Abstract

RELATIONSHIP BETWEEN TEST PERFORMANCE OF STUDENTS WITH LEARNING

DISABILITIES AND THE POVERTY LEVELS OF THEIR SCHOOLS

by Shannon Saunders Dingle

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Director: Dr. Sue Byrd Steinweg

DEPARTMENT OF CURRICULUM & INSTRUCTION

The purpose of this causal-comparative study was to explore the relationship between the achievement of students with learning disabilities (LD) and the socioeconomic make-up of their schools. The research was guided by the following question: Does a relationship exist between the academic performance of students with LD and the socioeconomic distribution of students (a) at their schools and (b) in their district? The data analyzed were from two urban school districts in the same Southeastern state. The dependent variable was the passing rate (as defined by a proficient score of level III or higher) on EOG tests for students with LD, using the database found at http://report.ncsu.edu/ncpublicschools/. The independent variables were (a) poverty levels of schools in each district studied and (b) student assignment practices for all students at two large districts, labeled Distributed District and Neighborhood District for the purposes of this research.

At the district level, the difference between the average passing rate of students with LD in grades three through eight in the two districts was 9.95% ($p=0.001$) in math and 8.95% ($p=0.0003$) in reading, with higher performance in both subjects from the Distributed District which had fewer high-poverty schools as a result of their student assignment plan. At the school

level in the Distributed District, the difference between the performance of the group of students with LD in high-poverty schools and low-poverty school was 18.90% in reading (p=0.0005) and 7.37% in math (p=0.36, which is the one finding that was not statistically significant). For the Neighborhood District, the difference between high-poverty and low-poverty schools was 24.10% for reading (p=0.001) and 34.37% for math (p=0.005). In each case, students with LD in the low-poverty schools outperformed their peers at higher poverty schools.

As a causal-comparative study that did not control for all possible variables, the scope of these findings is limited. However, due to the lack of current research comparing the performance of students with LD and the poverty levels at their schools, these findings do indicate a need for additional research in this area. The results also can be used to help teachers understand the challenges that may face their students with LD in high-poverty schools.

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Shannon Saunders Dingle

APPROVED BY:

DIRECTOR OF THESIS:_____

Sue Byrd Steinweg, PhD

COMMITTEE MEMBER:_____

Guili Zhang, PhD

COMMITTEE MEMBER:_____

Hal Holloman, PhD

COMMITTEE MEMBER:_____

Jennifer Williams, PhD

CHAIR OF THE DEPARTMENT OF CURRICULUM & INSTRUCTION:

_____

Carolyn Ledford, EdD

DEAN OF THE GRADUATE SCHOOL:

_____

Paul J. Gemperline, PhD

DEDICATION

Though only my name appears on the cover of this thesis, several others have contributed to its completion. I owe my sincere gratitude to all those who have made this research possible.

To my husband Lee, who has loved, served, and encouraged me through this whole process, I do not have the words to adequately thank you for your support and sacrifice. I love you.

To our sweet daughter Jocelyn and to our precious son Robert, thank you both for constantly drawing Mommy's focus to what matters most in life. You both kept me smiling and prevented me from taking any of this too seriously in light of much more weighty things, like hugs, crayons, and cookies.

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And finally, above all else, I dedicate this to God. In the words of Ephesians 3:20-21 in the New International Version of the Bible, he "is able to do immeasurably more than all we ask or imagine, according to his power that is at work within us, to him be glory in the church and in Christ Jesus throughout all generations, for ever and ever! Amen."

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CHAPTER 1: Introduction

Students with learning disabilities (LD) have greater difficulty than their peers in academic achievement, particularly as measured by standardized tests (Fusaro, Shibley, & Wiley, 2006; Gronna, Jenkins, & Chin-Chance, 1998). Likewise, students in high-poverty schools tend to perform more poorly than those in more affluent schools (Okpala, Okpala, & Smith, 2001; Perry & McConney, 2010; Rumberger & Palardy, 2005). In the words of Fleming, Cook, and Stone (2002), "the challenges faced by adolescents at risk of poor academic outcomes due to learning disabilities may be further complicated by socioeconomic disadvantage, which tends to put children at even greater risk of educational failure" (p. 49). However, little research has been conducted to determine the relationship between the student achievement of students with LD and the poverty level of their schools. Because these areas have only been examined in depth for the general student population, this research is both necessary and timely.

The purpose of this causal-comparative study was to explore the relationship between the achievement of students with LD and the socioeconomic make-up of their schools. The research was guided by the following question: Does a relationship exist between the academic performance of students with LD and the socioeconomic distribution of students (a) at their schools and (b) in their district?

The two districts from which data were analyzed were large school districts in the same state in the southeastern United States, and they will be referred to as the Distributed District and the Neighborhood District throughout this research. The name Distributed District comes from that district's plan for assigning students to schools, which included consideration of student socioeconomic status (Baenen, 2005); the Neighborhood District did not consider income in student assignment, using a system that included parental choice and placed students in schools

in close geographic proximity to their homes (Public Education Research Institute, 2009). Both districts employed similar racial integration models for student assignment in the 1990s and switched to their current models in 2000 and 2001. The Distributed District replaced its racial integration model with one aimed at economic integration, setting the goal that no school would have (a) 40% or more students eligible for free or reduced-cost lunch or (b) more than one quarter of students with below grade-level performance. This was implemented through involuntary student assignment as well as choice through voluntary magnet school applications (Baenen, 2005; Kahlenberg, 2006b). The percentage of students receiving free or reduced lunch is not considered to be a perfect indicator of socioeconomic status because, among other reasons, it could underestimate levels (a) if qualifying families do not apply for it or (b) if families who do not qualify falsify their application to receive it; however, "free/reduced-price lunch is considered as a proxy for family standard of living or the income level of a school area" (Okpala et al., 2001, p. 115). While the Distributed District's policy shifted to one using socioeconomic status, the Neighborhood District replaced their racial integration model with a system of neighborhood schools, in which the aim of the assignment process was focused largely on allowing students to attend schools in close proximity to their homes (Public Education Research Institute, 2009).

The Neighborhood District's assignment model resulted in a mix of low-income schools in the inner city and higher-income schools in the suburbs (Hui, 2009). Meanwhile, in the Distributed District in the 2009-2010 school year, 122 of 159 schools (76.7%) were within the 40 percent guideline (Vouk, 2010). According to a report published by Queens University (2009), test scores for at-risk and minority students did not differ much between the districts. However, the number of low-performing and low-income schools was greater in the Neighborhood District, as was their difficulty to recruit and retain teachers (Hui, 2009). In other words, student

performance in each district looked similar at the district level but, at times, starkly different at the individual school level.

District practices in assigning students to schools affect every child in the school system, which makes it worthwhile to study the relationships between those practices and student achievement. This research can benefit a significant number of students, not only in the districts in question but also nationwide. The relationship between the socioeconomic make-up of schools and the performance of students has been analyzed, but not in the context of student assignment plans and not with a specific focus on students with LD. Scant research is available about any of these topics in relation to students with disabilities; therefore, this research is novel. Although it is limited in its scope and potential for findings to be generalized, this study can inform both policy discussions and instructional practices for students with and without disabilities when combined with other research.

If all the information above was not persuasive enough to warrant research comparing these two districts, the lack of research in this area – pertaining both to these districts specifically and to socioeconomic diversity in student assignment generally – demonstrates the undeniable need for this research. The Distributed District conducted an internal study to determine whether or not diversity-related reassignments benefit students and found that students who were assigned to a school based on socioeconomic factors achieved at higher levels than students who were not reassigned. However, the sample size was too small for the findings to be statistically significant (Febbo-Hunt, Lindblad, Baenen, & Banks, 2004). Another internal study (Banks, 2001) concluded that a small yet statistically significant relationship existed between end-of-grade test scores and school poverty level, with scores decreasing slightly with an increase in school poverty level.

Even more compelling is the lack of research concerning student assignment practices and/or socioeconomic status as they pertain to students with LD and other disabilities. The majority of the literature review in the next section is not focused specifically on students with disabilities. Ideally, it would contain several studies, but few exist.

The two districts were not perfect comparisons, though. One notable contrast is that, as shown in Table 3.2, only 34.56% of students in the Distributed District received free and reduced lunch, whereas 49.59% of students in the Neighborhood District did. This difference in district poverty levels and other differences (such as parental levels of education) required that caution be used when comparing the districts, since only correlation not causation could be inferred due to the various extraneous variables which could not be controlled. However, this research is still worthwhile because of the similarities between the districts (as the two largest school districts in their state, both in urban centers of the state and both with more than 130,000 students in the 2009-2010 school year) combined with the stark differences in assignment policies during the time period.

CHAPTER 2: Review of Existing Literature

Method for Finding and Organizing Available Research

Because the research problem for this study was multifaceted and because many existing studies address one or more, but rarely all, of the aspects of it, conducting a review of literature for this topic was not a simple process. A variety of databases were used, including ERIC, Academic Search Premier, and Wiley InterScience, to find recent scholarly research, utilizing various combinations of search terms such as *student assignment*, *socioeconomic diversity*, *integration*, *learning disabilities*, *disabilities*, *academic achievement*, *test scores*, *student composition*, and the names of each city and school district. In a couple of instances, the citation sections from other articles were used to find additional pertinent studies; however, since primary sources were accessible in almost every instance, there was no need to use secondary sources in this review. In the review of search results, the date was first checked to make sure that the research was published recently. Articles that were more than 10-15 years old received extra scrutiny but were not immediately eliminated, especially when current research was largely unavailable. The next step was the review of the abstract to determine whether or not it contained information relating to the topic. If not, it was eliminated from the review; if so, the article was thoroughly evaluated, examined for attributes such as the design of the study, the selection of participants, the presentation of the data, and the conclusions drawn from it. In the absence of scholarly sources, each school district provided information regarding its demographics and the design of its school assignment plans. Additionally, in areas in which searches resulted in few or no sources (particularly on the topic of student achievement for students with LD and other disabilities in high-poverty schools), the input of colleagues involved in related research was sought for suggestions of other relevant studies.

Because this research encompassed several topics, the literature review was organized into the following categories: (a) student achievement and socioeconomic status, (b) student achievement and school poverty level, (c) student achievement for children with LD in general, (d) student achievement for students with LD and other disabilities in high-poverty schools, (e) student achievement and district-defined school assignment practices, and (f) definitions of high-poverty and low-poverty schools.

Student Achievement and Socioeconomic Status

Sirin (2005) conducted a review of research related to academic achievement and socioeconomic status by analyzing research from 1990-2000. He found that socioeconomic status was usually defined by three characteristics: parent income, parent education level, and parent occupation (Sirin, 2005). It is worth noting that, as described in the introduction, the Distributed District's socioeconomic diversity plan only accounted for parent income, as measured by eligibility for free or reduced lunch. The research analyzed by Sirin (2005) indicated that family socioeconomic status is "one of the strongest correlates of academic performance" (p. 438) both for the student and, to a greater degree, for the school. Likewise, Marks, Cresswell, and Ainley (2006), researchers in Australia, examined the interplay between the socioeconomic status of fifteen-year-old adolescents and their academic performance in 30 different countries, and they found that there was an achievement gap between middle-class students and low-income ones. Furthermore, they identified this gap in multiple settings and schools, indicating that this could be a world-wide issue. Battle and Lewis (2002), after examining data from the National Educational Longitudinal Study on the academic performance of 12th graders and their subsequent achievement in the two years following high school, found that "socioeconomic status is more than three times more important than race in predicting outcomes" (p. 21) of students.

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Student Achievement and School Poverty Level

Research indicates that high concentrations of students classified as low-income can have a detrimental effect on all students at the school, not just those classified as economically disadvantaged. Rumberger and Palardy (2005) analyzed achievement growth from grades eight through 12 from the National Education Longitudinal Survey of 1988, with a sample of 14,217 students in 913 schools. One of their notable findings was that the socioeconomic status of the student body at a school had an equitable effect on academic growth of both advantaged and disadvantaged students and had as much impact as each student's own socioeconomic status (Rumberger & Palardy, 2005). In other words, the shortcomings of a high-poverty school did not affect only the students who were from low-income backgrounds. After controlling for a wide variety of extraneous factors, Palardy (2008) had similar findings, as did Perry and McConney (2010) after examining data from 320 secondary schools and more than 12,000 students in Australia. They not only found a positive relationship between school socioeconomic status and student achievement but also determined that the relationship remained the same among students of varied individual socioeconomic backgrounds. Likewise, Willms (2010) studied student performance on science standardized tests in 166 schools in the United States participating in Programme for International Student Assessment in 2006; he found that students of average socioeconomic status scored lower on average in high-poverty schools than similar students in low-poverty schools.

In their analysis of student achievement and family socioeconomic status at 52 schools (12 low-income, 17 middle-income, and 13 high-income schools) in a rural county in North Carolina, Okpala et al. (2001) found a negative correlation between percentage of fourth-grade students receiving free or reduced-cost lunch in a school and the fourth-grade end-of-grade math test scores at that school. According to the research of Okpala, Smith, Jones, and Ellis (2000)

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that examined end-of-grade reading and math tests of fourth-grade students in a North Carolina county (encompassing 42 elementary schools and 4,256 fourth-grade students), the percent of students receiving free or reduced lunch at a school was negatively correlated to math and reading achievement ($p = .01$). Crosnoe (2009) analyzed performance data from a sample of 1,073 low-income public school students in 47 schools from the Add Health database. As the percentage of middle- and high-income parents increased in schools, Crosnoe (2009) found that low-income students were less likely to take advanced math and science courses. This trend was more pronounced in and mostly confined to minority students. In his discussion, Crosnoe advocated for socioeconomic diversity efforts to extend beyond the simple distribution of students to the social integration of low-income students. He argued that a student body that is socioeconomically diverse is not necessarily socioeconomically integrated, and low-income student performance may suffer in schools with large proportions of wealthier peers (Crosnoe, 2009).

However, some research findings have indicated that while socioeconomic status could have a negative relationship to student achievement, there were ways for that relationship to be mitigated without changing the make-up of the school. One example from research was that principals can impact school culture and achievement of their schools irrespective of the effects of socioeconomic status (McGuigan & Hoy, 2006). While examples of high-poverty, high-achieving schools can be found, though, they were still the exception rather than the norm (Machtinger, 2007), just as some resilient students who are from low-income backgrounds perform at higher levels than expected while the group of low-income students tends to perform at lower levels than higher income peers (Willms, 2010).

Rumberger and Palardy (2005) found that schools with high percentages of economically disadvantaged students were organized and run in different ways than schools with lower

percentages, particularly with regard to teacher expectations, amount of homework, rigor of coursework taken by students, and students' beliefs about personal safety. Machtinger (2007) reported that high-poverty schools were associated with lower quality teachers, greater turnover of instructional staff, poorer physical conditions of the school, lack of resources, and fewer school-based staff members. Kahlenberg (2006a) referred to an Economic Policy Institute study which "found that middle-class schools (those with fewer than 50 percent of students eligible for free and reduced-price lunch) are 24 times as likely to be consistently high performing as low-income schools (those with 50 percent or more of students eligible for subsidized lunch)" (p. 51). While none of the research described in this paragraph addressed disability type, research cited in other sections of this literature review indicated that students with LD perform at lower levels than the general student body and that students in low-income schools perform at lower levels than their peers in higher income schools.

One possible explanation for the relationship between the socioeconomic composition of the school and its student achievement could be teacher quality. In a study of teacher salary (which the authors used as their measure of teacher quality and experience) at 349 elementary schools in eight school districts in Ohio, researchers De Luca, Takano, Hinshaw, and Raisch (2009) found a relationship between the percentage of low-income students and teacher salary at the school level (specifically that where teacher salary was higher, the proportion of low-income students was lower) and between student achievement and teacher salary (where student achievement was higher, teacher salary was higher as well). Darling-Hammond (2004) found that it was several times more likely for students in low-income schools in California to be taught by underqualified teachers, as compared to students in wealthier schools. Studies have shown that teacher quality matters, and it makes more of a difference for the academic achievement of

economically disadvantaged students than other students (Heck, 2007; Tschannen-Moran &
Marr, 2004).

Student Achievement for Children with LD in General

By definition, students with LD achieve at lower levels than their non-disabled peers.
Morrison and Cosden (1997) described having a learning disability as a risk factor for both low
academic performance and poor resiliency. While little is known about the effects of school
poverty level on students with disabilities, it is known that students with LD already face
challenges in standardized testing. Fusaro et al. (2006) conducted a study of the performance of
high school seniors with LD on the Pennsylvania System of School Assessment. They found
that, when holding gender, absenteeism, and socioeconomic status constant, the 27 students with
LD performed an average of 246.7 points lower on the reading assessment than their
non-disabled peers, an effect size of -.56. That meant that 31% of the variability in reading
performance within the group could be attributed to students with LD. For math, the same trend
was evident: points lower, 214.4; effect size, -.54; and variance in scores attributed to students
with LD, 29%. Gronna et al. (1998) had similar findings when examining scores of students in
Hawaii on the Stanford Achievement Test, 8th Edition, in grades three, six, eight, and ten, with
students with LD scoring lower than their non-disabled peers at each grade level. These
academic struggles could be a contributing factor to the higher risk for dropping out of school
among students with LD (President's Commission on Excellence in Special Education, 2002).

The challenges facing students with LD on standardized tests affect more than just the
individual student. For the purposes of determining adequate yearly progress (AYP), No Child
Left Behind (NCLB) requires schools to report not only test passing rates for all students but also
scores for subgroups, including minority groups, students who are economically disadvantaged,
English language learners, and – most importantly for this research – students with disabilities.

Schools can fail to meet AYP solely due to the performance of students in one subgroup, such as the group of students with disabilities, regardless of how well other students perform on the test (Eckes & Swando, 2009; Katsiyannis, Zhang, Ryan, & Jones, 2007). While the group of students with disabilities is the only NCLB-defined group in which members may be limited in their abilities to learn and retain information, this subgroup is not held to a different standard than any other group (Townsend, 2007). Eckes and Swando examined schools in California, Texas, and Florida. In California, they found that schools without special education subgroups were more likely to meet AYP than schools with special education groups. In Texas, the difference was significant; even with factors such as economic disadvantage, race, and class size held constant, they found that schools with special education subgroups were 79.6% less likely to make AYP than schools without such subgroups. The findings for Florida were not as strongly negative, but those results combined with the ones from Texas and California provide evidence that the presence of a special education subgroup negatively affects the school's AYP. These effects on AYP indicate that the factors impacting the performance of any subgroup have larger implications than merely those at the student level, considering that failure to meet AYP can lead to sanctions at the school level (Yell, Katsiyannas, & Shiner, 2006).

Student Achievement for Students with LD and Other Disabilities in High-Poverty Schools

As the previous two sections have indicated, research demonstrates that (a) students with learning disabilities perform at a lower level than students without disabilities and (b) students in low-income schools perform at a lower level than students in higher income schools. Little recent research, however, has focused on the effects of the dual challenge of having both a disability and a socioeconomic disadvantage. More than two decades ago, Kavale (1988) found a strong relationship between the presence of a learning disability and low socioeconomic status, which was confirmed by Blair and Scott (2002); however, none of those researchers examined

whether or not academic performance deficits are intensified by the amalgamation of those factors. Recent researchers have not studied what happens at the intersection of having a learning disability and being in a low-income school either. Blair and Scott did find that 30% of male LD identifications and 33% of female LD identifications were related to individual student markers of low socioeconomic status, indicating that there is a relationship between income level and disability diagnosis. However, those findings did not reveal what impact socioeconomic factors could have on a child who has already been diagnosed with a learning disability.

Most current research pertaining to students with disabilities and socioeconomic status exists in the context of the disproportional identifications of certain racial and ethnic group in special education. Skiba, Poloni-Staudinger, Simmons, Feggins-Azziz, and Chung (2005) stated "both poverty and race proved to be significant predictors of identification" of most disabilities (p. 135); however, they found the rates of students receiving special education services specifically for LD decreased as socioeconomic status decreased. Other studies have found that socioeconomic factors might play a role in racial and ethnic disproportionality but that other factors are also involved (Coutinho, Oswald, & Best, 2002; Fujiura & Yamaki, 2000; Harry & Klinger, 2006; MacMillan & Reschly, 1998; Skiba et al., 2008).

Student Achievement and District-Defined School Assignment Practices

The Distributed District is not the only district in the nation that has utilized an assignment plan that incorporates socioeconomic status. Other cities or districts that have done so include San Francisco, CA; Cambridge, MA; La Crosse, WI (Kahlenberg, 2006b); St. Lucie County, FL; Rochester, NY; and San Jose, CA (Kahlenberg, 2006a). However, most districts based student assignment on other factors, including school capacity, physical or geographical boundaries, neighborhood size, expected future growth, proximity to school, sibling enrollment, involvement in school-specific nonacademic programs (such as JROTC), and race (Brown &

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Knight, 2005). Brown and Knight pointed out that due to a lack of research about student assignment policies, in particular those incorporating socioeconomic diversity, there were no defined best practices for assigning students to schools in a way that ensures "a high quality of education for all students" (p. 413).

One recurring theme in research related to student assignment practices was the potential for them to be contentious issues within communities (Brown & Knight, 2005; Kahlenberg, 2006b). Kahlenberg (2006b) stated:

Socioeconomic school integration is fraught with considerable peril. Until recently, many school policymakers have been scared to death to take on the issue. After all, economic mixing challenges the deeply held notion that wealthy and middle-class parents have a right to purchase homes in 'good' neighborhoods and send their children to public schools where they will be surrounded by students from other wealthy and middle-class families. Yet reams of research suggest that socioeconomic integration may hold the key to reducing persistent achievement gaps. (p. 22)

According to Kahlenberg (2006b), the balance between neighborhood schools and diversity could be difficult due to increasing economic segregation in housing. However, Machtinger (2007) raised concerns about the sustainability of socioeconomic desegregation in housing and suggested that it may be necessary and more successful in the long term to focus on school-based strategies. One such example, suggested by Okpala et al. (2000), was that schools with high populations of economically disadvantaged students would benefit from increased educational and remediation services. Willms (2010) also suggested targeted summer learning programs for low-income students.

Brown and Knight (2005) examined the student assignment policies for 10 large, urban school districts, including the Neighborhood District. Other districts reviewed were Jefferson

County, Kentucky; Omaha; St. Louis; Buffalo; Memphis; Boston; Chicago; Dallas; and Austin. They found that none of the ten incorporated diversity into their policies (Brown & Knight, 2005).

Limited research has been conducted about student assignment based on socioeconomic diversity. Assignment of students based on socioeconomic factors did not affect the achievement of middle-class students (Kahlenberg, 2006b). In the discussion of the findings of Rumberger and Palardy (2005), two suggestions were made for dealing with the results concerning the detrimental relationship between student performance and the socioeconomic status of a school community: the problem could be targeted (a) by desegregation and reassignment or (b) by school reform to address how low-performing, high-poverty schools function in ineffective ways.

Kahlenberg (2006b) examined the performance of students on high school standardized exams in the Distributed District as compared to the Neighborhood District and two other districts in the state in which student assignment to schools was not linked to socioeconomic status. He found that students who were economically disadvantaged were more successful in the Distributed District than the other counties (63.8% passing rate as compared to 47.8% in the Neighborhood District and 47.9% and 48.7% in the other two districts). The same trend was true for black students (64.3% passing in the Distributed District, compared to 46.8% in the Neighborhood District and 47.5% and 52.7% in the others). He also indicated that middle-class students performed well in the Distributed District, using the same measures. However, while his article clearly supported socioeconomic integration of students, he did not discuss other factors that could contribute to the differences between the Distributed District and the other districts; therefore, at best, correlation is inferred rather than causation. Underlying factors, such as the correlation between low-income and single-family households, could affect outcomes as well;

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for instance, Caldas and Bankston (1999) found that school family structure (percentage of students from single parent homes) had the greatest effect on student achievement at the school, more so than socioeconomic status or racial composition.

It is also worthwhile to note that research has also shown that other factors could contribute to the socioeconomic achievement gap, including parental expectations and attitudes (Davis-Kean, 2005) among other variables. However, because student assignment decisions and outcomes can not account for or change such factors, there is little value in addressing them in detail in this study, other than simply acknowledging their existence.

Definitions of High-Poverty and Low-Poverty Schools

In research and in legislation, school poverty levels are typically defined by the percentage of students receiving free or reduced lunch (FRL) at a school. A student can qualify for free lunch if the family's income is below 130% of the federal poverty level and for reduced price lunch if the income is between 130% and 185% of that poverty level. Students must apply and be found eligible for either program, and the percentages of students receiving FRL are tracked at a school level, which makes this an easily accessible measure that is standardized across the country (Clotfelter, Ladd, Vigdor, & Wheeler, 2007; U.S. Department of Agriculture, 2008).

However, while FRL levels have been a standard measurement for quantifying the poverty level of a school, a review of present research did not expose a consistent definition of high-poverty and low-poverty schools. Current research and trends for defining school poverty levels fit into the following categories:

- *Definitions based on Title I guidelines:* Lippman, Burns, and McArthur (1996) analyzed school poverty levels in urban areas, and they divided schools into four groups based on FRL levels: 0-5% of the student body receiving FRL, 5-20%, 20-40%, and more than

40%. Schools in the first group were labeled as low-poverty schools, while schools in the final group were defined as high poverty. These definitions are consistent with the federal guideline for Title I schools, which is often used as a euphemism for high-poverty school; by definition, a Title I school is one with 40% or more students receiving FRL (NC Department of Public Instruction, n.d.). A report from the Center on Reinventing Public Education at the Daniel J. Evans School of Public Affairs at the University of Washington (Roza, 2005) also used Title I status as the definition for high-poverty schools.

- *The 50%/50% threshold:* In a report from the Illinois State Board of Education examining high-poverty schools with high performance levels (2001), high-poverty schools were defined as those with 50% or more of their students receiving FRL while low-poverty schools were those with FRL levels of less than 50%. Caliber Associates (2005), a social science research firm working for The Center for Public Education, found examples of research using the same cut-offs. According to Kahlenberg (2006a), the Economic Policy Institute also used the 50% FRL level as their upper threshold for low-poverty and lower threshold for high-poverty schools.

- *The 25%/75% threshold:* The U.S. Department of Education's National Center for Education Statistics analyzed high-poverty schools in 2010. In their analysis, high-poverty schools were those with 76-100% of students receiving FRL and low-poverty ones had 0-25% receiving FRL. By this definition 20% of public elementary schools in the U.S. were categorized as high-poverty schools.

- *Relative poverty groupings:* Meanwhile, Clotfelter et al. (2007) divided schools in North Carolina into quartiles by FRL levels. In 2004, the low-poverty quartile consisted of schools with FRL levels below 16.8%; the highest poverty quartile, above 73.8%.

Subsequently, these cut-offs were used for their definition of low-poverty and

high-poverty schools. This was not an uncommon approach; Perry and McConney (2010)

and Palardy (2008) grouped their sample schools into equal sized groups of high-,

middle-, and low-poverty schools. Other researchers have also used relative definitions of

poverty levels based on the distribution of students receiving FRL in their sample

(Machtinger, 2007; Rumberger & Palardy, 2005; Sirin, 2005).

In short, a review of poverty level thresholds revealed that there was no single widely accepted

definition for low- or high-poverty schools.

CHAPTER 3: Method

Participants and Setting

For the school poverty level comparison, the participants were fifth-grade students who took the math and reading end-of-grade (EOG) tests in the Distributed District and the Neighborhood District during the 2008-2009 school year. Scores were analyzed for students with LD, as reported by each school district at the time of testing. The focus was on fifth-grade because special education headcount data for the state showed that the highest numbers of students with LD occurred at ages nine, 10, and 11 (Exceptional Children Division, 2009), which corresponds best to fifth grade. Additionally, elementary schools typically have higher rates of students receiving FRL (Clotfelter et al., 200l), which meant that fifth graders would be more likely to be in high-poverty schools than older students.

For the district-level comparison, the participant group was the same, except that students in grades three through eight were included instead of isolating analysis to one grade level. Including students from additional grade levels made it possible for the data analysis to include more data points.

According to state data (NC Department of Public Instruction, 2009), the Distributed District had 150 schools during the 2008-2009 school year and the Neighborhood District had 172. Of these, 100 included fifth-grade students in the Distributed District, 103 in the Neighborhood District. The majority were K-5 schools (94, or 94%, in the Distributed District; 99, or 96.1%, in the Neighborhood District). In the Distributed District, four other schools were PK-5 and one was K-8. The Neighborhood District included one school housing each of the following grade ranges: K-12, 1-12, 4-12, and K-8. Table 3.1 includes the distribution of types of schools with fifth-grade students in each district.

For each analysis, data from the group of students designated "LD-general" in the testing database were used. Other options included examining test results for students with LD in specific areas, such as math. Using that type of data for math tests, and using information for students with LD in reading for the reading tests, was considered. However, the option of using data from subject-specific groups of students with LD was rejected because students with LD in more than one content area (e.g., a student with LD in both math and reading) could have had their scores recorded in both the reading and the math categories or only one, depending on the school or district policies. Because the student scores represented in the LD-general category included all students who had documented LD, this approach was the best way to ensure that comparisons between districts and among schools would use the same kinds of data.

The rates of students receiving FRL in each district can be found in Table 3.2. The mean of the rates of students receiving free and reduced lunch in all schools was 34.56% in the Distributed District and 49.59% in the Neighborhood District, a difference of 15.03%. When focused on only those schools with fifth-grade students – those that were the focus of the comparison between student performance and school poverty levels – the difference was greater, at 18.54%, between the Distributed District's mean of 37.33% and the Neighborhood District's mean of 55.87%. The difference is similar when the mean groups are expanded to schools with third, fourth, fifth, sixth, seventh, and/or eighth graders – those that were the focus of the comparison between student performance in different districts – at 18.52%, with the mean of the Distributed District 37.31% and the mean of the Neighborhood District 55.83%. These means were included in Table 3.2. These differences indicate that even if student assignment practices were identical between the two districts, the Neighborhood District would be more likely to have more high poverty schools than the Distributed District because the FRL levels were higher for the entire district.

Dependent Variable

The dependent variable in this research was the passing rate (as defined by a proficient score of level III or higher) on EOG tests for students with LD. These data were publicly available at http://report.ncsu.edu/ncpublicschools/ (NC Department of Public Instruction, 2010).

Independent Variables

The independent variables were (a) poverty levels of schools in each district studied and (b) student assignment practices for all students at two large districts, labeled Distributed District and Neighborhood District for the purposes of this research. The initial plan was to access school poverty levels from http://www.ncreportcards.org, a publicly accessible online source of information about public schools. Instead, the state's data on FRL levels were accessed from the NC Department of Public Instruction (2009) because they were already available for download as an Excel spreadsheet, providing the same data in a more readily useful form.

Instruments

The instruments that were used to measure student achievement were EOG reading and math tests. Released forms of those tests are available at http://www.ncpublicschools.org/accountability/testing/releasedforms. Because students with LD are diagnosed in the areas of reading and math but not of science, EOG science test scores were not included in this research.

Student assignment practices were classified in a binary way: either the district assigned students to schools based on a process incorporating socioeconomic status, which the Distributed District did, or it did not, in the case of the Neighborhood District.

The instrument used to measure school poverty levels was the rate of FRL at each school. Defining the cut-off thresholds of FRL rates for high-poverty and low-poverty schools was not simple. After reviewing definitions used in previous research and by other organizations, as

summarized in the literature review, the two definitions that were considered for this research were the 75%/25% FRL and the 50%/50% FRL thresholds. The relative poverty level groupings that some previous researchers have used would have been problematic for this research because two different districts would have had two different definitions of school poverty levels, each based on the relative levels of FRL in each district. Considering the differences in the mean school rates of FRL in each, presented in Table 3.2, it is unlikely that the poverty level definitions would even be similar between the two districts. The high-poverty definition based on Title I guidelines was also rejected because the corresponding definition of low-poverty schools, which was FRL rates of 0-5%, would have been too limited to provide a large enough comparison group. Because the 75%/25% threshold was used for the recent and comprehensive report on high-poverty schools by the U.S. Department of Education (2010), that was the primary definition set for this research.

However, the group of high-poverty schools as defined as those with FRL rates of 75% or higher was too small for analysis in the Distributed District. Only three schools fit the definition, and two of those did not have enough students with LD for data to be reported. Because one school would not make a sufficient grouping and because the low-poverty school definition of less than 25% FRL did provide suitable group sizes, the back-up definition had to be used. The low-poverty school definition of 25% FRL remained unchanged, but the high-poverty definition became schools with 50% or more students having received FRL in the 2008-2009 school year. In the Neighborhood District, the group of schools with 75% or more of students receiving FRL was large enough for comparison, so data for the Neighborhood District was analyzed using both the 50%/25% definitions used for the Distributed District and the 75%/25% definition, with high-poverty schools labeled "high high-poverty schools" when defined by FRL levels of 75% or greater.

Research Design

This study utilized a causal-comparative design. See Table 3.4 for more detailed methodology, including the variables listed above.

Data Collection and Analysis

Data tables were created using raw data from the NC Department of Public Instruction (2010). Due to concerns for confidentiality of individual test takers, no passing rates are reported for subgroups with fewer than six students (NC Department of Public Instruction, 2010). Because elementary school sizes are typically smaller than middle or high schools, it would be more likely for the schools in this analysis to have too few students for data to be reported than schools with upper grade levels. It did occur in several cases that schools did not have a sufficient number of students with LD for scores to be reported. Additionally, some schools were missing testing data in the database used.

The result was that the sample size of schools at each level of FRL was reduced by data availability. For high-poverty schools, for example, the Distributed District had 25 schools in 2008-2009 with FRL rates of 50% or more; however, only the data from 12 could be used because 10 had insufficient data (meaning fewer than six students with LD were tested using the EOG) and 3 were missing data. The Neighborhood District, meanwhile, had 60 schools with 50% or greater FRL rates, but more than half (35) did not have enough students with LD for sufficient data and another three schools were missing data; this left only 20 schools with passing rate data out of 60 that had 50% or greater FRL levels. See Table 3.3 for the table of school counts in each group and category.

The data were analyzed using t-tests for independent means on each data set. Because the variances in each sample were assumed to be unequal, t-tests for unequal variances were used. Using the group labels from Table 3.4, the data sets for each test were

a. Student achievement, as measured by the EOG passing rates of students with LD in low- and high-poverty schools, for Group I and Group II in the Neighborhood District.

b. Student achievement, as measured by the EOG passing rates of students with LD in low- and high-poverty schools, for Group I and Group II in the Distributed District.

c. Student achievement, as measured by the EOG passing rates of students with LD in each district, for Group I and Group II, which differ by student assignment practices.

See Table 3.4 for descriptions of each variable in addition to their abbreviations.

CHAPTER 4: Results

Findings: District-Level Student Assignment Comparison

Two t-tests were conducted to compare the achievement of students with LD in each of the two districts. One t-test analyzed math EOG test passing rates from grades three through eight in 2008-2009, and the other used reading EOG test passing rates for the same group and year. For each comparison, six passing rates per subject were available from each district: the passing rate for third-grade EOG tests, the passing rate for fourth-grade EOG tests, and so on to eighth grade.

The Distributed District, which incorporated socioeconomic factors into student assignment and had fewer high-poverty schools, had a mean passing rate of 49.53% on the math EOG test for students with LD in grades three through eight. The Neighborhood District, which assigned students to schools based largely on geographic proximity and had more high-poverty schools, had a mean passing rate for the same group of 39.58%. This difference was statistically significant at the 0.001 level, which meant that having a difference in means of 9.95% would occur by chance only 1 out of 1,000 times.

In reading, the mean passing rate was 31.60% in the Distributed District and 22.65% in the Neighborhood District. Once again, the difference of 8.95% was statistically significant, this time at the 0.0004 level. The data from the district-level t-tests can be found in Table 4.1 for math and Table 4.2 for reading.

Findings: School Poverty Level Comparisons

For each district, the passing rates of fifth-grade students with LD in high-poverty schools were compared with the same passing rates in low-poverty schools. These analyses,

unlike the ones in the previous section, were intra-district (comparing scores within a district) rather than inter-district (comparing scores between or among districts).

In the Distributed District, 12 high-poverty schools and 10 low-poverty schools had sufficient test proficiency results for comparison. For these two groups the mean passing rate for high-poverty schools was 15.98% on fifth-grade EOG tests in reading, compared to 34.87% at low-poverty schools. The difference between the two, 18.90%, was statistically significant at the 0.0005 level. For math, 49.53% of fifth graders with LD in high-poverty schools (n=12) earned a passing score, compared to 56.91% in low-poverty schools (n=12). While the difference between the two was 7.37, that difference was not statistically significant (p=.36). See Tables 4.3 and 4.4 for complete t-test results.

In the Neighborhood District, the mean of school passing rates on the reading EOG for fifth graders with LD in high-poverty schools was 12.60% (n=17), compared to 36.70% for low-poverty schools (n=6). This difference of 24.10% was statistically significant (p=0.001). For math, the mean was 35.82% for high-poverty schools (n=19) as compared to 70.19% for low-poverty ones (n=8), a statistically significant difference of 34.37% (p=0.005). See Tables 4.5 and 4.6 for complete t-test results for these groups.

Because the Neighborhood District had a large enough group of high high-poverty schools, those with FRL rates of 75% or higher, additional t-tests were conducted for that district using the more limited definition of high-poverty schools. Students with LD in the high high-poverty schools (n=10) in Neighborhood District had a mean school passing rate of 8.56% on the fifth-grade reading EOG tests, compared to 36.70% of those at low-poverty schools (n=6). The difference, 28.14%, was statistically significant with p=0.0004. On math tests for fifth-grade students with LD, high high-poverty schools (n=10) averaged an EOG passing rate of 30.44%, while 70.19% of groups of those students with LD in low-poverty schools (n=8) passed. This is a

statistically significant difference of 39.75% (p=0.004). See Tables 4.7 and 4.8 for complete

t-test results.

CHAPTER 5: Discussion

In every comparison, the group of students with LD in high-poverty schools performed more poorly than those in low-poverty schools on standardized testing. For reading EOG tests in the Distributed District and reading and math tests in the Neighborhood District, the difference between the groups was statistically significant. At the district level, students with LD in the Distributed District, which has fewer high poverty schools due in part to a student assignment plan that incorporates socioeconomic status, had higher average passing rates than those in the Neighborhood District, which has more high poverty schools due in part to a student assignment plan based on geographic proximity in which the socioeconomic levels of schools typically mirror the surrounding neighborhoods. This difference between districts was statistically significant. These differences as the school and district levels suggest that there may be a relationship between the poverty level of a school and the achievement of students with LD in that school.

The findings do not explain why those differences exist, though. While this research was interesting and the results significant, the list of variables that could not be accounted for was extensive, making the findings limited. Other factors, including differences between the two school districts and differences among the schools from which data were analyzed, could have affected results. Some of those factors that could vary between districts and/or among schools include practices used to identify students with LD (including the use of response to intervention or discrepancy models), rates of student referrals to special education, professional development opportunities, teacher quality, availability of support staff, and testing rates. For example, in the Neighborhood District, the rates of students with LD who were tested were as low as 20% at one school and tended to be lower in general than the rates of those students tested at schools in the

Distributed District. While the reasons for that difference are not known, neither are the effects it could have had on testing results.

It is wise to remember that experimental research can offer much stronger evidence supporting causation than causal-comparative studies like this one can (Fraenkel & Wallen, 2009). Because of the nature of this research, it was not possible to control those additional variables, and this kind of ex post facto research is inherently weaker as a result. Due to the number of extraneous variables that could not be controlled, the implications of these findings should not be overestimated, and causation should not be assumed where only correlation can be suggested. Furthermore, the reasons for differences in performance in low-poverty and high-poverty schools are not clear, though researchers have suggested possibilities that include influence of school administration, school organization, teacher experience, rigor of coursework, staff turnover, and physical conditions of the school (Darling-Hammond, 2004; De Luca, Takano, Hinshaw, & Raisch, 2009; Heck, 2007; McGuigan & Hoy, 2006; Rumberger & Palardy, 2005; Tschannen-Moran & Marr, 2004).

Additionally, test scores were chosen as a measure of student achievement, despite their limitations. In the future, further research could use other quantitative measures of student achievement, additional data sets (i.e., from other districts and/or grade levels), and/or qualitative measures (e.g., interviews of parents, students, and/or teachers).

Despite these limitations, however, this research has the potential to influence classroom instruction. It could be helpful for teachers of students with LD in low-income schools to be aware of a possible relationship between the passing rates of their students and the poverty levels of their schools. They can then adjust instruction by, for example, utilizing best practices as defined by present research for students from low-income backgrounds. Field-based research could also be conducted to determine if best practices for low-income populations in general

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education are effective in special education settings or if a different set of best practices apply for working with students with LD and other disabilities in low-income settings. As the literature review shows, teachers can and do make a difference, even in the midst of challenges (including poverty issues) outside of the classroom. If teachers are aware that their students may be facing additional district- or school-specific challenges from the beginning of the year, they can proactively provide additional support for those students, working to minimize the effects of those challenges. Finally, this research also has the potential for adding information to policy debates concerning student assignment and socioeconomic status. School boards and district administrators could use this research and additional research in the field as they make decisions regarding student assignment and school poverty levels, considering how those decisions could impact the achievement of students with disabilities, a sub-group in standardized testing that often has a detrimental effect on AYP (Eckes & Swando, 2009; Katsiyannis et al., 2007; Yell et al., 2006).

The biggest implication for this research, though, is that it demonstrates the need for further research. The review of current literature showed that very little research exists about the relationship between the poverty levels of schools and the achievement of students with disabilities in general or with LD specifically. The significance of these results should encourage future research, preferably some that controls for additional variables. One interesting extension of this research would be to determine whether or not the relationship between student achievement and school poverty levels (demonstrated by Crosnoe, 2009; Okpala et al., 2000; Okpala et al., 2001; Palardy, 2008; Perry & McConney, 2010; Rumberger & Palardy, 2005; Willms, 2010) is magnified by the presence of a disability or simply present in the group of students with disabilities to a similar degree as their non-disabled peers.

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Table 3.1: Grade-Level Distribution in Each District, 2008-2009

School groupings	Distributed District		Neighborhood District	
Total schools	158		172	
Total schools with fifth grade	100		103	
	Grade	Count	Grade	Count
Grade spreads of schools with fifth grade	K-5	94	K-5	99
	PK-5	4	1-12	1
	K-8	1	4-12	1
			K-12	1
			1 K-8	1

Table 3.2: Mean of FRL Percentages in Each District, 2008-2009

Mean FRL %	Distributed District	Neighborhood District
All schools	34.56%	49.59%
Schools including fifth grade	37.33%	55.87%
Schools including third, fourth, fifth, sixth, seventh, and/or eighth grade	37.31%	55.83%

Table 3.3: Test Data Availability for Schools in Each Poverty Grouping, by District, 2008-2009

School data categories	Distributed District	Neighborhood District
Total High High-Poverty (HHP) schools (Schools with 75% FRL or more)	3	38
High High-Poverty, data available	1	11
High High-Poverty, insufficient data	2	23
High High-Poverty, missing data	0	2
Total High-Poverty (HP) Schools (Schools with 50% FRL or more)	25	60
High-Poverty, data available	12	20
High-Poverty, insufficient data	10	35
High-Poverty, missing data	3	3
Total Low-Poverty (LP) Schools Schools with 25% FRL or fewer)	29	28
Low-Poverty, data available	12	8
Low-Poverty, insufficient data	7	12
Low-Poverty, missing data	10	8

Table 3.4: Methodology

	Group	Independent variable	Dependent variable
School level for Neighborhood District	I	C_I Low-poverty schools in Neighborhood District	O_I Student achievement, average test passing rates for students with LD
	II	C_{II} High-poverty schools in Neighborhood District	O_{II} Student achievement, average test passing rates for students with LD
School level for Distributed District	I	C_I Low-poverty schools in Distributed District	O_I Student achievement, average test passing rates for students with LD
	II	C_{II} High-poverty schools in Distributed District	O_{II} Student achievement, average test passing rates for students with LD
District-level	I	C_I Student assignment to schools based on a process incorporating socioeconomic status (Distributed District)	O_I Student achievement, average test passing rates for students with LD
	II	C_{II} Students assignment to schools by geographic proximity to school (Neighborhood District)	O_{II} Student achievement, average test passing rates for students with LD

Table 4.1: District Level T-Test for Math EOG Passing Rates of Students with LD, 2008-2009

Group	n	Mean	*sd*	*t*	*p*
Distributed District	6	49.53%	1.04		
Neighborhood District	6	39.58%	1.79	-4.82	0.001*

*p < .05

Table 4.2: District Level T-Test for Reading EOG Passing Rates of Students with LD, 2008-09

Group	N	Mean	*sd*	*t*	*p*
Distributed District	6	31.60%	1.34		
Neighborhood District	6	22.65%	1.07	-5.23	0.0004*

*p < .05

Table 4.3: School Poverty Level T-Test for Reading EOG Passing Rates of Students with LD, 2008-2009; Distributed District

Group	n	Mean	*sd*	*t*	*p*
High-poverty schools	12	15.98%	3.83		
Low-poverty schools	10	34.87%	2.29	4.23	0.0005*

*p < .05

Table 4.4: School Poverty Level T-Test for Math EOG Passing Rates of Students with LD, 2008-2009; Distributed District

Group	n	Mean	*sd*	*t*	*p*
High-poverty schools	12	49.53%	4.49		
Low-poverty schools	12	56.91%	6.49	0.94	0.36

Table 4.5: School Poverty Level T-Test for Reading EOG Passing Rates of Students with LD, 2008-2009; Neighborhood District

Group	n	Mean	*sd*	*t*	*p*
High-poverty schools	17	12.60%	2.77		
Low-poverty schools	6	36.70%	4.39	4.64	0.001*

*p < .05

Table 4.6: School Poverty Level T-Test for Math EOG Passing Rates of Students with LD, 2008-2009; Neighborhood District

Group	n	Mean	*sd*	*t*	*p*
High-poverty schools	19	35.82%	5.33		
Low-poverty schools	8	70.19%	8.68	3.37	0.005*

*p < .05

Table 4.7: School Poverty Level T-Test for Reading EOG Passing Rates of Students with LD, 2008-2009; Neighborhood District, for High High-Poverty Schools

Group	n	Mean	*sd*	*t*	*p*
High high-poverty schools	10	8.56%	2.67		
Low-poverty schools	6	36.70%	4.39	5.47	0.0004*

*p < .05

Table 4.8: School Poverty Level T-Test for Math EOG Passing Rates of Students with LD,

2008-2009; Neighborhood District, for High High-Poverty Schools

Group	n	Mean	*sd*	*t*	*p*
High high-poverty schools	10	30.44%	7.94		
Low-poverty schools	8	70.19%	8.68	3.38	0.004*

*p < .05

APPENDIX A: IRB Approval Form

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
1L-09 Brody Medical Sciences Building• 600 Moye Boulevard • Greenville, NC 27834
Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb

Date: September 29, 2010

Principal Investigator: Shannon Dingle, Graduate
Dept./Ctr./Institute: College of Education
Mailstop or Address: 4209 Dinwiddie Ct., Raleigh, NC, 27604

RE: **Exempt Certification**
UMCIRB#   **10-0515**
Funding Source: unfunded

Title: "Relationship Between Test Performance of Students with Learning Disabilities and the Poverty Levels of Their Schools"

Dear Ms. Dingle:

On 9.28.10, the University & Medical Center Institutional Review Board (UMCIRB) determined that your research meets ECU requirements and federal exemption criterion #4 which includes research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. *NOTE: 1) This information must be existing on the date this IRB application is submitted. 2) The data collection tool may not have an identifier or code that links data to the source of the information.*

It is your responsibility to ensure that this research is conducted in the manner reported in your Internal Processing Form and Protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB Office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification Request at least 30 days before the end of the five year period.

Sincerely,

Chairperson, University & Medical Center Institutional Review Board

pc: Sue Steinwegs