

**WHAT ARE THE DAILY EXPERIENCES OF LOW-INCOME
KINDERGARTEN CHILDREN BASED ON THE POVERTY DENSITY OF
SCHOOLS?**

by

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A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Science in Human Development and Family Studies

Fall 2011

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ACKNOWLEDGMENTS

I would like to thank all my friends and colleagues that have supported me throughout this endeavor. I especially would like to thank my advisor, Dr. Martha J. Buell for her continuous guidance, support and dedication. Dr. Buell's willingness to talk through ideas and her patience has been a guiding force for my academic success in completing my Master's degree. The other members of my committee, Dr. Cynthia Paris and Dr. Jennifer Vu have also been most helpful in this process. My thanks and gratitude goes to all of them.

Finally, I would like to thank my family. Their encouragement, support and spirit have helped me on this journey.

TABLE OF CONTENTS

LIST OF TABLES.....	vii
LIST OF FIGURES	viii
ABSTRACT	ix

Chapter

1	INTRODUCTION AND BACKGROUND	1
	The Achievement Gap	1
	Early Influences on the Achievement Gap	2
	Schools Fixing the Gap	2
	Historical Perspective on Educational Policy.....	3
	Additional Challenges for Low income Children.....	6
	Purpose	8
2	THEREOTICAL FOUNDATION AND LITERATURE REVIEW	9
	PPCT= Development/Education	10
	Person	11
	Process.....	15
	Context	18
	Time.....	21

3	METHOD	25
	Participants	25
	Procedure	26
	Micro level Analysis: Daily Experiences of Teacher and Child	
	Interaction	27
	Developmental Outcomes: Woodcock Johnson III Test of Achievement.....	30
4	FINDINGS.....	32
	Teacher Interaction Results	32
	Adult Interaction Results	34
	Group Size Results	36
	Child Verbal Result	38
	Instructional Content Results.....	41
	Woodcock Johnson Results	44
	Findings by Poverty Density Levels	45
	Interaction and Outcomes in High Level Poverty Dense Schools	45
	Interactions and Outcomes in Mid-Level Poverty Dense Schools	46
	Interactions and Outcomes in Low Level Poverty Dense Schools	47
	Comparing the Poverty Density Levels	50
	Low-Level Poverty Dense as Compared to Mid and High Level.....	50
	Mid-Level Poverty Dense as Compared to Low and High Level.....	50
	High Level Poverty Dense as Compared to Low and Mid-Level	50
	Outcomes for all Levels.....	50

5	DISCUSSION.....	52
	Commonalities.....	52
	Differences.....	53
	Limitations.....	55
	Future Implications for Research.....	55
	Future Implications for Policy	57
	REFERENCES	59

LIST OF TABLES

Table 1	Poverty Density Percentage for the 2006-2007 School Year	27
Table 2	Teacher Interaction Results	33
Table 3	Comparison of Poverty Density with Means for Teacher Interaction	34
Table 4	Adult Interaction Results	35
Table 5	Comparison of Poverty Density with Means for Adult Interaction.....	36
Table 6	Group Size Results	37
Table 7	Comparison of Poverty Density with Means for Group Size Results	38
Table 8	Child Verbal Results	39
Table 9	Comparison of Poverty Density with Means for Child Verbal	41
Table 10	Instructional Content Results	43
Table 11	Comparison of Poverty Density with Means for Instructional Content	44
Table 12	Results for Change Scores on the Woodcock Johnson III.....	45

.

LIST OF FIGURES

Figure 1 Time Variable: Micro to Macro	24
Figure 2 Adult Interaction (AI) and Teacher Interaction (TE) Means for Poverty Density	47
Figure 3 Child Verbal (CV) Means for Poverty Density	48
Figure 4 Instructional Content (IC) and Group Size (GS) Means for Poverty Density	49

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ABSTRACT

It is clear that the poverty density of schools is related to children's educational outcomes and yet our educational policies result in an educational system with high concentrations of low-income children in certain schools and or school systems. This paper explores the everyday experiences of low-income kindergarten children according to the poverty density of the schools they attend. Analysis of the experiences the children have such as teacher child interactions indicate that there are both commonalities and differences according to the poverty density of the schools. Knowledge of these similarities and differences can guide future educational policy.

Chapter 1

INTRODUCTION AND BACKGROUND

Children in the United States are growing up in poverty at an increasing rate. In 2007, 13.3 million children were living in poverty, an increase from 11.6 million children in 2000 (Moore, Redd, Burkhauser, Mbwana, & Collins, 2007). In 2008, in the State of Delaware, 14.7% of children (29,382 children) were living in poverty (Children's Defense Fund, 2008). These statistics are concerning as research confirms the negative impact of poverty on children's physical, social-emotional and cognitive development (Evans, 2004). Observable and measurable influences on children's development as a result of poverty are especially evident in the area of cognitive development (Moore et al., 2009; Duncan, 1984; Duncan & Brooks-Gunn, 1997; Guo, 1998; Haveman & Wolfe, 1994). A timely example of these influences on cognitive development is the achievement gap.

The Achievement Gap

The achievement gap refers to significant and measurable differences in students' academic achievement based on demographic information such as language, race, gender, ability or socio-economic status (SES). Additionally, academic achievement is related to different broad variables of status such as income (McKown & Weinstein, 2008). The gap in achievement related to family income level is seen in the very beginning of formal schooling for children. According to the US Department

of Education's Center for Educational Statistics (2004), children entering kindergarten with risk factors, such as growing up in a low-income family, score lower on achievement tests in reading and math when compared to children without similar risk factors. Research from 2007 shows that the income achievement gap continues to grow throughout the entirety of a low-income student's academic career (Maldonado & Votruba-Drzal, 2007).

Early Experiences Influencing the Achievement Gap

Research has shown that living in poverty during early childhood can adversely affect academic achievement (Duncan & Brooks-Gunn, 1997; Moore et al., 2009). The experiences of children from low-income families are characterized by a lack of resources which can lead to developmental and academic challenges. One major area of deficit in low-income children is language and literacy skills. Hart and Risely (1995) found that low-income children come to school with a significantly different exposure to language, resulting in differences in ability and vocabulary, when compared to children from higher income households. This is relevant because vocabulary acquisition and development is an integral part of academic achievement (Cunningham & Stanovich, 1997; Snow, Porche, Tabors, & Harris, 2007).

Schools Fixing the Gap

Schools are tasked with providing an environment that decreases the income related differences between students and facilitates equal development in all children. This functionalist perspective characterizes schools as providing a "mechanism for social mobility" (Lauren & Tyson, 2008, p.72) that can ameliorate the risks low-income children face, thereby allowing them to achieve the same level as

their more advantaged peers. Education policy in the United States is undergirded by the implicit belief that the educational environment provided to children from low-income families will eradicate the effects of poverty on children's cognitive outcomes.

Completely eradicating the detrimental influences of poverty on children's academic achievement rarely occurs. Schools are often blamed for extending the problems of low-income children, in addition to "promoting the intergenerational transmission of poverty" (Corcoran, 1995). To not blame schools, families, or children, there is a need to examine the achievement gap from a systems perspective. A thorough examination of multiple aspects of poverty that influence child development, particularly the role of schools in exacerbating poverty related challenges, is vital to understanding the risks endemic to the educational system rather than focusing purely on risks related to income level. Once systemic risks are identified, it is possible to identify ways to address the risks, and move towards policy recommendations for resiliency.

Historical Perspective on Educational Policy and the Income Achievement Gap

The Coleman Report was a nationwide report required by the 1964 Civil Rights Act that examined the differences in educational opportunity for students in elementary and secondary public school in the United States. The expectation of the report was that levels of school funding would be a contributing factor in students' achievement. However, the findings indicated that individual family differences and SES predicted student achievement rather than the school funding. Further analysis showed school's resources and student's economic backgrounds were highly correlated. The high correlation between school resources and student SES makes it

difficult to establish the independent role of school resources on academic success for low-income students attending low-resource schools (Darling-Hammond, 2010, see for example, MacPhail-Wilcox & King, 1986).

The 1970's marked an expansion of desegregation policies created by federal and state governments to establish non-racially identifiable schools. With the publication of "A Nation at Risk" in 1983, by the U.S. Department of Education's National Commission on Excellence in Education, a new push to improve schools began. Initiatives started on the federal, state and local levels to promote success by creating programs that aimed to support students of all races and economic backgrounds. A focus on school reform policy continued in the 1990's with the formation of the bipartisan National Education Goals Panel. Additionally, the 1990's saw the formation of voucher systems, court supervision of desegregation efforts ending, and state Supreme Court rulings such as *Abbott vs. Burke* in New Jersey that influenced school funding and the emergence of charter schools. Goals 2000 was also formed with the first goal being for all children to begin school ready to learn (CQ Researcher, 2009). The effectiveness of these policies is questionable since success in bridging the achievement gap on a broad scale has not been documented. With this in mind, 2002 marked a significant moment in educational policy with President Bush signing No Child Left Behind (NCLB).

The basic tenets of NCLB revolved around five main areas: standards, testing, public reporting, accountability with associated sanctions, and qualifications for teachers (CQ Researcher, 2009). For example, states were required to begin using standards for teaching and more rigorous testing for student achievement. Schools

were required to report test results by the following subgroups: economically disadvantaged students, students with disabilities, racial and ethnic groups, and students with limited English skills. If there were measureable differences in test scores by subgroup, schools needed to show improvement in closing the gap. If the gap did not begin to close, schools were labeled as “underperforming” and faced sanctions.

Attempting to explain why schools are underperforming is difficult. Many factors affect children’s school success, with school environment being but one of them. Moreover, NCLB looks at the achievement gaps between low income and high-income children, but in many schools this gap cannot be measured accurately because the school is comprised of one income level. Due to the homogeneity of many school districts, examining how low-income children are performing compared to their higher income peers is more difficult than NCLB anticipated (CQ Researcher, 2009).

The basic idea of school improvement is continued in President Obama’s Race to the Top Initiative. Started in 2010, this initiative requires states to implement improvement plans based on teacher effectiveness and child outcomes as states compete for funding from the federal government to support their plans. In March 2010, the State of Delaware was one of two finalists for the first round of federal funding and was awarded one hundred and nineteen million dollars to implement their school improvement plan. Delaware’s plan had four main objectives: “...effective teachers and leaders; rigorous standards, curriculum, and assessments; sophisticated data systems and practices; and deep support for the lowest-achieving schools” (http://www.doe.k12.de.us/rttt/dist_planning.shtml). In June of 2011, the state

approved plans from each district that will begin implementation in the 2011-2012 school year.

The effects of Race to the Top cannot be predicted. However, when reviewing the outcomes of previous education policy and initiatives, the precedence for educational policy to fail has been set. One can hypothesize that unless educational policy is thoughtfully crafted to include the needs of all children and families, it may join the historical road of other education policies in not being as effective as anticipated. Past educational policies failed because they did not look at poverty from a systems perspective. Health care and cognitive development have been ignored in most of the broad educational policies created in the last 50 years, which ultimately means that children's needs are not being adequately addressed. (Izzo, Weissberg, Kasprow, & Fendich, 1999; Marcon, 1996; McWayne, Hampton, Fantuzzo, Cohen & Sekino, 2004; Reynolds, 2000; Weiss, Caspe, & Lopez, 2006). Family involvement in schooling is a predictor of child success, yet families are rarely the focus of educational policy in K-12 schools. Generally, strategies to involve families (all types of families, including low-income families) in the school setting have not been at the forefront of policy. Lack of family involvement is a critical reason why policies do not reach their desired goals.

Additional Challenges for Low-Income Children: Poverty Density

The belief that schools can apply a lathe to standardizing child outcomes not only ignores the strengths and needs that children bring to the school experience, but it also does not account for differences in resources afforded to schools.

Neighborhood disadvantage research illustrates the challenges that poverty-dense schools experience:

Family SES [including income level], which will largely determine the location of the child's neighborhood and school, not only directly provides home resources but also indirectly provides "social capital," that is, supportive relationships among structural forces and individuals (i.e., parent-school collaborations) that promote the sharing of societal norms and values, which are necessary to success in school (Sirin, 2005, p.334; (Coleman, 1988; Dika & Singh, 2002)).

The disadvantages inherent in most low-income children's achievement and developmental trajectory are part of a larger system that incorporates other demographic, familial, cultural, societal and individual characteristics related to student achievement (Bronfenbrenner & Morris, 1998; Duncan & Brooks-Gunn, 1997; Eccles, Lord, & Midgley, 1991; Lerner 1991; Sirin, 2005). In addition, schools in more poverty dense areas experience more teacher turnover and generally lack resources when compared to more affluent schools (Darling-Hammond, 2010). Since the typical public school has set feeder patterns involving specific neighborhoods, neighborhood advantage or disadvantage could potentially influence the academic success rate for low-income children. Set feeder patterns in low-income areas perpetuate the cycle of low-income students attending schools with fewer resources, which ultimately creates a context of inequality when compared to schools that include high-income students in their feeder patterns. Therefore the context of schooling for low-income children can create a contextual disadvantage.

Purpose

Children from low-income families are at risk when entering kindergarten and poverty dense schools lack the resources of more well-resourced communities to support children (Sirin, 2010). Less attention is given to research on how poverty density is related to daily school experiences of low-income children and how these experiences impact development over the course of the school year. How this translates into the everyday experiences of the children in the kindergarten is the prevailing interest of this study. Thus, the purpose of this study is to provide a descriptive analysis of the experience low-income children have in kindergarten. Specifically using the poverty density of the school as a filter, this study seeks to understand the day-to-day interactions low-income children in kindergarten classrooms experience, according to the poverty density of the schools they attend.

Chapter 2

THEROETICAL FOUNDATION AND LITERATURE REVIEW

Bronfenbrenner's bioecological theory provides a framework to analyze the influence poverty density has on kindergarteners experiences and developmental outcomes. This theory enables researchers to examine the relationship of development within the person and the environment in a multi-faceted, dynamic approach (Lerner, 2007). Over time Bronfenbrenner has refined and expanded specific aspects of this theory. Bioecological theory has been extended beyond the characteristics of the developing person, and employed to describe the environment in which development occurs. To urge researchers to utilize bioecological theory to identify characteristics of the developing person, Bronfenbrenner clarified his original theory through articles, presentations and books throughout the last three decades to highlight the importance of using his theory to assess human development (Lerner, 2007).

Bronfenbrenner presents an ecological paradigm for development in context. Building from and adapting Kurt Lewin's (1935) formula concerning behavior, Bronfenbrenner puts forth the formula $D=f(PE)$, "Development [D] is a joint function of person [P] and environment [E]" (Bronfenbrenner, 2005, p. 108) . When attempting to define development, he states,

Thus at a purely descriptive level, human development can be defined as the phenomenon of constancy and change in the characteristics of the person over

the life course. In light of this definition, careful consideration of the reformulated formula reveals that the “D” term refers not to the phenomenon of development but to its outcome at a particular point in time (Bronfenbrenner, 2005 p. 108).

By continuing this definition to include the temporal aspect of time, Bronfenbrenner (1992) alters the formula of development to include characteristics of a person in a system at a particular time. In essence, time is an integral piece of development. This definition of development works well for many different types of research. The use of a time dependent framework allows researchers to examine a specific moment of development within the complex systemic structure of the environment, and to analyze the characteristics of a developing child. A developmental model has been offered and refined by Bronfenbrenner to study, analyze and refine aspects of development for children. This model consists of four main components: the person, the process, context, and time (PPCT). For this study, the PPCT model will be utilized to examine aspects of a low-income child’s experience and developmental outcomes in kindergarten. In each section below, the variable of focus- person, process, context or time- will be further elaborated followed by a presentation of relevant literature/research to this study.

PPCT= Development/Education

In our society, education is ideally represented as a vehicle to increase cognitive development (i.e. academic outcomes) for children. In this study, development is conceptualized as education and academic outcomes. Academic outcomes are stressed in formal schooling, with the onset of formal schooling typically

beginning in kindergarten. Cognitive developmental gains are referred to as academic outcomes. Based on the decentralized model of the United States education system, academic outcomes are measured differently dependent on the geographic region (i.e., state of residence) where children are attending kindergarten. While some national tests are utilized, school districts have the ability in a decentralized system to pick their own curriculum and evaluation tools.

For the purposes of this study, the academic outcomes that we will focus on will be language and literacy outcomes. Due to the extensive breadth each area of the PPCT model could potentially entail, it is imperative to focus clearly on specific characteristics of each component. In terms of the bioecological model the following describes salient features of the model's components for this study, starting with the person followed by process, context and time.

Person

In the bioecological model, Bronfenbrenner and Morris (1998) refer to three main categories of person characteristics. The first is dispositions (individual) that can potentially affect the proximal process of development. Proximal process refers to specific forms of interaction between the child and the environment that facilitate development. Proximal process will be discussed in detail in the process section. The second is biological resources, including experience, ability, knowledge, and skill that are required for proximal process to function adequately (Bronfenbrenner & Morris, 1998). The third is demand characteristics that influences how the social environment interacts with the person to influence proximal process. Fully understanding the relevant person characteristics will create a better picture of how the

process, context, and time are interacting with the person to influence development in terms of language and literacy outcomes.

In this study low-income status is the person characteristic of interest. The way that low-income status affects a person's developmental trajectory, places low-income children at risk. For example, the child that enters kindergarten from a low-income family may begin with a deficit of language and literacy skills when compared to their higher income peers (Hart & Risley, 2001). The experiences of children from low-income families are characterized by a lack of resources related to economic hardships. A lack of resources can lead to developmental and academic challenges (Mistry, Benner, Biesanz, Clark, & Howes, 2010). In addition, children growing up with multiple socio-demographic and family risk factors do not do as well academically when compared to more advantaged student data (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Gutman, Sameroff, & Cole, 2003; Rauh, Parker, Garfinkel, Perry, & Andrews, 2003; Rouse & Fantuzzo, 2009).

While some studies focus specifically on one or two variables that affect development, understanding the cumulative adverse effects of low-income level that encapsulate early developmental years and shapes characteristics at the time of school entry is vital. Illustrating this point, Mistry et al. (2010) studied cumulative risk beginning in infancy, defining the measure of cumulative risk by weighting economic resources heavily:

Study findings highlight the enduring and adverse developmental consequences at school entry of children's exposure to cumulative risk during infancy.

Children who experienced greater levels of family and social risk as infants

exhibited lower levels of cognitive/academic achievement, poorer self-regulatory skills, and higher levels of problematic behavior as compared to children who experienced lower levels of risk during their first year of life, even after adjusting for the influence of a fairly comprehensive set of covariates (including intra-individual differences in children's cognitive performance) and the mediating influence of children's experiences of more proximal risk and family processes (p. 445).

Low-income children are often at risk due to inadequate or crowded living space, lack of health and child care, inadequate schools, neighborhood disadvantage, limited access to community resources and services, as well as lack of stimulation at home and potential parental psychological distress (Mistry et al., 2010).

This cumulative risk follows low-income children into formal schooling and develops person characteristics that can hinder successful academic outcomes. Examples of this cumulative risk affecting formal schooling can be seen in the physical domain such as prevalence towards obesity (Long, Hendley, & Pettit, 2007) and higher levels of toxins in the blood such as lead (Brody, Pirkle, Kramer, Flegal, Matte, & Gunter, 1994; Crocetti, Mushak, & Schwartz, 1990; Ettinger et al., 2004; Mahaffrey, 1990; Moya, Bearer, & Etzel, 2004; Pollitt, 1994). Additionally as Moore, Redd, Burkhauser, Mbwana, and Collins, (2009) point out, research has shown that the domains of social and emotional skills, as well as behavioral characteristics (Elder, Van Nguyen, Caspi, 1985; Linver, Brooks-Gunn & Kohen, 2002; Yeung, Linver, & Brooks-Gunn, 2002; Hanson, McLanahan, S., & Thomson, 1997; Simons, Whitbeck,

Melby, & Wu, 1994; Takeuchi Williams & Adair, 1991) can posit challenges for some low-income children in schooling.

Low-income status is also often associated with significantly less cognitive stimulation (Evans, 2004). Based on the above research, low-income children are at risk of entering school with different physical, social, emotional, cognitive, and behavioral characteristics than their higher income peers. This different set of experiences potentially affects their academic outcomes.

Low-income children's early years mold them for academic success in their cognitive development of vocabulary. Low-income children come to school with a different vocabulary experience and ability than children from higher income households (Hart & Risely, 1995). Hart and Risely's longitudinal study demonstrated that the quality and quantity of words children were exposed to differ between socioeconomic statuses. Children from professional families heard 11 million words in a year while children in welfare families heard 3 million. By age 9, the children from higher socioeconomic status families were achieving more positive academic outcomes than their low-income peers.

Language and literacy, especially vocabulary acquisition, have been tied to later school achievement in many studies (Cunningham & Stanovich, 1997; Silverman & Crandell, 2010; Snow, Porche, Tabors, & Harris, 2007). Further, vocabulary knowledge is understood to be an integral part of intelligence (Dunn & Dunn, 1997). As explained by Neumann and Dwyer (2009), vocabulary is more than word learning; it also illustrates knowledge of word meaning and concepts associated with the word (Stahl & Murray, 1994; Stahl & Nagy, 2006). Further studies have found that

outcomes of standardized vocabulary tests are highly correlated with other IQ tests (Marchand & Fernald, 2008). Children who have high vocabulary acquisition tend to be more successful at schooling and this presents an additional challenge for low-income children lacking this skill. As cited above, several studies, especially Hart and Risley's work, have demonstrated the limited vocabulary that low-income children exhibit at kindergarten entrance.

Interventions have been designed to aid low-income children in bridging the achievement gap, however specific vocabulary instruction is typically missing. Neuman and Dwyer (2009) found that children participating in Head Start are often taught a curriculum that lacks direct vocabulary instruction. Overall, the physical, social, emotional, and behavioral characteristics mentioned as well as the cognitive skills of low-income children at entry to kindergarten, demonstrates how cumulative risks in different domains combine to paint a picture indicating difficulties for academic success.

Process

Bronfenbrenner's description of process for development includes the understanding of proximal process. Proximal process refers to specific forms of interaction between the child and the environment. These interactions occur over time and are considered to be the integral push for development (Bronfenbrenner & Morris, 1998). In this study, the proximal process that is expected to further cognitive development for children is education. Of particular interest when examining the achievement gap is the proximal process of kindergarten. For children entering school at varying cognitive levels, kindergarten carries the expectation of neutralizing these

differences and in turn bridge the achievement gap. While, perhaps, the expectation is not to completely bridge the achievement gap, an expectation exists that children get a fair or equal opportunity for education from the proximal process of kindergarten. Furthermore, the underlying expectation is that the proximal process of kindergarten is designed to facilitate this kind of academic achievement for all children. For the purposes of this study, proximal process is defined by the interactions that occur between the teacher and the child. This interaction is potentially influenced by the social construct of the low-income child, which will be explained later.

Vocabulary acquisition, a major component of academic achievement and outcome, stems from adult and child interaction. Clark (2009) proposes that the “social content of language” is where words and meanings are created and understood and generally occurs within the context of conversations. Silverman and Crandell (2010) point out how research has consistently illustrated children learn words through interactions with adults (Huttenlocher, Haight, Bryk, Seltzer & Lyons, 1991) and that vocabulary acquisition is understood to be a socially mediated process (Rogoff, 2003; Vygotsky, 1934/1986).

Relationships between teachers and children also have been shown to have a significant effect on a child’s learning. The teacher-child relationship as a context for children’s development has suggested that a positive relationship can act as a protective factor for at risk children (Copeland-Mitchell, Denham, & DeMulder, 1997; Fallu & Janosz, 2001; Hamre & Pianta, 2001; Ladd & Burgess, 2001; Meehan et al., 2003; 1997; van IJzendoorn, Sagi, & Lambermon, 1992). These relationships impact social development and cognitive development, specifically, academic outcomes.

Teacher-child relationships are a vital component for children's academic success (Pianta, Hamre & Stuhlman, 2003) and despite this as Thijs et al., (2011) expounds; "Even though the actual reciprocal interactions between teachers and children are considered to be one of the cornerstones of their relationships (Pianta, Hamre, & Stuhlman, 2003) far less is known about how they respond to each other in concrete daily situations" (p.234)

The process of daily interactions for teachers and children has not been researched as thoroughly (Thijs et al., 2011). Social aspects of learning are important for child development and have the potential to serve as a protective factor against risks including low-income status. However, at this time there is little current research documenting how daily social interactions, or proximal process, affect developmental outcomes (Meehan et al., 2003).

The social construct of a low-income child –or the way in which an adult perceives a low-income child- could be detrimental to proximal process, especially to teacher-child interaction. As Lubrek and Garrett (1990) demonstrate, the very concept of an at-risk child encourages educators to stereotype low-income children. Moreover, the social construct of the at-risk child allows educators to potentially blame parents and to ignore the characteristics of schools where at-risk children are struggling academically (Lubrek & Garrett). Additionally, Darling-Hammond (2010) points out that students perform poorly when expectations are low based on "stereotype threat" towards their group's expected performance is prompted (Steele, Spencer & Aronson, 2003). Darling-Hammond asserts that to overcome inequalities teachers views and behaviors must be thoroughly considered to establish high standards of expectation for

all children. Teachers potentially treat children from a low-income background differently according to expectations of achievement, which could possibly be analyzed through teacher-child interactions.

Teacher-child interactions influenced by stereotypes and social constructs may affect the proximal process in kindergarten, and in turn influence future academic outcomes. It is assumed that the power of proximal process will change according to the characteristics of the person, context, and time (Bronfenbrenner & Morris, 1998). To truly understand the power of the proximal process there must be a clear description and understanding of the person characteristics, the context, and the time period being evaluated. All aspects of the PPCT model enhance and provide a clear focus of the proximal process. While the process of the kindergarten day has been researched in terms of interaction, few studies have accounted for other contextual factors that may influence outcomes.

Context

Bronfenbrenner (1992) stresses the context in which development occurs as a cornerstone in bioecological theory. Ceci, Bronfenbrenner, and Baker (1988), argue that the context is an integral part of cognition. This point is illustrated by first examining the macrosystem:

The macrosystem consists of the overarching pattern of micro-, meso-, and ecosystems characteristics of a given culture, subculture, or other extended social structure, with particular reference to the developmentally instigative beliefs systems, resources, hazards, lifestyles, opportunity structures, life course options, and patterns of social interchange that are embedded in such

overarching systems. The macrosystem may be thought of as a societal blueprint for a particular culture, subculture, or other broader social context (Bronfenbrenner, 1992, p. 149).

This social blueprint describes the environment in which development occurs for a low-income child. As the macrosystem is broken down, the pieces of the other systems are clarified, beginning with the microsystem in which a child exists. The microsystem is a pattern of roles, activities and interpersonal interactions that are characterized by complex interaction in a direct setting (Bronfenbrenner, 1994). With this description of the microsystem, the closest parts in the child's environment and the effects they have on that particular child's development can be studied. Recognizing that the developing person, or in this instance, the low-income child, is interacting with multiple environments, helps define the mesosystem. The mesosystem is comprised of the processes and connections that are between two or more contexts such as the home and school (Bronfenbrenner, 1992). Additionally, development exists for all children within interconnected environments that are not clearly observable or environments that, while the child does not actively participate in, potentially influence development. Bronfenbrenner (1992) refers to this as the exosystem, which is between multiple settings, one that typically involved the individual and one that does not.

Of particular interest for this study is Bronfenbrenner's idea of ecological niches, which are areas in the environment that are considered to be either good or not good in aiding the development of children with specific personal characteristics (Bronfenbrenner, 1992). Particular aspects of the environment support positive or

negative processes of development for low-income children. Kainz and Vernon-Feagan's (2007) study of cognitive development (specifically reading) in children shows that classroom structures and processes are important to learning, but that teachers exist and teaching happens in particular school contexts. The variable of context in which teaching processes occur allows the relationship between classroom processes and children's development to be better understood.

Literature concerning the academic outcomes of children in different school contexts is plentiful. Specifically, research into academic outcomes in kindergarten has followed the lead of the desegregation literature furthering findings that school contexts are significant. For instance, the U.S. Department of Education (2000) found data from the National Assessment of Educational Progress that showed children in more affluent schools achieved academically significantly and reliably higher scores than children in more economically disadvantaged schools (as cited in Sirin, 2005, p.).

Potentially, low-income children are treated as a minority in the education system. Hindman, Skibbe, Miller and Zinnerman (2010) illustrated the need for analysis as schools with fewer minority-ethnic students demonstrate higher student achievement (Koth, Bradshaw & Leaf, 2008; Pianta & Early, 2001). In addition there are some indications that early academic success can differ between geographic locations such as urban and rural schools (Lee & Burkam, 2002).

A number of variables challenge schools in low-income areas with low-income students, including: resources, teacher education, and neighborhood contextual factors (Evans, 2004). Lack of social resources and well-qualified teachers, paired

with other issues such as student absenteeism, teacher turnover, less parental involvement, and violence in low-income schools adversely affects learning and development (Evans; Lee & Croninger, 1994; Rutter, Yule, Quinton, Rowland, Yule & Berger 1974; U.S. Department of Health and Human Services, 1999). Moreover, Huston, McLoyd, and Garcia (1994) state:

Duncan et al. examine the relation between neighborhood characteristics and developmental outcomes. Neighborhood economic conditions, although less powerful than family-income differences, are significant predictors of IQ and behavior problems. In comparison to those with moderate-income neighbors, children with affluent neighbors have higher IQs, whereas those with low-income neighbors have more externalizing problems (p. 280).

This study focuses on the mesosystem layer of context regarding the poverty density of schools and how children's academic outcomes are related. It is imperative to clearly understand how the context influences these processes. As Kainz and Vernon-Feagans (2007) indicate, there is a need to understand the unique classroom and school environments that low-income children encounter and how these contexts influence the process.

Time

The variable of time narrows down the area of study for development and provides an opportunity to investigate how time periods can influence cognitive outcomes for children. Bronfenbrenner (1988) stresses the importance of time, as human development must be defined in relation to time due to the relevance of

continuity and change in the biological and psychological framework individuals experience throughout their life span.

Bronfenbrenner and Morris (1998) clarify microtime, mesotime and macrotime in the following ways. Examining microtime by relating to a child's experience in kindergarten would entail observing and documenting the daily experiences of a low-income child's interactions with children (proximal process). Such an examination would in turn lead to questions of the continuity or discontinuity of these attempts at proximal process over longer periods of time in the lives of low-income children. Bronfenbrenner (1992) refers to this as mesotime, which is the prevalence of these episodes of proximal process across the time intervals of days and weeks.

Bronfenbrenner and Morris (1998) define macrotime as looking across the life course at larger events in society and the changing expectations, including through and within generations, that affect the processes and trajectories of a child's development. For the purposes of this study, macrotime focuses attention on the federal and local education policies that shape proximal processes for low-income children's kindergarten experience. Macrotime encompasses the changing expectations that are placed on children in kindergarten, based on policies that regulate academic standards and testing. The increased push toward reaching academic standards is a macro context feature that was not present for past generations of kindergarten aged children. Academic standards influence interactions between schools, parents, and communities as children are pressed to reach increased expectations. Moreover, the creation and application of these policies or "events in the

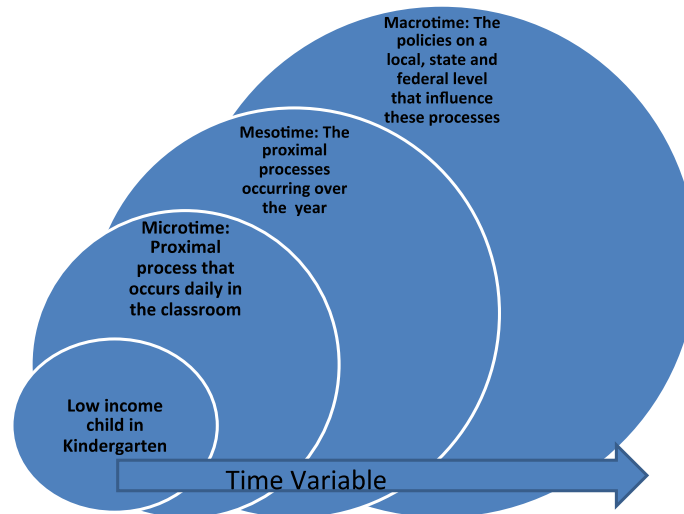
larger society” influence the context within classrooms, school, communities and families. In light of these policies, most recently NCLB and Race to the Top, requiring the demonstration of standards of learning, which before children were not applied to kindergarten children, the on affect academic outcomes must be examined. Macrotime events, such as educational policy, are influencing academic outcomes over time.

As stated earlier, the main theoretical focus for the time variable from Bronfenbrenner’s PPCT model will be in the microtime of the day across the mesotime of the Kindergarten year. Specifically, this study will focus on the Kindergarten day in terms of process and the relationship this has with the low-income child’s outcome (academic achievement) over the course of the year. As shown in Figure 1, time is an important element when combined with the person, process and context in this study.

When viewing the complete picture of the time variable and the aforementioned variables of person (the low income child), process (teacher child interactions in kindergarten) and context (poverty density of schools) and time (micro- day to day; meso- course of the year), the implications and potential of low-income children struggling to reach academic success is clear (see Figure 1).

Figure 1

Time Variable: Micro to Macro



Chapter 3

Method

Participants

This study used the 2006-2007 Full Day Kindergarten data set from The University of Delaware. The data was originally collected in response to an agreement between the Delaware Department of Education and the University of Delaware's Center for Disabilities Studies to assess kindergarten achievement outcomes of full day kindergarten. All children included in the original study attended kindergarten for at least five hours a day for five days per week (Han et al. 2007). Twenty classrooms participated in the 2006-2007 study from nine of Delaware's 19 school districts. Of these 20 classrooms, six were located in New Castle County, seven in Kent County, and seven in Sussex County. Nineteen of these classrooms were located in public K-12 or elementary schools with one, in Smyrna, located in an early childhood center separate from the public school. The study assessed 113 children, with 61 male students and 52 female students.

For this study, participants from the 2006-2007 Full Kindergarten data set with low income were identified. Enrollment in the free and reduced lunch program served as the proxy for low-income status. Children from families earning at or below 185% of the federal poverty line are eligible for free lunch, and families earning at or below 130% of the federal poverty line are eligible for reduced lunch according to the U.S. Secretary of Agriculture. In 2007 a family of four with an annual income of \$26,845 would be eligible for free lunch while a family of four with an annual income of

between \$26, 845 and \$38,203 would be eligible for reduced lunch (<http://www.fns.usda.gov/cnd/Governance/notices/iegs/IEGs.htm>). In this data set 56 children met the criterion for free and reduced lunch.

Procedure

Across the state of Delaware for the 2006-2007 school year 40.3% of students were enrolled in the free and reduced lunch program, but they are not distributed evenly across the state. For the purposes of this study, three groups of schools were formed based on poverty density percentages. School profiles are available that show what percentage of children are enrolled in the free and reduced lunch program. In 2007, the schools in this study had percentages that ranged from 28% to 85.7%. There was an evident grouping of schools with poverty density percentages right around the 50-60% mark (n=7). As a result, while a specific median cut was originally expected, the schools clustered into three groups. The first group in this study, low-level poverty dense, are schools with a low-income percentage less than 40% (n=7). The second group, mid-level poverty dense, are schools with percentages between 40% and 61% (n=7). The third group, high-level poverty, density, are schools with percentages over 61% (n=4). Table # 1 shows the percentage of free and reduced lunch enrollment for the schools in this study.

Table 1

Poverty Density Percentages for the 2006-2007 School Year

Percentage	School Name	Poverty Density Group
28.00%	School A	Low
34.40%	School B	Low
36.00%	School C	Low
36.90%	School D	Low
36.90%	School E	Low
37.20%	School F	Low
39.70%	School G	Low
50.50%	School H	Mid
55.30%	School I	Mid
55.80%	School J	Mid
59.70%	School K	Mid
60.20%	School L	Mid
60.80%	School M	Mid
60.80%	School N	Mid
62.40%	School O	High
68.50%	School P	High
81.60%	School Q	High
85.70%	School R	High

Microlevel Analysis: Daily Experiences of Teacher/Child Interactions

The microlevel analysis focused on describing the daily interactions of children in the kindergartens, what Bronfenbrenner refers to as proximal processes. The description of the proximal process experienced by the target kindergarteners was categorized based on the poverty density of the schools. Data on proximal process was

used from the UD Student Snapshot (based on the Emerging Academics Snapshot, Ritchie, Howes, Kraft-Sayre, & Weiser, 2002). The UD Student Snapshot used time sampling data that were collected by trained observers targeting specific children. The trained coders observed a targeted child for twenty uninterrupted seconds, and then for the next sixty seconds coded the observation. The observers collected information on teachers' interactions with children, group size, and other categories from the original Emerging Academics Snapshot, (Ritchie, Howes, Kraft-Sayre, & Weiser, 2002) measures. For the UD Student Snapshot, additional categories were observed such as child verbal interaction, teacher directedness and behavior guidance strategies. These four observations took place for five cycles over the months of January, February, March and April of the kindergarten year. For the purposes of this study, only the data recorded on the children enrolled in the free and reduced lunch program was used.

The following categories were chosen for analysis: teacher directedness, adult interaction, child verbal, group size, and instructional content. These categories were chosen to examine characteristics of daily interactions (proximal process) for low-income children. Teacher directness examined the pedagogical/interactive approach the teacher took in sharing new information with children. This category provides descriptions of interactions related to instruction with the teacher in closest proximity to the target child (Han et al., 2007). Teacher directedness included the variables of teacher interaction that invites exploration, teacher interaction that scaffolds and teacher interaction that is didactic. Teacher interaction that invites exploration was an interaction that involved using materials that allowed children to make autonomous choices to experiment and test hypothesis.

Teacher interaction that scaffolds occurred when a teacher asked open-ended questions, helped children expand their curiosity to learn as well as tying class activities to the child's real-life experiences. Teacher interaction didactic occurred when the teacher taught or interacted with the target child in a manner that invited no response from the child. Adult interaction described the involvement and responsiveness of the adult closest to the target child this differs from the teacher interaction because it could be any adult in the room (such as a paraprofessional), including the teacher. Adult interaction variables included minimal interaction, simple interaction, elaborate interaction, not in range, ignoring, and adult interaction that about daily routine. Minimal interaction was coded if adults responded to a child's request for help or gave directions with no reply from the child expected. Simple interaction was coded if the adult gave a short answer or gave simple directions to the child. Elaborate interaction was coded if the adult interacted extensively with the child in an affirming way or expanded on a child's idea. Not in range was coded by observers when a student was working independently. Ignoring was coded when the child is asking for attention and the adult did not give any. Adult interaction about daily routine was coded when an adult gave materials or assistance but did not interact verbally with the child. The child verbal category illustrated the range of verbal styles a child could be using during the time samples. These variables were not talking, not audible, talking alone, and talking to a paraprofessional. In addition verbal complexity was coded as elaborate, open questions, talking to teacher, talking to peers, talking socially, simple statements and talking about symbolic play. Elaborate was coded when a child gave an elaborated statement. Open was coded when a child replied to

an open-ended question. Talking to teacher was coded when the child was engaging in a conversation with a teacher. Talking to peers was coded when the child was talking with other classmates. Simple statements were coded when a child spoke in didactic sentences. Talking about symbolic play was coded when the target child was speaking about play that was symbolic in nature.

Additionally, measures of the daily experiences low-income children experience was analyzed using the instructional content and group size codes. Instructional content showed what types of curriculum content the students experienced in their day. Instructional content included the variables of being read to, pre-reading, letter, writing, math, computer, social studies, gross motor, fine motor, aesthetics, oral language and life skills.

Group size showed what context these interactions were taking place in by indicating the size of the group. At the beginning of each observation each observer noted the size of the group target children were working in. These variables were full group, individual, small, large and adult.

The mean for percent of occurrence was found for each variable above. In order to compare the means of each individual variables percentage of occurrences with the poverty density levels, a series of one-way Analysis of Variance (ANOVA) tests were run. The three group levels of poverty density were the independent variable.

Developmental Outcomes- Woodcock Johnson III Test of Achievement

Analysis of the developmental/academic outcomes over the kindergarten year was completed using the Woodcock-Johnson III Tests of Achievement

(Woodcock, McGrew, & Mather, 2001). For this analysis, data from the three subtests of the Woodcock-Johnson III were used: Picture Vocabulary which evaluates expressive vocabulary, Understanding Directions which evaluates ability to follow directions based on pictures and pointing and Academic Knowledge which evaluates general knowledge (<http://alpha.fdu.edu>).

Age-Equivalent scores from the Woodcock-Johnson III time two (spring-end of kindergarten) were subtracted from scores from the Woodcock-Johnson III Age Equivalent time one (fall-entrance to kindergarten) to obtain change scores for the year. The chronological age of the child was controlled for in the change scores by calculating the difference between the chronological age and age-equivalent score at each time point (time one and time two) and then subtracted time one from time two. From these scores one-way ANOVA's were completed using SPSS.

Chapter 4

FINDINGS

Teacher Interaction Results

Table # 2 presents means, standard deviations, and the F scores for the three groups (low, mid and high poverty dense) of schools on the dependent variable of teacher interaction with low-income children. One-way ANOVAs were run independently for each category of teacher interaction. Comparisons revealed that the homogeneity assumption underlying an ANOVA was met for the teacher interaction exploration variable (Levine Statistic .428 and .000) but not for the teacher interaction scaffolds variable (Levine Statistic .000). Therefore, post hoc comparisons were apportioned using the Tukey adjustment (teacher interaction exploration variable) and Games-Howell (for teacher interaction scaffolds). The ANOVA results showed a statistically significant difference between groups for teacher interaction exploration ($F = 4.09$, $df [2, 60]$, $p < .05$) and for teacher interaction scaffolds ($F=14.40$, $df(2,60)$, $p<.001$).

Table 2

Teacher Interaction Results

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Teacher interaction invites exploration	21.57	10.91	17.7	17.7	9.26	14.03	4.09*
Teacher interaction scaffolds	4.60	5.20	0.488	.855	0.18	3.30	14.4**
Teacher Interaction Didactic	45.04	14.34	47.35	15.94	47.19	14.65	.307

Post hoc analyses demonstrated that teacher interaction invites exploration occurred more often in the low poverty density group than in the high poverty density group. Additionally, teacher interaction scaffolds occurred more often in the low poverty density group than both mid and high poverty density (see table #3)

Table 3

Comparison of Poverty Density with Means for Teacher Interaction

Variable	Comparison of Poverty Density with Means	<i>p</i>
Teacher Interaction Exploration	Low Poverty Density vs. High Poverty Density (21.57 vs. 9.26)	.021
Teacher Interaction Scaffolds	Low Poverty Density vs. Mid Poverty Density (4.60 vs. 0.488)	.013
Teacher Interaction Scaffolds	Low Poverty Density vs. High Poverty Density (4.60 vs. 0.18)	.008

Adult Interaction Results

Table # 4 presents means, standard deviations and F scores for the three groups on the dependent variable of adult interaction. One-way ANOVA's were run independently for each category of adult interaction. Analysis revealed that the homogeneity assumption underlying an ANOVA was violated for all variables except adult interaction routine and adult interaction simple (Levine Statistic 2.91 and 1.51). Therefore, post hoc comparisons were apportioned using the Tukey adjustment (adult interaction routine and simple) and Games-Howell (for adult interaction ignore, minimal and elaborated). The ANOVA results showed a statistically significant difference between groups for adult interaction ignore ($F = 3.15$, $df [2, 60]$, $p = .05$) for

adult interaction routine ($F=6.23$, $df(2,60)$, $p<.05$) for adult interaction minimal ($F = 5.39$, $df [2, 60]$, $p>.05$) and for adult interaction elaborated ($F = 8.05$, $df [2, 60]$, $p = .001$).

Table 4

Adult Interaction Results

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Adult Interaction Minimal	9.84	6.51	5.51	4.89	12.50	10.30	5.39*
Adult Interaction Simple	24.13	14.66	20.62	11.64	20.74	12.55	.456
Adult Interaction Elaborate	11.00	10.51	2.32	2.65	5.90	7.36	8.05**
Adult Interaction Not in Range	18.6	10.75	22.75	12.63	17.99	6.71	1.37
Adult Interaction Ignore	1.95	3.42	8.26	11.41	5	5.01	3.15*
Adult Interaction Routine	23.47	13.14	11.32	8.36	21.08	15.75	6.23*

Note: * $p \leq .05$; ** $p \leq .0001$

Post hoc analyses demonstrated that adult interaction routine occurred more often in the low poverty density group than the mid poverty group. Mid poverty density produced higher occurrences of adult interaction that ignores and then the low poverty density groups. Additionally, adult interaction minimal occurred more in the high poverty density group than the mid poverty density group (see table # 5).

Table 5

Comparison of Poverty Density with Means for Adult Interaction

Variable	Comparison of Poverty Density with Means	<i>p</i> = value
Adult Interaction Ignores	Low Poverty Density vs. Mid Poverty Density [1.95 vs. 8.26]	.030
Adult Interaction Routine	Low Poverty Density vs. Mid Poverty Density (23.47vs. 11.32)	.006
Adult Interaction Minimal	Mid Poverty Density vs. High Poverty Density (5.51 vs. 12.50)	.028
Adult Interaction Elaborated	Low Poverty Density vs. Mid Poverty Density (11.00 vs. 2.32)	.010

Group Size Results

Table # 6 presents means, standard deviations and F scores for the three groups on the dependent variable of the percentage of time spent in group size. One-way ANOVA's were run independently for each category of group size. Analysis

revealed that the homogeneity assumption underlying an ANOVA was violated for all variables except group size small and full (Levine Statistic 1.14 and 1.71). Therefore, post hoc comparisons were apportioned using the Tukey adjustment (for small group and full group) and Games-Howell (for group size individual student, large group and adult present). The overall ANOVA itself showed a statistically significant difference between groups for group size individual student ($F = 6.47$, $df [2, 60]$, $p < .05$ and for group size adult present ($F=3.67$, $df(2,60)$, $p<.05$).

Table 6

Group Size Results

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Group Size Full Group	60.49	12.92	60.17	21.25	56.84	19.75	.223
Group Size Individual	12.6	11.57	4.15	4.67	9.36	7.69	6.42*
Group Size Small	16.68	9.56	17.61	11.98	18.4	9.87	.121
Group Size Large	4.9	5.91	9.03	11.53	11.4	25.04	.761
Group Size Adult	19.7	27.70	8.32	24.31	0.32	1.42	3.67*

Note: * $p \geq .05$; ** $p \geq .0001$

Post hoc analyses demonstrated that group size individual student occurred more often in the low poverty density group than the mid and high poverty density groups. Additionally, group size adult present occurred more in the low poverty density group than the high poverty density group (see table # 7 below).

Table 7

Comparison of Poverty Density with Means for Group Size

Variable	Comparison of Poverty Density with Means	<i>p</i>
Group Size Individual	Low Poverty Density vs. Mid Poverty Density [12.6 vs. 4.15]	.024
Student Group Size Individual	Low Poverty Density vs. High Poverty Density (12.6 vs. 9.36)	.036
Student Group Size Adult Present	Low Poverty Density vs. High Poverty Density (19.7 vs. 0.32)	.028

Child Verbal Results

Table # 8 presents means, standard deviations and F scores for the three groups on the dependent variable of percentage of time child verbal. One-way ANOVA's were run independently for each category of child verbal. Analysis revealed that the homogeneity assumption underlying an ANOVA was met for all variables except child verbal not talking and not audible (Levine Statistic 6.45 and 15.8). Therefore, post hoc comparisons were apportioned using the Tukey adjustment for most variables and Games-Howell (for child verbal not talking and not audible). The

ANOVA results showed a statistically significant difference between groups for child verbal not talking ($F = 8.40$, $df [2, 60]$, $p = .001$ child verbal not audible ($F=7.46$, $df (2,60)$, $p=.001$), child verbal talking alone ($F=3.56$, $df (2,60)$, $p<.034$), child verbal talking to peers ($F=5.40$, $df (2,60)$, $p<.05$), child verbal talking socially ($F=16.3$, $df (2,60)$, $p=.000$) and for child verbal simple statements ($F=6.29$, $df (2,60)$, $p<.05$).
Table 8

Child Verbal Results

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Child Verbal Not Talking	66.9	5.10	59	14.73	51.67	8.73	8.48**
Child Verbal Not Audible	1.33	2.26	7.88	9.91	1.22	1.91	7.46**
Child Verbal Talking Alone	2.32	2.25	1.96	2.26	3.92	3.05	3.56*
Child Verbal Talking to Paraprofessional	1.6	2.67	2.8	2.58	1.92	2.29	1.59
Child Verbal Elaborate	1.25	1.78	1.07	2.38	0.78	1.41	.260
Child Verbal Open Questions	0.577	.923	0.37	1.28	0.28	0.64	.378
Child Talking to Teacher	7.97	4.36	9.26	4.31	11.5	5.84	2.59
Child Talking to Peers	18.66	7.13	16.24	10.83	25.36	8.41	1.59*
Child Talking Socially	8.5	4.32	5.52	4.84	15.02	7.31	16.31**
Child Talking in Simple Statements	12.85	9.44	8.68	5.47	16.68	8.30	6.29*
Child Verbal Talking about Symbolic Play	0.41	1.04	0.32	0.73	0.69	0.77	1.10

*Note: *p $\geq$.05 ; **p $\geq$.000*

Post hoc analyses demonstrated that the child verbal not talking happened more often in the low poverty density than the mid and high poverty density group. Child verbal not being audible was more prevalent in the mid poverty density group than the high poverty density group. Child verbal talking alone occurred more in the high verses the mid poverty density group. Child verbal talking with peers was significantly higher in occurrence for high poverty over mid poverty density as well. Child verbal simple statements was higher in the mid over the high poverty density group. Additionally, child verbal talking socially occurred less in the low and mid poverty density group than the high poverty density group (See table # 9).

Table 9

Comparison of Poverty Density with Means for Child Verbal

Variable	Comparison of Poverty Density with Means	<i>p</i>
Child Verbal Not Talking	Low Poverty Density vs. Mid Poverty Density [66.9 vs. 59]	.039
Child Verbal Not Talking	Low Poverty Density vs. High Poverty Density (66.9 vs. 51.67)	.000
Child Verbal Not Audible	Low Poverty Density vs. Mid Poverty Density (1.33 vs. 7.88)	.028
Child Verbal Talking Alone	Mid Poverty Density vs. High Poverty Density (1.96 vs. 3.92)	.031
Child Verbal Talking to Peers	Mid Poverty Density vs. High Poverty Density (16.24 vs. 25.36)	.005
Child Verbal Talking Socially	Low Poverty Density vs. High Poverty Density (8.5 vs. 15.02)	.003
Child Verbal Talking Socially	Mid Poverty Density vs. High Poverty Density (5.52 vs. 15.02)	.000
Child Verbal Simple Statements	Mid Poverty Density vs. High Poverty Density (8.68 vs. 16.68)	.002

Instructional Content Results

Table # 10 presents means, standard deviations and F scores for the three groups on the dependent variable percentage of time spent in instructional content.

One-way ANOVA's were run independently for each category of instructional content. Analysis revealed that the homogeneity assumption underlying an ANOVA was met except for the variables instructional content computers and life skills (Levine Statistic 6.74 and 9.33). Therefore, post hoc comparisons were apportioned using the Tukey adjustment and Games-Howell (for instructional content computers and life skills). ANOVA results showed a statistically significant difference between groups for instructional content aesthetics ($F = 8.49$, $df [2, 60]$, $p = .001$) and for instructional content fine motor ($F = 3.86$, $df (2,60)$, $p < .05$).

Table 10

Instructional Content Results

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Instructional Content Read to	6.95	5.61	8.36	6.27	6.74	6.46	.479
Instructional Content Pre Read	13.4	8.97	13.62	7.49	9.6	7.77	1.61
Instructional Content Letter	16.11	5.84	12.36	8.17	15.55	10.07	1.36
Instructional Content Writing	8.79	5.94	10.22	7.13	8.11	5.73	.651
Instructional Content Math	14.8	6.72	14.2	6.81	10.25	5.97	2.79
Instructional Content Science	11.07	7.54	6.77	6.49	9.64	7.37	2.13
Instructional Content Computer	6.34	4.02	4.93	6.88	3.99	3.42	.889
Instructional Content Social Studies	10.9	7.51	8.14	10.25	5.71	5.91	1.7
Instructional Content Gross Motor	7.01	9.51	9.82	7.54	5.02	5.00	2.35
Instructional Content Fine Motor	23.38	10.35	17.6	12.74	13.11	8.88	3.86*
Instructional Content: Aesthetics	21.46	9.42	11.75	11.81	9.05	4.57	8.49**
Instructional Content: Oral Language Activity	12.92	12.13	7.65	10.65	10.52	22.29	.636
Instructional Content Life Skills	7.82	14.87	4.01	6.13	9.00	11.82	1.35

Note: *p $\geq$.05 ; **p $\geq$.000

Post hoc analyses demonstrated that instructional content aesthetics occurred more often in the low poverty density group than both mid and high poverty density groups. In addition instructional content fine motor occurred more often in the low poverty density group than the high poverty density group (see table # 11).

Table 11

Comparison of Poverty Density Means for Instructional Content

Variable	Comparison of Poverty Density with Means	<i>p</i>
Instructional Content Aesthetics	Low Poverty Density vs. Mid Poverty Density [21.46 vs. 11.75]	.005
Instructional Content Aesthetics	Low Poverty Density vs. High Poverty Density (21.46 vs. 9.05)	.001
Instructional Content Fine Motor	Low Poverty Density vs. High Poverty Density (23.38 vs. 13.11)	.020

Woodcock-Johnson Results

Table # 12 presents means, standard deviations and F scores for the three groups on the dependent variable of change scores. Preliminary comparisons revealed that the homogeneity assumption underlying an ANOVA was met. The overall ANOVA itself did not show a statistically significant difference between groups for any of the poverty density groups.

Table 12

Results for Change Scores of the Woodcock Johnson III

Variable	<u>Low density</u>		<u>Mid density</u>		<u>High density</u>		F
	Mean	SD	Mean	SD	Mean	SD	
Understanding Change Scores	-2.00	10.67	-2.25	7.72	-6.58	7.80	1.09
Vocabulary Change Scores	4.87	8.09	3.82	10.41	-.50	12.23	.806
Knowledge Change Scores	-3.25	5.82	1.17	12.96	-0.36	9.62	.457

Note: *p $\geq$.05 ; **p $\geq$.0001

Findings by Poverty Density Level**Interactions and Outcomes in High-Level Poverty Dense Schools**

Simple interactions (20.74%) and interactions based on routines (21.08%) were the most frequent interaction low-income children have with teachers in high-level poverty dense schools. They experienced elaborative interactions with adults 11% of the time sampled. Teacher interactions for instruction with children tended to be more didactic than scaffolding. Additionally, children were experiencing interactions that invited exploration 9.26% of the time.

From the child verbal variables, there was almost no evidence of any talking about symbolic play, open-ended questions or elaborative statements. During the sampled time, children spent 62.67% of the time not talking.

Full-group time was the predominant group size for high-level poverty dense schools (56.84%). Instructional content for children in these schools was spread out fairly evenly across the variables with the highest amounts of time spent in fine motor (13.11%) and letter knowledge (15.55%). (See figures 2,3, and 4)

Low-income children attending high-level poverty dense schools lost about six and a half months on their change scores for the Woodcock Johnson Age-Equivalent subtest of Understanding Directions. Further, in Picture Vocabulary they lost half a month and in Academic Knowledge they lost almost half a month on their scores.

Interactions and Outcomes Mid-Level Poverty Dense Schools

Low-income children in mid-level poverty dense schools experienced adult interaction that was simple and often regarding routines in the classroom. Teacher interaction was predominantly didactic with a small portion of time sampled showing the teacher inviting exploration (17.7%).

Children not talking had the most occurrences; yet, there was some talking with peers, simple statements and talking socially. Group size for low-income children in mid-level poverty dense schools was mostly full group. Instructional content in mid-level poverty dense schools was higher in fine motor (17.6%), pre-reading (13.62%) and math (14.2%) then other variables. (See figures 2,3, and 4)

Children attending the mid-level poverty dense schools from low-income families lost about two months on their change scores for the Woodcock Johnson Age-Equivalent subtest of Understanding Directions. However, children

gained almost four months in Picture Vocabulary and about one month in Academic Knowledge.

Interactions and Outcomes in Low-Level Poverty Dense Schools

Adult interaction that was simple and based on routines in the classroom were the most prevalent experiences with adult interaction low-income children had in low-level poverty dense schools. Teacher interaction was primarily didactic with some invitations for exploration (21.57%).

Child verbal was mostly not talking (66.9%) with some talking to peers (18.66%) and simple statements (12.85%). Group size for low-income children in low-level poverty dense schools was generally full group. Instructional content in aesthetics and fine motor had the highest occurrences. (See figures 2,3, and 4)

Figure 2

Adult Interaction (AI) and Teacher Interaction (TE) Means for Poverty Density

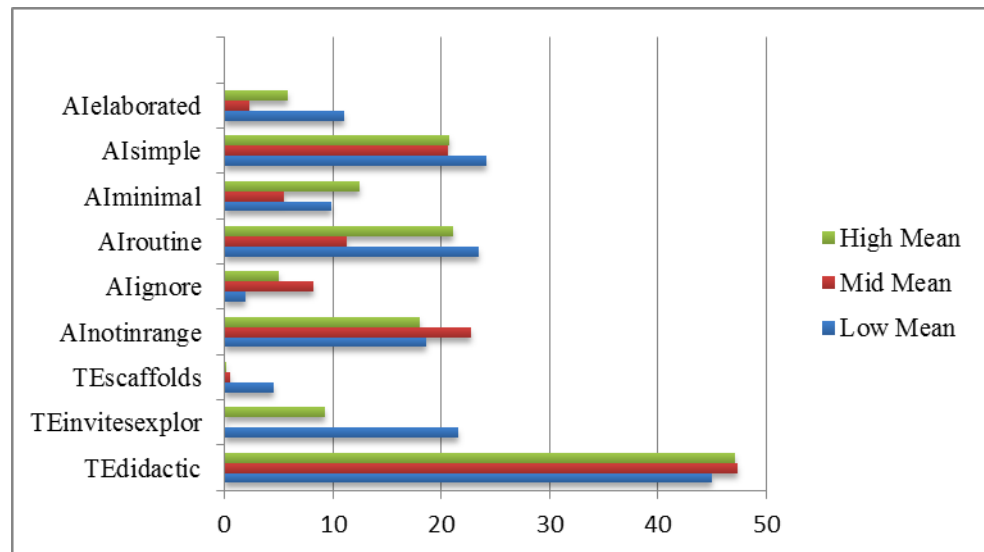


Figure 3

Child Verbal (CV) Means for Poverty Density

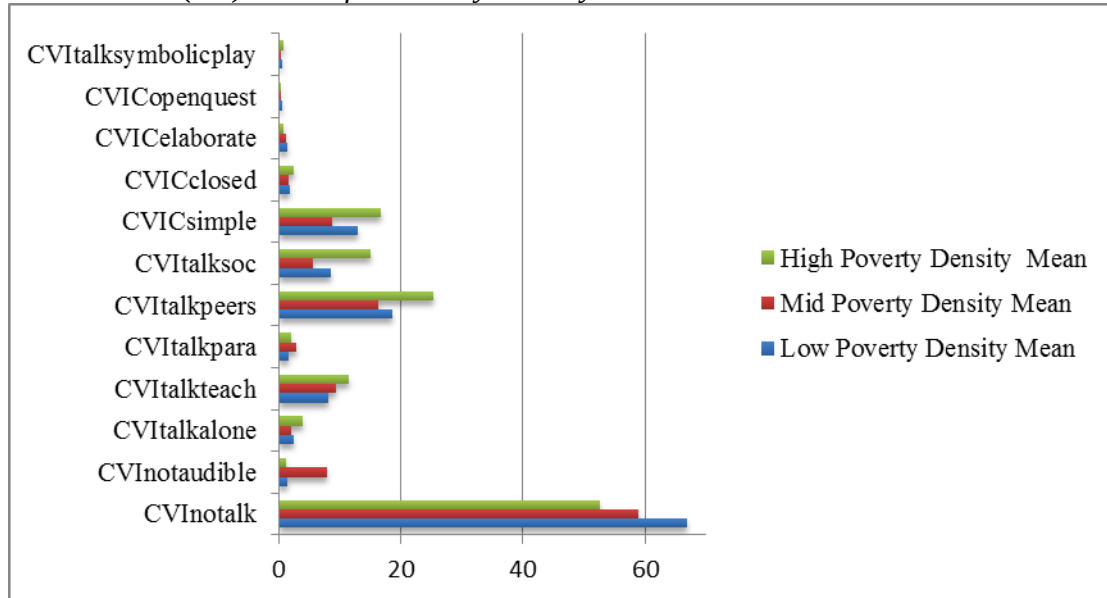
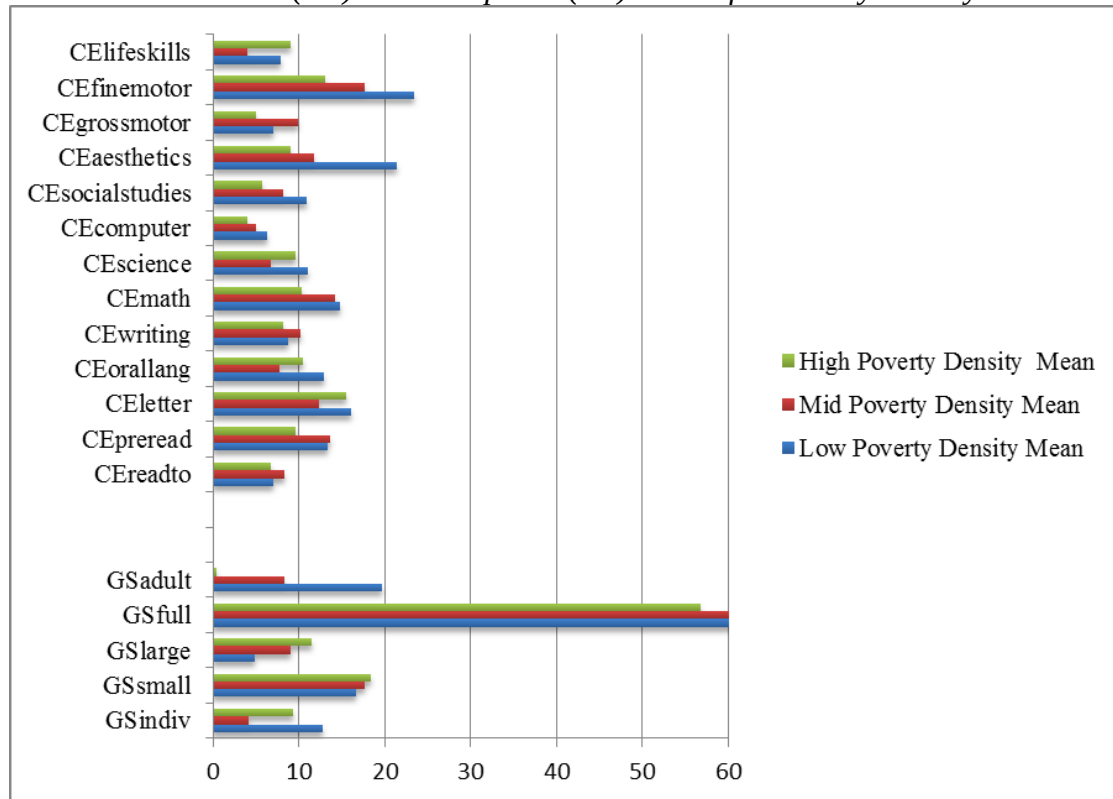


Figure 4

Instructional Content (CE) and Group Size (GS) Means for Poverty Density



Change scores on the Woodcock Johnson III Age-Equivalent subtest of Understanding Directions showed that over the Kindergarten year, low-income children in low-level poverty dense schools lost two months on their scores. Their change scores for the Picture Vocabulary subtest showed an improvement across the year of almost five months. Further, change scores on Academic Knowledge indicated another loss of about three months across the year.

Comparing the Poverty Density Levels

Low-level poverty dense as compared to mid and high-level

Teacher interaction that invites exploration, instructional content on fine motor and group size that has an adult present had significantly higher occurrences in low-level poverty dense schools than high-level. Adult interaction about routines in the day occurred more often in the low-level than the mid-poverty dense schools. In comparison to both mid and high-level poverty dense schools, low-level schools had more occurrences of teacher interaction that scaffolds, group size that is individual, instructional content on aesthetics and children not talking.

Mid-level poverty dense classes as compared to low and high-level

Mid-level poverty density schools produced higher occurrences of adult interaction that ignores than the low-level poverty density schools. Incidents of children not being audible, talking alone and speaking in simple statements were higher in the mid-level than the high-level poverty density schools.

High-level poverty dense classes as compared to low and mid-level

Children talking socially occurred more often in the high-level poverty dense schools than both the low and mid-level. Talking with their peers and minimal adult interaction was significantly higher in the high-level poverty dense schools than the mid-level schools.

Outcomes for all Levels of Poverty Density

While there were no significant findings between the poverty density levels for outcomes on the Woodcock Johnson III subtests, it is important to note the change scores that fell in each one of the poverty density levels. Children's age

adjusted scores in the spring were lower than the fall, meaning children lost ability related to age. This occurred in all the density levels but especially in the low and high poverty levels.

Chapter 5

DISCUSSION

The results of these analyses show both commonalities and differences in the experiences and daily interactions of low-income children based on the poverty density of the school. The results of this analysis show that low-income children in different poverty dense settings have some certain experiences with daily interactions. Outcome scores also have mixed findings. However, there are differences that do characterize a low-income child experiences between low, mid and high-level poverty density.

Commonalities

The results from the outcome scores on the Woodcock Johnson III show commonalities that are thought provoking and require further examination. Across all poverty density levels, children lost ground. The loss of scores in all 3 subtests for children in the high-level poverty dense schools is particularly concerning. The processes these low-income children experience throughout the kindergarten year may be influencing this loss score. More information is needed to examine this further.

Analysis from the Snapshot variables demonstrated commonalities as well. Across all three contexts, high, mid and low-poverty dense schools, there was a lack of interaction from teachers. Research has demonstrated that children learn language and literacy skills through interactions with adults (Silverman & Crandell,

2010; Huttenlocher, Haight, Bryk, Seltzer & Lyons, 1991). The lack of talking and rich language in these classrooms is important to note. For the interaction mean scores, it is concerning how low the scores were for all the poverty density levels for the variables of teacher interaction that scaffolds, adult interaction that is elaborate, child verbal that is open ended questions and talking about symbolic play. These are concerning as a rich teacher-child relationship is shown to have a significant effect on children's learning. These interactions are seen as crucial for cognitive development as well as academic outcomes (Pianta, Hamre & Stuhlman, 2003). Additionally, the prevalence of full-group time across all levels of poverty density makes one wonder how any child can forge a relationship with a teacher, with a lack of individual or small group time. With teacher-child interaction scores being low and the frequency of full-group time, it is worrisome for these low-income children's future academic outcomes.

Differences

There is a need to understand the unique classroom and school environments that low-income children encounter and how these contexts influence the process (Kainz & Vernon-Feagans, 2007). This study has shown across the three poverty dense levels there are some differences that characterize the experiences of low-income children.

Striking is the fact that in low-level poverty dense schools low-income children have more occurrences of teacher interaction that scaffolds and group size that is individual than both mid and high-level poverty dense schools. This finding implies that in this context, low-income children are getting more individualized

attention from teachers, as well as more opportunities for language development through scaffolded conversation versus low-income children in mid or high-level poverty dense schools.

In the mid-level poverty dense schools low-income children were experiencing adult interaction that ignores more often than the low-level poverty dense schools. Questions remain as to the implications this finding may have and what may change between the mid and low-level poverty dense contexts that influence this type of interaction. Lubrek and Garrett (1990) argue the knowing a child is at risk (such as a low-income child) may influence how teachers treat the child and stereotypes can be an influence. Could the stereotype of the low-income child effect teacher's interaction? Could interaction be less because of an increase in low-income children in a specific school? In this study, questions still remain as to how different contexts and social stereo types are influencing teacher-child interaction. While it has been identified that there are some differences in the interactions between contexts, it would be interesting to pursue what processes are influencing these interactions further. It is clear from the data that across all poverty dense levels, interaction is low. However, there are significant differences in types of interactions occurring across poverty density levels that need to be addressed and researched further.

Low-income children in high-level poverty dense schools experience more social talking than both low and mid-level poverty dense schools. Because talking and oral language skills are essential to children's learning (Au & Mason, 1981; Aulls, 1998), it would be interesting to see what types of social talking are occurring more often in the high-level poverty dense schools than the low and mid-levels.

Additionally, it might also be valuable to look into the culture of these schools to see if there is a marked difference in discourse patterns.

Limitations

As this was a descriptive study, no causation can be inferred from any of the analysis. A larger sample size may produce more rich information. Additionally, with only 56 participants, there is limited power to the analysis (Cohen, 1988). Further, the definition of poverty is different according to different sources. Utilizing a different definition would lead to different results. Finally, this study did not look at non-poverty children in the same school.

Future Implications for Research

Generally, more information is needed on what characterizes the experiences of low-income children in poverty dense schools. While it is important to more effectively capture these experiences to inform thoughtful policy and future research, this particular study successfully generates provocative questions in five specific areas.

First, it would be interesting to see how these children are faring in school as they get older. Examining later outcomes through the lens of poverty density could be informative. Second, an examination of funding streams and the experiences low-income children in the higher density poverty schools would be noteworthy. As research has shown that economic inequality is high in the United States (Crondun, 2011) it would be informative to garner more in depth experiences to compare with affluent peers and schools. This would be beneficial information to analyze during the determination of school funding policy.

Third, it would be interesting to examine and analyze this data from a gender and cultural perspective to look for patterns in interaction and outcomes. Disproportionate effects from poverty are seen on children from cultural minorities (Arnold & Doctoroff, 2003). Further, research has shown the need for more information on gender:

Unfortunately, little beyond demonstrations of general gender differences in attention had been documented in literature. More information on these differences, their causes, mechanisms, and consequences would be valuable. Further, since most of the early work in this area included only middle-class children, gender trajectories in low-SES children need closer investigation (Arnold & Doctoroff, 2003, p.527)

Additional information, beyond differences between genders, could be generated through examining the processes that characterize the daily experiences by gender. Fourth, as noted in the limitations, it would be interesting to explore the experiences of children without risks in comparison to children categorized in this data set with risk factors. This information would serve to better evaluate how our education system in serving all children and guide future research. Finally, beyond this data set, it would be interesting to examine teacher and administrator education programs to determine the extent to which they are effectively educating to meet the needs of a variety of schools. Poverty dense schools have different needs than do more affluent schools. Poverty dense schools may lack social resources, parental involvement, well-qualified teachers, have high student absenteeism and teacher turnover, and violence (Lee & Croninger, 1994; Rutter, Yule, Quinton, Rowland, Yule & Berger 1974; U.S. Department of Health and Human Services, 1999; Evans, 2004).

It would be thought provoking to see how educators are being taught and advised to work with different types of schools.

Future Implications for Policy

In a time filled with economic uncertainty and debate on government fiscal policy focused on budgets and spending, it is imperative that we continue to focus our attention on our most vulnerable populations. In America, because education is seen as the vehicle that can balance society, schools are expected to be the medium through which equality is enabled. Education in America is understood to be an answer to society's challenges by providing equal opportunities for all children to succeed (Lauren & Tyson, 1999). While these values are fundamental to our society, they have largely failed to be realized. Policies, initiatives and movements have attempted to realize this vision, yet there is still an inequality in our education system that is demonstrated through the economic achievement gap. Low-income children continue to be left behind by their more affluent peers. While the findings in this study do not compare low-income children to their more affluent peers, the findings do suggest that the daily experiences these low-income children are experiencing do not include interactions that would aid in bridging the gap. Additionally, the outcome measures found in this study indicate that these low-income children are continuing to fall behind in academic outcomes over the course of the kindergarten year. In line with other research, this gap is extending past the beginning of formal schooling. At present, only 1 in 10 low-income kindergartners graduates from college (Darling-Hammond, 2010). Given such compelling statistics, the question at the forefront of our minds must be how our educational policy is serving all types of children.

There needs to be a more systematic approach to eliminating the economic achievement gap. In addition to educational policy changes, multiple thoughtfully constructed social policies are needed. The idea of one single policy being able to change the influence of poverty over child outcomes is unrealistic given the many diverse needs and experiences for low-income families (Magnuson & Vtruba-Drzal, 2009). Accordingly, more broad based social policy is needed to aid families and children to get out of poverty. This reconceptualization of systematic policy could potentially help all of our children succeed in an increasingly competitive, globalized world.

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