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UNDERSTANDING THE RELATIONSHIP BETWEEN TEXAS' EARLY CHILDHOOD EDUCATION DELIVERY SYSTEM AND FIRST GRADE RETENTION: AN ECOLOGICAL SYSTEMS ANALYSIS

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UNDERSTANDING THE RELATIONSHIP BETWEEN TEXAS' EARLY CHILDHOOD EDUCATION DELIVERY SYSTEM AND FIRST GRADE RETENTION: AN ECOLOGICAL SYSTEMS ANALYSIS

by

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DEDICATION

For My Family, from whom I have learned that as we progress and work through the joys, trials, and tribulations that constitute our collective and shared human condition, we discover at some point during the journey, that LOVE is the divine condition.

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UNDERSTANDING THE RELATIONSHIP BETWEEN TEXAS' EARLY CHILDHOOD EDUCATION DELIVERY SYSTEM AND FIRST GRADE RETENTION: AN ECOLOGICAL SYSTEMS ANALYSIS

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This study examined which predictor measures best explain first grade retention in Texas, using three campus configuration types. Predictor measures were chosen from Texas public school campus student demographic and operational data, as well as community-based early childhood program data. Prior to this study, no research had been conducted in Texas that merged public school-based early childhood program data with community-based early childhood program data in order to understand a historical and often neglected problem in the state's education system: the number of students being held back in first grade.

To determine which predictor measures best explained first grade retention among selected campus configuration types, a hierarchical regression analysis was conducted. Initially, public school campuses that did not contain early childhood and/or pre-

kindergarten programs in their campus configuration, and that generally served students with fewer risks for academic and social failure, had lower first grade retention rates, which were statistically significant. After controlling for multiple campus student demographic and operational predictor measures, as well as access to community-based early childhood programs per first grade student, however, campuses that contained early childhood and pre-kindergarten programs, or a combination of both, had retention rates that were no longer statistically different from the campus configurations that, on average, contained fewer economically disadvantaged and at-risk students.

Although the study was a systems-level analysis and was restricted to making inferences at the aggregate level that were non-causal, the findings provided several clues that suggest early childhood programs and experiences, both internal and external to public school campuses, have the potential to affect the short- and long-term academic success of vulnerable children. The study encouraged collaboration between the public school system and a complex, diverse community-based early childhood system, using a "vulnerable neighborhood approach" (Bruner, 2007), as one effective strategy for promoting school readiness and success for disadvantaged children, and as one means to address this challenge.

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CHAPTER 1

Introduction

Conversations and strategic initiatives abound in the state of Texas regarding the urgent need to "close the education achievement gaps" and "ensure that students are adequately prepared and ready" to meet the future demands of higher education and the workforce. According to the Texas Higher Education Plan report (2006) titled, *Closing the Gaps*, the alignment of the P-16 education system is a crucial component of the goal to promote the success of all students in the state. In addition, the Texas Governor's Business Council (GBC) issued a report in 2002 titled, *Building an Effective and Aligned P-16 Education System* that highlighted the demographic challenges to this alignment and depicted what an aligned system should look like. The GBC also released a report in 2004 (*From Good to Great: The Next Phase in Improving Texas Public Schools*) that suggested the need to "create a more robust accountability system" (p. 3) that, among other priorities, supports evaluation of state supported pre-kindergarten (pre-k) and K-2 programs on their success in preparing students for future academic work.

While the rhetoric regarding the importance of an effectively aligned and accountable P-16 system is plentiful and hopeful, the reality of such an alignment as it pertains to what exists and what is actually happening throughout the state is an entirely different matter. Given the complexity involved in trying to formulate strategies and solutions to establish a seamless P-16 system, the potential to overlook currently existing problems in various facets of the system, from the early grades through high school, represents a potentially formidable barrier.

Since the "P" component of P-16 alignment is normally conceptualized from a perspective that favors public school pre-k—which means a select population of eligible[1] children who are primarily four years of age—a substantial portion of Texas' child population is potentially ignored in alignment discussions. This substantial portion includes at-risk, multi-age children in a variety of early childhood programs, ranging from licensed child care centers to family homes. Because some researchers have argued that eighty-five percent of brain growth occurs during the infant and toddler years (Shore, 1997), not conceptualizing the "P" component to include all children—encompassing ages birth to five—limits the extent to which the goals of an aligned system can be realized.

Although highly important, only recognizing a limited pool of disadvantaged, four year-old children as constituting the "P" component of Texas' education system allows the school readiness gap[2]—as opposed to the longitudinal achievement gap typically targeted by school reform efforts—to continue to widen. To take the requisite steps needed to conceptualize and implement an aligned P-16 system, beginning at the earliest entry points, a better understanding about how Texas' early childhood education delivery system works, represents a logical starting point.

[1] Current eligibility criteria for public school pre-k in Texas include: (a) must be three or four years of age, and either (b) qualify for free and reduced lunch, (c) not comprehend the English language, (d) be homeless, (e) be a dependent of an active duty member of the military or be a dependent of an active duty military member wounded or killed in action, or (f) be currently or formerly in the foster care system.

[2] By school readiness gap, I mean the tendency for children to enter the early grades lacking the requisite knowledge and skills, both cognitive and socio-emotional, necessary for academic success.

Texas' Early Childhood Education Delivery System

To appreciate the scope of Texas' early childhood education delivery system, a preliminary definition of what is meant by "early childhood" is warranted. According to Mitchell (2001) early childhood education or "preschool":

> Implies a certain level of educational quality, an expectation that young children are learning in a setting they attend in the years before they enter school. Quality preschool education means operationally a program that promotes growth in the complementary areas of cognitive, social-emotional and physical development necessary for children to be ready to succeed in the early grades. (pgs. 7-8)

The early childhood education delivery system in Texas is broad and includes (see Table 1): (a) private (for-profit and non-profit) and faith-based child care centers and home providers (funded in part through a subsidy system based on the federal Child Care Development Block Grant and provider fees), (b) Head Start and related programs (including Early Head Start and Migrant Head Start) funded through federal revenues, and (c) public school programs funded through local property taxes. These categories often overlap and, for example, could include possibilities like a public school contracting out its pre-k services to a private child care provider as allowed in Texas statute, or integrated partnerships such as the Texas Early Education Model (TEEM).[3]

[3] In addition to the aforementioned components of Texas' early childhood education delivery system, it is important to note that there are sizeable numbers of children in unregulated care situations. Unfortunately, little to no data is available on this population of children.

Table 1
A 2005 Snapshot of Texas' Early Childhood Education Delivery System

Program Type	Frequency	Enrollment or Capacity
Public School Pre-k Campuses	2,880	182,293
Licensed Child Care Centers	8,889	820,360
NAEYC Accredited Child Care Centers	534	n/a
Licensed Child Care Homes	1,645	19,625
Registered Child Care Homes	7,808	46,848
Listed Homes	4,132	12,296
Head Start Programs	250	67,327

Source: A (2007) Texas Child Care and Early Education Factfinder

A Brief History of Public Early Childhood Education in Texas

Each of the aforementioned programs, with the exception of certain for-profit providers, is primarily designed to assist low-income and disadvantaged children. According to a recent state profile generated by Pre[k]Now (2006) titled, *Key State Profiles*, Texas' publicly funded pre-k initiative maintains the largest total enrollment of any state funded pre-k initiative in the country (p. 1). Established in 1984 as a result of Texas House Bill (HB) 72, the Texas Public School Prekindergarten Initiative provided a half-day education-based program to children who were three or four years old and who were either homeless, unable to speak and comprehend English, and who qualified for free or reduced price lunch. This initiative required school districts to offer services and fund them according to K-12 average daily attendance formulas if there were 15 or more eligible children in a given school district. An amendment to Texas House Bill (HB) 1 in 2006 expanded public school pre-k eligibility requirements to three and four year old children whose parents were either active military duty, in an activated reserve unit, or who were killed or wounded in military action. As a result of the 80th legislative session in 2007, eligibility was expanded to include children currently or formerly in the foster

care system. In addition to pre-k programs, public schools, according to the Texas Education Agency's (2004) *Frequently Asked Questions and Answers: Prekindergarten*, may also provide early education programs for children between the ages of birth to five, and preschool programs that serve children ages three to five with IDEA-B recognized disabilities.

In 1999 the Texas legislature appropriated $100 million per year, through the Prekindergarten Expansion Grant Program, to offer grants to school districts and charter schools interested in expanding their half-day pre-k programs to full-day programs. Also, in recognition of the growing need to improve the readiness of school children and promote collaboration between the multiple early childhood education and development delivery systems, the Texas Early Education Model (TEEM) was developed and approved in 2003 through Texas Senate Bill (SB) 76. In 2006, the TEEM model was significantly expanded through Texas Senate Bill (SB) 23, and the Texas School Readiness Certification System was developed to encourage the growth of quality pre-k programs.

Changes in Texas' Demography

In a 2007 report by the Educational Testing Service titled, *America's Perfect Storm*, seismic changes in American society as a result of divergent skill distributions, a changing economy, and demographic trends could have potentially devastating consequences in terms of greater inequity and increased polarization, both socially and politically. The report details changing demographic characteristics for the nation, which are especially reflected in the state of Texas.

According to the Anne E. Casey Foundation (2006) report titled, *Kids Count*, Table 2 represents historical trends in Texas' child population, which is growing steadily, and reflects 2005 Census Bureau (DeNavas-Walt, Proctor, & Smith, 2006) data that ranks Texas as 4th in the nation in total child population growth.

Table 2
Texas' Child Population, by Single Age

Age	2001	2002	2003	2004	2005
<1	366,985	367,301	371,832	377,078	379,873
1	343,191	370,281	367,872	372,117	377,089
2	330,918	346,898	371,265	368,558	372,504
3	328,578	334,850	348,106	372,150	369,131
4	328,050	332,754	336,276	349,184	372,837
5	330,926	332,460	334,398	337,569	350,033
6	331,753	335,418	334,195	335,788	338,576

Recent (2006) population projections from the Texas State Data Center and Office of the State Demographer predict, "by 2010, Texas is likely to have 25 million people and by 2040 could have more than 51.7 million people" (p. 2). In addition, according to Murdock, White, Hoque, Pecotte, You, & Balkan (2003), the future population and number of household trends shown in Tables 3-4 are likely.

Table 3
Population for the State of Texas in 2000 and Projections to 2040

Year	Anglo	Black	Hispanic	Other	Total
2000	11,074,716	2,421,653	6,669,666	685,785	20,851,820
	Assuming Rates of Net Migration (0.0) Scenario				
2010	11,292,858	2,604,162	7,986,640	776,088	22,659,748
2040	10,599,190	2,697,888	11,408,456	856,047	25,561,581
	Assuming Rates of Net Migration (0.5) Scenario				
2010	11,494,673	2,730,659	8,999,827	953,348	24,178,507
2040	11,382,992	3,283,413	18,391,333	1,954,592	35,012,330
	Assuming Rates of Net Migration (1.0) Scenario				
2010	11,700,471	2,863,397	10,164,378	1,168,772	25,897,018
2040	12,225,486	3,995,349	29,926,210	4,435,916	50,582,961

Table 4
Number of Households for the State of Texas in 2000 and Projections to 2040

Year	Anglo	Black	Hispanic	Other	Total
2000	4,540,078	843,712	1,789,623	219,941	7,393,354
		Assuming Rates of Net Migration (0.0) Scenario			
2010	4,762,878	977,518	2,304,591	267,695	8,818,719
2040	4,826,827	1,190,014	3,804,178	329,243	10,150,262
		Assuming Rates of Net Migration (0.5) Scenario			
2010	4,855,688	1,022,198	2,607,216	333,617	8,818,719
2040	5,203,862	1,441,747	6,200,085	770,565	13,616,259
		Assuming Rates of Net Migration (1.0) Scenario			
2010	4,950,419	1,068,979	2,956,070	414,118	9,389,586
2040	5,610,322	1,746,730	10,231,880	1,787,865	19,376,797

Given the data provided in Tables 2-4, the future population of Texas will not only be more diverse but could, for example, in the case of Hispanics, potentially increase by 449% (assuming the 1.0 Scenario in Tables 3 and 4; see also *Para nuestros ninos*, 2007). In addition, the Texas State Data Center (2006) predicted that the state's child population could increase by 84 percent and potentially reach 10.8 million in 2040.

Recently, Murdock (2006) predicted the trends in Texas' population by age group and ethnicity as shown in Figures 1-2.

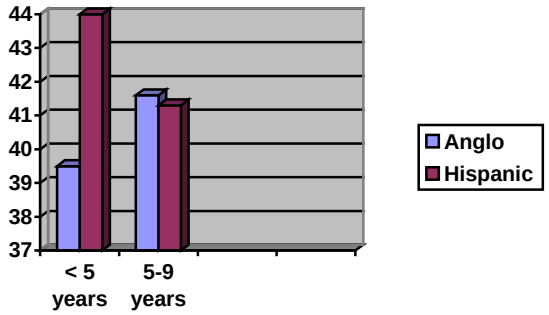

Figure 1
Percent of Texas Population by Age Group and Ethnicity, 2000

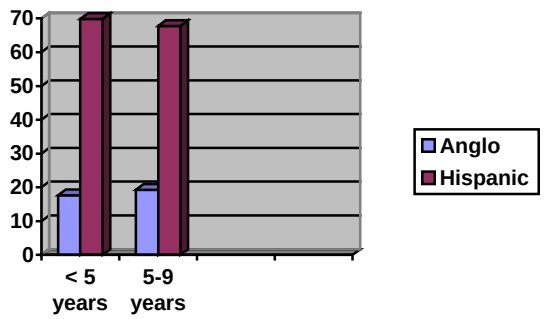

Figure 2
Percent of Texas Population by Age Group and Ethnicity, 2040 (assuming 1.0 scenario in Tables 3 and 4)

The population shifts projected for Texas present significant challenges to the state, especially in terms of education. To provide all children in the state with an efficient, adequate, and suitable education, Texas must first have the capacity to accommodate a growing child population. Table 1 showed the total 2005 capacity of Texas' known early childhood education delivery system as roughly 1,150,000 children, for all ages. Another Texas-based data report (*Central Texas sustainability indicators project*, 2006) suggested "in concept, the need for child care grows in rough proportion to the child population, yet the number of facilities and their capacity has not grown appreciably over the past three years" (p. 27). If, for example, the Texas State Data Center's (2006) projections become a reality, and the child population grows to over ten million by 2040, the state will need to respond with not only adequate facilities and space, but also ensure that families and children have access to high-quality early childhood education programs.

Changes in Poverty in Texas

As the population increases and becomes more diverse, Texas faces a significant problem in terms of the numbers of individuals living in poverty, especially the number of young children living in poverty. The U.S. Census Bureau (as quoted in *Children's campaign for the decade*, 2007) estimates the poverty rate in Texas, shown in Table 5, will remain steadily higher than the U.S. average.

Table 5
Percent of Children Living in Families Below the Federal Poverty Level

Year	Texas	U.S.
2000	20.9%	16.1%
2001	21.1%	16.3%
2002	22.0%	16.7%
2003	24.0%	17.6%
2004	23.2%	17.8%
2005	22.0%	17.6%

Not only does Texas exceed the national poverty rate, but these rates are even more pronounced for the state's child population. The poverty rate for children under the age of five is estimated to be 28.3% (Kluever, 2005) in comparison to the national average of 19.6%. This suggests that as of 2005, more than one out of every four children under the age of 5 in Texas lived in poverty. In addition, a recent report issued by the U.S. Census Bureau (DeNavas-Walt, Proctor, & Smith, 2007) indicated that the child poverty trends observed in 2005 still persist.

If this trend continues, the demography challenge will grow exponentially in terms of the impact on institutions that educate children. According to Duncan and Brooks-Gunn (2000), "research on the impact of poverty on children suggests that avoiding the adverse consequences of deep or persistent poverty in early childhood is key

for the healthy cognitive development of children" (p. 191). As the child population grows and institutions are called to accommodate children's learning needs in high-quality ways, their ability to do so will become increasingly complicated due to the deleterious effects associated with poverty (Blau, 1999; Brooks-Gunn & Duncan, 1997; Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan, Yeung, Brooks-Gunn, & Smith, 1998). Inevitably, this will lead to increasing numbers of children not being prepared to succeed in school.

The Need to Study First Grade Retention in Texas

Not only is Texas' population expanding and growing more diverse, but large numbers of children in the state are growing up in poverty. This reality could potentially translate into a greater demand for early childhood services statewide. Yet, if the demand is not satisfied with accessible, multiple, high-quality early childhood education and development options, the school readiness gap that shadows children from low-income families and communities, for example, will continue to expand and increasingly elude state and local control.

One indicator of children's school readiness in Texas is the amount of retention[4] that occurs in the early grades. Table 6 shows retention data retrieved from TEA's on-line performance monitoring tool, the Academic Indicator Excellence System. Clearly, first grade retention since 2000 has remained the highest category in the K-5 elementary system.

[4] Retention is defined as the practice of requiring a child to repeat a particular grade (Dawson, 1998; Jackson, 1975).

Table 6
Texas Retention Trends (% of students retained in select grades)

Grade	2000	2001	2002	2003	2004	2005
K	2.8	3.2	3.4	3.6	3.7	3.7
1	6.3	6.3	6.4	6.3	6.4	6.4
2	3.3	3.6	3.6	3.6	3.7	3.6
3	2.3	2.5	2.4	2.8	2.6	3.2
4	1.3	1.4	1.3	1.5	1.6	1.8
5	1.0	0.9	0.8	1.0	1.0	3.5

As the value of early learning experiences continues to surface in the research literature—ages birth to five—and as more states continue to invest in comprehensive pre-k reform as a means to enhance children's school readiness (*Votes count: Legislative action on pre-k*, 2006), a better understanding of the impact that various early childhood education programs have on student retention[5] is required to ensure that Texas' early childhood education delivery system is able to meet the current and future challenges posed by substantial demographic changes.

Purpose of the Study

The purpose of this study was to examine measures inside and outside of formal schooling contexts that contribute to first grade retention[6]. Specifically, this study analyzed whether different public school campus configurations varied significantly in

[5] Levels of student retention, or whether a student is "held back," provides a proxy measure of students' abilities or inabilities to be promoted successfully in the public education system, and represent this study's measure of school readiness.

[6] First grade retention was chosen for several reasons: (a) controlling for population growth, it has remained the highest category of student retention for a decade; (b) it is the year where students are expected to be able to read in preparation for more rigorous coursework and it is the first year where student attendance in school is mandatory in Texas; and (c) compared to kindergarten retention, it is understudied. According to Slavin, Karweit, and Wasik (1994), "In many [urban districts], 20% or more of the children repeat first grade, and more than half of all students have repeated at least one grade by the time they leave elementary school. In the early grades, performing below grade-level expectations in reading is the primary reason for retention" (p. 3). In addition, the authors maintain "there is little question that success in first grade is essentially synonymous with success in reading" (p. 6). Cunningham and Stanovich's (1997) research suggests that the ability of a first grade student to learn to read is a strong predictor of successful education outcomes later on, especially in high school.

terms of first grade retention levels (within school measures), and based on these results investigated whether access to community-based early childhood programs (external measure), impacted first grade retention.

Research Question

This study answered the following research question:

What predictor measures best explain first grade retention in Texas based on selected campus configuration types?

Theoretical Framework

This study incorporated Bronfennbrenner's ecological systems framework to understand aspects of the early childhood mesosystem that impact student retention. Bronfenbrenner (1989) defined the mesosystem as the "linkages and processes taking place between two or more settings containing the developing person" (p. 227), which influence developmental outcomes for children. Given that mesosystems are comprised of two or more interacting microsystems, this study analyzed the impact that select public school elementary campuses and diverse early childhood programs in close proximity had on student retention levels in the first grade. Termed "multisetting participation" (Bronfenbrenner, 1979), this study focused on how the public school campuses (microsystem one) and community-based early childhood programs (microsystem two) prepared children for formal entry into school, as measured by the extent to which they were retained or held back in first grade.

Research Design and Method

This study used a non-experimental, prediction research design. This study was non-experimental because there were no controlled or experimental groups and no treatment or measured intervention was applied. Data was derived from multi-year, archived, aggregate campus-level information from the Texas Academic Excellence Indicator System, and statewide community-based early childhood program data at the institutional level from the Texas After School Registry. Both data sets were publicly available from the Texas Education Agency. The research design used a hierarchical entry, multiple regression procedure that incorporated continuous and categorical variables.

Significance of the Study

A 2001 study by Gordon and Chase-Lansdale that analyzed the availability of child care programs nationwide using Census data indicated that researchers have been generally "restricted by a scarcity of data on the availability of child care across all US communities" (p. 299). Their findings were complimented by a previous study by Fuller and Strath (2001) where it was noted that given the fact that "America's early education sector remains so radically decentralized—a far flung archipelago of preschools, family child-care homes, and subsidized individuals providing services—that basic information on local organizations […] remains scarce" (p. 37).

This study filled a glaring gap in the research in Texas. To date, no study has merged public school early childhood education data with community-based early childhood program data to examine the impact that early childhood programs for young

children have on retention in first grade. Given the rise of P-16 alignment rhetoric and initiatives in Texas, this study not only informs potential research and debate on this issue statewide, but also creates a model that can be replicated by researchers to further study Texas' retention practices using diverse contextual measures. In addition, present policy trends in Texas include the need to integrate early childhood education systems (providers) in order to collaborate around serving the needs of the early childhood population, especially as it continues to grow. This study informs policy debate and deliberation in this regard by providing data-rich information specific to Texas, and offers strategic recommendations regarding how to build an effective early childhood education program infrastructure that meets current and future capacity-based challenges.

Assumptions and Limitations

This study assumed the following:

1. Retention levels in first grade provide one indicator of whether previous early education experiences or a lack of these experiences contribute to children's readiness for school.

2. The variables and data utilized in this study were measured consistently and accurately across all of the campuses and early childhood programs considered.

3. A minimum level of early childhood program quality can be measured according to licensing status (if applicable) information provided by the Texas Department of Family and Protective Services.

This study was limited by the following:

1. In addition to the measures chosen for the purposes of analysis in this study, it was acknowledged that other measures, both inside and outside the context of public schools, contribute to student retention levels. For example, according to Lee and Burkam (2002), in addition to school demographic variables, home demographics and family activities, such as family residential mobility, the types of communities in which family homes are located, the frequency of home-based literacy activities, and parental levels of education impact children's student readiness. Accordingly, only variables available through Texas Education Agency data sets could be utilized and controlled for in this study.

2. The early education experiences of students prior to school entry (kindergarten) who did not participate in public school programs were not possible to accurately determine due to a lack of data. This study utilized campus-level data that provided proxy measures of student demographic and performance characteristics, as well as aggregate staff and financial data. Student-level data was not available for the study; therefore, the researcher was limited to making inferences at the aggregate level.

3. Data that indicated teacher and caregiver qualifications for both public school campuses and community-based early childhood programs were not available for the study. It is well known that teacher quality directly impacts student learning.

4. Early childhood quality was defined according to basic state licensing information and general state information regarding public school-based programs. The research literature indicated that early childhood education program quality is based on structural characteristics (generally captured by licensing status) and process

characteristics (based on the one-on-one interactions between teachers/caregivers and children). These important process characteristics were not considered in the present study.

5. This study was unable to identify whether or not the public school early childhood education programs were half-day or full-day programs.

CHAPTER 2

Literature Review

This literature review situated the present study within two primary research fields: (a) school readiness and (b) student retention. In addition, this literature review explained how this study extends each of these research fields by addressing gaps in what is known and what needs to be understood. To accomplish this, literature highlighting the pressing need to address the school readiness gap was first reviewed. Next, literature that constructs and deconstructs what is meant by the term "school readiness" was reviewed, which built the case for how this study conceptualized school readiness. Third, literature that contributed to an understanding of Texas' retention problem and the effects of student retention on children's development in several domains was reviewed. Finally, literature was reviewed that supported the theoretical framework that guided this study's purpose and research question, and that substantiated the analytic approach to the problem considered herein.

The School Readiness Gap

A 2007 report by the National Scientific Council Center on the Developing Child (*The science of early childhood development*) at Harvard University suggested "the explosion of research in neuroscience that clarifies the extent to which the interaction between genetics and early experience literally shapes brain architecture" (p. 3) rests on a reliable record of evidence. In addition, the report specifies core concepts of development and the implications these concepts have for early childhood education and development (p. 4). The core concepts include:

- Child development is a foundation for community development and economic development, as capable children become the foundation of a prosperous and sustainable society.
- Brains are built over time.
- The interactive influences of genes and experience literally shape the architecture of the developing brain, and children's mutual engagements in relationships with their parents and other caregivers in their family or community are the "active ingredients."
- Both brain architecture and developing abilities are built "from the bottom up," with simple circuits and skills providing the scaffolding for more advanced circuits and skills over time.
- Cognitive, emotional, and social capabilities are inextricably intertwined throughout the life course.
- Toxic stress in early childhood is associated with persistent effects on the nervous system and stress hormone systems that can damage developing brain architecture and lead to lifelong problems in learning, behavior, and both physical and mental health.
- Creating the right conditions for early childhood development is likely to be more effective and less costly than addressing the problems at a later age.

As the foregoing research affirms, it is well known that early childhood interventions make a difference in the lives of children (Zigler, Finn-Stevenson, & Hall, 2002), especially high-quality interventions. According to Loeb, Bridges, Bassok, Fuller

and Rumberger (2005), "young children benefit from exposure to preschool or child-care centers, at least among those from poor families and within the domains of cognitive growth and school readiness" (p. 1). (See also Campbell & Ramey, 1994; Hustedt, Barnett, Jung, & Thomas, 2007; Loeb, Fuller, Kagan, & Carrol, 2004; Fontaine, Torre, & Grafwallner, 2006; and Ramey, Campbell, Burchinal, Skinner, Gardner, & Ramey, 2000). In addition, Loeb, et al., (2005) maintain that this improvement in growth and readiness is significant given that "children in the lowest socio-economic groups are several months behind their middle-class peers in pre-reading and early math skills at kindergarten entry" (p. 2). It is well known that "the achievement gap has deep roots that begin before school entry" (Laosa, 2005, p. 1). Therefore, the benefits of early childhood education and development suggest the need to expand access to high quality programs to all children and families, especially those from the most disadvantaged of circumstances.

Based on evaluations of pre-k programs nationwide since 1962, the Southern Regional Education Board published a report (2001), *Improving Children's Readiness for School: Preschool Programs Make a Difference, but Quality Counts*!, stipulating that high-quality prekindergarten can "help children be more ready for school; improve students' scores on standardized tests; reduce students' chances of repeating a grade; reduce referrals to special education; and improve students' chances of finishing high school" (p. 3). Associations between access and participation in early childhood education and development interventions have been demonstrated by a variety of research studies (Barnett, 1992; Barnet & Hustedt, 2005; Barnett, Young, & Schweinhart, 1998; Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Campbell,

Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Fuller, Kagan, Loeb, & Chang, 2004; Gormley, Gayer, Phillips, & Dawson, 2005; Gormley & Phillips, 2005; Ou, 2005; Ou & Reynolds, 2004; Reynolds, Mavrogenes, Bezruczko, & Hagemann, 1996; Reynolds, Temple, Roberson, & Mann, 2001). However, some studies demonstrate initial, positive effects that persist for disadvantaged students, but dissipate for the rest of the population included in the research (Magnuson, Ruhm, & Waldfogel, 2007; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007).

Despite what has been learned about child development, a sizeable readiness gap exists before children enter school (Coley, 2002; Klein & Knitzer, 2007; Lee & Burkham, 2002; Poppe & Clothier, 2005; Reardon, 2003). On average, for example, "kids living in poverty are 18 months behind the average kid when they start [school]" (Poppe & Clothier, 2005, p. 26). According to Klein and Knitzer (2007), "before entering kindergarten, the average cognitive scores of preschool-age children in the highest socioeconomic group are 60 % above the average scores of children in the lowest socioeconomic group" (p. 2).

Magnuson, Meyers, Ruhm, and Waldfogel (2004) suggest, based on the research of Stipek and Ryan (1997), that children from economically disadvantaged and deprived backgrounds enter school with "fewer academic skills" (p. 117). Since "families facing economic constraints are limited in the quality and types of learning experiences they can provide for their children" (p. 117), Magnuson et al. hypothesize that children from these backgrounds are less likely to be exposed to "stimulating learning opportunities in their

home environments," and "less likely to be enrolled in early education programs and center-based care" (p. 118).

The Contested Concept of School Readiness

Consider the following scenario taken from a study by Wright, Diener, and Kay (2000):

> Imagine that you are a kindergarten [or first grade] teacher in a school in an impoverished neighborhood. At the beginning of the school year you administer an assessment to determine the basic skills of your incoming class. As you show these young children a book you ask, 'Show me where you would start to read.' Almost two thirds of the children do not know. (p. 99)

The foregoing scenario, illustrates a dilemma faced by increasing amounts of teachers in Texas and throughout the nation, and speaks to the existence of what was previously designated as a school readiness gap. In the study conducted by Wright et al. (pgs. 111-112), data was collected on children's readiness skills in the Salt Lake City school district, which is summarized as follows.

Literacy:

- 24% of children could not identify the front of a book.
- 68% of children did not know where to start or which direction to go when reading.
- 40% of children had difficulty telling the beginning and ending of a story the children read to them.

Basic Academic Skills:

- 29% of children did not know their full name and could not write their first name.

- 37% could not recognize any letters of the alphabet.
- 69% could not identify 10 numbers.

Social Adaptation:

- 22% of children could not express themselves in understandable words or sentences.

While it is known that the school readiness gap is a problem, and that children faced with gaps in their learning have a difficult time catching up, the concept of school readiness is contested and complex. A study by Scott-Little, Kagan, and Frelow (2006) found that the concept of readiness "has been elusive" (p. 153) and remains so due to the discrepancies and gaps found in early learning standards established by states. An earlier study by Carlton and Winsler (1999) supports the general idea that the concept of readiness is elusive and claims that "the construct of school readiness has suffered from a narrow […] theoretical perspective, which presents the problem as residing within the child, with the determination of readiness being the duty of the school systems" (p. 338).

Building on the work of Kagan (1990) and Lewitt and Baker (1995), Carlton and Winsler (1999) state "readiness has been historically defined as two separate concepts: readiness to learn and readiness for school […where] readiness to learn is viewed as a level of development at which an individual is able to learn […and] readiness for school indicates that the individual also will be able to be successful in a […] school context" (p. 338). In addition, Carlton and Winsler echo Lewitt and Baker's suggestion that readiness has more to do with being ready to make successful transitions into formal schooling environments. With the advent of high-stakes accountability reforms, such as those

advocated by the No Child Left Behind (NCLB) Act, Lewitt's & Baker's notion of school readiness might be interpreted as a readiness to perform.

Scott-Little and Kagan (2006) argued that a new paradigm must be advanced that represents a broader view of what readiness entails. Specifically, their findings revealed that readiness encompasses several domains: (a) physical health and motor development; (b) socio-emotional development; (c) approaches to learning; (d) language and communication development; (e) early literacy skills; and (f) cognition and general knowledge. In addition, while Scott-Little and Kagan acknowledged that readiness [also] entails a "prerequisite set of skills" (p. 163), they also suggested that

> within this broader view of readiness, the particular skills and knowledge children bring to school are a function of the 'readiness' of the environments where they have been before starting school and the 'readiness' of the school where they enroll. (p. 155)

Given the complexity associated with defining and conceptualizing what is meant by readiness, this study associated readiness with a child's preparedness to enter school and succeed academically as demonstrated by his or her ability to be promoted from one grade level to the next; thus assuming, according to Scott-Little and Kagan (2006), that children bring with them to school "particular skills and knowledge" (p. 163) that either supports [their success] or presents a barrier to their success. Despite the complexity inherent in the notion of school readiness, when considering the findings of the study conducted by Wright et al. (2000), it is possible to see why retention is considered as a remedial strategy, in some cases.

Retention as an Indicator of School Readiness

According to Phillips and Love (1997), "children enter […the early grades] with widely differing levels of preparation and, therefore, differing levels of functioning" (p. 127). Consequently, Carlton and Winsler (1999) maintain that children's "unreadiness" has historically been addressed through three strategies, or placement options: (a) redshirting or delayed entry, (b) grade retention, and (c) transition classes.

This study was primarily concerned with understanding how public school early childhood and pre-k programs and the availability of community-based early childhood programs impact Carlton and Winsler's (1999) second strategy, student retention. This study, therefore, conceptualized retention as an indicator of student readiness for school in Texas. Phillips and Love (1997) insisted that "indicators […] are designed to monitor rather than understand children's development" (p. 126). Therefore, it is argued that monitoring and studying student retention levels provides insight into how Texas' children succeed in the early grades, and how their previous education experiences influence their success or lack of success.

Comprised of seventeen participating states, the National School Readiness Indicator Initiative (*Getting ready*, 2004) developed three objectives to promote the school readiness of children. They include:

- To create a set of measurable indicators related to and defining school readiness that can be tracked regularly over time at the state and local levels.

- To have states and local governments adopt an indicator-based definition of school readiness.
- To stimulate policy, program and other actions to improve the ability of all children to read.

To date, findings from participating states suggest a diverse array of indicators used to measure school readiness. Examples include: child outcomes, risk measures, access, quality, availability, capacity, economic stability, health and development, transitions, and early childhood systems. Unfortunately, none of the seventeen states list student retention levels as an indicator.

Why Student Retention is Important to Study

Retention matters, and based on the lack of available, accurate, reliable student achievement measures for children in the age range of birth to five years, it requires closer scrutiny as a school readiness indicator. The findings of a 2005 study by Schappe, for example, suggested "preschool assessments lack the ability to capture performance variance" (p. 187). In quoting 2001 research by Bowman, Donovan, and Burns (2001), Schappe emphasized findings compiled by the National Research Council Committee on Early Childhood Pedagogy (NRC) that "notes the failure of existing preschool assessment methods to accurately reflect the breadth and depth of the preschool student's abilities" (p. 187). Some scholars, such as Shepard (1997), assert that most forms of school readiness testing are invalid. Richard Rothstein (2004) argued that "it would be shortsighted to evaluate preschool by its immediate effect on participants' academic scores" (p. 126) given the controversial nature of early testing. Retention rates, as a

consequence, represent a more holistic indicator of student success in the early grades given that these rates represent a metric that captures multiple measures of student evaluation, including the cognitive and non-cognitive (e.g., behavior).

In Texas, the school readiness gap is apparent based on historical and present retention trends in the early grades (see Table 6). Since 1997, first grade retention rates have steadily remained the highest retention category for elementary students. According to a 2006 TEA report that profiles statewide grade-level retention characteristics through 2005 titled, *Grade-Level Retention in Texas Public Schools*, "the disparities in retention rates across ethic groups were significant. In elementary school, African American and Hispanic students were more than twice as likely to be retained than White students" (p. ix).

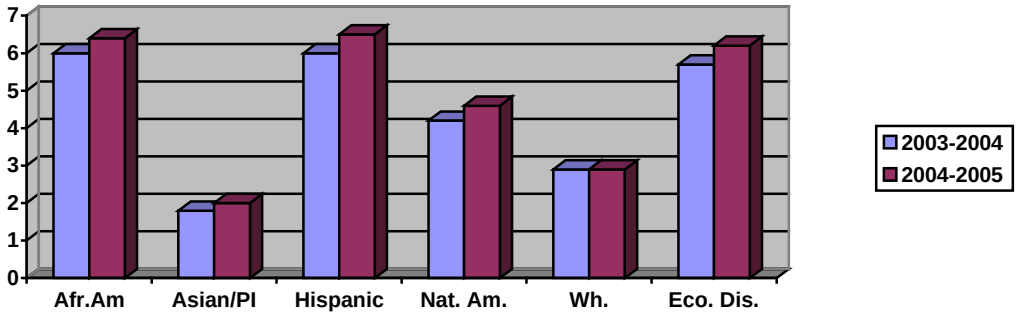

Figure 3
Retention (%) Comparisons by Ethnicity, TEA, 2006

In addition, first grade retention rates have increased for African Americans and Hispanics since 1997, while first grade retention rates for White students have declined (p. 18). Even more striking are the disparities in first grade retention rates between

economically disadvantaged children and their non-economically disadvantaged peers. Consider, for example, that in 2004-2005, TEA reports that 8.1 percent of first grade students that were economically disadvantaged were retained compared to 3.9 percent of non-economically disadvantaged students (p. 28). Also, first grade male students continue to be retained 2.4% points higher than females (p. 26), and first grade limited English proficient (LEP) students have the highest retention rate among all of the elementary grades in the same category, at 8%. At-risk and migrant first grade students have the highest aggregate retention percentage at 8.8% and 10.2% (p. 61).

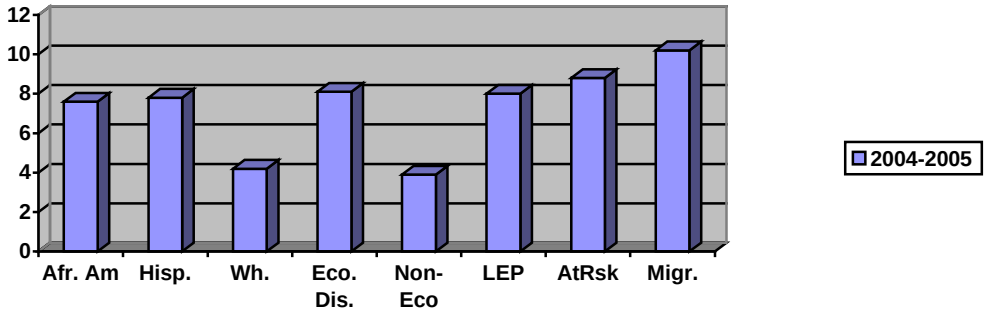

Figure 4
First Grade Retention (%) Characteristics, TEA, 2006

The aforementioned Texas retention rates reflect the findings of a broad range of scholarship that detail the characteristics of students typically retained. Smirk (2001) believes that the most common reason for retention is academic failure[7], especially reading difficulty, and Light and Morrison (1990, pgs. 17-31) suggest, based on a review

[7] Which is understood to mean a child's inability to attain required academic proficiency in skill sets such as the ability to read.

of over 200 studies, that the following factors influence retention decisions: sex of student (mostly boys), student's age (younger), knowledge of the English language (limited), physical size (small), present grade placement (retain in kindergarten or first grade), previous retention, parent-school participation (minimal), experiential background (impoverished), transiency (high mobility), school attendance (frequent truancy), intelligence level (below average), history of learning disabilities, motivation (poor), immature behavior (frequent), and a history of emotional and behavioral problems. Frey (2005) also maintains that academic failure normally occurs according to specified categories, namely ethnicity, gender (boys), and socioeconomic status. Frey's (2005) research is supported by Picklo & Christenson (2005), who, quoting McKay (2001, p. 259), suggest:

> Numerous research studies have identified characteristics of those who are more likely to be retained. These characteristics include gender (boys), poor reading and math test scores, ethnic minority status, low grades, poor classroom conduct, poor peer relationships, adjustment problems, low parent educational level, socioeconomic disadvantage, frequent school movement, and low parent perception of child's ability.

Smirk's (2001), Frey's (2005), Picklo's and Christenson's, and McKay's (2001) insights regarding "who is typically retained," is also supported by a significant number of additional research studies (Fowler & Cross, 1986; Hauser, Pager, & Simmons, 2001; Jackson, 1975; Jimerson & Kaufman, 2003; Karweit, 1991; Meisels & Liaw, 1993; McCoy & Reynolds, 1999; Slavin & Madden, 1999; Valencia and Villarreal, 2005; Zepeda, 1993).

Retention Policy in Texas: A Historical Overview

Bali, Anagnostopoulos, & Roberts (2005) suggest that performance-based, high-stakes accountability policies puts pressure on schools to retain low performers. It is clear, according to Jimerson, Pletcher, & Kerr (2005), that "despite the current policies of the No Child Left Behind Act, a greater number of students are being left behind because of grade retention than ever before" (p. 1).

Considered the exemplar upon which present-day federal education law is modeled, Texas' approach to school performance has its origins in its own Senate Bill (SB) 4 (1999). SB 4 was signed into law during Texas' 76th Legislative session. In Article 2 of SB 4 titled, "Program Improvements, Discipline, and Social Promotion," the *Texas Education Code* (*TEC*) was amended to include the controversial § 28.0211 titled, "Satisfactory Performance on Assessment Instruments Required; Accelerated Instruction." This section amended previous education code that stipulated that "a student may be promoted only on the basis of academic achievement or demonstrated proficiency of the subject matter of the course or grade level" (§ 28.021). SB 4 had a direct impact on the transformation of Texas' 1999 model of student assessment, the Texas Assessment of Academic Skills (TAAS), into the present model, the Texas Assessment of Knowledge and Skills (TAKS), which created high-stakes measures intended to prevent students from being promoted in grades three and five[8]. Section 28.0211 "prohibits a student from being promoted to certain grades unless certain requirements are met, […] and sets forth

[8] In 2007-2008, grade eight will be phased in and all students will be required to pass state assessments in order to be promoted to grade nine.

provisions regarding satisfactory performance on assessment instruments" (*SB 4: Bill analysis*, 1999, p. 8).

Section 28.0211 also established the Texas Student Success Initiative (SSI), which detailed important aspects of the new retention/social promotion decision-making process. Specifically, it outlined six domains that must be considered when making student grade retention/promotion decisions: (a) Multiple Test Opportunities, (b) Accelerated Instruction, (c) Grade Placement Committee, (d) Parent or Guardian Notification, (e) Miscellaneous Provisions, and (f) Commissioner's Rules.

Essentially, the Student Success Initiative required that students have at least three chances to pass statewide tests during the school year, and allows districts to administer an alternative test in lieu of the TAKS during the third test administration, which must be approved by the commissioner of education. In addition, school districts are required to offer accelerated instruction to each student in the subject area he or she failed after each test. Once a student fails a test for a second time, school districts are required to establish a grade placement committee that consists of the campus principal or his or her designee, the parent or guardian (who must be notified and kept informed throughout the process), and the teacher of the subject failed by the student. The purpose of this committee is to deliberate on the types of accelerated instruction required by the student prior to taking the test for the third time. If the student fails the test for a third time, he or she is retained at the same grade level.

Given that the foregoing descriptions detail the process of retention for students unable to successfully pass the required state tests in grades three and five, the

miscellaneous provisions component of § 28.0211 allows local districts and campuses to formulate retention policies using other factors such as courses, attendance, behavior, etc. This component gives districts and campuses the ability to develop criteria for student retention/promotion in non-TAKS grades, for example, such as kindergarten, first, and second grade.

The Effects of Student Retention

As demonstrated previously, first grade retention in Texas remains the highest early grade-level category. In addition, disparities and inequities exist regarding who is retained in grade. For example, Hispanic and African American first graders who come from low socioeconomic backgrounds are more likely to be held back. In an analysis that demonstrated the adverse impact that grade retention policy has had on ethnic minorities in Texas, Valencia and Villarreal (2005) stated that grade retention "has not fulfilled is promise" (p. 119) to promote the school success of low-achieving students. They quoted House (1989) who stated that "the practice of retaining students in education is absolutely contrary to the best research evidence" (p. 204), and Roderick (1994) who insisted that the retention literature "almost unanimously concludes that [it] is not as effective as promotion in improving school performance" (p. 732). Valencia's and Villarreal's (2005) conclusion that "over 50 years of research evidence [on] grade retention demonstrates little to no academic improvement among low-achieving students, […] and is a statistical predictor of dropping out" (p. 142) is supported by a substantial amount of research that examines the effects of retention in several domains: academic performance, self-esteem, personal and social adjustment, and school outcomes. Silberglitt, Jimerson, Burns, and

Appleton (2006) posit that "research examining the effectiveness of grade retention has provided overwhelming and seemingly irrefutable evidence that grade retention is an ineffective and potentially harmful practice" (p. 134).

Some research studies have found that children retained in the early grades, especially kindergarten or first grade, performed lower than peers on performance-based, standardized assessments compared to non-retained control groups (Dennebaum & Kulberg, 1994; Johnson, Merrill, & Stover, 1990; May & Welch, 1984; Niklason, 1987; Reynolds, 1992; Shepard & Smith, 1987). Hong and Raudenbush (2005) asserted that there is no long-term evidence of improvement in math and reading for retained students and no evidence that suggests children learn less if they are promoted. In fact, they stated: "at-risk children promoted to the next grade level seemed to have a better chance of growth acceleration" (p. 220) in academic work. Rose, Medway, Cantrell, & Marus (1983) found that some retained students, despite initial academic gains, experienced diminished returns over time, and that these same gains tended to dissipate. Jimerson, Pletcher, Graydon, Schnurr, Nickerson, & Kundert (2006) claim that the "results of the meta-analyses comprising nearly 700 analyses of achievement, from over 80 studies during the past 75 years, do not support the use of grade retention as an early intervention to enhance academic achievement" (p. 88).

Shephard and Smith (1986) found that not only do retained students not outperform their peers, but they also experience "emotional costs" (p. 80) as a result of being held back. They suggest that "contrary to popular beliefs, repeating a grade does not help students gain ground academically and has a negative impact on social

adjustment and self esteem" (p. 84). Their findings reflect previous research by White and Howard (1973) who studied retained students and discovered that they exhibited qualities characterized by a negative self-image, and tended to be disengaged from their school work. In addition, Jimerson, Carlson, Rotert, Egeland, and Stroufe (1997) discovered that retained students had difficulty cultivating social relationships with their peers, and displayed personal adjustment problems.

Several studies found convincing relationships between retention and dropping out of school (Jimerson, 1999; Jimerson, Anderson, & Whipple, 2002; Mantizicopoulos & Morrison, 1992; Roderick, 1994; Shepard and Smith, 1990; Rush & Vitale, 1994). Jimerson (1999) found that 69% of retainees dropped out of school compared to a control group where 29% dropped out. Jimerson et al. (2002) also found that retained students were up to 11 times more likely to drop out of high school compared to their non-retained peers. In addition, Rush and Vitale (1994) found that retention was one of eight factors that placed students at significant risk for dropping out, and that it was the most powerful predictor.

The two most prominent and cited research studies detailing the negative effects of student retention were conducted by Holmes (1989) and Jimerson (2001). After conducting a meta-analysis of 63 studies, Holmes found that the cumulative evidence did not support retention as effective for academic remediation, and that 54 of the 63 studies suggested negative effects for retainees, ranging from poor attitudes toward school, poor social adjustment, negative self-concept, and increased behavioral problems.

In 2001, Jimerson updated Holmes' (1989) work, and conducted a meta-analysis that examined retention outcomes from 1990-1999. Jimerson's findings support Holmes' in that out of 169 studies, only 5% demonstrated positive, statistically significant results that favored retention, and the majority of studies proved that retained students scored lower on standardized tests and displayed more negative social and behavioral outcomes. Table 7, developed by Jimerson et al. (2006, p. 88) illustrates findings from the meta-analyses.

Table 7
Mean Effect Sizes Examining the Outcomes of Studies Exploring Retention

	Jimerson (2001)	Holmes (1989)
Overall Effect Size	-.31[246]	-.15[861]
Academic Achievement	-.39[169]	-.19[536]
Language Arts	-.36[11]	-.16[106]
Reading	-.54[52]	-.08[144]
Mathematics	-.49[48]	-.11[137]
Total/Composites	-.20[13]	n/a
GPA	-.18[45]	-.58[4]
Socioemotional Adjustment	-.22[77]	-.09[234]
Social	-.08[12]	-.09[101]
Emotional	-.28[13]	.03[33]
Behavioral	-.11[30]	-.13[24]
Self-Concept	-.04[16]	-.13[45]
Adjustment Composite	-.15[4]	n/a
Attitude Toward School	n/a	-.05[39]
Attendance	-.65[2]	-.18[7]

Note: This table has been modified from the original. Negative numbers indicate that results favored the matched group of students relative to retained students, according to the authors. The numbers in brackets indicate the number of effect sizes used in calculating the mean effect size.

While the evidence that supports the harmful effects of retention is substantial, some studies have found that retention practices have positive consequences for students

(Alexander, Entwisle, & Dauber, 1994, 2003; Karweit, 1999; Peterson, DeGracie, & Ayabe, 1987; Pierson & Connell, 1992). Peterson, DeGracie, and Ayabe (1987) evaluated a sample of retainees four years after repeating either first, second, or third grade in Arizona based on how they performed on the California Achievement Test (CAT). While they found that at the end of the repeated grade the retained students were ahead of their classmates at the same point in time, these advantages diminished after three years. Pierson and Connell (1992) observed, based on various samples of students and how they performed on achievement tests, that "early academic difficulties tend to persist over the course of elementary school and whereas retention does not eliminate these difficulties, social promotion may exacerbate them" (p. 306).

Alexander's et al. (1994, 2003) research studies represent the most widely cited research that indicates some advantages for retained students. Since 1994, Alexander et al. have tracked the experiences of a large sample of children from first grade through high school, over 40% of which have been retained on one or more occasions. The researchers found that the "gift of time," meaning retention, had initial, positive consequences for students as they moved through the system, but admit that these effects, like other researchers' findings, diminished over time, especially when students entered middle school. In their 2003 reassessment, Alexander et al. made an important confession: "Despite the academic boost and associated improvements in attitude that result from doing better in school after retention, many of these children [the Baltimore students they tracked over time] do not finish high school" (p. 243). In addition, they

provide an interesting insight that is normally not mentioned in the retention literature: retention "deflect[s] attention from the real problems" (p. 248).

What the Literature Reviewed in this Study Suggests

Quoting a 1994 study by the National Education Commission on Time and Learning, Alexander and colleagues (2003) reiterate that:

> Decades of school improvement efforts have foundered on a fundamental design flaw, the assumption that learning can be doled out by the clock and defined by the calendar… Some students take three to six times longer than others to learn the same thing. Yet students are caught in a time trap – processed on an assembly line to the minute. Our usage of time virtually assures the failure of many students. (p. 25)

Accordingly, decades of retention-based research evidence reveals that it has mostly failed as a remedial intervention to assist at-risk students—typically from low socioeconomic backgrounds. Not only does the evidence not support long-term academic gains for retainees, but it suggests that many of these students suffer adverse consequences ranging from lower self-esteem, poor self-concept, and heightened chances for dropping out of school. Schwager, Mitchell, Mitchell, and Hecht (1992) suggest that retention "gives the appearance of accountability and standards without intervening in the underlying problem" (p. 435). According to Anderson, Whipple, and Jimerson (2002, p. 2), "there are several explanations for the negative effects associated with grade retention." These include:

1. absence of remedial strategies to enhance social or cognitive competence;

2. failure to address the risk factors associated with retention (short-term gains following retention mask long-term problems associated with ineffective instruction) [and the effects of poverty]; and
3. retained children are subsequently overage for grade, which is associated with deleterious outcomes, particularly as retained children approach middle school and puberty (stigmatization by peers and other negative experiences of grade retention may exacerbate behavioral and socio-emotional adjustment problems).

Given Texas' changing demographics, growing diversity, and alarming poverty rates, it is perplexing that, despite insistence on performance-based accountability, more and more children are failing to succeed in the early grades, especially first grade. Accordingly, a better understanding regarding how Texas' early childhood education delivery system impacts student success early on is needed. Based on the results obtained from this information, there is a need to re-evaluate relevant policies and practices to ensure that Texas' delivery system has the capacity to meet the needs of its children and families, especially those from disadvantaged circumstances.

Making Sense of Texas' Early Childhood Education Delivery System Using Bronfenbrenner's Ecological Systems Framework

Bronfenbrenner's ecological systems model of human development—also referred to as the bioecological model, the person-process-context-time (PPCT) model, and the ecosystemic approach—argues "environment differentiates and actualizes biological [human] potential" (Logsdon & Gennaro, 2005). In contrast, environment can

also pose barriers to human potential, especially young children. Bronfenbrenner (1979) stated:

> The ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which the settings are embedded. (p. 21)

According to Stolzer (2005, p. 65), "the core premise of [this] model is that human development is a function of the forces from all of the various systems, and the relationships that exist between the systems." Further, Stolzer (2005) argues that these "systems are intrinsically intertwined; alterations occurring on one level have the potential to impact the entire system" (p. 65). This supports Singal's (2006) belief, based on Bronfenbrenner's work, that "development involves a reciprocal and dynamic relationship between […the aforementioned systems], in which each developing person is significantly affected by interactions between a number of overlapping systems" (p. 240).

Bronfenbrenner (1979, 1999) defined the previously referenced interacting systems as the microsystem, the mesosystem, the exosystem, and the macrosystem, which Singal (2006) describes as the "intimate, interfacing, community, cultural, and time" (p. 240).

For Bronfenbrenner (1979), "a microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular characteristics" (p. 22). An example of a microsystem would be the actual classroom wherein a child learns and interacts with adults and peers. In addition, "a mesosystem comprises the interrelations among two or more settings in which the

developing person actively participates" (p. 25), and "is formed or extended whenever the developing person moves into a new setting" (p. 25). "An exosystem refers to one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person [such as a parent's dealings with the state welfare system]" (p. 25). The "macrosystem refers to consistencies, in the form and content of lower-order systems (micro-, meso-, and exo-) that exist, or could exist, at the level of the subculture or the culture as a whole, along with any belief systems or ideology underlying such consistencies [especially how these beliefs and ideologies are manifest in public policies]" (p. 26).

Given that "Bronfenbrenner believes […] that *all* the levels of organization involved in human life are linked integratively in the constitution of the course of individual ontogeny" (Lerner, 2005, p. xiv), this study enlarges the understanding of two organizations that exercise influence on the developmental trajectories of children, namely public school early childhood and pre-k programs, and community-based early childhood programs external to these settings. Since mesosystems are comprised of two or more interacting microsystems, this study analyzed the impact that select public school elementary campuses and community-based early childhood programs in close proximity have on student retention in first grade. Termed "multisetting participation" (Bronfenbrenner, 1979), this study focused on how these campuses (microsystem one) and community-based early childhood programs (microsystem two) prepare children for

formal entry into school, as measured by the extent to which they are being retained or "held back" in first grade.

This study, therefore, analyzed select components of Texas' early childhood education delivery mesosystem to understand how public school early childhood and prekindergarten programs, and community-based early childhood programs influence the academic lives of children according to whether or not they were successfully prepared and promoted in the education system. In addition, this study represents a response to several challenges found in the literature. In 2001, Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan, and Yazejian posed a challenging question to educators, parents, and policy makers. This challenge revolved around the need to study the "influences of early experiences on the transition to school" (p. 1534). In addition, the 2006 National Association of School Boards of Education Study Group titled "Early Childhood: Creating High-Quality Learning Environments" posed the question: "What does the research say about broad access to quality learning environments" (p. 4)?

Research increasingly suggests the important influence of not only school on student success, but also the influence of school contexts on school processes and student achievement (Thrupp & Lupton, 2006). Logsdon and Gennaro (2005) underscore the importance of how "environmental processes" influence child development and how "each process can either unlock potential or act as a barrier to achievement or development" (p. 327). A 2006 study by Burchinal, Roberts, Zeisel, Hennon, and Hooper concluded that children "exposed to multiple risk factors during early childhood often experience academic difficulties, so identification of protective factors is important" (p.

79). Specifically, the authors identify, in addition to family environment, school characteristics, and child factors (e.g., intelligence levels), child care quality as a "consistent predictor of cognitive and language skills" (p. 83).

Building on the work of Jencks and Mayer (1990), who surveyed the literature regarding the consequences of growing up in poor neighborhoods and suggested four broad models by which neighborhoods may influence children's development, Furstenberg and Hughes (1997, p. 24) suggest that the "presence of institutional resources—in the form of schools, police protection, strong neighborhood organizations, and community services [such as child care]—influences children […and] that the availability of resources […] promotes opportunity." Pebley and Sastry (2004) suggest "these institutions play a vital role in the general process of social organization, but many also impart important skills and provide specific services" (p. 120).

According to Gephart (1997):

> Conceptually, neighborhoods and communities are the immediate social context in which individuals and families interact and engage with the institutions and societal agents that regulate and control access to community opportunity structures and resources. Neighborhoods are spatial units, associational networks, and perceived environments […] Insofar as *neighborhood* has a geographical referent, its meaning depends on context and function […] For some purposes, the relevant neighborhood is the block on which an individual or family resides; for other purposes, it is a group of blocks immediately surrounding the residence; for still others, it encompasses a wide physical area that includes shopping areas, schools, and community facilities. (pgs. 9-10)

Defining a neighborhood, therefore, is complex. "Neighborhood is a relatively flexible and amorphous concept that is generally defined spatially" (Pebley & Sastry, 2004). Going a step further, Pebley and Sastry (2004) maintain that the literature supports

two predominant views of what constitutes a neighborhood. One view argues that "neighborhoods are spaces in which residents are exposed on a regular basis to specific types of people, individual and collective behaviors, and social and physical environments, purely because of where they live" (p. 123).[9] The second view defines neighborhoods as "places in which individuals can develop neighborly relationships and collectively influence the social and physical environment" (p. 123).

This study understood neighborhoods according to the first view, generally, but assumed an additional dimension that is encompassed by what Pebley and Sastry (2004) call "space and time dimensions of human activities" (p. 123), or a "series of moments through space and time." (p. 124). Accordingly, for the purposes of analysis, neighborhoods were defined as those that radially encompass and extend five miles from each public school campus represented in the study's sample population, which will be elaborated upon in Chapter 3.

Building on this five-mile, spatial definition of what encompasses a neighborhood, this study measured how institutional resources in the forms of public school early childhood and pre-k programs, and various community-based early childhood programs impacted student success in first grade. While Alexander et al. (2003) admitted that "first grade repeaters have severe problems that predate their retention" (p. 242), they offer researchers a puzzling question: "Repeating a grade has not helped these children [namely first grade and multiple repeaters over the long term…] but can it really be said that retention is the source of their problems?" (p. 242).

[9] I would also add "institutions" as well.

The present study sought to provide insight into this question by examining the extent to which access to and participation in early childhood programs influenced retention. While public school early childhood and pre-k programs are not universal panaceas for larger societal problems such as poverty, their effects on student success deserve more attention, especially in a demographically changing state such as Texas. In addition, this study promoted the idea that in order to build Texas' capacity to support its most at-risk children as they transition into formal school settings, accurate information is required to deliberate on and develop more effective early childhood education policy and, as a result, ensure the future successes of all children through the effective alignment of the larger P-16 system.

CHAPTER 3

Method

This study was a secondary analysis of archived, publicly accessible data sources representing select Texas public elementary schools and community-based early childhood programs. The sample for the study consisted of 927 public school elementary campuses, which were classified into three distinct configurations. Each campus configuration began with a specific grade and continued through 5th grade. The first configuration, early childhood (EE), consisted of campuses where children had access to early childhood programs then could move on to successive grades until they completed 5th grade. The second configuration, pre-kindergarten (PK), did not have early childhood programs but provided children with access to pre-kindergarten through 5th grade. In the third configuration, kindergarten (K), children did not have access to any early childhood or pre-kindergarten programs, but could enter school as kindergarteners and continue through the 5th grade.

Chapter 3 provides an explanation of the methods used in this study, and is comprised of six sections. The sections include: theoretical framework and research question, research design, procedures, measures, data analyses, and ethical considerations.

Theoretical Framework and Research Question

Urie Bronfenbrenner's ecological systems paradigm, discussed in Chapter 2, provided a guiding theoretical framework that allowed the researcher to examine two distinct but related microsystems, and how they impacted students' readiness for school:

public school early childhood and pre-k programs (microsystem 1), and community-based early childhood programs (microsystem 2). The following research question was informed by this framework:

What predictor measures best explain first grade retention in Texas based on selected campus configuration types?

Research Design

This study used a non-experimental, prediction research design. The study was non-experimental because there were no controlled or experimental groups and no treatment or measured intervention was applied. Data was derived from multi-year, archived, aggregate campus-level information from the Texas Academic Excellence Indicator System, and statewide community-based early childhood program data at the institutional level from the Texas After School Registry. Both of the aforementioned data sets were publicly available from the Texas Education Agency.

Procedures

Academic Excellence Indicator System Data

The first step used to collect the data required to answer the research question was to create a purposive sample (McMillan & Schumacher, 2006). This step entailed downloading several archived, campus-level data sets from the Texas Academic Excellence Indicator System (AEIS). The Texas Education Agency's Performance Reporting Division publishes AEIS on-line performance-based accountability reports to provide information to the public regarding school ratings, student demographics, school finances and staff characteristics, and programs. The data sets downloaded from AEIS

included: (a) 2001-2005 campus level student demographic data; (b) 2004-2005 campus level financial data; and (c) 2004-2005 campus level staff data.

Once all of the AEIS data sets were downloaded, they were imported into Microsoft Excel and saved as comma separated value (CSV) files. They were then imported and saved as SAS (9.1) data sets. Each AEIS data set imported into SAS included each school's unique 9-digit campus identification number. From all the campuses selected, only regular instructional campuses were selected. This eliminated charter and alternative type schools from the sample. Of the regular instructional campuses selected, only those schools that had 10 or more students in first grade (FG) in the school year 2004-2005 were selected. To evaluate first grade retention at the conclusion of the school year 2004-2005, campuses were subdivided into one of three configurations using the following student enrollment criteria per grade-level/school year shown in Table 8:

Table 8

Campus Configuration Types Used to Compare First Grade Retention Levels

Type	Data: 01-02	Data:02-03	Data: 03-04	Data: 04-05
EE	EE count $\geq$ 10	PK count $\geq$ 10	K count $\geq$ 10	FG count $\geq$ 10
PK	EE count = 0	PK count $\geq$ 10	K count $\geq$ 10	FG count $\geq$ 10
K	EE count = 0	PK count = 0	K count $\geq$ 10	FG count $\geq$ 10

Note: EE= early childhood programs; PK= prekindergarten programs; K= kindergarten programs; FG= first grade programs.

Campuses that did not meet the foregoing classification criteria for the first grade analysis were eliminated from the sample. In addition, all campuses selected had to include grades 2-5, in addition to kindergarten and first grade. This selection process yielded a final sample of 927 campuses. These 927 campuses, in their distinct

configurations, formed the basis of the analysis for this study and were used to examine first grade student retention rates for 2004-2005.

Texas After School Registry (TASR) Data

The final piece of data added to the select 927 campuses was their nine-digit postal zip code. In this process, campus contact information from the Texas Education Directory (TED), publicly accessible on-line through TEA, was used to retrieve the current zip codes for each of the campuses included in this analysis. Just like the campus identification number was used to link schools across the school years of AEIS data, the school's zip code was used to link it to community-based early childhood programs in the same and in contiguous zip code regions within a five square mile radius of each campus in the sample.

Once the zip codes for each of the campuses were retrieved, all available zip codes[10] for Texas were downloaded from the zip code database at SAS Maps Online and imported into SAS. From all of the zip codes retrieved for the state of Texas, only the zip codes for each of the community-based early childhood programs included in the TASR set were selected. The remaining zip codes were eliminated. In other words, only the nine-digit zip codes for each of the 927 campuses and 22,475 community-based early childhood programs were retained.

The SAS Maps data downloaded also included the corresponding latitude and longitude coordinates for each zip code retained in the sample. All nine-digit zip codes

[10] Gephart (1997, p. 11) indicated, based on the research of Brooks-Gunn, Duncan, Klebanov, and Sealand (1993), that "investigating the effects of community organizations on school-related outcomes has shown stronger effects using zip codes."

represent the centroid or central location within a given geographical area as defined by their respective latitude and longitude parameters. To link the campus zip codes to the community-based early childhood program zip codes, the distances between each campus and each program in the sample were calculated, using the Haversin[11] formula, and based on the latitude/longitude coordinates. Only those community-based early childhood programs within five square-miles of each of the 927 campuses were retained. All others were eliminated. The final zip code-based data set represented the number of early childhood programs located within five miles of each of the 927 campuses.

Measures

Measures for the study were selected from the previously referenced data sets from 2004-2005: (a) campus student demographic and operational measures from the Academic Excellence Indicator System; and (b) community-based early childhood program measures from the Texas After School Registry.

Criterion Measure

First Grade Retention. The percent of first grade retention was calculated by taking the number of students retained in first grade divided by the total number of first grade students for each elementary school campus in the sample.

Campus Student Demographic and Operational Measures

This study used several campus predictor measures to assess first grade retention. The methods for calculating each of these measures are described next.

[11] "For two points on a sphere (of radius R) with latitudes φ_1 and φ_2, latitude separation $\Delta\varphi = \varphi_1 - \varphi_2$, and longitude separation $\Delta\lambda$, where angles are in radians, the distance d between the two points […] is related to their locations by the formula: haversin (d/R) = haversin $(\Delta\varphi)$ + cos (φ_1) cos (φ_2) haversin $(\Delta\lambda)$" (see http://en.wikipedia.org/wiki/Haversine_formula).

Campus Configuration Types. As described in the previous section titled, "Procedures," there were 3 dummy coded campus configuration types used in this study: (a) early childhood (EE); (b) pre-kindergarten (PK); and (c) kindergarten (K).

Economically Disadvantaged. The percent of economically disadvantaged students was calculated by taking the number of students on a given campus who were eligible for free or reduced-price breakfast and/or lunches divided by the total number of students.

At-Risk. The percent of at-risk students was calculated as the sum of the students coded as at-risk divided by the total number of students. According to § 29.081 of the *Texas Education Code*, there are 13 at-risk eligibility criteria, 8 of which are relevant to elementary school children. These criteria included a child who:

1. was not advanced from one grade level to the next for one or more school years;

2. did not perform satisfactorily on an assessment instrument administered to the student under Subchapter B, Chapter 39, and who had not in the previous or current school year subsequently performed on that instrument or another appropriate instrument at a level equal to at least 110 percent of the level of satisfactory performance on that instrument;

3. if the student was in prekindergarten, kindergarten, or grade 1, 2, or 3, did not perform satisfactorily on a readiness test or assessment instrument administered during the current school year;

4. had been expelled in accordance with Section 37.007 during the preceding or current school year;

5. was a student of limited English proficiency, as defined by Section 29.052;

6. was in the custody or care of the Department of Protective and Regulatory Services or has, during the current school year, been referred to the department by a school official, officer of the juvenile court, or law enforcement official;

7. was homeless, as defined by 42 U.S.C. Section 11302, and its subsequent amendments; or

8. resided in the preceding school year or resides in the current school year in a residential placement facility in the district, including a detention facility, substance abuse treatment facility, emergency shelter, psychiatric hospital, halfway house, or foster group home.

Limited English Proficient (LEP). The percent of LEP students was calculated by taking the number of LEP students on a given campus divided by the total number of students.

Bilingual. The percent of bilingual students was calculated by taking the number of bilingual students on a given campus divided by the total number of students.

Special Education. The percent of special education students was calculated by taking the number of special education students on a given campus divided by the total number of students.

Gifted. The percent of gifted students was calculated by taking the number of gifted students on a given campus divided by the total number of students.

Ethnicity. The current study used 3 ethnic measures: (a) White; (b) Hispanic; and (c) African American. Each ethnic percent was calculated by taking the number of students of a particular ethnicity on a given campus divided by the total number of students.

Mobility. The campus mobility percent was calculated by the number of students counted as mobile divided by the total number of students. According to TEA's AEIS on-line glossary, a student was considered to be mobile if he or she had been in membership at the school for less than 83% of the year (or has missed six or more weeks at a particular school).

Campus Size. Campus size represents the total number of all students who attend a given campus.

All Compensatory Funds Per Pupil. All compensatory funds per pupil were calculated by taking the total amount of state and federal compensatory funds (derived from the number of students eligible for free or reduced-price breakfast and/or lunch) divided by the total number of students eligible to receive those funds on campus. Examples include Title I, Part A funds, national and school breakfast lunch program funds, Texas Successful Schools program funds, and state compensatory revenue funds. Compensatory funds, both state and federal, are used by campuses to provide instructionally-related services, personnel, and materials to students classified at-risk for school failure (see *Texas Education Code,* § 42.142).

Teacher-to-Student Ratio. The teacher-to-student ratio was calculated by dividing the total number of students on a given campus by the total teacher full-time equivalent (FTE) count.

Kindergarten and First Grade Average Size. The kindergarten and first grade average size was calculated using the average number of students in a respective grade divided by the total number of students in that grade. Student counts in regular and supplemental class-based programs were included in this metric.

Kindergarten Retention. The kindergarten retention rate was calculated by dividing the number of students retained in kindergarten by the total number of kindergarten students.

Cumulative Retention, Grades 2-5. The cumulative retention rate was calculated by summing the individual retention rates for 2nd through 5th grade. For example, if the retention rate for 2nd grade was 2%, and also 2% for grades 3 through 5 respectively, the cumulative retention rate was 8%.

District Size. District size was calculated by summing the total number of students in a given district.

Community-Based Early Childhood Program Measure

The community-based early childhood program measure used in this study was calculated based on the actual number of programs available in the state according to data supplied by the Texas Department of Family and Protective Services (DFPS), and included in the 2004-2005 TASR data set. This data set contained a comprehensive statewide database that compiled all measurable community-based early childhood

programs (N=22,475) in the state according to program type. These program types included licensed child care centers (n=8,774), licensed child care homes (n=1,707), registered child care homes (n=8,214), and listed homes (n= 3,780).

Licensed child care centers included any facility licensed by the Texas Department of Family and Protective Services (DFPS) that cared for 13 or more children under 14 years old for less than 24 hours. Licensed child care centers represent the largest facility classification. Licensed child care homes were homes licensed by the TDFPS that provided care for less than 24 hours per day for 7-12 children under 14 years old. Registered child care homes provided care in the caregiver's home for up to six children under the age of 14; they were also allowed to take in up to six more school-age children. Listed homes were any homes where caregivers are compensated to provide regular child care (at least four hours per day, three or more days per week) in their own homes for 1-3 unrelated children. Registered and listed child care homes are subject to the least regulatory criteria and standards as outlined by the TDFPS.

Access Per First Grade Student. Using the TASR data, a measure (Table 9) was created titled, access per first grade student, by taking the average number of available community-based early childhood programs (including licensed centers and homes, registered homes, and listed homes) within a five-square mile radius of each campus and dividing that number by the number of first grade students at a particular campus. This measure summed all of the various programs available to a given campus and provided a measure of "total availability" and is a metric that represents access to community-based early childhood programs in terms of supply versus demand (see Fuller & Liang, 1996;

Fuller and Strath, 2001). Choosing this variable as a construct of available community-based early childhood program resources provided a proxy measure of social infrastructure, which has been utilized in previous research (Chase-Lansdale & Gordon, 1996).

Table 9
Measures

Measure Name	Measure Definition
Criterion Measure	
First Grade Retention	Percent of first grade retention in 2005
Campus Student Demographic and Operational Measures (2004-2005)	
Campus Configuration Types	EE: campuses that contain early childhood through 5th grade programs PK: campuses that contain prekindergarten through 5th grade programs K: campuses that contain kindergarten through 5th grade programs
Economically Disadvantaged	Percent of economically disadvantaged students
At-Risk	Percent of at-risk students
Limited English Proficient (LEP)	Percent of LEP students
Bilingual	Percent of bilingual students
Special Education	Percent of special students
Gifted	Percent of gifted students
Ethnicity	Percent of White students Percent of Hispanic students Percent of African American students
Mobility	Percent of students classified as mobile
Campus Size	Total number of students per campus
All Compensatory Funds Per Pupil	Total amount of state and federal compensatory funds expended per pupil
Teacher-to-Student Ratio	Ratio of full-time equivalent teachers and educational aides per student
Kindergarten Average Size	Average size of all kindergarten classes
First Grade Average Size	Average size of all 1st grade classes
Kindergarten Retention	2004 kindergarten retention percentage
Cumulative Retention, Grades 2-5	Cumulative retention rate, grades 2nd through 5th
District Size	All students per district
Community-Based Early Childhood Program Measure (2004-2005)	
Access Per First Grade Student	Sum of all licensed child care centers, licensed child care homes, registered child care homes, and listed child care homes, per first grade student

Data Analyses

Descriptive Analyses

To answer the research question, descriptive analyses and a hierarchical regression modeling (HRM) procedure were conducted. Descriptive statistics that characterized the sample population data by configuration type, and assessed the strength of the relationships among the campus student demographic and operational measures selected from the AEIS data were generated. The Pearson product-moment coefficients (*r*) were used to evaluate the association between each of the campus student demographic and operational constructs measured.

Hierarchical Regression Modeling

The research question was answered using hierarchical regression modeling techniques. The hierarchical regression model used in this study assessed three hierarchies. Each hierarchy was represented by the general form of the following equation:

$$\hat{y} = b_0 + b_{i(x_i)} + \Sigma\, b_{j(x_j)} + b_{k(x_k)} + e$$

Where:

$\hat{y}$ = criterion measure

b_0 = intercept

$b_{i,j,k}$ = parameter (β) estimates

x_i = campus configuration type measure (EE or PK)

x_j = campus student demographic and operational measures

x_k = community-based early childhood program measure

First Hierarchy: Campus Configuration Type Measures. The first hierarchy measured the predictive value of the campus configuration types to determine the extent to which they contributed to an understanding of first grade retention. It created a preliminary way to assess how each configuration type varied in terms of retention rate prior to including control measures. The campus configuration types were dummy coded using "K" as the reference category.

Second Hierarchy: Campus Student Demographic and Operational Measures. The second hierarchy measured the predictive value of select campus student demographic and operational measures. Campus student demographic and operational measures were selected using a backward stepwise regression procedure. Prior to the backward selection process, the campus configuration types from the first hierarchy were entered into the model. In this backward stepwise procedure, the predictor measure that accounted for the most variance in the criterion measure was entered first into the model. Next, additional predictor measures were entered and either selected or eliminated based on the partial variance (R^2) explained (Kachigan, 1991; Vogt, 1999), while controlling for the campus configuration types.

Third Hierarchy: Community-Based Early Childhood Program Measure. The third and final hierarchy measured the predictive value of access to community-based early childhood programs per first grade student within a five mile-square radius of each campus contained in the sample. To determine this, the access per first grade student measure was entered into the model, after the measures represented by the second hierarchy.

The contribution of each hierarchy was assessed using Model F statistics and by observing changes in the amount of variance explained, or the r-squared (R^2) values as the respective measures were entered into the model. The parameter (β) estimates of each predictor measure were assessed, and included 95% confidence intervals to determine how each predictor uniquely contributed to first grade retention. In addition, variance inflation factor (VIF) diagnostics were estimated to measure multicollinearity among the predictor measures in each hierarchy. Stevens (2002) suggested that a VIF value of 10 was cause for concern. To measure statistical significance, a probability (α) level of .05 or less was assessed on all results.

Ethical Considerations

The data utilized in this study represented publicly available, aggregate, institutional-level information. Individuals could not be identified. Therefore, an Institutional Review Board (IRB) "exempt" application was submitted to the University of Texas at Austin Human Subjects Review Committee and approval was obtained to conduct this study.

CHAPTER 4

Results

Descriptive Analyses Results

Chapter 4 presents the results from this study's analyses in two major sections, a descriptive analysis based on the study's sample demographics and the results from the hierarchical regression model. The descriptive analyses are presented in Tables 10-11 to provide an understanding of how each campus configuration type compared and the extent to which the measures shared by each configuration are correlated.

Table 10 provides descriptive statistics for the three campus configuration types used in the present study, and includes the mean (*M*) and standard deviation (*SD*) for each predictor measure, and the sole criterion measure. As Table 10 illustrates, there was no sample bias present when one compares the 927 selected campuses utilized for this study's analysis versus the 3,119 campuses that were not selected based on the criteria established in chapter 3. Table 10 also illustrates that the first grade retention rate mean was 4.2% for the kindergarten (K) configurations, 5.5% for early childhood (EE) configurations, and 7.0% for the pre-kindergarten (PK) configurations. The cumulative retention rate mean was 5.0% for the kindergarten (K) configurations, 8.7% for early childhood (EE) configurations, and 10.5% for the pre-kindergarten (PK) configurations. In terms of student demographics, the campus configurations exhibited substantial differences. For example, the PK configurations, on average, had roughly 34% more economically disadvantaged students than the K configurations. Also, the K configurations had twice as many White students than did the PK and EE configurations.

Table 10

Descriptive Statistics for Selected and Non-Selected Campuses

Measure	EE (n=170)	PK (n=510)	K (n=247)	Non-Selected (n=3,119)
First grade retention	5.5 (5.5)	7.0 (5.7)	4.2 (5.1)	5.0 (5.1)
Economically disadvantaged	62.8 (29.4)	73.5 (28.0)	39.7 (30.3)	54.7 (30.2)
At-Risk	43.2 (24.4)	50.9 (24.0)	31.2 (22.3)	37.8 (22.6)
Limited English proficient (LEP)	25.5 (23.4)	30 (23.9)	14.4 (17.3)	17.2 (19.9)
Bilingual	24.1 (22.3)	27.7 (22.8)	12.5 (16.4)	16.2 (19.1)
Special education	11.1 (5.0)	8.6 (3.9)	9.3 (4.0)	10.2 (5.1)
Gifted	3.8 (3.2)	4.6 (5.0)	6.6 (9.0)	5.0 (5.1)
White	21.7 (22.6)	15.8 (24.7)	43.3 (28.5)	36.4 (31.3)
Hispanic	53.8 (31.9)	60.6 (36.2)	30.7 (26.6)	38.4 (31.5)
African American	12.2 (15.8)	12.1 (21.2)	11.6 (15.3)	12.9 (18.4)
Mobility	18.3 (8.8)	19.1 (8.7)	14.8 (8.8)	16.3 (9.3)
Campus size	646.2 (217.1)	549.8 (200.7)	573.4 (184.9)	516.3 (225.4)
All compensatory funds per pupil	739.4 (500.4)	951.2 (555.9)	429.1 (496.1)	775.9 (1090.4)
Teacher-to-student ratio	14.8 (1.7)	15.7 (2.1)	14.8 (1.8)	14.9 (2.5)
Kindergarten average size	12.0 (8.6)	11.2 (8.9)	15.1 (7.9)	10.9 (9.0)
First grade average size	13.6 (8.3)	11.3 (8.4)	15.0 (7.6)	11.7 (8.7)
Kindergarten retention	2.0 (2.5)	2.3 (3.1)	3.1 (3.8)	2.7 (3.5)
Cumulative retention, 2-5	8.7 (8.3)	10.5 (8.9)	5.0 (6.3)	6.2 (7.8)
District size	60868.8 (55530.5)	54455.9 (65029.6)	34543.9 (37527.2)	33667.8 (49910.3)
Access per first grade student	4.2 (3.5)	4.0 (4.0)	3.6 (2.9)	n/a

Table 11 provides an intercorrelation matrix measuring statistical associations between the campus student demographic and operational measures included in the present study. While many of the campus measures were significantly correlated, Table 11 indicates that the strength of these associations were generally low to moderate (McMillan & Schumacher, 2006).

Table 11

Intercorrelations of Campus Student Demographic and Operational Measures

	1	2	3	4	5	6	7	8	9
1. Economically disadvantaged		.53*	.41*	.41*	-.04	-.19*	-.61*	.46*	.12*
2. At-Risk			.61*	.58*	-.15*	-.12*	-.57*	.49*	-.06*
3. Limited English proficient (LEP)				.84*	-.24*	-.08*	-.56*	.56*	-.23*
4. Bilingual					-.22*	-.09*	-.54*	.54*	-.23*
5. Special education						-.13*	.19*	-.15*	.02
6. Gifted							.15*	-.11*	-.03
7. White								-.62*	-.14*
8. Hispanic									-.36*
9. African American									
10. Mobility	.35*	.25*	.17*	.19*	.01	-.25*	-.31*	.20*	.14*
11. Campus size	-.09*	.10*	.26*	.25*	-.21*	.06	-.16*	.14*	-.11*
12. All compensatory funds per pupil	.42*	.29*	.28*	.28*	-.04	-.19*	-.35*	.33*	-.00
13. Teacher-to-student ratio	.08*	.13*	.15*	.12*	-.29*	.09*	-.25*	.21*	-.06*
14. Kindergarten average size	-.17*	-.16*	-.21*	-.20*	.04	.02	.15*	-.15*	.05
15. First grade average size	-.20*	-.12*	-.23*	-.21*	.04	.09*	.16*	-.16*	.02
16. Kindergarten retention	-.02	-.07*	-.15*	-.14*	.16*	-.04	.12*	-.06*	.00
17. Cumulative retention	.38*	.33*	.27*	.23*	-.06	-.11*	-.39*	.19*	.26*
18. District size	.16*	.18*	.24*	.24*	-.19*	.20*	-.30*	.09*	.28*

	10	11	12	13	14	15	16	17	18
10. Mobility		.00	.18*	-.05*	-.02	-.05*	.05*	.23*	.10*
11. Campus size			-.27*	.53*	.21*	.22*	-.12*	.11*	.30*
12. All compensatory funds per pupil				-.25*	-.15*	-.18*	-.00	.18*	-.05*
13. Teacher-to-student ratio					.14*	.13*	-.09*	.11*	.27*
14. Kindergarten average size						.26*	.03	-.09*	-.06*
15. First grade average size							.03	-.06*	-.03
16. Kindergarten retention								.02	-.15*
17. Cumulative retention									.40*
18. District size									

Note: p<.05*

Hierarchical Regression Model Results

The research question asked, "What predictor measures best explain first grade retention in Texas based on selected campus configuration types." The question was answered using hierarchical regression modeling.

First Hierarchy Results: Campus Configuration Type Measures

Table 10 indicated that the percent of first grade retention initially differed by campus configuration type. The first grade retention mean for all EE (n =170) campus

configurations was initially 5.5%, while for PK (n = 510) configurations it was 7.0%, and 4.2% for all K (n = 247) configurations. To determine whether these configuration-based first grade retention means were statistically different, and to determine the extent to which they predicted first grade retention, they were entered into the hierarchical regression model first.

It was found that the campus configuration types, before any additional predictor measures were introduced, were predictive of first grade retention (R^2=.05, F(927)= 22.63, p<.05), and explained 5% of the variance. In addition, the campus configuration parameter estimates yielded statistically significant results. Specifically, the EE campus configurations had 1.28% higher retention rates (p<.05), and the PK configurations had 2.82% higher retention rates (p<.05) compared to the reference category, K configurations.

Table 12
Results of First Hierarchy Estimated to Predict First Grade Retention

Measure	95% Confidence Lower Bound	95% Confidence Upper Bound	β	P	VIF	R^2	Δ R^2	Model F
Hierarchy 1								
PK	1.98	3.66	2.82	<.0001	1.38	.05	.05	22.63*
EE	.20	2.36	1.28	.02	1.38			
Intercept	3.51	4.88	4.20	<.0001	0			

Note: p<.05*

Second Hierarchy Results: Campus Student Demographic and Operational Measures

A backward stepwise, multiple regression procedure was conducted to determine which campus student demographic and operational measures best predicted first grade

retention while controlling for the campus configuration types. The results of this procedure constituted the second hierarchy of the regression model.

The predictive value of the model increased significantly with the addition of the campus student demographic and operational measures (R^2=.29, ΔR^2 =.24, F(927) = 40.86, p<.05), and explained 24% of the variance. The campus student demographic and operational measures selected by the backward stepwise procedure included the following: (a) cumulative retention, grades 2nd through 5th; (b) teacher-to-student ratio; (c) all compensatory funds per pupil; (d) mobility; (e) at-risk; (f) LEP; and (g) district size. Using the criterion of p<.05 to assess significance, it was found that the parameter (β) estimates for most of the selected predictor measures positively predicted first grade retention and all were statistically significant. The LEP measure was the one exception, which yielded a negative β estimate, and barely met the criterion for statistical significance.

Controlling for these measures, the parameter (β) estimates for campus configuration type decreased in comparison to the results of the first hierarchy (EE β = -.46, p>.05; PK β = .20, p>.05). Specifically, the EE configuration type yielded a negative parameter estimate, which was no longer statistically significant in comparison to the reference category. In addition, the PK configuration type yielded a positive parameter estimate, and like EE was no longer statistically significant in comparison to the K configuration. The VIF values for each of the measures indicated that multicollinearity was not problematic.

Table 13
Results of Second Hierarchy Estimated to Predict First Grade Retention

Measure	95% Confidence Lower Bound	95% Confidence Upper Bound	B	p	VIF	R^2	ΔR^2	Model F
Hierarchy 2								
District Size	.00	.00	.00[12]	.01	1.31	.29	.24	40.86*
Cumulative Retention	.20	.29	.24	<.0001	1.36			
Teacher-Student Ratio	.08	.42	.25	.00	1.21			
All Comp. Funds/Pupil	.001	.002	.002	<.0001	1.44			
Mobility	.03	.10	.07	.00	1.17			
At-Risk	.005	.04	.02	.01	1.78			
LEP	-.03	-.00	-.02	.05	1.71			
PK	-.65	1.06	.20	.64	1.48			
EE	-1.33	.40	-.46	.29	1.17			
Intercept	-6.19	-.38	-3.29	.03	0			

Note: p<.05*

Third Hierarchy Results: Community-Based Early Childhood Program Measure

The measure, access per first grade student, was added to the results of the second hierarchy, and together constituted the third and final hierarchy. After this measure was added to the model, the predictive value of the model remained constant (R^2=.29, ΔR^2=0, F(927)=37.07, p<.05), collectively explaining 29% of the variance in first grade retention. Using the criterion of p<.05 to assess significance, it was found that the parameter (β) estimates for the following measures continued to positively predict first grade retention and were statistically significant: (a) cumulative retention, grades 2nd through 5th; (b) teacher-to-student ratio; (c) all compensatory funds per pupil; (d) mobility; (e) at-risk; and (f) district size. The following measures did not meet the criterion for significance in the final model hierarchy: (a) LEP; and (b) access per first

[12] The actual parameter estimate was .00000791.

grade student. The VIF values for each of the measures indicated that multicollinearity was not problematic.

After controlling for all of the campus student demographic and operational measures, as well as the community-based early childhood program measure, the parameter estimates for the campus configuration types continued to decrease in comparison to the reference category (EE β =-.69, p>.05; PK β=-.19, p>.05). After the third hierarchy, findings revealed that the campus configuration types were not statistically different from the reference category.

Table 14
Results of Third Hierarchy Estimated to Predict First Grade Retention

Measure	95% Confidence Lower Bound	Upper Bound	β	p	VIF	R^2	Δ R^2	Model F
Hierarchy 3								
Access per 1st grade student	-.20	.02	-.09	.12	1.72	.29	0	37.07*
District Size	.00	.00	.00[13]	.00	2.05			
Cumulative Retention	.20	.29	.24	<.0001	1.36			
Teacher-Student Ratio	.05	.40	.23	.01	1.25			
All Comp. Funds/Pupil	.001	.002	.002	<.0001	1.46			
Mobility	.03	.10	.06	.00	1.17			
At-Risk	.004	.04	.02	.01	1.78			
LEP	-.03	.00	-.02	.06	1.72			
PK	-1.04	.66	-.19	.66	1.88			
EE	-1.67	.29	-.69	.17	1.50			
Intercept	-5.26	.27	-2.50	.08	0			

Note: p<.05*

[13] The actual parameter estimate was .00001155.

CHAPTER 5

Discussion

The purpose of this study was to examine measures, both inside and outside of formal schooling contexts, which contributed to first grade retention. Specifically, this study analyzed whether different public school campus configurations varied significantly in terms of first grade retention levels (within school measures), and based on these results investigated if access to community-based early childhood programs (external measure), impacted first grade retention. To date, no study in Texas had attempted to merge public school elementary campus student demographic and operational data with community-based early childhood program data in order to understand the relationship between these systems and first grade retention, a neglected educational problem in this state.

Chapter 5 is divided into eight major sections: summary of the literature, summary of the method, summary of the findings, discussion of the findings, implications of findings, suggestions for further research, limitations, and conclusions. In the discussion of the findings, some preliminary conclusions are made about each of the measures found to be significant predictors of first grade retention in the final hierarchical regression model, as well as those found to be non-significant. These findings are then elaborated on through a discussion regarding their implications for practice, theory, public policy, and future research. After discussing the limitations of the study, Chapter 5 concludes with a brief discussion on why the present study provides a

meaningful contribution to P-16 deliberations and conceptualizations within the state of Texas.

Summary of the Literature

A preponderance of research collected over the past 75 years suggests that student retention, as a remediation practice, has not only been ineffective, but in many cases harmful to the students and costly to school districts and taxpayers. Not only do retention practices fail to promote long-term student achievement and result in higher instances of discipline and student engagement problems, but they also contribute to the likelihood that a student will drop out of school.

Since implementing a high-stakes, pro-retention education policy in 1999, the Texas Legislature has ignored decades of research pertaining to how students are negatively affected by retention. Consequently, retention rates in the elementary grades remain problematic and contradictory to the performance goals associated with Texas-based education accountability policy. Consider, for example, that in addition to repeated and ineffective attempts to ameliorate the school achievement gaps in the later, secondary grades, school readiness preparation prior to kindergarten entry remains unaddressed while retention practices persist. Research that has studied the effects of high-quality early childhood education, ages birth to 5, suggests that investments in this realm contribute not only to a reduction in the readiness gaps, but also to the achievement gaps. In addition, profiled high-quality early childhood program interventions have demonstrated decreased special education referrals and lower instances of grade retention.

While student grade-level retention persists, state investments in quality programs and enhancements, and increased access to high-quality community-based programs across Texas are minimal. The state's interest in the evaluation of current programs remains surprisingly non-existent. Since retention constitutes a practice that is encouraged by public policy, schools have little incentive to minimize it as a remedial strategy. Given Texas' current and projected demographic changes, which include higher instances of child poverty, and lack of a coordinated, high-quality early childhood education delivery infrastructure, the inability of institutions to effectively educate children, especially in the earliest grades, constitutes a serious threat to child well-being and future academic success.

In examining the existing literature and the potential problems associated with population change and a potential inability to meet the educational demands of such change, there was little insight into the current state of affairs in Texas regarding retention and how its early childhood education delivery system impacts retention. This void created an opportunity to examine retention levels occurring in first grade, which has historically experienced some of the highest rates of student retention in the state.

The study addressed a gap in the research and provided insight into the problems by examining the extent to which access to and participation in early childhood programs, as defined throughout this study, influence first grade retention. While public school pre-k and early childhood programs are not universal panaceas for larger societal problems such as poverty, their effects on student success deserve more attention, especially in a demographically changing state like Texas. This study, therefore, promoted the idea that

to increase the capacity for Texas to support its most at-risk children as they transition into formal school settings, more information was required to develop more effective early childhood education policies and practices.

Summary of the Method

The study was a secondary analysis of archived, publicly accessible data representing 927 Texas public school elementary campuses that were classified into three distinct configurations. After the data sources were processed and the final sample was selected, the research question was answered using descriptive statistics and hierarchical regression modeling. The final model contained three hierarchies, each of which assessed first grade retention using independent predictor measures.

In the first hierarchy, the three campus configurations were assessed without additional predictor measures to determine their unique contribution to first grade retention, and to examine how these configuration types compared to each other. In the second hierarchy, a backward stepwise regression procedure was used to select campus student demographic and operational measures that best explained first grade retention variation, during which the campus configuration types were held constant. In the third and final hierarchy, a predictor measure was added to the results of the second hierarchy that measured how access to community-based early childhood programs per first grade student contributed to first grade retention.

Summary of Findings

The following research question guided this study: What predictor measures best explain first grade retention in Texas based on selected campus configuration types? In

order to answer this question, a hierarchical regression analysis was conducted. The findings were presented in Tables 12-14. Initially, the campus configuration types were a significant predictor of first grade retention, explaining 5% of the variance in retention rate. When selected campus student demographic and operational measures were entered into the regression model, based on a backward stepwise regression procedure (which controlled for campus configuration type), there was an increase in the amount of variance explained (24%). The campus student demographic and operational measures selected by the backward stepwise procedure that were significant predictors of first grade retention included the following: (a) Cumulative Retention, Grades 2-5; (b) Teacher-to-Student Ratio; (c) All Compensatory Funds Per Pupil; (d) Mobility; (e) At-Risk; (f) Limited English Proficiency (LEP); and (g) District Size.

When the community-based early childhood program measure titled, *access per first grade student* (which represented access to all community-based early childhood programs per first grade student within 5 miles of each campus in the sample) was added to the model, it remained constant, collectively explaining 29% of the variance in first grade retention. The majority of the predictor measures continued to predict first grade retention significantly, however, being limited English proficient (LEP), and having access to community-based early childhood programs per first grade student were not.

Discussion of Findings

Campus Demographic and Operational Measures

Jimerson et al. (2006) found that "over 100 studies have been conducted during the past century examining both the short- and long-term outcomes associated with

repeating a grade; however, no single definitive study examining the effectiveness of grade retention that includes all necessary control variables and outcomes" (p. 86), had been conducted. Based on the findings of the present study, several predictor measures were found that explained first grade retention between three distinct campus configurations. Several of these predictor measures confirmed previous research, and some of them provided additional insights into Texas' first grade retention problem.

Campus Configuration Types. Initially, first grade retention rates were compared across several specific campus configuration types to assess how Texas' public school-based early childhood and prekindergarten programs were preparing students for formal school entry (as measured by first grade retention) in comparison to programs that did not contain such programs. Since the research design was predictive and non-experimental, the researcher was not able to make causal connections regarding how public school-based early childhood and prekindergarten programs affect first grade retention, positively or negatively. However, the regression modeling provided several clues in the form of predictor measures that suggested how to begin to affect meaningful change towards reducing instances of first grade retention statewide through policy and practice.

Based on a preponderance of early childhood research that supports the value that early childhood participation has on student school readiness and academic outcomes for certain children, entering the campus configuration types as the first step of the hierarchical regression model was useful and necessary. Loeb, Bridges, et al. (2005), found that "young children benefit from exposure to preschool or child-care centers, at least among those from poor families and within the domains of cognitive growth and

school readiness" (p. 1; see also, Campbell & Ramey, 1994; Hustedt, Barnett, Jung, & Thomas, 2007; Loeb, Fuller, Kagan, & Carrol, 2004; Fontaine, Torre, & Grafwallner, 2006; and Ramey, Campbell, Burchinal, Skinner, Gardner, & Ramey, 2000) In addition, Loeb et al. maintained that this improvement in growth and readiness is significant given that "children in the lowest socio-economic groups are several months behind their middle-class peers in pre-reading and early math skills at kindergarten entry" (p. 2). In addition, associations between access and participation in early childhood education and development interventions have been demonstrated by a variety of research studies (Barnett, 1992; Barnet & Hustedt, 2005; Barnett, Young, & Schweinhart, 1998; Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Fuller, Kagan, Loeb, & Chang, 2004; Gormley, Gayer, Phillips, & Dawson, 2005; Gormley & Phillips, 2005; Ou, 2005; Ou & Reynolds, 2006; Reynolds, Mavrogenes, Bezruczko, & Hagemann, 1996; Reynolds, Temple, Roberson, & Mann, 2001).

It must be noted, however, that the most widely accepted, highly regarded research regarding effective early childhood education interventions has been based on a few, relatively small experiments that include the Michigan-based Perry Preschool Program, Carolina's Abecedarian Program, and the Chicago-based Child-Parent-Centers (CPC). Since Texas' early childhood education delivery system has been largely ignored in the research and subject to few analyses, the researcher assumed that the findings of the study would not reflect previous research that suggests the benefits of small, high-quality interventions, particularly in terms of retention rates. In fact, the researcher

expected that the K configurations, the reference category, would probably yield lower first grade retention rates compared to the other two types. This expectation was grounded in an assumption that configuration type, as a predictor, would minimally contribute to an initial understanding about how various public school programs impacted first grade retention because they did not include other measures that the research suggests significantly predicts retention rates.

As the findings indicated, the configuration types accounted for 5% of the variation in first grade retention. Since the K configuration type generally included students who came from more affluent socioeconomic contexts and contained fewer risk characteristics for school failure, its initial, significantly lower rate comes as no surprise. However, these statistically significant differences in first grade retention rate only differed by 2.8% in the case of the PK configurations, and 1.2% in the case of EE configurations.

As more predictor measures were entered into the hierarchical regression model, the differences in first grade retention by campus configuration type changed. At the conclusion of the third and final hierarchy, there were no differences between the three configurations and first grade retention rates, while holding all other measures in the model constant. One possible explanation for this trajectory change is based on the campus student demographic and operational predictor measures included in the hierarchies. These measures were well known indicators of the challenges faced by certain campuses in terms of addressing potential inconsistencies in students' previous academic and socio-emotional preparation. In other words, the campus configurations

that contained EE and PK programs grappled with factors that are different in comparison to campuses that did not have such programs. A consideration of eligibility criteria for public school early childhood and pre-k programs confirms this assumption.

It must be emphasized that the configuration type only represents structural characteristics of select campuses and does not, as a measure in itself, present an adequate representation of differences across Texas elementary school campuses based on first grade retention rates. Measuring only the configurations fails to address or account for the processes that occur within them, especially whether they are of high-quality. Therefore, it would be negligent to assume that since the retention rates for EE and PK configurations were initially higher than the K configurations, that they were ineffective.

Limited English Proficient (LEP). Some previous research has confirmed that language difficulties are highly correlated to retention in the early grades, especially difficulty with the English language (Kaczala, 1991; Marcon, 1993; Smink, 2001). This research assumed that limited English proficiency contributed to higher rates of academic failure.

The findings of this study indicated that in the second hierarchy, LEP was a statistically significant measure, but after the access per first grade student measure was added in the third hierarchy, this measure was not significant, with a p-value of .06. However, this finding warrants further discussion, especially given that its parameter (β) estimate in the third hierarchy was negative at .02, and given that the p-value is barely non-significant.

In 2005, Bali, Anagnostopoulos, and Roberts conducted a Texas-based retention study using district level data, and found that for every increase in the percentage of LEP or English language learners (ELL) district-wide, the amount of retention that occurred decreased by .003 %. The authors of the study noted that this finding was contrary to their expectations, especially in light of previous research.

One assumption made about children whose first language is not English, especially in an education system like Texas' that favors and rewards English proficiency, is that students who have limited proficiency do not perform as well as their English-dominant peers. It could be the case, however, that LEP children, on average, are able to equally and adequately perform in such areas as reading as their English proficient peers. What is unknown is the extent to which teachers realize this and simply promote students knowing that their English skills will probably improve over time. In addition, it could be that in the case of some students, their native countries provide superior early childhood education programs, which could result in lower first grade retention rates.

Another factor that needs to be considered is the extent to which high-stakes tests in the 3rd grade influence 1st grade retention rates. Consider, for example, that students are allowed to take the 3rd grade Texas Assessment of Knowledge and Skills math and reading tests in Spanish. It could be that if children in the first grade are reading and performing well in their native language, and produce acceptable scores on readiness assessments such as the Tejas Lee, that teachers do not consider retention as an option despite limited English proficiency. Given that first grade teachers are probably aware that students are able to take the high-stakes tests later on in their dominant language, a

decision to promote them makes sense. Unfortunately, the foregoing possibilities are purely conjecture at this point, and require further research.

At-Risk. Chapter 3 defined the measure "at-risk" based on criteria set forth in § 29.081 of the *Texas Education Code*. The percent of students classified as at-risk was found to be a significant predictor of first grade retention. This variable was expected to be significant given the assumption that the more at-risk students a campus serves, the more resources, time, and expertise are required to address potential needs. In addition, previous research has confirmed that being an at-risk student positively and significantly contributes to retention (Jimerson & Kaufman, 2003; Mantzicopoulos, 1997; Martinez & Vandegrift, 1991; Rush & Vitale, 1994). The final hierarchical regression model estimated that for every percent increase in a campus' at-risk student population, first grade retention increased by .02%, while holding all other measures in the model constant.

This finding indicated that educators and communities that work with higher at-risk student populations, to the best extent possible, must ensure that their campus policies and practices reflect evidence-based strategies and that these policies and practices are suited to the campus' unique needs and culture. The *Texas Education Code* provides options for how educators can and should use resources (see Title II, Chapter 29). Generally speaking, however, by implication each campus is charged with the challenge of conducting the research, training and evaluation necessary to promote and sustain student success.

Mobility. Historically, the problems associated with school mobility have been studied by a diverse array of researchers from multiple fields (Alexander, Entwisle, & Dauber, 1996; Barton, 2004; Bevans, Bradshaw, Miech, & Leaf, 2007; Black, 2006; Christenson & Thurlow, 2004; Crowley, 2003; Engec, 2006; Franke, Isken, & Parra, 2003; Ingersoll, Scamman, & Eckerling, 1989; Kerbow, 1996; Nelson, Simoni, & Adelman, 1996; Pebly & Sastry, 2004; Pribesh & Downey, 1999; Rothstein, 2004; Rumberger, 2003; Simpson & Fowler, 1994; South, Haynie, & Bose, 2007; Stover, 2000; Swanson & Schneider, 1999; Titus, 2007; Tucker, Marx, & Long, 1998; Weckstein, 2003). A synthesis of the foregoing research suggests that student mobility lies at the center of a complex interplay of forces that include housing, family fragmentation, and poverty (Kerbow, 1996). However, it is mainly linked to instability in the housing market, and the quality associated with schools and residential neighborhoods.

The final hierarchical regression model estimated in the present study found that for every percent increase in campus student mobility, first grade retention increased, significantly, by .06%, while holding all other measures in the model constant. The student mobility research overwhelmingly indicated that as mobility increased, so does student failure and disengagement. Student mobility contributed to disruptions in student learning and increased the likelihood that students would repeat a grade (Crowley, 2003; Swanson & Schneider, 1999). In addition, the more a student moved and changed schools, the greater the chance for lower school performance, and heightened emotional and behavioral problems (Simpson & Fowler, 1994) due to the continued challenge of

psychologically "coping with a new school environment" (Rumberger, 2003, p. 8) and needing to constantly "catch-up" and address disruptions and gaps in their learning.

The effects of student mobility are particularly acute for the early childhood and elementary population (Alexander, Entwisle, & Dauber, 1996; Ingersoll, Scamman, & Eckerling, 1989; Nelson, Simoni, & Adelman, 1996; Rumberger, 2003; Tucker, Marx, & Long, 1998), and influence the ability of children and families to make effective home-to-school transitions. For young children, the pressures associated with separation anxiety are exacerbated due to the link between mobility and the perception of environmental instability. Pebley and Sastry (2004) found that "mobility rates are highest for young children [as…] families often move in an effort to find better neighborhoods, schools, and housing" (p. 131). Richard Rothstein (2004; see also Crowley, 2003) also connected the housing issue to the student mobility challenge and remarked that a lack of affordable housing, changing unemployment rates and general lack of stable job opportunity, and family break up all contribute to an understanding of why student mobility rates continue to disrupt the ability of early education institutions to effectively prepare children to be successful.

David Kerbow (1996) found that student mobility "penetrates the essential activity of schools—the interaction of teachers and students around learning" (p. 147). However, it should be emphasized that the mobility issue is also a reciprocal one; not only do outside forces contribute to student school failure, but so do schools themselves (Franke, Isken, & Parra, 2003). Rumberger (2003) maintains that schools contribute to mobility through overcrowding, large class sizes, harsh discipline policies, and retaining

students. This provides insight to Black's (2006) assertion that student mobility and school transfer decisions are both strategic and reactive. Some leave to find better opportunities, while others leave because they are dissatisfied.

Research shows that "leaving school early is the outcome of a long process of disengagement [from the students and the parents, and is…] preceded by indicators of withdrawal […] that often begin in elementary school" (Christenson & Thurlow, 2004, p. 37). The authors also posit the difficult question associated with cause and effect, namely "what is alterable" (p. 37) from a schooling perspective? In other words, how can an organization effectively grapple with the problems associated with school mobility especially those that are exogenous to the school?

Research highlights several windows of opportunity for addressing the problem that involve schools, parents, and communities. Bevans et al. (2007) found that student mobility prevented schools from sustaining an achievement culture, and Crowley (2003) highlighted the importance of "good neighborhoods" in reducing mobility. Crowley (2003) also found that mobility "sever[ed] ties to social networks" (p. 23) for parents. Pribesh and Downey (1999) found that mobility lowered community social capital and disrupted social ties. Bevans et al. (2007) drew from social disorganization theory and postulated that "structural aspects of a community, such as urbanism, concentration of poverty, racial and ethnic heterogeneity, and residential mobility, affect the level of organization present within the environment and the collective efficacy of the residents" (p. 295).

To better serve parents and communities by helping to lessen mobility through stability, schools and other education-related institutions (especially community-based early childhood programs) have options. Rumberger (2003) insisted that the "most effective strategy to [immediately] reduce mobility is to improve the overall quality of the school" (p. 14). Kerbow (1996) found that mobility, regardless of its cause, affected classroom culture in the following ways:

1. Long term instructional planning becomes difficult and assessment of instructional outcomes becomes clouded.
2. Unstable contexts make adoption of new practices and innovations difficult and may be disruptive to the flow of instruction for all students.
3. Flattens curriculum pacing.
4. Weakens the social ties necessary to bind neighborhoods together and often extends to the interactions of residents with their public institutions. (pgs. 160-165)

Accordingly, Weckstein (2003) suggested that schools can develop accelerated curricula, effective instructional strategies, evidence-based professional development, and various supportive services and strategies that strengthen organizational response to mobility problems. In addition, Black (2006) and Stover (2000) found that districts and campuses that implement programs that connect families, students, and schools, such as "*One Student. One School. One Successful Year.*," often experience lower mobility-related problems. Since mobility can reduce a sense of belonging and disrupt continuity in relationships, community partnerships, enhanced communication strategies (Titus,

2007), and parent/student engagement practices that have proven to be effective, can help schools effectively mitigate the damaging effects of mobility.

More information regarding how campuses tactically address student mobility concerns is required to better mitigate the effects that mobility rates have on classroom learning cultures. For example, teachers need to be educated on how to effectively plan, pace, and monitor instruction despite mobility-based learning disruptions. Campus administrators and counselors need to identify effective practices of parental outreach and engagement that not only communicate how important stability is for student success, but also be able to provide resources and referrals to parents to assist them with contextual pressures such as child care needs and housing. In addition, as Pomerantz, Moorman, and Litwack (2007) found, "the how, who, and why of parents' involvement" (p. 373) needs to be carefully considered according to the unique needs of each campus.

All Compensatory Funds Per Pupil. Given the frequency with which socio-economic status appears in the research literature, the researcher initially expected the percent of economically disadvantaged students on a campus to be a significant predictor of first grade retention. (see Alexander, Entwistle, & Dauber, 2003; Byrd & Weitzman, 1994; Jimerson, 2001; Karweit, 1999; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Mantzicopoulos, 2003; McCoy & Reynolds, 1999; Meisels & Liaw, 1993; Owings & Kaplan, 2001; Tillman, Guo, & Harris, 2006; Wilson & Hughes, 2006).

When the model showed all compensatory funds per pupil to be a significant predictor of first grade retention the researcher determined this predictor measure to be a more thorough measure because it not only captured the percentage of economically

disadvantaged students on a campus as part of its metric, but also provided additional insights. The model suggested that for every dollar increase in compensatory funding per pupil, first grade retention increased by .002%, while holding all other measures in the model constant. Corman (2006) used a similar expenditure per pupil measure to predict retention, but found it was not significant. This exemplified a larger debate identified in Corman's study where one researcher argued that there was no evidence to suggest that increased spending positively impacted student performance (Hanushek, 1996), while another maintained the exact opposite (Hedges & Greenwald, 1996).

Simply stated, the percentage of economically disadvantaged students fails to present researchers and practitioners with many options regarding what can be done to improve student academic outcomes. It is normally conceptualized as a campus demographic variable that confounds efforts to successfully educate and prepare students. With all compensatory funds per pupil, researchers are presented with a complex measure that captures diverse realities on a given campus, including student demographics.

The *Texas Education Code*, § 42.152(c), defines compensatory education as "program(s) and/or service(s) designed to supplement the regular education program for students at-risk of dropping out of school." In addition, this section describes the purpose of compensatory education as "to increase the achievement and reduce the dropout rate of identified students."

Districts are charged with the responsibility of designing compensatory education programs and services, and local campuses are required to detail a site-based improvement plan that tactically elaborates on how resources will be maximized to

improve the educational well-being and success of disadvantaged students. Examples of how compensatory education resources may be used (according to § 42.152), include the following:

1. Tutorials;
2. Class size reduction;
3. Computer-assisted instruction;
4. Specialized staff development;
5. Specialized reading and mathematics programs;
6. Parenting programs;
7. Extended day sessions for prekindergarten;
8. Accelerated instruction ;
9. Extended day, week, or year; and
10. After school and summer programs.

It should be noted that while state and federal compensatory funds are utilized to provide supplemental education services to students identified as being at-risk for school failure, funding allocated for these programs and services is calculated according to the number of educationally disadvantaged students in the district (§ 42.152), and is determined by averaging the best six months' student enrollment that qualify for free or reduced-price lunches in the prior school year. Districts, according to present weighted average daily attendance funding formulas, receive a compensatory allotment multiplied by 0.2 for each student who is educationally disadvantaged and that revenue follows the student to his or her home campus. According to Title 19 of the *Texas Administrative*

Code, a campus may not spend more than 15% of its compensatory education revenue on indirect costs such as administration and facilities acquisition and construction. Eighty-five percent of all compensatory revenue, therefore, must be spent on identified programs and services that support a student's academic improvement.

According to the final results of the hierarchical model estimated in this study, the more compensatory revenue that a campus spends per pupil, the higher the first grade retention rate. Initially, this translated into the following assertion: the more revenue spent on educationally disadvantaged students, the more likely they will be retained. The foregoing conclusion, however, should be approached with caution. Certain questions need to be asked to understand what this predictor measure truly indicates. Such questions include:

- Do campuses make retention decisions with compensatory funding in mind? In other words, are teachers and administrators fully cognizant of resource allocations to their campus and, as a result, do they make retention decisions based on these allocations?
- If the amount of compensatory revenue available to a campus impacts retention decisions, how does it do so? Does this mean that more resources means better supplemental services, which require more time to implement and sustain thus the need to retain?
- If campuses do not perceive that they receive adequate compensatory revenue, does this mean that they simply promote students?

As mentioned previously, this variable is complex. Since it is known that retaining and recycling a student through the same grade for an additional year requires "repeat" funding, it could be that local campuses retain more when they know they have more resources to spend.

It's a given that as the percentage of economically disadvantaged students increases in Texas, so does the revenue spent per pupil. What is unknown, however, is whether campus leaders actually make retention decisions with this revenue in mind, and whether they use these resources effectively. As previously mentioned, the *Texas Administrative Code* specifies that 85% of all compensatory education revenue must be spent on supplemental programs and services that must be anchored to the realm of curriculum and instruction. When campuses spend compensatory revenue on programs and services intended to facilitate the academic successes of their disadvantaged students, it is only assumed that they spend this revenue on interventions that are evidence-based, and proven to work at the local level. This predictor measure, therefore, could indicate that on average, the campuses in this sample are not using their compensatory education revenue wisely and may be making poor decisions regarding how best to maximize the use of these resources to promote student success. According to Barbarin, Bryant, McCandies, Burchinal, Early et al. (2006), "[a]lthough the relation between […] economic status and academic achievement is well documented, there continues to be a need to clarify the processes through which this effect occurs and to identify factors which mediate or moderate the relation" (p. 266). Further study is required where campuses are evaluated on how well decisions are made and best practices for at-risk

students are implemented, and the extent to which better, more effective use of compensatory resources, both state and federal, affects retention.

Teacher-to-Student Ratio. Teacher-to-student ratio was found to be a significant predictor of first grade retention. The findings of this study demonstrated that as ratio of students per teacher increased, first grade retention increased by .23%, while holding all other measures in the model constant. Bali, Anagnostopoulos, and Roberts' (2005) study contained a similar finding. This was an interesting measure in that it also captured the issue of class size. Throughout Texas, there is a mandated class size requirement in kindergarten through 4th grade only, where no more than 22 students may be in a classroom per teacher. There is an exemption clause that districts can apply to have these limits waived according to high growth scenarios or due to a lack of resources necessary to make room to accommodate more students or construct new facilities. In addition, there are no class size requirements in early childhood and/or prekindergarten classes, however, and no teacher-to-student ratio requirements. This is problematic for several reasons. To begin with, student-to-teacher ratios and class sizes, when applied as a blanket structural policy, do not take into account the unique learning needs of students. According to Mitchell and Mitchell (2003),

> [q]uantitative evidence indicates that effective small classes are composed of 17 or fewer students with a single teacher. These small classes are most likely to be effective when implemented during the child's first year of schooling and when maintained for at least 2 years and probably longer. A slight benefit edge accrues to 'at-risk' students, but smaller classes do not ameliorate all student risks for school failure. (p. 140)

Because most of the campuses included in this study serve at-risk students, it is difficult to determine what ratios are proper and cost effective for different campuses with different needs.

The fact that teacher-to-student ratio was a significant predictor of first grade retention comes as no surprise, however. In addition to capturing size problems, this variable connects to the issue of a teacher's ability to provide adequate and individual attention to all students. What's more, it relates to a teacher's ability to provide a stable and consistent learning environment for students, with large ratios potentially limiting a teacher's ability to implement and monitor instruction.

In a recent article, Benjamin Endres (2007) examined "how teaching is caught between the ideals of formal, systemic institutions, on the one hand, and the ideals of more intimate or more personal relations, on the other" (p. 171). He documented a conflict that exists between the performance demands placed on education institutions, and the "growing expectation for interactions [between teachers and students] that are responsive to personal needs" (p. 172). He emphasized the point that focusing on systems-level changes misses a crucial mark, "the face-to-face interaction among students and teachers" (p. 175), and that the "kinds of education that require the teacher's responsiveness to the particular needs of a student are only possible in a classroom that is small enough to allow for sustained and frequent interactions [between the teacher and student]" (p. 181). Accordingly, as teacher-to-student ratios increase, the less time teachers have to personally engage with and respond to their students on all levels.

Any attempt to affect teacher-to-student ratios, translates into a resource issue. Historically, class size reductions have met with considerable "push-back" on behalf of school boards and superintendents in Texas, especially when these mandates were unfunded. Additionally, just reducing ratios may not be enough. Reducing ratios should be accompanied by increasing teacher quality and exposure to effective training and professional development. In addition, applying a uniform ratio may not reflect efficient use of resources. Ideally, all classrooms should have low teacher-to-student ratios, but students with different needs and at different stages of development may necessitate the need to critically evaluate what ratio is best for different levels of need.

Cumulative Retention, Grades 2-5. The cumulative retention rate was calculated by summing the rates of retention for several elementary grades. According to Gredler (1980), calculating the cumulative retention rate "is useful in comparing the differences between schools," (p. 15) and it provides a proxy measure of the "magnitude of retention" (p. 15) occurring school wide. In addition, Shepard and Smith (1989) posited that cumulative retention rates give a stronger picture of the impact of retention policies. It should be noted, however, that the use of cumulative retention as a predictor measure has not been utilized frequently in the research literature.

Descriptive statistics revealed that the configuration types had different rates of cumulative retention, and K configurations in particular had, on average, a lower magnitude of cumulative retention. As a predictor, it was found to be significant in the final model. For every percent increase in cumulative retention in grades 2-5, first grade

retention increased by .24%, while holding all of the other measures in the model constant. Three insights can be gleaned from this finding.

First, as discussed in Chapter 2 of this study, the Texas Student Success Initiative implemented more stringent criteria regarding retention and promotion decisions for students in grades 3 and 5. Most criteria, however, were based on student performance on high-stakes exams, specifically the Texas Assessment of Knowledge and Skills. According to Stone and Engel (2007, p. 607), "retention and promotion decisions are [typically] based on standardized test scores (test-initiated retention decisions) [which…] may be increasingly common in the current high-stakes testing climate" (see Heubert and Hauser, 1999). A question that arises based on this assumption is "how much are retention and promotion decisions in the earlier grades, especially first grade, influenced by these high stakes assessments?" While this study did not answer that question, the possibility exists that the cumulative retention rate predictor is significant due to the fact that teachers and administrators are consumed by pressures imposed on them to improve student performance on high-stakes assessments in grades 3 and 5. As a result, they may shift pressure "downwards" to the early grades to influence the preparation that occurs. In other words, while such a claim cannot be justified at this point and represents pure conjecture, when teachers are faced with preparing students for high-stakes tests that have the potential to "make or break" a campus' accountability rating in Texas, the possibility exists that teachers in the upper elementary grades and campus administrators are requiring more from younger students and their teachers. This downward pressure could be based on a need to remediate potential "testing problems" as early as possible

thereby increasing the probability that perceived problems might result in greater use of retention as a remedial strategy. Further study, however, is required to closely examine how high-stakes assessments influence retention decisions in the early grades.

Besides potentially capturing the influence of high-stakes accountability decision-making on student retention and promotion decisions in the early grades, the cumulative retention predictor measure could represent a possible indicator of overall school quality. If a campus, for example, is retaining students at varying levels across multiple grades, this could be an indication that what's occurring in the classrooms, and the school culture in general, is not sufficient to sustain quality student engagement and performance. Many factors would have to be considered to evaluate such a claim, including examining teacher quality, assessing teaching practices and how the curriculum is mediated to the students, as well parental involvement and community engagement. However, including the cumulative retention rate as a measure of overall school quality represents an indicator worthy of further consideration.

While the cumulative retention rate could represent an indicator of total school quality and the degree to which retention is promoted within school culture, this rate may also reflect the struggles that certain types of campuses engage in with regards to adequately educating the unique needs of their student populations. Some campuses, like those that contain early childhood programs, may have to address student preparation gaps beyond their immediate sphere of control. Essentially, a higher cumulative retention rate may reflect a previous lack of access to high-quality education for students and therefore becomes symptomatic of previous learning problems. For example, this study

examined campus indicators over a specific time period and focused on first grade retention rates as an indicator of school readiness. This time period did not account for students in grades 2-5 and whether they may have participated in a campus-based early childhood program. Accordingly, the cumulative retention predictor measure also potentially addresses the level of complexity that certain campuses must grapple with in terms of the amount of remediation that may be required for its students, thereby contributing to increased use of retention as an academic strategy. The great news about this finding, as mentioned previously, is that it is rarely if ever considered as a predictor variable in the retention research literature, and thus holds great potential for further research. Since Texas' accountability rating system primarily evaluates the success of schools based on student performance on standardized tests, using cumulative retention as a measure across ALL grade levels, not just 2-5, may represent an indicator that tells a different side of the accountability story. In other words, if the potential cost of student failure on standardized assessments entails increased use of retention as a remedial strategy campus-wide[14], then the potential repercussions based upon what we know about the effects of student retention on long-term student success requires further consideration and study.

District Size. District size had a significant, positive parameter estimate. The regression model indicated that for every increase in district size, first grade retention increased by .00001155, while holding all other measures in the model constant. Prior research confirms this finding (Bali, Anagnostopoulos, & Roberts, 2005; Schwager,

[14] Which is also reinforced as a strategy in current Texas law.

Mitchell, Mitchell, & Hecht, 1992). It is difficult to interpret what this means above and beyond the general assertion that as district size increases so does first grade retention. Accordingly, in order to understand how first grade retention for campus configurations varies by district size, a follow-up analysis to this study is required using hierarchical linear modeling (HLM) techniques. Short of that, some comments can be made about the possible implications of this measure.

First, districts throughout Texas are growing and becoming more diverse in regards to the population. As population rates increase, especially among early childhood and elementary-age children, districts will be faced with the need to expand their programs and accommodate a growing demand on their respective infrastructure needs. This could have a significant impact on retention especially if the follow-up study yields significant variation according to district type.

Community-Based Early Childhood Measure

Access Per First Grade Student. The average number of early childhood programs that first grade students may have had access to in preceding years, and that operate within a five-mile radius of a campus, was found to be an insignificant predictor of first grade retention. A 2001 study by Gordon and Chase-Lansdale that analyzed the availability of child care programs nationwide using Census data, indicated that researchers have been generally "restricted by a scarcity of data on the availability of child care across all US communities" (p. 299). Their findings are complimented by a previous study by Fuller and Strath (2001) where they noted "America's early education sector remains so radically decentralized—a far flung archipelago of preschools, family

child-care homes, and subsidized individuals providing services—that basic information on local organizations […] remains scarce" (p. 37).

Access to programs, as a predictor measure, has never been used in Texas-based research, especially in conjunction with public elementary school data. The absence of a significant relationship could be based on two realities: (a) this measure links two largely uncoupled and disconnected systems; and (b) the quality of the programs measured is insufficient to affect outcomes in the public education system based on the lack of alignment and collaboration shared between these two systems. While it cannot be determined whether the availability of programs is adequate to meet the demand for services, it is conceivable that as the quality of services is enhanced in the programs that do exist, students' readiness to succeed in school would be enhanced. In addition, the effective alignment of community services with school-based operations, policies, and procedures represents an additional means to solve preparation problems.

The majority of campuses in the sample, regardless of configuration type, had access to two major types of early childhood facilities/programs: licensed child care centers and registered child care homes. The prevalence of registered child care homes presents a unique challenge as they are required to meet the least amount of state-based compliance criteria in terms of quality. According to Morrissey and Banghart (2007), "[l]ow-income families tend to use home-based, mostly unregulated care" (p. 2). Since centers tend to have "higher-quality care than […] family child care providers" (p. 7), the large number of family homes could represent a considerable challenge in terms of

developing a coordinated, neighborhood-based early childhood education network, which will be discussed later in this chapter.

After controlling for selected campus student demographic and operational measures, and access to community-based early childhood programs per first grade student, the findings suggested that there was no statistical difference in first grade retention between campuses that contained either PK or EE programs, or some combination of both, in comparison to the K configurations. One assumption left unaddressed revolves around the need to understand why EE first grade retention rates were lower than PK rates. It could be that rates are lower for EE configurations because students have had more time to develop and adjust; given that they have had longer time in one place, their development can be more carefully monitored and evaluated. This means that teachers can potentially collaborate for longer periods of time on the needs of their students, and also identify what strategies and practices work best. Being in one place for a longer period of time could also facilitate more effective student transitions into formal schooling requirements when they enter kindergarten and first grade (Bogard & Takanishi, 2005).

This access measure finding makes a very important contribution to retention research. It suggests that adequate, aligned, high-quality early education in Texas, given rapid demographic change in a complex supply and demand environment, is both a school and community issue and under certain conditions could successfully contribute to all students' readiness for school, and reduce retention rates. In other words, the power of

this variable as a predictor could be considerably increased given an adequate, aligned, high-quality, school-community-based early childhood education system.

Implications for Practice

Andrews (1985) provided two guiding metaphors that assist in understanding the implications of the findings. Specifically, in his discussion on stretching the boundaries of how we conceptualize children's health and well-being, Andrews constructed two framing concepts: (a) ecologies of risk; and (b) geographies of intervention. He drew on the work of Urie Bronfenbrenner and claimed that "children are at risk when their immediate worlds—their microsystems and mesosystem—are impoverished" (p. 373). Specifically, "impoverished microsystems contain the seeds of risk for children […and the] sources of risk are networks of microsystems that are narrow (i.e., few in number) or shallow (i.e., lacking multiple connections between settings)" (p. 374).

Alternately, a geography of intervention "is based upon the proposition that 'early happenings have later effects.'" (Andrews, 1985, p. 375). As the findings of this study revealed, there are several themes and arenas wherein specific interventions can be used to promote the academic and social success of all students, especially those from impoverished backgrounds.

Throughout this chapter, the researcher has purposely tried to avoid making blanket, all-encompassing recommendations. This strategy was chosen based on the premise that a one-size-fits-all approach not only disregards the different needs of different students, families, and schools, but it is impractical. As revealed in this discussion, campuses that serve at-risk and economically disadvantaged students have

choices they can and should make that might assist them in lowering and/or eliminating retention as a remediation strategy and also promote the ongoing academic successes of students in general. According to Jimerson et al. (2006),

> considering the transactional-ecological model of development, grade retention should not be construed as a single event causing all subsequent negative events but rather as an outcome associated with a disadvantaged developmental history exacerbated by ineffective intervention. Without appropriate support and assistance, children experiencing grade retention are likely to continue upon developmental pathways characterized by low-achievement, poor adjustment, and further academic failure. (p. 90)

Citing Rafoth and Carey (1995), Jimerson et al. (2006) advocate an approach to remedying academic failure and by implication, retention, using school-wide interventions and instructional strategies where "school-wide interventions refer to administratively commissioned programs that are pervasive throughout the school whereas instructional strategies are direct, teacher-led interventions implemented within the existing classroom structure" (p. 90). They highlighted specific interventions, namely: (a) Preschool intervention programs, (b) Comprehensive programs to promote social and academic development, (c) Summer school and after school programs, (d) Looping and multi-age classrooms, (e) School-based mental health programs, (f) Parent involvement, (g) Early reading programs, (h) Effective instructional strategies and assessment, and (i) Behavior and cognitive behavior modification strategies (pgs. 91-93). However, it is imperative that as campuses formulate improvement plans and consider how to best grapple with their own unique challenges, critical discernment should be exercised as it pertains to how campuses select and implement the right kinds of programs and services.

Bronfenbrenner (1999) noted that a "major factor influencing the outcome of human development is the timing of biological and social transitions as they relate to the culturally defined age and role expectations and opportunities through the life course" (p. 21). This notion of time and timing penetrates to the core of all discussions about school readiness and by implication, retention. As the findings of this study reveal, retention practices persist. To ameliorate existing retention levels, a preliminary question deserves further consideration. Silberglitt et al. (2006) asked, "If retention has proved to be an ineffective and potentially harmful remediation strategy then "why are students retained?" (p. 135). Quoting Martinez and Vandergrift (1991), Silberglitt et al. (2006, p. 135) noted "students are purportedly retained in early elementary grades to prevent future failure […] Thus, retention before second grade is viewed as an early intervention or a preventative measure." A larger question remains, however, namely "How can retention rates be decreased?"

Slavin, Karweit, and Wasik (1994) maintain that "preschool is not enough" (p. 75). Rather, the "largest effects come about from infant and preschool and elementary programs [which…] appears to support a view of the need for continuing intervention as opposed to a one-time shot in the arm" (p. 75). While immediate solutions need to be identified to provide effective academic interventions to all children, a seamless, birth to five, high quality early childhood system represents a long term solution. However, the effects and gains associated with such a system need to be sustained throughout a child's academic experience.

In addition, §'s 11.252 and 11.253 of the *Texas Education Code* requires districts to develop and implement improvement plans to sustain increased student performance, and also requires local campuses to effectively plan and sustain similar goals through site-based decision-making. These requirements represent an opportunity for school leaders and practitioners, in collaboration with communities and families, to develop progress indicators that could include retention. Not only could districts and campuses set goals in terms of reducing retention rates, but they could work with a variety of stakeholders to formulate effective strategies and implement effective practices that work simultaneously to realize successful student outcomes that go a step beyond the question, "to retain or to promote?" However, given Texas' strong emphasis on testing and campus ratings that are based largely on scores on these tests, it may prove difficult to align retention goals with achievement goals.

In a 2004 analysis of trends in child care and early childhood education and development policy in the United States, Linda White noted:

> Child care and education policy have traditionally developed on two separate jurisdictional tracks. The federal government has authority of child care and child development programs [for low-income children] through, for example, Head Start and the Child Care and Development Block Grant (CCDBG), while states have authority over education, including pre-kindergarten. The substantive goals of these two tracks have differed as well. (pgs. 668-669)

In Texas, the historical lack of coordination between child care (public/private/faith-based) providers, federal-based programs including Head Start, and public school early childhood and pre-k programs, as well as historical and present inequities in early care and education (Sachs, 2000) results in an uncoupled, non-

integrated approach to early childhood education and development and has significant consequences for children and families, and early childhood organizations. As a result, current conversations about goals related to the importance of school readiness and longitudinal student academic success will prove difficult to realize, especially in terms of an aligned P-16 system. A national report conducted by Kagan and Rigsby (2003) suggested that several problems need to be redressed, "a crisis in quality and a crisis in coordination" (p. 8). Given Texas' demographic trends and the potential explosion in terms of the child population, coupled with Texas's alarming poverty statistics, the lack of an integrated system is highly problematic.

While the problems associated with the integration and coordination of early childhood education and development delivery systems are not insurmountable, their solution entails the need for strategic planning, effective support and resources, viable policy, and effective tactical implementation strategies. In essence, Texas needs to move beyond disjointed, uncoupled, and fragmented (Barnett, 1993) single-program solutions and consider an integrated and aligned multi-program delivery system (Stoney, Mitchell, & Warner, 2006; Goldstein, 2006).

In a 2006 study titled, "The Influence of the Territorial Factor on the Accessibility of Preschool Education," I.V. Seliverstova concluded the necessity of having adequate networks of preschool institutions in terms of fostering long-term student success. The author notes,

> quality of access to preschool education is determined by three basic characteristics: (1) the capacity of the network (whether there are enough places in preschool educational institutions for all of those who want to attend); (2) the

> efficiency of the location of preschool institutions (the uniformity of the distribution of preschool educational institutions of different types and kinds); and (3) the quality of preschool educational institutions. (pgs. 36-37)

Seliverstova stated "a network that is not adequate results directly in unequal access to a preschool education (and care/development), and a low level of network effectiveness and institution quality results in relative inequality of success [outcomes]" (p. 37).

The findings of this study highlight the importance that access to high-quality early childhood education programs could have for student academic success. Collaboration, however, is no easy task, especially considering that multi-provider partnering across early childhood programs entails different program goals and philosophies, varying funding mechanisms, and disparities in workforce preparation and training. Several examples can be found in Texas that illustrate such partnerships can work. The *Texas Education Code* encourages collaboration among diverse service providers and provides fiscal incentives for programs to partner and provide early childhood education services for children and their families. Examples include public school and Head Start partnership projects, and the Texas Early Education Model (TEEM), which pools together the resources of three primary delivery types, namely public school pre-k programs, community-based childcare programs, and Head Start programs.

Theoretical Implications

The ecological systems paradigm developed by Bronfenbrenner provided a useful framework through which to consider the relationship between Texas' early childhood

education delivery system and first grade retention, including the contexts and variables that potentially influence this relationship. As previously discussed, mixed-delivery partnership projects may provide an effective solution to the increasing demand for early childhood care and education on behalf of parents and communities. For these collaboration projects to be successful, further theoretical tools and frameworks are needed to assist researchers, policymakers, and practitioners in their pursuit of developing and sustaining a high-quality early childhood education system. Bronfenbrenner's theoretical framework, therefore, is further complemented and expanded based on a consideration of the tenets of social network theory, and a recently developed "vulnerable neighborhood" approach to building up the community infrastructure necessary to sustain a high-quality, seamless system. While Bronfenbrenner's work and social network theory provide explanatory power and a means of thinking holistically and strategically about the challenges that face community organizations, Bruner's (2007) vulnerable neighborhood approach to early childhood education and development provides a necessary "tactical" dimension that outlines specific steps that community organizations can take to achieve and sustain such goals.

Social network theory focuses on the "mapping of the relations that create social structures" (Turner, 1991, p. 571). Networks are about relationships, which can be directional and non-directional, symmetrical and asymmetrical, as well as multiplex (Kadushin, 2004). These relationships can also be reciprocal and balanced. The extent to which all of the nodes [organizations] in a given relationship are linked and balanced represents the degree to which they are stable. According to Kadushin (2004, p. 3), a key

question in social network theory is, "What are the conditions that make it more or less likely that a path will exist between two [or more] nodes, that the nodes will have the same attributes, that they will be reciprocally or mutually related to one another, and that the triads will be balanced?" To answer this question, several key propositions of network theory must be considered, namely: (a) level of propinquity; (b) homophily; (c) distance and diffusion (zones); (d) dyads and mutuality; (e) balance and triads; and (f) the notion of intersecting social circles as a predictor of social capital (Kadushin, 2004).

Propinquity, according to Kadushin (2004) means that "at all levels of analysis nodes are more likely to be connected with one another, other conditions being equal, if they are geographically near to one another" (p. 4). Homophily "is defined as having one or more common social attributes [and thus…] the greater the homophily the more likely two nodes will be connected" (p. 6). However, "as the number of nodes in a network grows, so does the complexity of the network" (p. 7). The "distance between two nodes in a network is determined by four parameters: (a) the size of the first order zone[15] of nodes in the network, (b) the extent to which nodes in the network have overlapping members in their first order zones, (c) barriers between nodes, (d) agency exercised by the nodes" (p. 9). Further, "while in principle there can be an infinite number of zones, the impact of each zone on an individual node declines exponentially. For most purposes, the number of effectively consequential zones is between two and three" (p. 11). The "concept of mutuality implies first, the extent to which relations are reciprocal, that is, involve a give and take between the two parties; and second, the degree of power or

[15] A first order zone can be conceptualized as a neighborhood.

asymmetry in the relationship" (p. 13). "The addition of a third member to a dyad […] vastly increases the complexity of relationships" (p. 18).

The implications of these theoretical constructs for mixed-delivery partnerships in local communities, is highly significant. While Bronfenbrenner's work outlines how communities and various systems are interconnected and mutually dependent, very few suggestions are made regarding how organizations embedded within these nested contexts can work together to influence the development of children and families. Social network theory offers ideas that promote effective ways of thinking about how best to partner among diverse organizations. Through an examination of how distance impacts relationships, and how communication between organizations within a network must negotiate power asymmetries and promote mutual recognition among members, social network theory outlines important concepts that community organizations need to consider to establish effective networks. If, for example, a school district partners with several community-based early childhood education providers in an effort to meet the needs of local families, and they do not consider how their relationship could potentially be influenced by how power and resources are shared, and how decisions are made, then mutual recognition is diminished and the potential for a pathological network relationship increases. As social network theory suggests, when pathology in a network is present and a hierarchy of power creates disruptions in the relationship between organizations, the ability of the network to promote community stability is significantly decreased.

To build an effective, high-quality, early childhood education system, not only do the various ecological contexts that influence development need to be considered along

with how relationships should be formed to promote effective collaboration, but tactical, efficient intervention vehicles and strategies must be developed and implemented to sustain organizational well-being. Charles Bruner's (2007) concept of "building early learning systems in vulnerable neighborhoods" (p. 15) is particularly helpful in this regard. According to Bruner, neighborhoods must provide healthy spaces that sustain "developmental supports and opportunities" (p. 15). As this study found, public school and community-based early childhood programs represent examples of what he has in mind. In addition to spaces, "professional services" must be offered to provide support in all domains of development, from health and dental care, to counseling, to after school tutoring programs. Neighborhood mesosystems, therefore, need to be comprised of not only high-quality early childhood programs, but also adequate health care clinics, playgrounds, and various multiple service organizations that support human growth and development. Through healthy spaces and professional services, Bruner (2007) highlights the absolute need to build an adequate community "infrastructure" to sustain and promote holistic-well-being. Accordingly, early childhood programs, while significant to this effort, will only be enhanced through the addition of multiple services.

Bruner (2007) recommends that communities and organizations interested in building and sustaining effective neighborhood infrastructures must first start with the base that is available to determine neighborhood capacity. The methods used in the present study represent one step necessary to begin to examine capacity in the realm of early childhood education. These methods can also be used to examine access to other community-based services like health care clinics and libraries. Once the capacity of a

given neighborhood has been analyzed, the next step is to examine the quality of the service networks. Once quality is assessed, information is shared, and action steps are agreed upon, Bruner's (2007) framework supports Bronfennbrenner's ecological paradigm by creating a "village" approach to school readiness, which suggests that ready children equals, "ready families + ready communities + ready health services + ready early care and education services + ready schools" (p. 27). In addition, a village approach to supporting school ready children "argues for the importance of building an early learning system in large measure from the latent talent and passion within the neighborhoods" (Bruner, 2007, p. 3).

Implications for Public Policy

To build, implement, and sustain a high-quality, mixed-delivery, early childhood education system in Texas, careful deliberation must take place regarding the types of variables and issues that are alterable by policy. Realistically and practically, such deliberations and considerations, by necessity, need to take into account that all policy decisions involve the need to allocate and distribute resources.

Andrews (1985) understood that "macrosystem risks are the most deeply rooted and pervasive of all hazards in the ecology of risk […and that] at this level, risk is an ideology or cultural alignment that threatens to impoverish children's microsystems and mesosystems and sets ecosystems against them" (p. 374). Yoshikawa and Hsueh (2001) provided an interesting perspective regarding early childhood education and public policy, and suggested several key, pertinent principles that are useful in framing the issue. The first principle states, "Processes that link child policies and child development are

associated with different probabilities of change in intervening systems" (p. 1889). Based on an ecological context, this principle suggests that "changes in one part of the system may potentially affect all other parts" (p. 1889). In addition, "influences of public policy on children do not occur directly, but are mediated through a variety of systems intervening between the administrative area covered by a given policy and the individual" (p. 1889). As a result, "a particular change at the policy level may be associated with different probabilities of change in intervening systems" (p. 1889), which are determined by "complex patterns of individual and aggregate behavior in institutions, organizations, and proximal settings intervening between policy formation and the child" (pgs. 1889-1890). Ultimately, the challenge revolves around "how macrosystems such as policy environments bring about change in multiple systems" (p. 1890).

The second principle Yoshikawa and Hsueh (2001) provided posits that "changes in systems that intervene between public policy and the child may be continuous or discontinuous" (p. 1893). This means that policies themselves may present barriers to transformation. To facilitate a high-quality, birth to five, early childhood education system, public policy in Texas must address several "systems" issues that present current and future barriers. For example, early childhood education in Texas is situated at the intersection of multiple institutions. Child care licensing issues are the responsibility of the Texas Department of Family and Protective Services. Public school early childhood and pre-k programs fall under the jurisdiction of the Texas Education Agency and local school boards. The child care subsidy system for poor families is managed by the Texas Workforce Commission. Head Start programs are operated according to federal law.

There is a need, therefore, for more information sharing through best practices in data-based decision making and tracking. The data that is available to decision-makers and stakeholders involved in early childhood education and development is minimal and fragmented. In addition, information supplied by the aforementioned diverse agencies is rarely, if ever, shared with other agencies. Accordingly, what is needed are tracking systems that monitor multiple data measures such as funding, student achievement, student retention levels, special education referrals, and student demographic and health information. In Texas and other states, there is no integrated system of data collection that, for example, gives professionals information that provides a profile for students entering the public education system. Some students begin school in early childhood and pre-k, but others enter kindergarten having been placed in other public and private early childhood organizations. Having data of this sort not only allows educators to understand students' previous learning, but can also be utilized to generate ongoing program evaluation projects that encourage high-quality services among organizations. Data sharing and collaboration, when empowered at the agency level, also directly impact the extent to which mixed-delivery projects can share information and mutually collaborate on the needs of children and families.

In addition to improved data systems and sharing, funding for early childhood programs and services is critical. A subject of controversy in education—regardless of the issues invoked—is how to adequately and equitably fund programs to provide the maximum amount of quality to as many recipients as possible. One challenge, according to Levin (1989), is that,

> after resources are committed to education, questions remain about how they can most productively be used [as] some allocations of resources within education are likely to produce greater results in terms of student achievement and other educational outcomes than their alternatives. (p. 13)

While scholarship on the economic benefits and costs associated with early childhood education and development is not as robust as the long-term academic and socio-emotional benefits associated with participation, a few promising studies have been conducted by prominent individuals who concluded that there are positive economic and future workforce benefits associated with increased investments and funding for early childhood education (Barnett, 1992; Barnett & Ackerman, 2006; Barnett & Masse, 2007; Committee for Economic Development, 2006; Dickens, Sawhill, & Tebbs, 2006; Friedman, 2004; Heckman, 2006; Heckman & Masterov, 2004; Knudsen, Heckman, Cameron, & Shonkoff, 2006; Temple & Reynolds, 2007).

In a 2006 National Institute for Early Education Research report, Barnett, Hustedt, Hawkinson, and Robin concluded that state-funded preschool programs, nationwide, have seen their enrollments increase by more than 100,000 children from 2002-2005 (p. 1). In addition, as enrollment continues to increase in most states, especially Texas, the ability to generate the funding necessary to keep pace with this rapid growth is cause for concern. According to Barnett, Hustedt, et al. (2006, pgs. 1, 13) we know:

- The quantity of resources a state devotes to preschool education impacts both the number of children that can be served and the quality of service they receive.

- Resources may be used with varying levels of efficiency, but as a general rule, higher quality and more effective programs tend to be more costly.
- Preschool education—like education generally—is a combined federal, state, and local responsibility.
- Too many children in the United States lack access to any preschool program at all and too many others do not have access to a high quality educational program.

In addition, Brandon (2004, p. 4) has identifies several major program design issues that affect cost:

- What [exactly] are elements of quality [early childhood education and development]: staffing; quality assurance; [and] ancillary services?
- How many hours a day and days a year are early education services provided?
- What share of the population is eligible to participate, particularly which age and income groups?
- Are parents asked to share the financial burden directly through co-payments or fees, or indirectly through taxes?

A major problem that exists in terms of the financing of early childhood education and development statewide revolves around the multitude of funding streams that are, in most cases, separate from each other and originate in different agencies. A 2004 research report by the Child and Family Policy Center argues that "(t)he number and complexity of these [early care and education] programs and services easily can obscure whether the

overall level of investment [in early childhood education and development] is sufficient to meet […] needs" (p. 3). To give the reader an idea of the complexity involving multiple funding streams for early interventions in the state, consider the following sources of revenue: (a) federal Head Start funding through Health and Human Services; (b) federal Child Care and Development Fund funding through Health and Human Services; (c) federal Temporary Assistance to Needy Families (TANF) funding through Health and Human Services; (d) Preschool Grants Program through the US Department of Education; (e) Even Start funding through the US Department of Education; (6) Title I funding through the US Department of Education; (f)federal Social Services Block Grant through Health and Human Services; (g) Early Reading First through the US Department of Education; (h) grants for Infants and Families with Disabilities through the U.S. Department of Education; and (i) all of the corresponding state generated revenue through state agencies and matching funds, and school district-based financing through property taxes and weighed average daily attendance formulas.

In order to be able to consider how to adequately fund early childhood care and education initiatives in Texas and work towards integration, not only is an understanding of the diverse sources of funding available necessary, but also an understanding of how current Texas funding practices works against this goal of integration. As indicated previously in this analysis, Texas has one of the fastest growing child populations in the nation, and future demographic projections situate the state as having one of the largest projected general populations based on increased levels of immigration. In addition, as previously stated, Texas has a child and general poverty rate that exceeds national trends.

Unfortunately, Texas has not demonstrated that it is willing to meet these demographic challenges with adequate levels of financial support. Consider, for example, that since 1996 federal spending on child care has grown significantly, but state spending has remained stagnant, despite slight increases. According to Sabo, Bresette, and DeLuna Castro (2002), "child care funding has roughly tripled [since 1996], but approximately three-quarters of that increase is due to increases in federal, not state, spending" (p. 9). As a result, "for child care to make any more progress the balance of state and federal funding cannot remain so lopsided" (Sabo et al., 2002, p. 9).

A 2002 report by the Center for Law and Social Policy states: "Low-income families with [child care] subsidies are more likely to access formal and regulated child care than their peers without a subsidy. However, low payment rates [reimbursement rates] and insufficient supply of necessary and appropriate child care may be limiting the ability of these families to access a broad range of care" (Mezey, Schumacher, Greenberg, Lombardi, & Hutchins, 2002). Quoting an Illinois child care provider, this report emphasizes:

> Low reimbursement rates means cutting corners—and that usually means not being able to pay staff an adequate/living wage. That means programs suffer with staff turnover, low quality, less nutritious meals, [fewer] needed projects such as new equipment, playground improvements, and/or facility repairs as a direct result of the low reimbursement rate. It is difficult for centers to attract quality staff. Staff in most centers receiving this low reimbursement rate does not receive any benefits. (p. 5)

In support of these concerns, Schulman and Blank (2006) raise awareness to the costs of child care and how "many low-income families are unable to receive the child care assistance they need" (p. 1) Since "only nine states had adequate reimbursement

rates for providers who serve families receiving child care assistance in 2006" the potential consequences are severe (p. 1).

Texas has one of the highest child care waitlists (over 33,000 children) and lowest reimbursement rates in the nation (see Schulman & Blank, 2006). While the aforementioned Texas Workforce Commission (TWC) empowers 28 regional workforce boards to set their own reimbursement rates, the majority of these regional boards have established reimbursement rates that are well below the market rate, which is suggested at 75%. In most cases there is a –40% difference between regional reimbursement rates and the suggested 75% of market level usually required to insure healthy and safe conditions for the education and development of children (Schulman & Blank, 2006).

In Texas, all federal monies appropriated through Temporary Assistance for Needy Families and the Child Care Development and Block Grant, as a result of Texas' 1995 House Bill 1863, are managed by the Texas Workforce Commission, which distributes federal revenue and state matching funds to 28 different regional workforce boards. One problematic issue associated with this is that each regional board is granted the authority to determine and set eligibility criteria for families seeking funds for subsidized child care. Thus, child care and early education providers, in many cases, do not receive adequate reimbursement for the children they serve. As a consequence, quality and safety issues are rampant. Texas House Bill 1863 set ambitious targets to get as many people as possible off welfare and into jobs. However, what is problematic about this is that it assumes that children will be well cared for while families work. Given the

long child care waiting lists and low reimbursement rates in Texas, education and child care providers are less inclined to serve low-income children.

According to Barnett & Ackerman (2006), there needs to be an improved method to blend existing funding streams, which includes revenue from Title I, IDEA, Head Start, child care subsidies, and local sources. The National Economic Development and Law Center (2005) supports the foregoing goals, but suggest additional requirements. The Center highlights the need to seek innovative financing solutions beyond existing streams, and the absolute need to integrate early childhood education and development infrastructures and oversight of these multiple systems into a seamless system.

> Without significant changes to public policy in the realms of institutional authority and collaboration, data sharing across diverse early childhood program networks, and the extent to which the multiple programs that make up Texas' pre-k delivery system are adequately funded, child development and school success will continue to remain a difficult goal to realize, especially within a rapidly changing and demographically complex society. (p. 132)

Implications for Future Research

According to Wong (2001), "Bronfenbrenner's concepts of microsystem, mesosystem, exosystem, and macrosystem serve as a fundamental framework, whereas further attention can [and should] be given to the [study] of 'proximal processes'" (p. 374). Throughout this chapter, several comments have been made regarding the need for further research and study. Based upon the findings of this study, the most immediate research projects perceived as necessary to fill-in the gaps and answer the many questions left unanswered by a systems analysis include the following:

- Conduct qualitative, follow-up studies of campuses contained in this study's sample to determine how campus-specific policies and instructional practices either increase or diminish the effects of the variables found to significantly predict student retention. In addition, within these studies, examine if there are differences in the availability and use of evidence-based instructional practices between campuses that retain students and those that promote students "Most research […] has focused on identifying the effects of grade retention rather than defining the experience of grade retention or gaining insight into the process" (Stone & Engel, 2007, p. 606). A study of this sort would also examine how various stakeholders within the campuses make retention and promotion decisions, the tools they use to monitor decisions, and the instructional and support practices they use to "catch their students up."
- Conduct qualitative studies of early childhood program networks in close proximity to public school campuses to build the knowledge base regarding how best to collaborate to meet the growing demand for high-quality services among multiple provider types. Qualitative studies would complement quantitative snapshots by providing "more nuanced insights into […] processes" (Haveman, 2000, p. 477) and "qualitative analysis would situate ecological theory more deeply in time and space" (p. 477). In addition, qualitative studies would allow for an in-depth analysis of the "content and functioning of interorganizational networks" (Haveman, 2000,

p. 479). A study like this would also cultivate insights into how the quality of programs differs in these multiple networks and would research effective, best practices that can immediately be used to promote both structural and process quality among the various organizations involved. Additional areas of consideration would be "How do networks share information?" to monitor and evaluate student progress, "How do they collaborate to make decisions on the information they have," and "How do they assess how effective their strategies are that intend to promote the development of the children involved?".

- Conduct a study that examines the extent to which districts and campuses that receive compensatory funding currently use their improvement plans to reduce retention rates, and research and provide recommendations on how they could use these tools and align them to resources available (e.g., state compensatory education and federal Title I funds) to reduce retention in all grades.
- Replicate this study with student-level data and conduct a companion study that tracks the progress of individual students within select campus configuration types. Such a study would not only include retention rates, but also include such things as special education referrals, student performance on diverse kindergarten through second grade readiness assessments to include cognitive and socio-emotional measures, attendance rates, and student performance on the third-grade TAKS assessment in reading and

mathematics. This data would also be broken down by type of previous pre-k participation, including whether or not students were previously in half-day or full-day programs and, if possible, include family-specific demographic information such as parental education level and housing quality.

- Using a geography-based algorithm, like the one used this study, measure, in addition to early childhood programs, access to other community-based social forms of capital such as health care clinics, playgrounds, recreation centers, public libraries, banking institutions, and after-school programs, and the relationship this access has on retention.

Limitations

This study represented a first step towards building a high-quality, systems-integrated, neighborhood approach to school readiness by focusing on early childhood education, both internal and external to public schools. Since the data used in the study were campus and institutional level data, inferences could only be made at the aggregate level.

Following Bruner's (2007) vulnerable neighborhood framework, an ecological systems analysis was a necessary first step, but provided an incomplete picture of what is needed to promote effective child development. While the availability of early childhood programs in communities and a preliminary comparison of Texas' public school early childhood and pre-k programs was important, assessing and building the quality of these

programs represents a critical, next step. Bronfenbrenner and Morris (1998) emphasized that:

> Throughout the life course, human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving bio-psychological human organism and the persons, objects, and symbols in its immediate external environment. To be effective, the interaction must occur on a fairly regular basis over extended periods of time. (p. 996)

Bronfenbrenner and Evans (2000, p. 118) expanded upon these premises and noted that proximal processes produce two possible developmental outcomes: (a) competence; and (b) dysfunction. They pose a further question: "If proximal processes are indeed 'engines of development,' what are the differences between those that produce dysfunction vs. competence?" (p. 118). The answer relates to quality.

Bronfenbrenner and Evans (1998, p.118) elaborated further on the dichotomy and proposed a new construct titled, "exposure," which

> refers to the extent of contact maintained between the developing person and the proximal processes in which that person engages. Exposure varies along the following dimensions:
>
> 1. Duration;
> 2. Frequency;
> 3. Interruption;
> 4. Timing of interaction; and
> 5. Intensity.

Accordingly, diagnosing and improving the quality of early childhood programs represents a balance between structural quality and process quality (Espinosa, 2002).

Structural quality includes teacher-to-student ratios, class size, qualifications of teachers and staff, and licensing requirements (Espinosa, 2002, p. 3). Process quality "emphasizes the actual experiences that occur in educational settings, such as child-

teacher interactions and the types of activities in which children are engaged" (Espinosa, 2002, p. 2). The findings of the present study highlighted both of these quality dimensions as predictors of first grade retention and, by extension, student success in the early grades. For example, while teacher-to-student ratios and compensatory funds per pupil were structural quality variables, they have significant implications regarding processes that occur between educators and children.

Until the systems-level information generated by the present study is replicated and assessed at the classroom and individual levels, the ability to truly understand and effectively change Texas' early childhood education delivery system will be shortsighted and limited.

Conclusions

This study examined measures inside and outside of formal schooling contexts that contributed to first grade retention. A major consideration in examining these measures revolved around the need to inform current and future directions in Texas P-16 conceptualizations, specifically in terms on how the "P" component is understood (Krueger, 2006).

Van de Water and Rainwater (2001) found that states throughout the nation have been "taking steps to infuse three largely disconnected levels of public education—preschool, K-12, and postsecondary—with greater coherence and a stronger sense of connectedness" (p. 2). However, the authors conceptualize preschool for only the 3-5 year-old population. While they acknowledge that a "hodgepodge of providers offering services for young children" exists, providers have "no connection to the public

education system" (p. 5). The fact that they do not elaborate on how to address this issue in terms of creating seamless connections between fragmented organizations, may contribute to the ongoing existence of a school readiness gap.

Despite this limitation, Van de Water and Rainwater (2001) craft an interesting P-16 agenda from the perspective of "areas of mutual interest" (p. 11) that supports the recommendations discussed in the present study. Between the early childhood and K-12 sub-systems, the authors (p. 13) suggest the following areas of mutual interest that can serve to promote better collaboration:

- Expanded access to early learning for all children;
- Create linkages between early learning and K-12;
- Improve school readiness;
- Promote meaningful assessments; and
- Build relationships between families and schools.

Between the early childhood and postsecondary sub-systems, Van de Water and Rainwater (2001, p. 13) suggest:

- Enhance preparation and professional development of early childhood professionals;
- Research and disseminate strategies for developmentally appropriate learning; and
- Create finance models for systems with universal access.

As the study's findings suggested, several campus student demographic and operational measures significantly predict first grade retention. In order to be in a position

to address long-term achievement gaps among diverse student groups, P-16 stakeholders must recognize the value associated with simultaneously addressing the readiness gaps that exist prior to school entry. To effectively address the school readiness gaps that exist, P-16 leaders and policymakers need to conceptualize Texas' early childhood education delivery system from a birth to age five perspective, and support the creation and development of a sufficient school- and community-based infrastructure necessary to support the academic achievement and well-being of all students.

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VITA

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