	90.4
Spanish	100	6.8
Missing	50	2.4

Factor Analysis

A factor analysis using varimax rotation was conducted for the total sample of participants to examine the underlying factors for the home learning environment, school readiness, child-care, family demographics, and cognitive skills. The number of factors actually extracted was determined by the number of factors with eigenvalues greater than 1.0 (Tabachnick & Fidell, 2001). Factor loadings less than .3 were suppressed to make interpretation easier. The resulting factor loadings for the home learning environment variables are presented in Table 4.2. Overall, there were four factors with eigenvalues greater than 1.0. These factors were able to explain 46.93% of the variation between the variables included in the analysis.

The first factor was comprised of five items. These were the variable that corresponded to the child's participation in dance, music, art class, art program, and crafts. This factor had factor loadings that ranged from .381 to .780. This factor will be labeled from hereafter as "Fine Arts Participation". The second factor was then comprised of the items that corresponded to the literacy activities the parent does with their child. These items had factor loadings that ranged from .730 to .750. This factor will be labeled from hereafter as "Literacy Activity". The third factor was then comprised of the variables that corresponded to the child's involvement in literacy activities in the library. These items had factor loadings that ranged from .444 to .641. This factor will be labeled from hereafter as "Library Literacy". The fourth factor was comprised of two items. These were the variable that corresponded to the child's participation in athletic program and drama class after school hours. This factor had factor loadings that ranged from .447 to .671. This factor will be labeled from hereafter as "Performance Participation". For the purpose of this study the items that corresponded to the factors from the factor analysis were

computed by summing the item scores from each of the items that belonged to each factor. For example, there are five items that correspond to the "Fine Arts Participation" factor. Therefore, if someone had scores of 2, 3, 4, 3 and 4 for these items then their overall Fine Arts Participation score would be 16. The summary statistics for this variable are presented in the following subsection. This was done for the remaining variables from the factor analysis as well.

Table 4.2

Factor Loadings for Home Learning Environment

	Component			
	Fine Arts Participation	Literacy Activities	Library Literacy	Performance Participation
Athletics				.447
Dance	.381			
Music/Singing	.658			
Drama				.671
Art classes	.780			
Art programs	.448			
Crafts	.720			
Borrow books			.444	
Borrow materials			.641	
Parenting information			.604	
Attend story hour/program			.564	
Read books		.750		
Tell stories		.745		
Sing songs		.730		

The resulting factor loadings for the school readiness variables are presented in Table 4.3. Overall, there was one factor with an eigenvalue greater than 1.0. This factor was able to explain 47.56% of the variation between the variables included in the analysis. This first factor was

comprised of only three of the four items that related to the school readiness variable. These were whether the child could identify colors, the letters the child can recognize and how high the child can count. The variable that did not load on this factor was whether the child could read books alone. For this reason, this question was not included in the calculation of the overall school readiness variable. The factor loadings for this factor ranged from -.804 to .803. Since one of the items was negative, this item was reversed scored when the items were combined with one another (described in the reliability section). This factor will be labeled from hereafter as "School Readiness".

Table 4.3

Factor Loadings for School Readiness

	Component
	School Readiness
Identify colors	.732
Read alone	
Recognize letters	.803
Counting level	-.804

The resulting factor loadings for the childcare variables are presented in Table 4.4. Overall, there were two factors with an eigenvalue greater than 1.0. These factors were able to explain 54.01% of the variation between the variables included in the analysis. This first factor was comprised of only two of the four items that related to the relative child-care variable. These were whether the child-care was from a non-relative and care from a relative. The factor loadings for this factor ranged from -.766 to .711. This factor will be labeled from hereafter as "Relative

Child-care". The second factor was then comprised of two questions. These were whether the child attended head start and whether the child has center based care. The factor loadings for this factor ranged from -.766 to .455. This factor will be labeled from hereafter as "Child-care Program". The negative scores were reverse scored and then the sums of the items were calculated to give an overall measurement for the "Relative Child-care" and "Child-care Program" variables.

Table 4.4

Factor Loadings for Child Care

	Component	
	Relative Child-care	Child-care Program
Head Start		.455
Preschool/Center		-.766
Non-relative	-.766	
Relative	.711	

The resulting factor loadings for the family demographics variables are presented in Table 4.5. Overall, there were two factors with an eigenvalue greater than 1.0. These factors were able to explain 59.32% of the variation between the variables included in the analysis. This first factor was comprised of two items. These were for the socioeconomic status of the parent and the highest level of education of the parent. The factor loadings for this factor had values of .938 and .942. This factor will be labeled from hereafter as "SES". The second factor was then comprised of three questions. These were the parents who reside in the household, the sex of the

child and the race/ethnicity of the child. The factor loadings for this factor had a range of values from -.663 and .687. Since one of the items was negative, this item was reversed scored when the items were combined with one another (described in the reliability section). This factor will be labeled from hereafter as “Demographics”.

Table 4.5

Factor Loadings for Family Demographics

	Component	
	SES	Demographics
SES	.938	
Family Type		.687
Child’s gender		.405
Child’s ethnicity		-.663
Parent’s education level	.942	

The resulting factor loadings for the cognitive assessment variables are presented in Table 4.6. Overall, there was one factor with an eigenvalue greater than 1.0. This factor was able to explain 84.13% of the variation between the variables included in the analysis. This first factor was comprised of an average of all of the variables included in the analysis. The factor loadings for this factor ranged from .911 to .924. This factor will be labeled from hereafter as “Cognitive Skills”.

Table 4.6

Factor Loadings for Cognitive Assessment

	Component
	Cognitive Skills
X3 LITERACY IRT SCALE SCORE	.911
X3 LITERACY T-SCORE	.913
X3 MATH IRT SCALE SCORE	.922
X3 MATH T-SCORE	.924

Constructed Values

The descriptive statistics for each of the constructed variables are considered. The results of the measures of central tendency for the variables are presented in Table 4.7. For the library literacy construct the average score was 6.11 (*SD* = 1.05), while the literacy activity construct the average score was 8.44 (*SD* = 2.09). For the two participation constructs, the average values were 9.65 (*SD* = .84) for fine arts participation and 3.79 (*SD* = .43) for performance participation. As for the school readiness construct, the average value was 7.93 (*SD* = 1.87). For the two children care constructs, the average scores for the relative child-care construct was 6.84 (*SD* = .53) and 6.91 (*SD* = 1.09) for the care-care program construct. For the family demographics, the SES construct had an average of 6.20 (*SD* = 3.03), while the demographic construct had an average score of 7.05 (*SD* = 1.67). Finally, for the cognitive skills construct, the average score was 122.21 (*SD* = 32.40). For some of the variables, there were some missing

values. In particular, there were over 1200 missing values for the library variable while for the cognitive scores there were over 200 missing values. For this reason, when the analyses are conducted these children with missing values, they will not be included in the analysis.

Table 4.7

Descriptive Statistics for Constructed Variables and Parental Expectations

	N	*Min*	*Max*	*M*	*SD*
Library Literacy	500	4.00	8.00	6.11	1.05
Fine Arts Participation	1750	5.00	10.00	9.65	.84
Performance Participation	1750	1.00	4.00	3.79	.43
Literacy Activity	1750	1.00	12.00	8.44	2.09
School Readiness	1750	3.00	13.00	7.93	1.87
Relative Child-care	1750	2.00	8.00	6.84	.53
Child-care Program	1750	5.00	8.00	6.91	1.09
SES	1750	2.00	14.00	6.20	3.03
Demographic	1750	5.00	15.00	7.05	1.67
Cognitive Skills	1500	28.17	243.89	122.21	32.40
Parental Expectations	1750	1	6	4.34	1.31

Resilience Scores

For determining the resilience of the children in the study, the resilience was divided into three different categories. These categories included the (a) non-resilient group, (b) the average child, and then finally (c) the resilient group. To compute these variables, first the negative items were recoded. Second, all of the items were summed together and then divided by the total number of items. This score was labeled as the composite score of the child's resilience. Third, a frequency of the composite resilient score was conducted. Fourth, based on the distribution of frequencies and percentages of the composite resilient scores, non-resilient Hispanic students have a composite resilient score of .96-3.46; average Hispanic students have a composite resilient score of 3.5-3.96; and resilient Hispanic students have a composite resilient score of 4-5. The frequency results for these groups are presented in Table 4.8. The most frequent group the student belonged to was the average group (45.6%), which was followed by the resilient group (28.2%) and then the non-resilient group (26.3%).

Table 4.8

Frequency Distribution for Resilience Scores

	Frequency (N = 1750)	Percent
Non-Resilient	450	26.3
Average	800	45.6
Resilient	500	28.2

To further examine the different groups of children, the average scores for each of the computed underlying variables from the factor analysis are presented for each group of children.

The average group had the highest average value for the library literacy construct. On the other hand, the resilient group had the highest average value for the literacy activity, child-care program, SES, demographic, the cognitive skills scores, and the parental expectations scores. While the non-resilient group had the highest average values for the fine arts participation, performance participation, school readiness and relative child-care constructs. To determine whether there is a significant differences between resilient and non-resilient Hispanic preschoolers on cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics a MANOVA was conducted. The results of the MANOVA are presented in the following section.

MANOVA Results

MANOVA was conducted to address the first research question. For this analysis, the dependent variables were the cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, childcare arrangements, parental expectations, and family demographics scores from the factor analysis. The independent variable for this analysis is then the type of resilient group in which the student belonged. To determine whether there was a significant difference between the resilience groups of the children the Wilks' lambda (Λ) statistic was examined. The Λ statistic is the multivariate equivalent of the univariate F-test (Tabachnick & Fidell, 2001). There was a significant multivariate difference between the resilience group the child belonged to, $\Lambda = .829$, $F(22, 938) = 4.18$, $p < .01$.

This indicated that non-resilient, average and resilient groups significantly differed with one another for the combination of all the dependent variables. In order to determine which dependent variables the resilience groups differed for, the results of the ANOVA were examined.

There was a significant difference between the resilience groups for the fine arts participation scores, $F(2, 479) = 12.83$, $p < .01$. There was also a significant difference between the resilience groups for the performance participation scores, $F(2, 479) = 4.50$, $p = .01$. There was also a significant difference between the resilience groups for the literacy activity scores, $F(2, 479) = 15.41$, $p < .01$. There was also a significant difference between the resilience groups for the school readiness scores, $F(2, 479) = 16.43$, $p < .01$. There was also a significant difference between the resilience groups for the SES scores, $F(2, 479) = 5.06$, $p < .01$. There was also a significant difference between the resilience groups for the cognitive skills scores, $F(2, 479) = 12.18$, $p < .01$.There was also a significant difference between the resilience groups for the parental expectation scores, $F(2, 479) = 10.50$, $p < .01$.

Table 4.9

Constructed Variables for Each Group of Students and Analysis of Variance Results for Each Dependent Variable and Resilience Group

	Non-Resilient		Average		Resilient				
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η^2
Library Literacy	6.14	1.13	6.18	1.00	5.99	1.07	1.763	.173	.007
Fine Arts Participation	9.77[a]	0.72	9.70[a]	0.76	9.45[b]	1.00	12.831	.000	.051
Performance Participation	3.87[a]	0.37	3.79[ab]	0.41	3.70[b]	0.48	4.496	.012	.018
Literacy Activity	7.52[c]	2.07	8.48[b]	2.06	9.23[a]	1.81	15.408	.000	.060
School Readiness	8.78[a]	1.89	7.84[b]	1.69	7.27[c]	1.83	16.425	.000	.064
Relative Child-care	6.88	0.54	6.82	0.54	6.83	0.52	.123	.884	.001
Child-care Program	6.88	1.06	6.89	1.10	6.96	1.11	.151	.860	.001
SES	5.25[b]	2.88	6.28[b]	2.92	6.95[a]	3.10	5.056	.007	.021
Demographic	7.02	1.69	7.04	1.65	7.11	1.69	.262	.770	.001
Cognitive Skills	109.58[c]	30.87	122.96[b]	29.94	130.86[a]	34.21	12.184	.000	.048
Parental Expectations	3.98[b]	1.40	4.38[ab]	1.29	4.61[a]	1.19	10.497	.000	.042

Note. Means with the same letter are not significantly different from each other

The resilience groups did not significantly differ from one another for the remaining variables in the analysis, as indicated by the *p*-value in the "p" column of Table 4.9. For the significant differences, post hoc tests were conducted to determine just how each of the groups differed from one another. The post hoc analysis that was conducted was the Least Significant

Difference (LSD) test. This is because this allows one to determine whether there was a significant difference between each combination of groups. The results of the post hoc analysis are presented in Table 4.9.

There was a significant difference between the non-resilient and resilient group for the fine arts participation scores. There was also a significant difference between the average and resilient groups when it came to the fine arts participation scores of the child. In fact, the resilient group scored significantly lower on average than those in the non-resilient and average groups. As for the performance participation scores, the only difference was between the resilient and non-resilient groups where those in the resilient group would score significantly lower than the non-resilient group. For the literacy activity scores of the children, each group was significantly different from the other. In fact, those in the resilient group had the highest average literacy activity scores, which were followed by the average and non-resilient groups. In terms of the school readiness scores of the children, each group was significantly different from the other. In fact, those in the non-resilient group had the highest average school readiness scores, which were followed by the average and resilient groups.

There was a significant difference between the non-resilient and resilient group for the SES scores. There was also a significant difference between the average and resilient groups when it came to the SES scores of the child. In fact, the resilient group scored significantly higher on average than those in the non-resilient and average groups. In terms of the cognitive skills scores of the children, each group was significantly different from the other. In fact, those in the resilient group had the highest average cognitive skills scores, which were followed by the average and non-resilient groups. Finally, for the parental expectations scores, there was a significant difference between the non-resilient and resilient group as well as the non-resilient

and the average group. In fact, those in the average and resilient groups would score significantly higher than those in the non-resilient group when it came to the parental expectations of the child.

Discriminant Analysis Results

A discriminant analysis was conducted to address to what extent does cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics discriminate resilient Hispanic children from non-resilient Hispanic children. The dependent variable for this analysis was the resilience category of the children, while the independent variables were the cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, childcare arrangements, parental expectations, and family demographics variables from the factor analysis. A summary table for each of the class variables in the study is presented in Table 4.10. Equal prior probabilities were used for each of the groups. This means that the probability of the participants being in each of the groups was equal. The unweighted value is also presented in Table 4.10. This represents the unweighted number of participants in each of the groups. It is clear from Table 4.10 that the number of observations in each class is not equal. Even though this is the case, proportional prior probabilities were used in the discriminant analysis. The fine arts participation, literacy activity, school readiness and parental expectations had the largest impact on the grouping variable as indicated by the standardized canonical discriminant function coefficients presented in Table 4.10.

Table 4.10

Summary Statistics for Class Variable and Standardized Canonical Discriminant Function Coefficients

Resilient	Prior		Unweighted	
Non-Resilient	.333		91	
Average	.333		233	
Resilient	.333		158	
	Standardized Canonical Coefficients		Structure Matrix	
	Function 1	Function 2	Function 1	Function 2
Library Literacy	-.075	.320	.635	.109
Fine Arts Participation	.370	.441	-.607	-.254
Performance Participation	.118	-.111	-.547	.052
Literacy Activity	-.505	-.079	.522	.490
School Readiness	.369	.091	-.339	-.227
Relative Child-care	.151	-.032	.333	.020
Child-care Program	.072	.167	.052	-.044
SES	.180	-.313	-.416	.684
Demographic	.049	-.123	.139	.363
Cognitive Skills	-.241	.233	.018	-.183
Parental Expectations	-.386	.750	-.034	.119

The contribution of the independent variables at predicting group membership was assessed by Wilks Lambda statistic. There was a significant result based on the Wilks' Lambda statistic $\Lambda = .83$ ($df = 22, 482$), $p < .01$ for the first canonical function. There was not a significant result based on the Wilks' Lambda statistic $\Lambda = .97$ ($df = 10, 482$), $p = .16$ for the second canonical function. The first canonical correlation was equal to .38, while the second canonical correlation was .17. This meant that the first canonical function was able to explain 14.4% of the variation between the three groups, while the second canonical function was able to explain 2.8% of the variation between the three groups.

The canonical structure coefficients from the discriminant analysis are reported in Table 4.10. In the first function, eight of the eleven constructs included in the discriminant analysis had structure coefficient values of .25 or greater. These included the library literacy, fine arts participation, performance participation, literacy activity, school readiness, relative child-care, SES, and demographics. Only child-care program, cognitive skills, and parental expectations did not appear to be related to the discriminant function. The five constructs that had a structure coefficient value of .40 or greater and had the greatest practical significant for distinguishing between resilient and nonresilient students were library literacy, fine arts participation, performance participation, literacy activity, and SES.

In the second function, four of the eleven constructs included in the discriminant analysis had structure coefficient values of .25 or greater. These included the fine arts participation, literacy activity, SES, and demographics. Literacy activity and SES had a structure coefficient value of .40 or greater and had the greatest practical significant for distinguishing between resilient and nonresilient students. Library literacy, performance participation, child-care program, school readiness, relative child-care, cognitive skills, and parental expectations did not appear to be related to the discriminant function.

In terms of classification, this model was able to successfully classify the type of resilience the child had in just over 47% of the cases. The classification table is provided in Table 4.11 where it can be seen that the resilient group had the lowest misclassification rate of 42.4%. The misclassification rates for the average and non-resilient groups were 62.2% and 42.9%, respectively. The type of child that was misclassified more often was the average child, which had misclassification rates of 62.2%. In most of the cases, average children were classified as either resilient or non-resilient. To attempt to get a better fitting classification result,

the average children were removed from the study. The discriminant analysis was then conducted on only the non-resilient and resilient children.

Table 4.11

Classification Table for Type of Child

		Predicted Group Membership			
		Non-Resilient	Average	Resilient	Total
Original	Non-Resilient	10.79%	4.15%	3.94%	18.88%
	Average	14.94%	18.26%	15.15%	48.34%
	Resilient	6.22%	7.68%	18.88%	32.78%

A summary table for each of the class variables in the study is presented in Table 4.12. Equal prior probabilities were used for each of the groups. This means that the probability of the participants being in each of the groups was equal. The unweighted value is also presented in Table 4.12. This represents the unweighted number of participants in each of the groups. It is clear from Table 4.12 that the number of observations in each class is not equal. Even though this is the case, proportional prior probabilities were used in the discriminant analysis. The fine arts participation, literacy activity, school readiness and parental expectations had the largest impact on the grouping variable as indicated by the standardized canonical discriminant function coefficients presented in Table 4.12. The contribution of the independent variables at predicting group membership was assessed by Wilks Lambda statistic. There was a significant result based on the Wilks' Lambda statistic $\Lambda = .77$ (df = 11, 249), $p < .01$ for the first canonical function. The first canonical correlation was equal to .48. This meant that the first canonical function was able to explain 23.0% of the variation between resilient and nonresilient Hispanic students.

The canonical structure coefficients from the discriminant analysis are reported in Table 4.12. In the first function, seven of the eleven constructs included in the discriminant analysis had structure coefficient values of .25 or greater. These included the library literacy, fine arts participation, performance participation, literacy activity, school readiness, relative childcare, and childcare program. The following four constructs did not appear to be related to the discriminant function; SES, demographics, cognitive skills, and parental expectations. The five constructs that had a structure coefficient value of .40 or greater and had the greatest practical significant for distinguishing between resilient and nonresilient students were library literacy, fine arts participation, performance participation, literacy activity, and school readiness.

Table 4.12

Summary Statistics for Non-Resilient and Resilient Class Variables

Resilient	Prior		Unweighted
Non-Resilient	.50		91
Resilient	.50		158
		Standardized Canonical Coefficients	Structure Matrix
Library Literacy		-.100	.638
Fine Arts Participation		.329	-.633
Performance Participation		.179	-.559
Literacy Activity		-.491	.501
School Readiness		.340	-.465
Relative Child-care		.143	-.349
Child-care Program		.026	.341
SES		.200	.128
Demographic		.069	.055
Cognitive Skills		-.243	-.040
Parental Expectations		-.396	.026

In terms of classification, this model was able to classify the type of child's resilience 71.9% of the cases. The classification table is provided in Table 4.13 where it can be seen that the non-resilient group had a misclassification rate of 29.7%. The misclassification rate for the resilient group was 27.2%. This indicated that based on the cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics variables, approximately 72% of the children were classified correctly as compared to the 47.9% that were classified when the average group was included in the model. This provides evidence that the cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics variables are able to adequately discriminate between the resilient and non-resilient children.

Table 4.13

Classification Table for Non-Resilient and Resilient Children

		Predicted Group Membership		
		Non-Resilient	Resilient	Total
Original	Non-Resilient	25.70%	10.84%	36.55%
	Resilient	17.27%	46.18%	63.45%

Summary of Results

For the first research question, there was a significant multivariate difference between the resilience groups for the fine arts participation scores. There was also a significant difference between the resilience groups for the performance participation scores, the literacy activity

scores, school readiness scores, the SES scores, cognitive skills scores, and the parental expectation scores. The resilient group scored significantly lower on average than those in the non-resilient and average groups. The resilient group would score significantly lower than the non-resilient group for the performance participation scores of the child. For the literacy activity scores of the children, each group was significantly different from the other. Those in the resilient group had the highest average literacy activity scores, which was followed by the average and non-resilient groups. Those in the non-resilient group had the highest average school readiness scores, which were followed by the average and resilient groups.

The resilient group scored significantly higher on average than those in the non-resilient and average groups when it came to the SES scores of the children. In terms of the cognitive skills scores of the children, each group was significantly different from the other. Those in the resilient group had the highest average cognitive skills scores, which were followed by the average and non-resilient groups. Those in the average and resilient groups would score significantly higher than those in the non-resilient group when it came to the parental expectations of the child.

For the second research question a discriminant analysis was conducted. When including the average group of children in the discriminant analysis, only approximately 48% of the children were classified into their resilience groups correctly. When the average group was removed from the analysis the model was able classifying the type of resilience the child had 71.9% of the cases. The non-resilient group had a misclassification rate of 29.7% and the misclassification rate for the resilient group was 27.2%. This indicated that when the average children were removed from the model there was a much better classification rate of the children.

There was a significant result based on the Wilks' Lambda statistic for the first canonical function. There was not a significant result based on the Wilks' Lambda statistic for the second canonical function. The first canonical correlation was equal to .38, while the second canonical correlation was .17. This meant that the first canonical function was able to explain 14.4% of the variation between the three groups, while the second canonical function was able to explain 2.8% of the variation between the three groups. Eight of the constructs included in the discriminant analysis had structure coefficient values of .25 or greater. The fine arts participation, literacy activity, school readiness and parental expectations had the largest impact on the grouping variable.

In terms of classification, this model was able to successfully classify the type of resilience the child had in just over 47% of the cases. The resilient group had the lowest misclassification rate of 42.4%. The misclassification rates for the average and non-resilient groups were 62.2% and 42.9%, respectively. The type of child that was misclassified more often was the average child, which had misclassification rates of 62.2%.

The contribution of the independent variables at predicting group membership was assessed by Wilks Lambda statistic. There was a significant result based on the Wilks' Lambda statistic for the canonical function. The canonical correlation was equal to .48. This meant that the first canonical function was able to explain 23.0% of the variation between the two groups. Seven of the constructs included in the discriminant analysis had structure coefficient values of .25 or greater. The fine arts participation, activity, school readiness and parental expectations had the largest impact on the grouping variable.

In terms of classification, this model was able to classify the type of child's resilience 71.9% of the cases. The classification table is provided in Table 4.13 where it can be seen that

the non-resilient group had a misclassification rate of 29.7%. The misclassification rate for the resilient group was 27.2%. This indicated that based on the cognitive skills (literacy, language, and mathematics), school readiness, home learning environment, child care arrangements, parental expectations, and family demographics variables, approximately 72% of the children were classified correctly as compared to the 47.9% that were classified when the average group was included in the model.

Discussion

In this study, we examined the impact of family demographics, cognitive skills of mathematics and literacy, care giver arrangements, school readiness, and home learning environment on resilient and non-resilient Hispanic, preschoolers. Family practices, such as positive home learning environment and high expectations, promote academic achievement (Phan, 2006). These variables allowed constructs of fine arts participation, performance participation, literacy activity, library literacy, school readiness, relative child-care, family demographics, child-care program, SES, and cognitive skills.

Another challenge in this study was classifying the Hispanic, preschoolers correctly as resilient and nonresilient students. We first identified resilient students based on the behavior skills in a social and school setting. A child having a difficult temperament, for example, would be likely to develop risk factors, such as poor social adjustment, and hinder their capability to develop resilience. Furthermore, Padrón, Waxman, and Huang (1999) examined at risk (e.g., low SES and single-parent home) Hispanic students, and their findings indicated that the resilient students were less disruptive, less distracted, and more on task. Protective factors have been demonstrated by researchers to influence the development of resilience in children (Barton, 2005). Similar to how this study defined resilience, Werner and Smith's (1977) longitudinal

study included individual attributes and behavior problems in their definition of resilience. They identified resilient students as active, affectionate, social responsive, self-help skills, high internal locus of control, achievement orientation, and gender differences (Werner & Smith, 1977). A discriminant analysis was conducted to examine our classification of resilient students closer. When including in the discriminant analysis resilient, nonresilient, and average students, only approximately 48% of the children were classified into their resilience groups correctly. When the average group was removed from the analysis the model was able classifying the type of resilience the child had 71.9% of the cases. The non-resilient group had a misclassification rate of 29.7% and the misclassification rate for the resilient group was 27.2%. This indicated that when the average children were removed from the model there was a much better classification rate of the children as resilient or nonresilient.

The MANOVA findings revealed there was a significant difference between the resilience groups for the fine arts participation scores. There was also a significant difference between the resilience groups for the performance participation construct. The resilient group would score significantly lower than the non-resilient group for the performance participation scores of the child. For the literacy activity scores of the children, each group was significantly different from the other. Those in the resilient group had the highest average activity scores, which was followed by the average and non-resilient groups.

In terms of the cognitive skills scores of the children, each group was significantly different from the other. Those in the resilient group had the highest average cognitive skills scores, which were followed by the average and non-resilient groups. Similarly, Hispanic students have been identified by other researchers as resilient based on high academic standing (Alva, 1991; Gonzalez & Padilla, 1997) study had academically excelled in 10th grade. Also,

Lee, Winfield, and Wilson (1991) found that 8th grade African American students with high academic grades were resilient.

In the present study, those in the non-resilient group had the highest average school readiness scores, which were followed by the average and resilient groups. It was surprising that our findings did not reveal any significant difference in the type of care arrangements with resilient and nonresilient students. Researchers have found that high-quality center-based care and preschool programs for early education and child care experiences raises the child's academic and social readiness for school, especially for minority students (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Therefore, it could be hypothesized that childcare would also impact resilience in children since this study revealed a significant difference in school readiness and academic. Childcare arrangements, especially the nurture from parental caregivers, have been found to significantly affect children's emotional and intellectually development (Knitzer, 2000; Boyden & Mann, 2005). Furthermore, researchers have noted that examining type of caregivers a preschooler is exposed to is an important factor of resilience because their qualifications and experience in providing appropriate developmental skills and supportive environment where a child can develop a relationship with a caring adult (Friesen & Brennan, 2005; Hebert & Beardsley, 2001).

The resilient group had significantly higher socioeconomic status than those in the non-resilient and average groups. Our results support Lee, Winfield, and Wilson's (1991) findings that 8th grade African American resilient students came from high SES backgrounds. This is opposite to Alva's (1991) findings, however, that Hispanic resilient students in 10th grade had low SES. Low socioeconomic status puts a strain on the family, because it is related to important issues impacting a child's need to cope and face challenges of adversity. These issues include

low-quality childcare, lack of parental involvement, adequate safety, poor-quality housing, adequate nutrition, and lack of proper health services (Friesen & Brennan, 2005). It would be expected that children would build resilience to help cope with the difficult living situations a low socioeconomic status brings.

Parental expectations for their child were significantly higher in the average and resilient groups than those in the non-resilient group. Although there are limited studies that have examined differences between parent expectations for resilient and nonresilient students, Waxman, Huang, and Wang (1997) found that Hispanic resilient children in middle school had high academic expectations, such as expecting to graduate from college. In a qualitative study of Vietnamese refugees, Phan (2006) also found that resilient children had expectations to receive an academic scholarship based on their merits. These high student expectations may be related to parent expectations, but that needs to be empirically determined in future studies.

As previously discussed, the findings from the present study are supported by other research in the field. More specifically, this study was able to target a growing minority population of Hispanic preschoolers. Targeting these students at an early age, as they are entering formal education is essential for developing a baseline of student's resilience. It has been found that resilience does not stand still in time, it should be looked as skills and coping mechanisms that individuals develop and change over time depending on their experiences and their immediate needs. Future research should include longitudinal data to determine patterns and help develop interventions to promote resilience in children in order for them to reach their highest potential despite adverse conditions.

Limitations of the Study

Due to the limited information available in the database of ECLS-B, English Language Learners could only be identified by the primary language spoken at home at the age of preschool. There is limited information of language minority children due to the exclusion of literacy assessments from English Language Learners (Magnuson, Lahaie, & Waldfogel, 2006; Rathbun, West, & Walston, 2005). English proficiency screening excluded non-English proficient students from literacy assessments until they were able to pass the English screening. Our limited sample size of ELLs may reduce our power for statistical comparison.

This study was based primarily on the parent's responses during the parental interview. Some parents may have answered questions in reference to their family, parenting practices, and child with some degree of bias. Data was limited to the parent's responses of their home environment and children's behaviors and abilities. One approach that can perhaps provide additional information is to administer to the children a standardized assessment to measure resiliency. Furthermore, ECLS had limited information on the student's efforts to resolve a problem were not measured in this study. Problem solving skills promote protective mechanisms in the classroom-learning context (Waxman, Gray, & Padrón, 2004).

Future research should include school and classroom environments (e.g., instructional practices and administrative support) when measuring resiliency in children. Questionnaires and interviews should be conducted with teachers, administrators, and students. Observations in the classroom should be conducted in order to gain a deeper understanding of instructional practices and learning and social behaviors. Observing, for example, peer play can demonstrate social competence.

Furthermore, longitudinal research is needed to measure patterns and development of resiliency in children. Also longitudinal research will allow researchers to examine the long-term effect in children's success in school and life. Future research can explore the possible association of resiliency and mental health.

Conclusion

Researchers and practitioners are interested in how some Hispanic students are able to excel academically despite psychological and emotional difficulties and challenging environmental situations (Reis, Colbert, Hebert, 2005). It has brought forth the theory that resilience may be empowering a student to overcome adversity and develop the necessary coping mechanisms to overcome academic and environmental challenges. This study supports the need for additional resilience research that addresses other aspects such as gender and ethics group differences, this research may help us in developing more effective educational policies (Boyden & Mann, 2005). Focusing on target groups allows researchers and practitioners to gain knowledge of specific areas that can reduce the risk of disadvantaged children of academic failure and increase their future opportunities.

To summarize, I found that resilient students (a) had low participation in athletic activities and drama class; (b) parents are involved often in reading books, telling stories, and singing songs to their child; (c) lowest school readiness (i.e., identifying colors, counting high numbers, and recognizing letters); (d) highest SES; (e) highest cognitive scores of reading and mathematics; and (f) highest parental expectations. It appears that these areas need to be promoted in their home and school environment in order to increase student's resilience for academic and social success.

The results of this study on the nation's Hispanic preschoolers are useful for researchers, parents, caregivers, practitioners, and policymakers. The overall implications of these analyses suggest that family socioeconomic status, parental involvement and expectations, and cognitive skills alter favorable outcomes in resilient students. For policy and practitioners, the results indicate the importance to target resources (e.g., parental involvement, high-quality and nurturing care giving programs or services, and social interactions) prior to preschool in order to enhance the child's social and academic competence.

Future research of educational resilience should also include qualitative methods in order to gather information from the student through interviews or surveys, including questions such as why they think they are successful and their coping skills. Qualitative methods can also include observations of on-task and behaviors. Future studies with ECLS can include longitudinal studies to help identify patterns of competence and development of positive social skills and their relationship to resilient factors. Research can also include additional ecological factors of the home and school environment (including instructional practices) as the child is developing. The continued research of resilience is beneficial to build student's competence and resilience skills needed for him or her to overcome obstacles, receive more opportunities, and increase their cognitive and social ability.

CHAPTER V

CONCLUSION

Hispanic English Language Learners (ELLs) are the largest growing minority population in the United Stations (Carrasquillo & Rodriguez, 2002). Their educational achievement and building resilience from an early age is crucial for their future success. The purpose of this dissertation is to contribute to the emerging research on (a) effective instructional practices in mathematical and reading for Hispanic, ELLs and (b) factors that discriminate resilient and nonresilient Hispanic children. The dissertation consists of three studies using the Early Childhood Longitudinal Study-Kindergarten Cohort and Birth Cohort dataset.

Instructional Practices to Hispanic ELLs and Non-ELLs

In the first study, we investigated whether there were instructional practices differences between ELLs and non-ELLs and the type of classrooms (i.e., predominantly Hispanic, ELL; integrated; and predominantly White) they attended. Then, we examined if there was a relationship between instructional practices and the ELLs reading skills in 5^{th} -grade. The study contributed to the limited empirical literature regarding ELLs and low reading skills (Vaughn, Mathes, Linan-Thompson, & Francis, 2005).

The results indicated that ELLs were being exposed more often to teacher-directed, whole-classroom instruction. Student-selected activities differed between integrated classrooms and predominantly ELL reading classrooms. Students in integrated and predominantly non-ELL reading classrooms were receiving significantly different amount of workbook instruction. The findings of this study also indicate that media instruction had a differential significant effect in

the type of classroom the student attended and whether the student was ELL or non-ELL. Furthermore, non-ELLs in predominantly non-ELL classrooms and predominantly ELL classrooms were receiving less media instruction compared to non-ELLs in integrated classrooms. In contrast, ELLs in integrated classrooms were receiving the least amount of media instruction. The teacher-directed, small-group instruction influences the ELLs 5th -grade reading achievement. The results of this analysis also indicated that workbooks contribute the least to ELLs 5th-grade reading achievement. As expected, the results from this study found that 3rd-grade reading achievement directly influences the students 5th -grade reading achievement.

It is important to increase ELLs' reading achievement, because literacy skills are the foundation of academic development and achievement (Almaguer, 2005). The development of literacy is also essential because students can demonstrate content-area mastery across the curriculum once they have achieved high-ability levels of literacy (Kamil, 2003; Suarez-Orozco, Suarez-Orozco, 2001; Wortham, Murillo, & Hamann, 2002). One of the important implications of this study is that ELLs need more exposure to effective instructional practices (e.g., small-group and media). Another important implication is that instructional practices differ by type of classrooms in which is promoting inequalities opportunities of learning.

The second study focused on the 5th -grade mathematics achievement of Hispanic ELLs, Hispanic non-ELLs, and White non-ELLs. The findings of this study suggest 5th -grade students are receiving more teacher-directed, whole-class instruction and are being exposed almost every day to mathematics textbooks or worksheets rather than other more student-centered instructional practices. Student-selected activities and the use of computers, for example, were found to be rarely used during mathematics instruction. The results also indicate that the use of textbooks or worksheets and computers for solving mathematics problems significantly

contribute to the student's mathematic achievement. In addition, we found that student's mathematics achievement in previous grades directly impacts the student's achievement in future grades. Furthermore, Hispanic ELLs were found to learn more when they were exposed more often to blackboards and overheads for solving mathematics problems. Finally, all the students within the groups improved their mathematical performance when using the blackboards or overheads to increase their mathematics understanding. These results may be a reflection of the prevalence use of these instructional practices across classrooms.

There is limited research on relations between instructional practices and ELLs' academic achievement (Chang, 2008). These two studies, however, lend support to other studies that have found that providing effective student-centered instructional practices (e.g., small group instruction and using media) increases ELLs' cognitive skills (Lake & Pappamihiel, 2003). Educators need to recognize that these student-centered practices are effective instructional practices and enhance student outcomes, rather than totally emphasizing direct instruction practices to help students meet national standards (Burris, Heubert, & Levin, 2006; Waxman, Padrón, & Lee, 2008)). The findings from the two studies highlight the need for improved instructional practices to reinforce ELL and Hispanic success in mathematics and reading. Future research should continue to identify effective instructional practices for ELLs and Hispanic students in order to provide a better understanding of the effects of different instructional practices for mathematics and reading. If the classroom instruction does not improve, especially for targeting Hispanic and ELL needs, students' academic performance will continue to decline (Gordon & Mejia, 2006).

The results from the two studies suggest there is a need for continued professional development to promote effective instructional practices to address Hispanic, ELL literacy and

mathematics development in the classroom. Many classroom teachers are not receiving professional development that addresses the needs of ELLs. Thompson (2004), for example, found that from the 47% teachers that had ELL students in their classrooms, only 6% had received 8 or more hours of ELL strategy training since 2000. Preservice teacher education also should address effective instructional practices for ELLs (Padrón, Waxman, & Rivera, 2003). Professional development should specifically include strategies for addressing the needs of ELLs as well as implementing in the research-based instructional practices for ELLs (Padrón, Waxman, & Rivera, 2003).

Finally, policy makers and educators have the power to be advocates for improving the educational circumstances for ELLs (Baca & Escamella, 2002; Stritikus, 2006; Waxman, Téllez, & Walberg, 2006). Education policies need to be based on effective instructional practice for ELLs in order to meet the needs of all students in diverse classrooms. Educational policies also need to ensure that there are equal learning opportunities for all students. Furthermore, policy makers and educators need to ensure that all the students are receiving high-quality education, and that teachers are held accountable for effective instructional practices.

Resilience of Hispanic Preschoolers

The final study analyzed the resilience and academic achievement (i.e., literacy and mathematics) of preschool Hispanic students with an emphasis on school readiness, home learning environment, child care arrangements, parental expectations, and family demographics. The results indicated the resilient group had a more active home learning environment. Those in the non-resilient group had the highest average school readiness scores. The resilient group had higher SES scores, the highest cognitive scores and the highest parental expectations. The discriminant analysis between resilient and non-resilient preschoolers revealed that the non-

resilient group had a misclassification rate of 29.7% and the misclassification rate for the resilient group was 27.2%. Library literacy, fine arts participation, performance participation, literacy activity, school readiness, relative child-care, and child-care program had the largest impact.

Despite the ability for resilience to develop from an early age, most research on resilience has focused on older elementary grades and adolescence and few have studied resilience in preschool children and the extent that various factors promote resilience (Israelashvili & Wegman-Rozi, 2003; Lynch, Geller, & Schmitdy, 2004; Werner, 2000). There are also limited investigations focusing on comparisons between resilient and non-resilient preschool children (Judge, 2005) and positive outcomes of resilient children. Similarly, there are few studies that have compared resilient and non-resilient Hispanic students (Waxman, Huang, & Padrón, 1997).

The results of the present study on the nation's Hispanic preschoolers are useful for researchers, parents, care givers, practitioners, and policymakers. The overall implications of these analyses suggest that family socioeconomic status, parental involvement and expectations, and cognitive skills alter favorable outcomes in resilient students. For policy and practitioners, the results suggest the importance of targeting resources (e.g., parental involvement, high-quality and nurturing care giving programs or services, and social interactions) prior to preschool in because it will create a foundation and enhance the child's academic skills and attainment of social-emotional skills. Educational interventions in early childhood programs can create a smooth transition to elementary grades and provide protective resources to foster resilience (Crosnoe, 2005; Lynch, Geller, & Schmitdy, 2004; McMahon, 2007; Waxman, Huang, & Padrón, 1997).

This study also contributes to the research in this area by helping identify resilient factors that promote Hispanic preschool student's success. As previously discussed, the findings from the present study lend support to other research in the field. More specifically, this study focused on Hispanic preschoolers and examined factors that may be useful for developing educational interventions in early childhood programs (Crosnoe, 2005; Lynch, Geller, & Schmidt, 2004; McMahon, 2007; Waxman, Huang, & Padrón, 1997). Furthermore, the findings may help educational policymakers, teachers, and school personnel understand why some students are successful in school despite coming from stressful at-risk home and school environments. Targeting these students at an early age, as they are entering formal education, is essential for developing a baseline of student's resilience. With a baseline, patterns and future development of resilient characteristics can to be examined and promoted. It has been found that resilience is not a fixed trait, but rather it should be looked at as skills and coping mechanisms that individuals develop and change over time depending on their experiences and their immediate needs. Future research should include longitudinal data to determine patterns and help develop interventions that promote resilience in children in order for them to reach their highest potential despite being placed in adverse conditions.

Summary

These three studies emphasize the need of future research to include longitudinal studies of Hispanic, ELLs from Preschool through upper-level grades to investigate (a) resilience development, patterns, and changes, (b) consistency and variance of effective instructional practices in different types of classroom, and (c) development of achievement in mathematics and reading. For example, the continued research of resilience with ecological factors of the home and school environment as the child is developing is beneficial to build student's

competence and resilience skills needed for him or her to overcome obstacles, receive more opportunities, and increase their cognitive and social ability. Furthermore, identifying a problem to increase academic performance in the early years of school will allow Hispanic ELL not fall behind mainstream students (Chang, 2008).

Future studies including Hispanic ELLs, should examine the impact of language development, proficiency, and exposure on both instructional practices and resilience. Qualitative methods should also be included when exploring resilience and effective instructional practices with Hispanic and ELLs in order to gain rich information from the student, parent, and teacher. For example, interviews or surveys can include questions such as why they think they are successful and their coping skills. Qualitative methods can also include observations of on-task and behaviors.

Early intervention programs, policies, and educators, however, need to target resources and protective factors for resilience development as early as possible (e.g., preschool or earlier) in order to create the foundation of academic skills and attainment of social-emotional skills (Bennett, Elliott, & Peters, 2005; Judge, 2005; Lynch, Geller, & Schmidt, 2004). Early intervention promoting resilience can help students make a smooth transition to elementary school (Israelashvili & Wegman-Rozi, 2003). However, there is a lack of specific interventions promoting resilience in young children (Israelashvili & Wegman-Rozi, 2003) and more programs need to be developed and tested. It is essential that early intervention programs provide protective resources for young, vulnerable children (Lynch, Geller, & Schmidt, 2004; Werner, 2000). Resilient students generally come from the same disadvantaged social, economic, and educational environments as less-successful or non-resilient students. Resilient students, however, generally develop effective strategies to overcome adversities. Early intervention and

prevention programs can aid in developing and maintaining resilience in all children. It is essential for parents and educators to promote from an early age internal and external factors of resilience in children in order to positively impact the development of all children's competence and social skills. Overall, educational policies and programs can influence educational practices to foster resilience in all children, especially those at risk, and hold teachers accountable to implement effective instructional practices.

Hispanic ELLs face many educational challenges, but the three studies reported here suggest that promoting resilience and implementing effective instructional practices may increase Hispanic ELLs academic achievement as well as positively enhance their home and school environment. The teacher and policy implications of the findings of our studies indicated that more student-centered instruction is needed in the classrooms because not enough effective instructions are being implemented in diverse classrooms. Also our findings implicated that classrooms and policies should focus on early intervention and prevention fostering resilient characteristics, as well as consistent and effective instructional practices.

Further research needs to address the relation between resilience and classroom practices. Are there effective classroom instructional practices for ELLs, for example, that promote their resilience and academic outcomes? Questions related to resilience and classroom practices need to be addressed in further studies. As previously discussed, qualitative and mixed methods would be beneficial in future research of instructional practices and resilience. In future studies examining ELLs, the child's language development, English proficiency, services provided, and exposure to language and formal education need to be included in order to determine the impact of language and experience on academic achievement and resilience. Furthermore, it is suggested that future studies examine the longitudinal (a) consistency and variance of effective

instructional practices in different types of classrooms, (b) the development, patterns, and change of resilience in children, especially at-risk students, and (c) how instruction and resilience impacts the development of achievement in math and reading from early education onward.

Federally- and privately-sponsored research projects need to include a better representation of minorities, such as Hispanic ELLs. The ECLS, for example, is a longitudinal national representative database, however, it has several limitations to how ELLs can be researched. For example, researchers vary in how they define ELLs. In the present study, we labeled a child as an ELL by whether they were receiving ESL services in their school. Other researchers using the ECLS database have defined ELLs by the language of instruction, English screening assessment, language spoken at home, or ethnicity. This limits the ability for researchers to compare findings and collaborate in studies. Also, the database did not provide information or tracking of language development, entering and exiting ESL programs, immigrant status, or migrant status. There is also not an adequate representation of ELLs because the English language screening excluded limited English proficient students. From this perspective, we need to question why a national representative database, such as ECLS, would omit these factors and why the sub-group of ELLs is not a national representative database.

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APPENDIX

Appendix 2.1

Spring Fifth Grade Composite Variables

Variable Name	Description	Derived from	Values
R6RACE	Child race and ethnicity	K-3rd grade parent interview W5RACETH, W3RACETH, W1RACETH, WKRACETH, RACE, C_RACE, HI_PSU	1=White; 2=Black or African American; 3=Hispanic, race specified; 4=Hispanic, no race specified; 5=Asian; 6=Native Hawaiian or other Pacific Islander; 7=American Indian or Alaska Native; 8=More than 1 race, non-Hispanic
R6GENDER	Child's gender	K-3rd grade parent interview R6GENDER, CHILDGEN, FMS, GENDER	1= male; 2 = female
W5SESQ5	Socioeconomic status	K-5th grade parent interview W5SESL; Father/male guardian education and occupation; Mother/female guardian education and occupation; household income	1 = First quintile (lowest); 2 = Second quintile; 3 = Third quintile; 4 = Fourth quintile; 5 = Fifth quintile (highest)
W5PARED	Highest level of education for the child's parents or non-parental guardian who resides in the household.	K-5th grade parent interview W5MOMED, W5DADED	1 = 8th grade or below; 2 = 9th to 12th grade; 3 = High school diploma/equivalent; 4 = Voc/Tech program; 5 = Some college; 6 = Bachelor's Degree; 7 = Graduate/professional school/no degree; 8 = Master's degree; 9 = Doctorate or professional degree
S6PUPRI	School type: public or private	School administrator questionnaire S6SCTYP	1 = public 2 = private
S6MINOR	Percentage of minority students in school in 5thgrade	School administrator questionnaire, question #8 asking percentage of race; school administrator questionnaire (1st-5th grade) asked racial composition; CCD (public); PSS (private)	1= less than 10%; 2= 10% to less than 25%; 3= 25% to less than 50%; 4= 50% to less than 75%; 5= 75% or more

Appendix 2.2

Race of Non-ELL and ELLs by Type of Classroom from Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
White, non-Hispanic	3710	---	70	---		---
Black or African American	590	---	30	---		---
Hispanic, race specified	350	20	70	40	20	40
Hispanic, race not specified	340	30	100	60	20	50
Asian	290	---	40	---		---
Native Hawaiian, Other Pacific Islander	60	---	10	---		---
American Indian or Alaska Native	80	---	10	---		---
More than one race, non-Hispanic	120	---	10	---	0	---
Total	5540	50	340	100	40	90

*unweighted sample

Appendix 2.3

Gender of Non-ELL and ELLs by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Male	2760	20	160	60	30	40
Female	2780	30	180	40	20	40
Total	5540	50	340	100	50	80

*unweighted sample

Appendix 2.4
Parent Highest Education of Non-ELL and ELLs by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classrooms		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
8th grade or below	60	10	20	30	10	30
9th-12th grade	200	10	30	20		10
High School/Equivalent	1060	10	80	30	10	30
Voc/Tech program	300		20	10	10	10
Some college	1640		90	10	10	10
Bachelor degree	1170		50			
Graduate/professional, no degree	200		10			0
Masters degree	590		20		50	
Doctorate or professional degree	310	0	10			0

*unweighted sample

Appendix 2.5

Socioeconomic Status of Non-ELL and ELLs by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
First Quintile	650	30	100	70	20	60
Second Quintile	1020	10	70	20	10	10
Third Quintile	1130		60	10	10	
Fourth Quintile	1300		60			
Fifth Quintile	1440	0	40	0		0

*unweighted sample

Appendix 2.6

ESL Certified Reading Teacher by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Yes	250	10	160	40	10	60
No	5290	30	180	60	40	30

*unweighted sample

Appendix 2.7

Percent Minority Students in the Participants School by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Less than 10%	1900			0		
10% to less than 25%	1150		20	0	0	0
25% to less than 50%	1120	10	50	10		
50% to less than 75%	520	10	50	10		
75% or more	860	30	220	90	50	80

*unweighted sample

Appendix 2.8

Non-ELLs and ELLs Attending Public School by Type of Classrooms for Complete Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Public	4850	50	330	50	50	90
Private	690	0		0		0
Total	5540	50	330	50	50	90

*unweighted sample

Appendix 2.9
Race of Non-ELL and ELLs by Type of Classroom of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
White, non-Hispanic	40	---	10	---		---
Black or African American	10	---		---		---
Hispanic, race specified		20	10	20	20	20
Hispanic, race not specified		30	20	30	20	30
Asian		---	10	---		---
Native Hawaiian, Other Pacific Islander	0	---	0	---		---
American Indian or Alaska Native	0	---	0	---	10	---
More than one race, non-Hispanic		---	0	---	0	---

*unweighted sample

Appendix 2.10

Gender of Non-ELL and ELLs by Type of Classrooms of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Male	20	20	25	30	30	30
Female	30	30	25	20	20	20
Total	50	50	50	50	50	50

*unweighted sample

Appendix 2.11
Parent Highest Education of Non-ELL and ELLs by Type of Classrooms of Random Sample

	Predominantly Non-ELL Classrooms		**Integrated Classrooms**		**Predominantly ELL Classrooms**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
8th grade or below		10	10	20	10	20
9th-12th grade		10	10	10		10
High School/Equivalent	10	10	10	10	10	10
Voc/Tech program		10			10	
Some college	20	10	10	10	10	
Bachelor degree	10		10			
Graduate/professional, no degree				0	0	0
Masters degree	10				0	0
Doctorate or professional degree	10	0		0		0

*unweighted sample

Appendix 2.12

Socioeconomic Status of Non-ELL and ELLs by Type of Classrooms of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
First Quintile	10	30	20	40	20	40
Second Quintile	10	10	10	10	10	10
Third Quintile	10		10		10	
Fourth Quintile	20	10	10			
Fifth Quintile	10	0	10	0		0

*unweighted sample

Appendix 2.13

ESL Certified Reading Teacher by Type of Classrooms of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Yes		10	30	30	10	40
No	50	30	20	20	40	10

*unweighted sample

Appendix 2.14

Percent Minority Students in the Participants School by Type of Classrooms of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Less than 10%	20		0	0		0
10% to less than 25%	10			0	0	0
25% to less than 50%	10	10	10			0
50% to less than 75%	10	10	10			
75% or more	10	30	30	40	40	50

*unweighted sample

Appendix 2.15

Non-ELLs and ELLs Attending Public School by Type of Classroom of Random Sample

	Predominantly Non-ELL Classroom		**Integrated Classroom**		**Predominantly ELL Classroom**	
	Non-ELLs	**ELLs**	**Non-ELLs**	**ELLs**	**Non-ELLs**	**ELLs**
Public	40	10	50	50	50	50
Private	10	30	0	0		0

*unweighted sample

Appendix 2.16

Multicollinearity

	Collinearity Statistics	
	Tolerance	**VIF**
3rd grade reading achievement	.981	1.020
Teacher-directed, whole class	.861	1.162
Teacher-directed, small group	.564	1.774
Teacher-directed, individual	.647	1.546
Student-selected activities	.862	1.160
Workbooks/worksheets	.894	1.118
Visual aide	.985	1.016

Appendix 2.17

Model Summary 1

R	R Square	Adjusted R Square	Std. Error of the Estimate
.795	.633	.615	12.793857

Appendix 3.1. Composite Scores

Variable Name	Description	Derived from	Values
R6RACE	Child race and ethnicity	K-3rd grade parent interview W5RACETH, W3RACETH, W1RACETH, WKRACETH, RACE, C_RACE, HI_PSU	1=White; 2=Black or African American; 3=Hispanic, race specified; 4=Hispanic, no race specified; 5=Asian; 6=Native Hawaiian or other Pacific Islander; 7=American Indian or Alaska Native; 8=More than 1 race, non-Hispanic
R6GENDER	Child's gender	K-3rd grade parent interview R6GENDER, CHILDGEN, FMS, GENDER	1= male; 2 = female
W5SESQ5	Socioeconomic status	K-5th grade parent interview W5SESL; Father/male guardian education and occupation; Mother/female guardian education and occupation; household income	1 = First quintile (lowest); 2 = Second quintile; 3 = Third quintile; 4 = Fourth quintile; 5 = Fifth quintile (highest)
W5PARED	Highest level of education for the child's parents or non-parental guardian who resides in the household.	K-5th grade parent interview W5MOMED, W5DADED	1 = 8th grade or below; 2 = 9th to 12th grade; 3 = High school diploma/equivalent; 4 = Voc/Tech program; 5 = Some college; 6 = Bachelor's Degree; 7 = Graduate/professional school/no degree; 8 = Master's degree; 9 = Doctorate or professional degree
S6PUPRI	School type: public or private	School administrator questionnaire S6SCTYP	1 = public 2 = private
S6MINOR	Percentage of minority students in school in 5th grade	School administrator questionnaire, question #8 asking percentage of race; school administrator questionnaire (1st-5th grade) asked racial composition; CCD (public); PSS (private)	1= less than 10%; 2= 10% to less than 25%; 3= 25% to less than 50%; 4= 50% to less than 75%; 5= 75% or more

Appendix 3.2

Ethnicity of Participants

	Non-ELLs	**ELLs**
White	100	0
Hispanic	100	100
Total	200	100

*unweighted sample

Appendix 3.3 Descriptive of Participants

	Non-ELLs White	Non-ELLs Hispanic	ELLs Hispanic
Gender			
Male	50	50	49
Female	50	50	50
Parent Highest Education			
8th grade or below	---	10	30
9th-12th grade	10	20	20
High School or Equivalent	40	30	30
Voc/Tech program	10	10	10
Some college	40	30	10
Bachelor degree	10	10	
Socioeconomic Status			
First Quintile	20	40	70
Second Quintile	40	40	20
Third Quintile	40	20	10
ESL Certified Mathematics Teacher			
Yes		20	60
No	100	80	50
Public School Attendance			
Public School	100	100	100

*unweighted sample

Appendix 3.4
Multicollinearity of Multiple Regressions

	White, Non-ELLs		Hispanic, Non-ELLs		Hispanic, ELLs	
	Collinearity Statistics		Collinearity Statistics		Collinearity Statistics	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
3rd grade mathematics IRT scale score	.814	1.229	.865	1.156	.889	1.124
Teacher-directed, whole-class	.514	1.944	.631	1.585	.671	1.491
Teacher-directed, small-group	.453	2.207	.638	1.566	.572	1.747
Teacher-directed, individual	.650	1.539	.564	1.773	.610	1.640
Student-selected activities	.608	1.645	.738	1.355	.798	1.253
Textbooks activities	.716	1.397	.791	1.264	.712	1.404
Use blackboard or overhead	.769	1.301	.680	1.471	.779	1.284
Small group or partner	.442	2.265	.696	1.436	.558	1.792
Measuring instruments	.572	1.749	.703	1.423	.523	1.912
Manipulatives	.515	1.940	.619	1.615	.397	2.516
Writing	.755	1.324	.675	1.482	.469	2.134
Discussion with peers	.447	2.235	.375	2.666	.427	2.343
Reflect real-life situation	.479	2.089	.381	2.626	.457	2.187
Use computer	.776	1.288	.753	1.329	.650	1.539
Visual representation	.589	1.697	.596	1.678	.558	1.793

*unweighted sample

Appendix 4.1 Composite Descriptions for Preschool Hispanic Students

Variable Name	Description	Derived from	Values
X3CHRACE	Child race and ethnicity	Preschool parent interview; Parent CAPI Instrument data; X1CHAMIN, X2CHAMIN, X3CHAMIN, X1CHASN,X1CHPCIL, X1CHBLCK, X1CHWHT, X1CHHISP, X1CHMLRC, X1CHRACE,X2CHRACE, X3CHRACE	3=Hispanic, race specified 4=Hispanic, no race specified
X3CHSEX	Child's gender	Preschool parent interview Field interviewer corrected previous response error	1= male; 2 = female
X3SESQ5	Socioeconomic status	K-5th grade parent interview; X3MOMED, X3IMOMLB, X3MOMOCC, X3FTHED, X3IFTHLB, X3FTHOCC, X3INCOME	1 = First quintile (lowest); 2 = Second quintile;3 = Third quintile; 4 = Fourth quintile; 5 = Fifth quintile (highest)
X3PARED	Highest level of education for the child's parents or non-parental guardian who resides in the household.	Preschool parent interview; Composite of mom and father education; X3FTHED, X3MOMED	1 = 8th or below; 2 = 9th-12th grade; 3 = High school; 4 = Tech program; 5 = Some college; 6 = Bachelor; 7 = Graduate; 8 = Master ; 9 = Doctor
X3HPARNT	Parents/guardians living in household	Preschool parent interview Composite classification of the resident female and male guardians ; X3MOMTYP and X3FTHTYP	1= biological mom/dad; 2=biological mom/other dad; 3= biological dad/other mom; 4= biological mom; 5= biological dad; 6= 2 adoptive parents; 7= 1 adoptive parent or adoptive & step; 8= related guardian(s), 9= unrelated guardian(s)
X3LITSC	Literacy- IRT scale score	Literacy items from the Direct Child Cognitive Assessment (X3LTR, composite); (X3PHONO); (X3PRINT)	Continuous, range 0-37
X3LITTS	Literacy- T-scale score	Literacy items from the Direct Child Cognitive Assessment	Continuous, range 0-100
X3MTHSC	Mathematics- IRT scale score	Math items from the Direct Child Cognitive Assessment	Continuous, range 0-28
X3MTHTS	Mathematics- T-scale score	Math items from the Direct Child Cognitive Assessment	Continuous, range 0-100

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