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School Size, School Poverty and School-Level Mobility: Interactive Threats to School Outcomes

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ACCEPTANCE

This dissertation, SCHOOL SIZE, SCHOOL POVERTY AND SCHOOL-LEVEL MOBILITY: INTERACTIVE THREATS TO SCHOOL OUTCOMES, by SHARON MARIE THOMPSON, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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ABSTRACT

SCHOOL SIZE, SCHOOL POVERTY AND SCHOOL-LEVEL MOBILITY: INTERACTIVE THREATS TO SCHOOL OUTCOMES

by

Sharon M. Thompson

School-level mobility is the flow of students moving in and out of schools and has been defined as the rate of student entries and withdrawals per 100 students enrolled in a school during the year (Pike & Weisbender, 1988). Stakeholders report that school mobility disrupts the delivery, pace and effectiveness of classroom instruction, causes problems associated with classroom adjustment, and renders long-term negative effects on schools' Adequate Yearly Progress rankings (Bruno & Isken, 1996; GAO, 2007; Kerbow, 1996; Lash & Kirkpatrick, 1990; Rhodes, 2005; Sanderson, 2003). Despite these findings very few studies have been conducted to determine the effects of mobility (particularly at the school level) and how it combines with other school-level factors such as school size and school poverty to create threats to positive school outcomes. Of the few relevant studies (e.g., Bourque, 2009; Rhodes, 2007), little attention has been given to understanding mobility's relationships to achievement in the context of size of student enrollment, degree of poverty and longitudinal examination of achievement across multiple years. To address these gaps in the research literature, this study investigated the effects of school-level mobility on middle school reading achievement after controlling for the effects of school enrollment and poverty.

Findings from regression analyses indicated significant relationships between school-level mobility and reading achievement over and beyond the relationships between school size or school-level poverty with achievement. A repeated measures

procedure was used to analyze long-term effects on eighth grade reading achievement for Title I middle schools that focused on three, key variables: degree of school mobility (e.g., high versus low rate), size of student enrollment (e.g. big versus small school), test administration year(s) (e.g., 2006, 2007 and 2008) and interactions between these variables. There were significant main effects for school size, school-level mobility as well as for the year of test administration. Reading test scores rose significantly from one year to the next, big schools out-performed small schools , and highly mobile schools performed significantly lower than low mobile schools in reading achievement over a three-year period. No significant interaction effects were found. Results are discussed in terms of research and policy implications.

SCHOOL SIZE, SCHOOL POVERTY AND SCHOOL-LEVEL MOBILITY: INTERACTIVE THREATS TO SCHOOL OUTCOMES

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Sharon M. Thompson

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ABBREVIATIONS

AYP	Adequate Yearly Progress
GAO	Government Accounting Office
NAEP	National Assessment of Education Progress
NCES	National Center for Education Statistics
NCLB	No Child Left Behind Act

CHAPTER 1

SCHOOL SIZE, SCHOOL POVERTY AND SCHOOL-LEVEL MOBILITY: INTERACTIVE THREATS TO SCHOOL OUTCOMES

INTRODUCTION

Over the past ten years, Public Law 107-119, the No Child Left Behind Act of 2001 (NCLB) has been a central feature in the educational processes of school systems across the country. It has been a catalyst for high stakes testing (Chappuis, Chappuis, & Stiggins, 2009; Dodge, 2009). It has given license to the restructuring of underperforming schools (Duffrin, Scott, & Kober, 2008; Scott & Center for Education Policy, 2009; Scott & Center for Education Policy, 2009) and fodder to characterizations of schools as failing with incapable school staff (Bracey, 2009; Likis, 2008; Zambo & Zambo, 2008). NCLB has given impetus to changes in local school administrations (Stullich et al., 2009), fostered an ambivalent regard towards at-risk student subgroups because of their perceived potential to threaten schools' AYP status (Johnson, Peck, & Wise, 2007; McLaughlin et al., 2005) and been the focus of educational and political debate. In sum, NCLB's leverage has raised the academic, professional and political stakes for students, school personnel and educational policy-makers nation-wide.

One of the principle aims of NCLB is that all schools will be academically proficient by 2014 (NCLB, 2002). Four years before this deadline, however, gaps in student achievement prevail and inequities in school outcomes persist (Hartman & Franke, 2003; Orfield, Losen, Wald, & Swanson, 2004; NCLB, 2001; Steifel, Schwartz, & Chellman, 2007; Swanson, 2004). Too many schools still do not demonstrate adequate academic progress and effective ways to turnaround these problem schools are elusive.

New perspectives are needed; however, a "business-as-usual' philosophy often guides educational policy and decision-making (Stullich et al, 2009). As such, ten years since its passage and four years until the formidable 2014 deadline, NCLB is confronted with resolving one of its original aims, e.g., closing the achievement disparities that exist amongst schools.

Reports by the Government Accountability Office (2007) and the U. S. Department of Education (2009) have indicated the existence of a growing number of schools that do not continuously demonstrate adequate yearly progress. This increasing number of schools raises the need to consider different paradigms in thinking with regards to improving schools' academic performance. With renewed vigor, broader perspectives should be considered that spawn innovations for turning around the adverse, academic outcomes observed in low performing schools. Currently, many of the perspectives employed are guided by factors internal to the school as a system. These factors may include teacher supports, curriculum adoption, instructional resources and so forth, all necessary ingredients for effective delivery of curriculum and instruction (Hargreaves & Dennis, 2008).

Fewer perspectives take into account and are also guided by factors that are external to the school, yet such factors are also necessary when considering effective and efficient delivery of curriculum and instruction (e.g., Hampton & Gruenert, 2008; Offenberg, 2004). Examples of these factors can include economic upheaval, socioeconomic status of the school and community instability, just to name a few (GAO, 2007; Hampton & Gruenert, 2008). An emergence of research has become available that highlight the importance of considering the implications these factors on school outcomes

(Crane et al., 2008; Crane et. al.; GAO, 2007; U.S. Department of Education, 2001). Finding an antidote for the academic course of low performing schools might lie in giving greater attention to the less frequently considered external factors that may mask or impede actual academic progress, disrupt school functioning and raise the level of academic risk in low performing schools. Giving greater attention to some of these less frequently considered factors or school characteristics is the basis for this chapter.

Particularly, the purpose of this chapter is to formulate a perspective on schools' low performance and/or failure to demonstrate Adequate Yearly Progress (AYP) that is primarily based on school-level attributes and factors whose origins are external to the school. This perspective considers the interactive power of a cluster of school-level characteristics that are scarce in schools that are ranked in the top tiers of school performance, but prevalent in schools ranked in the bottom-most tiers of school performance. Primarily, these factors include school poverty (Crane et al., 2008; Crane et. al., U.S. Department of Education, 2001) and school-level mobility (Rhodes, 2005). School size is a third factor considered because it is commonly believed that school size has particular relevance for student achievement (Howley, 1997; Howley & Bickel, 1999; Lee & Smith, 1997). In considering the impact of these factors on school outcomes, one purpose is to review what the research has to say about them. Another purpose of this chapter is to review the implications posed to schools when interactions exist among these factors. It is suggested that the conjoined threat of these factors is at the crux of the problem for failing schools. Finally, suggestions are given that address the needs of schools that continually fail to demonstrate AYP and that may be disproportionately impacted by the interaction of school poverty, school size and school level mobility.

To construct this examination of the interactive effects of school poverty, school size and school-level mobility, this chapter begins by discussing, individually, the influences of each of these school-level attributes on academic performance. It will be shown how school poverty, school size and school-level mobility each can have a unique relationship with school outcomes based on their interaction with student achievement. Furthermore, it will be posited that interactions between these three variables have implications for schools' academic progress and the efficient and effective delivery of curriculum and instruction. The potential threat to schools' AYP attainment will also be examined. Finally, this chapter concludes with suggestions for systemic interventions and the need for future research that continues to examine the combined role of school size, school poverty and school-level mobility on AYP attainment.

School Poverty

Poverty is one of the greatest threats to student achievement and is one of the biggest obstacles in producing positive school outcomes. According to a recently published report by the National Center for Education Statistics (2010), students who attended high poverty schools were less likely to graduate with a high school diploma, less likely to enroll in a four-year college, and trailed low poverty schools on national measures of academic achievement (National Center for Education Statistics, NCES, 2010). An Illinois study (e.g., Ross, 2008) examined school outcomes for a statewide population of elementary schools found that as the level of poverty increased within the school, the level of achievement and AYP performance decreased. Because of the negative relationship between poverty and positive academic outcomes, Title I, Part A, of the No Child Left Behind Act of 2001, gives schools that have high percentages of

children from families with low incomes financial resources to help close achievement gaps between economically disadvantaged students and non-economically disadvantaged students. Recognizing the degree to which school-level poverty can pose a threat to schools' AYP attainment is important because the nationwide percentage of high poverty schools has increased (NCES, 2010) and the over-representation of high poverty or Title I schools among schools that fail to make adequate yearly progress is unsettling (Government Accounting Office, 2007; Stullich, Abrams, Eisner, & Lee, 2009).

Educational reports have revealed low-performing educational trends for impoverished schools, or schools classified as Title I schools, e.g., GAO (2007) and U. S. Department of Education (2009). In this context, many Title I schools continually fail to make AYP at high rates that are increasing over time and this represents a dilemma for impoverished schools and the children that attend these schools. As of 2007, data generated by the U. S. Department of Education (2009) indicated that 25%, or one-fourth, of all Title I schools were identified as "needs improvement". *Needs improvement* is a category within NCLB indicating that a school did not make adequate yearly progress for "two" consecutive years. In other statistics, the National Center for Educational Statistics (e.g., Hoffman, 2007), reported that 58,021 out of 98,793 schools, or roughly 58.7% of all schools, were Title I schools in 2006-07. Of schools, a total of 13,103 schools did not make AYP. Roughly 82%, were Title I schools and 18% were Non-Title I (Stullich et al., 2009). Title I schools were nearly four times more likely to fail to make adequate yearly progress when compared to Non-Title I schools.

While these data give perspective on the prevalence of Title I schools that struggle to demonstrate adequate academic progress, other data give a greater perspective

on the rise in the number of Title I schools that have struggled to make Adequate Yearly Progress (e.g., Government Accounting Office, 2007; Rampey, Dion, & Donahue, 2009). In the 2006 school year, 2,790 Title I schools were categorized as either being in corrective action, in the process of being restructured, or having completed the process of being restructured (GAO, 2007). These are the most critical stages of AYP in that they signify five our more years of continual failure for these schools (GAO, 2007). In the 2007 school year, the number of schools in corrective action and restructuring status had almost doubled to include 4,500 schools (GAO, 2007). In addition, Title I schools that were identified in the most critical stages of AYP had an average of 83% impoverished students, while Title I schools that did make AYP had a 54% impoverished student rate (Stullich et al., 2009). Thus, not only do more impoverished schools fail but those impoverished schools with the highest rates of impoverished students are more likely to fail than Title I schools with lower rates of impoverished students.

Data on middle schools, specifically Title I middle schools, have indicated that middle schools, in particular, struggle to demonstrate AYP. In 2004-05, middle schools constituted 37% of the Title I schools that were identified as *needs improvement* while they comprised only 14% of all Title I schools (cited in Yecke & Finn, 2005). By 2005-06, forty-one percent of all middle schools did not make AYP, as compared to 19% of elementary schools and 34% of high schools (Zinth, 2009). In the following year, 22% of middle schools were likely to be slated for corrective action or restructuring status, as compared to 13% of high schools and 14% of elementary schools (Stullich et al.). The over-representation of impoverished schools and middle schools in categories of school

failure reinforce the point that current practices in determining and addressing the needs of these schools have fallen short.

In summary and based largely on data presented by the U.S. Department of Education (Stullich et al., 2009), not only are high poverty schools at risk for not making AYP, they have difficulty reversing course once in the cycle of continuous failure. Furthermore, the degree of poverty matters even within the Title I school context. The greater the percentage of poverty, the greater the conceivable risk of Title I schools not making AYP. The threshold of poverty that makes the difference in school-level AYP outcomes is not clearly known and also uncertain is whether or not Title I schools are making as limited progress as has been demonstrated or whether assessment measures are just not sensitive to the incremental changes that they do make. In either case, poverty can be viewed as a threat to the well-being of schools and cannot be addressed effectively using a one-size-fits approach to curriculum, instruction or assessment. Instead, a differentiated model of curriculum, instruction and assessment is needed that takes into account the fundamental differences in schools based on their risk factors.

Heck (2006) articulated that an issue of fairness emerges when assessment processes that quantify school progress under NCLB do not take into account possible bias or favoritism in such assessment processes. For example, a wide range of school dynamics may exist that create inequities and/or differences between schools. Examples of these dynamics include poverty versus wealth; school mobility versus school stability; community upheaval versus community support; and, so forth. The existence of such school factors may challenge the ability to fairly compare schools because the existence of these factors can confound or promote the accurate measurement of school progress as

well as delivery of the curriculum standards by which all schools are assessed. For instance, the absence of particular dynamics (e.g., school poverty, school mobility and so forth) might offer an unfair advantage relative to AYP demonstration because delivery of curriculum and instruction can be more efficiently administered and measurement of school progress can be more concisely completed.

As applied to the dilemma of low performing, high poverty schools and AYP attainment, Heck's premise might suggest that school poverty rather than academic growth is the construct that is most often being measured when determining schools adequate progress under NCLB. Such an hypothesis might help explain why a disproportionate number of Title I schools is found in NCLB categories that reflect continuous failure and why the gaps between the outcomes for Title I schools and Non-Title I schools are not closing. In this case, the charge for educational stakeholders is to create a more equitable assessment system that does not place schools at an unfair advantage or disadvantage in their trek towards demonstrating AYP. However, resolving the issue of measurement, alone, may not be sufficient to address the problem of high poverty, low performing schools. Similarly, it has not been sufficient to simply provide additional resources to high poverty schools since recent governmental reports have indicated that the additional resources to Title I schools have not closed the performance gap between Title I and non-Title I schools (Stullich et al., 2009). It is the suggestion of this chapter that other "under-considered" factors, are working in concert with poverty to impede schools' academic performance and AYP attainment. In the next section, school size, one of these under-considered factors is discussed.

School Size

School size is a popular topic in educational discussions as it is commonly believed that smaller schools produce better student achievement and that reconfiguring larger schools into smaller ones will increase the likelihood of positive AYP outcomes (Cushman, 2000; David, 2008). However, as research has shown, the relationship between school size and schools' NCLB outcomes is complex because findings have produced mixed results regarding the impact of school size on student achievement (David, 2008; McMillen, 2004; Howley & Bickel, 1999). One example of this complexity is that school size may have differential effects on different student populations. For example, large school size might have particular benefits for student population comprised mostly of students from affluent backgrounds while small school size might have particular benefits for student populations comprised mostly of students from impoverished backgrounds (Howley, 1997; Howley & Bickel, 1999).

Another example of how school size may have complex effects is that student benefits may be thwarted if school size is either too big or too small. Some research, like that of Lee and Smith (1997), suggests that medium-sized schools (e.g., 600-900 students) may offer the greatest academic benefit for students. In another study, Howley and Bickel (1999) suggested that schools should be comprised of no more than 1000 students and that the size of middle and elementary schools should be extrapolated downwards from this number. In spite of these tentative findings, there is not sufficient research to articulate a precise ideal number for student enrollment, especially for elementary and middle schools. The studies most often considered when determining school size (e.g., Howley, 1997; Howley & Bickel, 1999; Lee & Smith, 1997) are based

primarily on high school populations. As such, guidance is less clear when determining ideal school size for elementary and middles schools even though some studies, like that of Stevenson (2006) and the Texas Education Agency (1999), have demonstrated that controlling school size at certain grade-level configuration such as middle schools might be beneficial.

Though the direct impact of school size on student achievement is uncertain, school size is still an important factor to be considered in this discussion about increasing the progress of low performing schools. It is important because ancillary benefits can exist in connection with school size. For example, several studies have suggested that reconfiguration of a school's size can have a positive impact on school climate (David, 2008; Texas Education Agency, 1999). Another example of school size's ancillary benefits is that school size may have a moderating effect on factors that impede achievement. Particularly, it has been suggested by researchers that small school size can moderate or lessen the negative impact of poverty.

To elaborate, Howley and Bickel (1999) conducted a longitudinal study across five states that investigated the role of school size on student achievement. From this study, they found that school size was not a significant factor in promoting student achievement when students were from moderate or affluent socioeconomic households. However, school size, particularly small school size, did *have a* significant benefit when students were from low, socio-economic backgrounds. Small school size was believed to lessen the negative impact of poverty by creating a more intimate learning environment that, in turn, facilitated higher student achievement for impoverished students. The researchers dubbed this phenomenon as the *equity effect* (Howley & Bickel, 1999).

Given the premise of an equity effect at the student level (i.e., on individual students), a similar premise could be used to predict that an equity effect could take place at the school-level. For example, small school size in highly impoverished school settings could be thought of as an academic safeguard that lessens the negative influences of poverty, thereby increasing schools' potential to meet AYP. At the other end of the spectrum, big school size in highly impoverished school settings could be thought of as an academic threat that exacerbates the negative influences of poverty, thereby decreasing schools' potential to meet AYP. In these current economic times, a trend has emerged to increase class size and to combine schools into larger ones (Chan, 2009: Dillon, 2008; Hardy, 2009; Wolk, 2006). In this context, the challenge for educational stakeholders is to show that highly impoverished schools can make adequate yearly progress even though use of lower school size as a protective factor has been discontinued in many instances.

Another discussion in the school size literature that has particular relevance for this chapter is the role that school size plays in the formation of NCLB subgroups. Under NCLB, schools are required to report test scores to determine if adequate yearly progress has been made for students from subgroups as well as schools as a whole (Davis, 2006). Those subgroups include major racial and ethnic groups (such as African-American, White-Non-Hispanic Asian/ Pacific Islander, Hispanic, and American Indian); economically disadvantaged; English language learners; and, students with disabilities. However, schools may opt not to report subgroup data if the size of the subgroup is too small to produce statistically reliable test data (NCLB, 2001).

Lewis (2006) suggested the potential importance of school size because it raises the odds that the minimum student-number required to establish subgroups, e.g., students with disabilities, English language learners and so forth, would be met. According to NCLB, a subgroup category is not formulated if there are not enough students in the category to yield statistically relevant achievement data (NCLB). When school size is large, there is a greater likelihood that the subgroup size criteria can be met. When school size is small, the converse is true. As a result, large schools with low performing subgroups are at greater risk of being labeled as not meeting AYP when compared to small schools with similarly low performing subgroups (Davis, 2006)

A study by McLaughlin et al. (2005) supports Lewis' proposition. McLaughlin et al. examined high performing, small schools in rural communities and the impact of the subgroup, student with disabilities, on ratings of school proficiency. Their examination revealed that small school size insulated schools considered high performing because often times the schools were so small that statistically reliable subgroups of students with disabilities could not be formed. When schools' enrollment sizes increased because schools were combined or other schools closed, subgroups that were not previously formed had to be considered when evaluating adequate yearly progress. Schools that were traditionally high-performing schools saw their proficiency rates dramatically decline. As this study demonstrated, when more subgroups are established, schools face a greater number of hurdles to overcome in order to demonstrate AYP. With more hurdles to overcome, schools faced an increased threat of AYP failure. Hence, it could be hypothesized that the bigger the school size the greater the risk that schools will not make AYP.

In sum, there are two popular beliefs that guide thinking relative to school size and AYP. First, smaller schools increase student achievement. Second, large schools raise the threat for AYP failure because it increases the likelihood of subgroup formations. Despite their popularity, the research literature has offered varying findings that confirm as well as disconfirm these beliefs. For the purpose of this chapter, the salient conclusion is that school size is important to schools' AYP outcomes because the number of students enrolled can either exacerbate or mitigates circumstances that either pose academic risks for schools or that influence formulas for calculating AYP.

School-Level Mobility

School-level mobility is a third issue that has significant implications for school outcomes under NCLB and can influence achievement. It is a complex variable, in part, because mobility can be viewed both at the student level and at the school level. Because each perspective on mobility can pose a threat to positive school outcomes, both are explained below in an effort to clarify this chapter's conclusions about school-level mobility. To begin, mobility at the student level is commonly defined in the research literature as the phenomenon of students frequently changing schools for reasons other than promotion to the next grade level (Rumberger, 2003). Student level mobility has been linked with long-term academic, behavioral and social challenges for the individual student (Audette & Algozzine, 2000; Engec, 2006; Government Accounting Office, 1994; Heinlein & Shinn, 2000; Mehana & Reynolds, 2004; Pribesh & Downey, 1999; Ream, 2005; Reynolds, Chen, & Herbers, 2009; Rumberger, 2003; Rumberger & Larson, 1998; Rumberger, Larson, Ream, & Palardy, 1999; Temple & Reynolds, 1999).

For example, some research on student level mobility has indicated that mobile students perform lower on statewide criterion measures of academic performance when compared to their non-mobile peers even after controlling for their previous test scores and socioeconomic status (in Policy Research Report, Texas Education Agency, 1999). Other investigations and meta-analyses of research studies have attempted to establish that a linear relationship exists between the frequency of schools moves and student underachievement (Reynolds, Chen, & Herbers, 2009; Temple & Reynolds, 1999). From these studies, three or more school moves have been consistently linked to lags in student achievement (GAO, 1994; Temple & Reynolds, 1999; Reynolds, Chen & Herbers, 2009). Reynolds et al. (2009), in a report stating their findings from a meta-analyses of 16 research studies on student-level mobility, further indicated that student mobility was a meaningful predictor of student underachievement and future school dropout in 14 of the 16 studies reviewed. Also, they found that the higher the frequency of mobility the greater the risks posed to students.

In contrast to student-level mobility, school-level mobility has generally been defined as the ratio of school enrollments and school withdrawals to overall school population within an academic school year (Ligon & Paredes, 1992; Pike & Weisbender, 1988). Because frequent school changes has been found to produce detrimental outcomes at the student level (e.g., Reynolds, Chen, & Herbers, 2009), a parallel assumption at the school level is that high numbers of school enrollments and withdrawals within an academic school year can be a detriment to school-level academic achievement. In support of these assumptions, high rates of school-level mobility may influence schools' performance negatively because there would be larger

numbers of mobile students who, individually, have lower scores because of their mobility (Paik &Phillips, 2002). In addition, the fact that the school is highly mobile means that there has been lots of transition and lots of movement that result in a great range of academic performance for students who have not been a part of the same instructional system. As a result, high rates of mobility can cause instruction to focus more on review of previously taught material rather than presenting new information about the curriculum (Kerbow, 1996; Paik & Phillips, 2002; Sanderson, 2003).

Other studies also provide support for the negative impact of mobility on schools. Sanderson's (2003) qualitative study examined the perceptions of veteran teachers and identified three salient challenges that student mobility poses for the classroom setting: lost instructional time, low achievement levels for students that were new to the classroom environment and poor behavioral adjustment and conformity to classroom routine. Similarly, Kerbow (1996) noted that mobility has a negative impact on instruction by hampering long-term instructional planning efforts, impeding adoption of innovations to classroom practices and changing the focus of instruction to being review-oriented, thereby slowing down the pace of instruction. For the school, Kerbow noted that mobility "flattens" the pattern of curricular pacing to such a degree that the amount of curriculum exposure for all students is limited.

Recently, researchers have investigated additional aspects of school-level mobility and their relevance to student achievement and school outcomes. One study created two categories of school-level mobility to compare their differential impact on achievement. Bourque (2009) examined the relationship between school achievement and two categories of school-level mobility rates. The two categories consisted of

schools with mobility rates of less than 20% and those with mobility rates of greater than 20%. Findings from this study indicated that schools in the higher category of school mobility had lower achievement scores than schools in the lower category of school mobility.

Thompson, Meyers and Oshima (in press) analyzed a statewide sample of elementary schools and examined the relationships between schools' rates of mobility and an academic measure used to determine schools' AYP attainment. Two salient findings were indicated in this study. First, school level mobility was negatively correlated with achievement across grade levels and across academic, content areas. Second, a negative relationship between achievement and school-level mobility (across grade levels and academic content areas) was demonstrated over and beyond the relationship between achievement and school size. A negative relationship between achievement and school-level mobility was also demonstrated over and beyond the relationship between achievement and school poverty status. An important finding is that the relationship between achievement and school level mobility was particularly evident in grades three and five, grade levels that are critical in determining schools' AYP status and student promotion to the next grade level. Likewise, Ross (2008) examined school factors that were related to school achievement and school's AYP in a statewide study based on elementary schools in the state of Illinois. Ross' study revealed that as the rate of school-level mobility increased, performance on the academic measure that determined AYP decreased.

In addition to these implications for achievement, there are other policy implications related to school-level mobility and NCLB. Two recent studies investigated

the direct relationship between schools' mobility rates and schools' demonstration of AYP (Rhodes, 2005; Pulliam, 2007). Rhodes (2005) investigated the mobility rates in urban, Ohio schools. Pulliam (2007) investigated mobility rates in a sample of elementary schools from the state of Texas. In both studies, researchers found that schools with the lowest AYP ratings had the highest mobility rates and schools with the highest AYP rankings had the lowest mobility rates. For example, Pulliam found that schools with the worst AYP ratings (i.e., Academically Unacceptable), had a mean mobility rate of 23.43% while schools with the best AYP rating (i.e., Exemplary) had a mean mobility rate of 13.6%.

With these findings, researchers have increasingly demonstrated that school-level mobility poses a significant threat to mobile student achievement, non-mobile student achievement and schools' AYP outcomes. Despite this growing body of research literature, NCLB continues to place more emphasis on student-level mobility and give far too little acknowledgement to school-level mobility. One important way that NCLB accounts for mobility is to exclude scores from those who have not attended the same school for one full academic year (Elementary and Secondary Education Act, 2001, Section 200.7(a)(2)(ii)(C)). Despite its use, however, this exclusionary practice may fall short in acknowledging the broader impact of school-level mobility and its negative impact on the school as a whole. For example, this practice may not measure the amount of lost instructional time or weigh the adverse implications for the non-mobile student population attending schools with high mobility rates. Further, this practice may not account for the impediment to curriculum delivery or account for the slowing pace of instruction though researchers have found that each of these deterrents to school

achievement is more likely to occur in schools with high school mobility when compared to those with low mobility (Kerbow, 1996; Paik & Phillips, 2002; Sanderson, 2003).

Thus far, this chapter has painted a picture of the risks to achievement and failed AYP attainment that may result from three, key, singular, school-level attributes: school poverty, school size and school-level poverty. Research on school size has produced mixed findings relative to its direct link to student achievement and it may have different effects for different types of schools based on variables such as poverty. Second, research on poverty has consistently yielded one consistent conclusion; the higher the rate of school poverty, the greater the schools' exposure to academic risk. Lastly, the limited research on school-level mobility has yielded the following conclusions.

First, school problems resulting from school-level mobility have not been investigated to the same degree as in prior research that has focused on student problems that have resulted from student-level mobility. Second, school-level mobility has the potential to negatively influence school outcomes just as student-level mobility has the potential to negatively influence student outcomes Third, mobility does not just affect individual student achievement but can have a negative impact on the entire school as it can impede effective delivery of curriculum and instruction. Individually, it is important to consider the ramifications of school poverty, school size and school-level mobility. However, it is also important to consider how these individual factors can work together to pose even greater threats to student achievement and school outcomes.

Interactive Effects

In the previous sections of this chapter, the intent was to demonstrate that school poverty, school size and school mobility, as unitary, school-level factors, could stymie

school achievement and impede schools' attainment of Adequate Yearly Progress (AYP). The purpose of this section is to examine these three factors as interactive variables to develop hypotheses about how they work together to influence school outcomes. It is noteworthy that only a few studies have investigated the interactive effects of these variables to examine how they may work together to have negative consequences for schools. In contrast, more research has been conducted to investigate interactions between two or more of these variables as predictors of school outcomes when these variables have been conceptualized at the student level. While much of this research was designed to distinguish between the individual, student-level effects of these factors rather than examining their combined effects, some of the findings do have implications for interactions among variables. The available research suggests that the joint or interactive effects of school poverty, school size and school-level mobility can pose an even greater threat to academic outcomes than when these factors exist alone.

As such, several overarching goals exist for this section. First and foremost, a greater recognition should be given to the potential for interactive threats to schools posed by combinations of school poverty, school size and school level mobility. A greater risk to school outcomes is present when these factors come together than when each factor is considered alone. For example, the available research on interactive effects has sought to determine whether one variable (i.e., school size) moderates the negative effects of a second variable (i.e., school poverty). At times, findings revealed interactions between these variables where there are stronger negative relationships to school outcomes than when each variable is considered alone. To accomplish the goals set for this section, evidence will be reviewed to describe the effects on school outcomes when

factors, chiefly poverty and mobility, were used as student-level variables. This will be followed by a review of research highlighting the interactive effects on school outcomes when mobility, poverty and school size are examined as school-level variables.

Interactive Effects at the Student Level

At the student level, it is important to acknowledge that consideration of the interactive effects of school size, poverty and student mobility is complicated because of the way that student mobility was studied in the context of poverty. When the problem of student mobility emerged in the national spotlight as a problem facing schools across the country (GAO, 1994), low family income and need for affordable housing were identified as the chief reasons why children frequently changed schools. As an example, thirty percent of third-grade children from household making less than $10,000 changed schools three or more times as compared to ten percent of third grade children from household incomes of over $25,000 (GAO, 1994). The conclusion was that the lower the level of family income the greater the frequency of school changes.

As a result, much of the historical study of student mobility has revolved around distinguishing it as something more than just a symptom of poverty, a symptom characterized by frequent school changes fueled by a family's need for affordable housing and unemployment (GAO, 1994; Kids Mobility Project, 1999; Pribesh & Downey, 1999; Rumberger, 2003; Mehana & Reynolds, 2004; Schafft, 2006; Wright, 1999). While some recent research has been effective in establishing mobility as an important variable with unique effects that are distinct from poverty, now it is important to study its interactive effects as separate from poverty. Some studies have attempted to study these interactive effects.

As an example, Alexander and Entwisle (1996) investigated a group of Baltimore-area schools and indentified two categories of student mobility, one that focused on within district student movement and one that focused on outside of district student movement. Within district student movement was characterized as frequent school changes that occurred between schools that were located within the same school district. Outside of district movement was characterized by frequent school changes that occurred between schools that were not located within the same district. In the context of district school changes, student transfers were commonly associated with the low income status of the home. In the context of outside of the district school changes, student transfers were commonly associated with moderate income status of the home. Within district, student movement was more often associated with students from low income households and these students were more likely score lower on achievement measures. On the other hand, student movement, into and outside of the school district, was more often associated with students from more affluent backgrounds who were also more likely to score higher on achievement measures. Findings from this study highlight that not just frequent movement, but frequent movement accompanied by poverty poses the greatest challenges for student achievement.

Prominent studies, such as Howley and Bickley (1999), Lee and Smith (1997) and a policy report by the Texas Education Agency (1999), suggest that risks to student achievement increase when school size is large and student poverty rates are high, particularly when student enrollment exceeds 1000 students. Howley and Bickel's study across several states indicated that small school size mitigated student poverty status such that improvement in student achievement was observed. Lee and Smith observed

academic gains that were commensurate between low income, high school students and high income, high school students when school size was between 600-900 students; however, academic disparities between the two student groups were apparent when school size exceeded this range.

Kingston (2002), in a review of the successes of Department of Defense Schools, highlighted the interactive effects of high student mobility rates and small schools size. On average, this article reported that students in military families changed schools six times during their parents' career. This number exceeded the frequency of school changes found to be detrimental to student achievement and other student outcomes (GAO, 1994; Temple & Reynolds, 1999; Reynolds, Chen & Herbers, 2009). Despite the frequency of school changes, students from Department of Defense Schools outperformed students from public schools across the country on the National Assessment of Educational Progress and gaps in achievement between minority and non-minority students were substantially smaller compared to the gaps in achievement between minority and non-minority students in non-Department of Defense Schools. One reason cited for the success of Department of Defense Schools was their small school size.

The previous review of the research highlighted studies that examined the interactive effects of school poverty, size and mobility particularly as they have occurred at the student level. In the studies reviewed, significant implications for student achievement were present dependent upon how these variables coalesced with one another. In some cases, variables interacted in such a way as to suggest negative consequences for student achievement (e.g., high poverty and frequent mobility, high poverty and large school size and so forth). In other cases, variables interacted in such a

way as to create protections to mitigate negative consequences for student achievement. For example, small school sizes in Department of Defense Schools may have diminished the negative consequences of frequent school changes. In the next section, an examination of studies will be made that focuses on the interactive effects of school poverty, school size and school mobility as school-level variables and their implications for school outcomes

Interactive Effects at the School Level

Given the results from student-level analyses, it is anticipated that school poverty, school size and school-mobility will interact similarly when viewed from a school-level perspective and that similar implications for schools outcomes will be found. A study by Chen (2008) offers a rare, school level view of the relationship between school mobility and school size. In this examination, the interaction between large school size and high mobility rates were investigated. Findings from this study revealed that large schools with high, school-level mobility rates had significantly greater crime and a more negative school climate than smaller schools with less student movement. A study by Hogrebe and Tate (2010) highlights the interactive effects of poverty and school-level mobility on school academic outcomes. Researchers in this study examined school context factors and their relationship to science proficiency. One of the key findings in this study was that high mobility rates in combination with high percentages of poverty were strong indicators of low science proficiency.

Thompson, Meyers and Oshima (in press) examined the relationships between school size, schools' poverty status and school-level mobility and how these variables influence school achievement on a statewide sample of elementary schools. Findings

indicated that a significant relationship existed between school-level mobility and an academic measure used to determine schools' AYP status. In addition, statistical analyses using R-square change methods proved that the addition of school level mobility rates to models that consisted of school size and school poverty accounted for a significant variation in reading and math achievement across the five grade levels analyzed. Again, the academic measure used was used by the state to determine schools' AYP status.

In Rhodes' study (2005), four factors (i.e., mobility, socioeconomic status, ethnicity, and school size) were examined to determine which variable had the greatest predictive value in determining schools AYP outcomes. Findings indicated that schools with the highest rates of mobility and the highest levels of poverty were more likely than schools with the lowest rates of mobility and the lowest levels of poverty to fall in AYP categories signifying failure to meet adequate yearly progress. Rhodes' study not only revealed the significance of school mobility, it provided greater evidence that schools disproportionately affected by poverty and mobility have a considerably harder time continually demonstrating adequate school performance than schools who have lower rates of poverty and mobility.

The previous studies provided examples of the interactive effects of school poverty, school size and school mobility and their influence on school outcomes. However, most of this research has been limited to examining only two out of three of these variables. Little research has been done to investigate the simultaneous interactions of all three variables. Further attention to and research on the interactions between these three variables are needed so that effective assessment as well as evidence-based

interventions can be developed. This chapter will conclude by discussing the potential implications for applied practice, educational policy and future research.

Future Endeavors

The goal of the No Child Left Behind Act has been to improve this nation's public schools by setting parameters by which schools, districts and states must demonstrate adequate yearly progress. In the years since its enactment, there has been a growing body of evidence indicating that the number of low performing schools is growing larger. In addition, there has been a growing number of stakeholder concerns that something different needs to be done with the law to more fairly and accurately measure school progress (A Petition Calling for the Dismantling of the No Child Left Behind Act, 2007; Butzin, 2007; McKim, 2007; Popham, 2009; Weaver, 2007). Much of this concern is rooted in the belief that as a result of NCLB initiatives many schools have been mischaracterized and wrongly identified as not making adequate progress. Despite the agreement that amendments to NCLB are needed (Hoff, 2008), reauthorization of the law has been delayed and consensus still has not been reached as to how the law should be changed and by what processes school outcomes should be determined (Hoff, 2008; Olson, 2007).

A particular problem confronting educational stakeholders and policy-makers is that there is not a strong body of empirically-based interventions that can help turn around low performing schools (Herman et. al, 2009). Clearly this point is critically important and will be discussed in greater detail in the ensuing section. From the standpoint of this chapter, another problem is that there are school-level, interactive factors that present problems for the effective and efficient delivery of curriculum

However, these factors, i.e., school poverty, school size and school-level mobility, are not recognized sufficiently in interventions that are used or the accountability measures commonly used to assess school progress. Since the individual and interactive effects of school poverty, school size and school-level mobility have potential implications for developing effective interventions and for turning around low performing schools, this last section will conclude with descriptions of the need for evidence-based educational interventions, fair approaches to accountability and related educational policy, as well as future research.

Evidenced-based Educational Interventions

One of the biggest contributors to the problem of low performing schools is that there exists a dearth of large-scaled, evidence–based interventions designed to meet their needs (Scott et al., 2009; Herman et al., 2008). This observation is particularly relevant for school populations that are the subject of this current chapter (e.g., high poverty, highly mobile schools). In fact, the interventions often touted seem more focused on staff credentials than the school-level, student-centered interventions that might be needed to really turn around schools. Four models of school-level interventions, called turnaround models, have been promoted by the U. S. Department of Education to address the needs of low performing schools: transformation (e.g., technical assistance and staff development), replacing school leadership and staff, re-opening the school as a charter school or allowing outside governance and, shutting down the school (Maxwell, 2010). Other recommendations, some of which encompass those previously mentioned, include: signaling the need for a drastic change with strong leadership, maintain a consistent on improving instruction, provide visible improvements early in the turnaround process

(e.g., "quick wins") and build a committed staff (Herman et al.). While all of these interventions address professionals working in the schools, none of them are highly student-centered approaches or have strong evidence that show they work(Herman et al., 2008; Stullich et al., 2009). To reiterate this point, the Center on Education Policy conducted a six-state, five-year study that followed the progress of schools in the restructuring stage of AYP, the lowest tier of low-performing schools. Study findings revealed that none of the federally-recommended strategies were associated with schools' subsequent progress and attainment of AYP (Scott et al., 2009).

Of particular promise, however, is the *differentiated accountability system* pilot program. The differentiated accountability system was set in place in 2007 and was developed to allow states the opportunity "to vary the intensity and type of interventions to match the academic reasons that led to a school's identification" [as a school in need of improvement] (U.S. Department of Education, 2009, Scott et al., 2009). This pilot program allows participating states to target resources and interventions differentially to low-performing schools identified as being at greatest risk for not meeting target goals versus uniformly distributing resources and interventions to all schools. It is primarily comprised of four areas: accountability, differentiation, interventions and restructuring and is being piloted in seventeen states (U.S. Department of Education). Relative to interventions, the component of this system that has promise is that a percentage of Title I funds can be allocated or redirected to the neediest schools in order that interventions can occur. As referenced in the previous section, a need exists for effective problem identification and the availability of appropriate interventions that are aligned with school needs (Stullich et al, 2009).

To start the process of intervention development, recognition has to first be given to the broad range of problems, internal and external to schools, which help to create and exacerbate schools' low performance. Of the seventeen states piloting the differentiated accountability system Florida, Illinois, Ohio, Pennsylvania were among the very few states that made any reference to mobility data (student level or school level) in their accountability plans. As such, comparison outcomes between the states that acknowledged mobility in their pilot programs and those that did not will be greatly anticipated in order to further consider its implications on school outcomes. This lack of acknowledgement by states may help explain why so little head-way has been made in reversing the negative trends in low performing schools. The downfall of this potentially effective tool is that until the role of school-level mobility and its interactive effects with poverty and school size are recognized, targeted interventions will not be conducted, consequences to schools AYP attainment will be under-recognized and the much needed research will be stalled.

Using the same interventions and viewing all school problems the same does too little in addressing the multi-faceted needs that schools have (Hartman, 2003; Stullich et. al. 2009); hence, differentiation of school-level curriculum and intervention are needed. Differential curriculum models need to be researched at the school level to determine which have the greatest treatment efficacy for schools disproportionately impacted by the constellation of school poverty, school size and school-level mobility. Examples might include investigating varying approaches to pacing the curriculum for high-risk schools to see which is most effective, investigating different reading and math programs to see which have the greatest treatment efficacy for low performing schools and, investigating

varying curriculum components to see which have the greatest correlation with school engagement and student achievement.

Accountability and Educational Policy

Assessment of school progress is a key component of No Child Left Behind as it constitutes one way that schools are held accountable for meeting the needs of their students. Despite the purpose of assessment, how and what assessments are used have been the source of great contention when the results of assessment are used unfairly to compare schools or characterize students, school faculties and schools, particularly low-performing, impoverished schools. Given this belief, it is the position of this chapter that the presence and interactive threat of school poverty, school size and school-level mobility can not only distort the progress made in schools but can be confounding factors in the assessment methods used to evaluate that progress. As such, careful consideration should be given when determining how best to conceptualize and measure adequate progress in low-performing schools because of the high stakes for the educational, political and fiduciary well being of students, faculties, schools and communities across the country.

The complex nature of schools disproportionately affected by the individual and interactive effects of school poverty, school size and school-level mobility may be largely unrecognized by processes most commonly used in determining AYP (e.g., student performance on a single achievement measure, e.g., in Linn, 2008). For example, the current use of a singular assessment that simply assesses the pass/fail rate of student groups may not be sensitive enough to acknowledge how factors like poverty and school-level mobility can coalesce to effect negative school outcomes caused by disruptions and

impediments to curriculum, instruction and school climate (Jennings & Corcoran, 2009; Linn, 2008). As another example, addressing the impact of mobility on school outcome by only excluding mobile students' test scores may under-represent the negative impact of school-level mobility on the school at-large. Because of this, the negative effects on the performance of all students enrolled in highly mobile schools, particularly highly mobile schools in which poverty and school size have coalesced, may result in unchanging, negative school ratings that perpetuate continually low performing schools (Pulliam, 2007; Rhodes, 2005).

NCLB allows the exclusion of individual, mobile students' test scores from in schools' AYP tabulations. This protocol assesses students' knowledge of the curriculum while, arguably, adding a level of protection to schools against scores that may not reflect the quality of instruction in the school and thus should not contribute to poor AYP ratings. Though the merits of this NCLB protocol have been questioned because of its potential to incentivize unwarranted student withdrawals (Weckstein, 2002), this practice recognizes that mobility has negative implications to school outcomes. While this may be a helpful step protecting some schools from inappropriate labels, it does not go far enough in offering redress to schools that possess inordinately high school-level mobility rates or other factors, such as poverty, school crime and so forth, that can impede effective and delivery of curriculum, instruction and academic interventions. In this context, it is critically important to use methods to evaluate schools that are appropriate for schools disproportionally affected by the interactive effects of school poverty, school size and school-level mobility.

Varying models of accountability have emerged in the NCLB literature to judge the progress of schools, most of which are categorized as either status measures (i.e., performance on a single test) or growth measures (i.e., estimation of the progress of student cohorts over time) (Jennings & Corcoran, 2009; Linn, 2008). NCLB has predominantly incorporated the status model (i.e., single test performance) to hold schools accountable for adequate yearly academic growth (Jennings & Corcoran). A third category, and by-product of the growth model, is the value-added model. Value-added models are versions of growth models that hold schools or individual teachers accountable for student performance based upon how well such performance exceeded predictions made by the school given the student's past performance and some other external circumstance (for example poverty level). If student performance is higher than expected, then the school is said to have high value-added and if student performance is lower than expected, then the school is said to have low value added (Jennings & Corcoran, 2009; Linn, 2008).

When the implications of school poverty, school size and school-level are considered, use of value-added models in low performing schools would permit greater consideration of how each of these factors negatively affects student achievement. The current status model gives too much singular power to a unitary test and gives too little acknowledgement to other factors, like poverty and mobility, which can obscure school progress and confound the meaningfulness of a pass or fail test score. While changing assessment based on a value-added model rather than the current status model would be a promising direction, this would not resolve all of the challenges for highly mobile students and highly mobile schools. First, inherent in growth models is the ability to

follow individual student groups over time. But, "over time" is antithetical to the notion of mobility at the individual student level. However, at the school level, schools' mobility trends can be used as a basis for predicting school outcomes versus student outcomes. Second, the research literature does not provide the data needed for schools to make accurate predictions about the extent to which student-level mobility rates affect reading and math achievement. More research is available at the student level (e.g., Reynolds et al., 2009), but even more is needed.

Future research

This chapter has provided a perspective that takes into account the negative influence wielded by the union of large school size, high school poverty and high school mobility. However, more research is needed to investigate the interaction between poverty, school size and mobility and expand the research literature regarding their collective role in struggles that certain schools face in their quest for AYP attainment. For example, targeted, differentiated school level interventions are needed which take into account the composition of students and their unique needs. In addition, time and financial investment are needed to determine empirically what school level programs work best for the specific schools. Educational stakeholders and federal, state and local policy-makers, must play a role in these efforts as they set the curricula and assessment measures by which success in these schools are measured and, more importantly, can make available the climate and resources needed to investigate what works. In conclusion, a massive undertaking is required that broadens the perspectives by which school failures are understood and addressed. More research is needed across the NCLB

continuum but particularly as it relates to the negative implications of the interactive threat of school poverty, school size and school-level ability on schools' AYP attainment.

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CHAPTER 2

IN THE ERA OF NO CHILD LEFT BEHIND: SCHOOL-LEVEL MOBILITY AND IMPLICATIONS FOR MIDDLE SCHOOL ACHIEVEMENT

INTRODUCTION

The No Child Left Behind Act of 2001, Pub. L. No. 107-110, § 20, 115 Stat. 1425 (2002), **is** hallmark legislation that was signed into law on January 8, 2002. The aim of No Child Left Behind (NCLB) was to increase academic standards for public education students and the schools that serve them by *"closing the achievement gap with accountability, flexibility and choice" (*NCLB, 2001*).* NCLB established parameters by which public schools are vetted and/or held accountable for their progress in meeting high academic standards. Its Adequate Yearly Progress (AYP) provision established the vehicle designed to transform schools and enhance their academic performance. Within this context, Title I schools and particularly Title I middle schools have consistently demonstrated weaker academic performance as compared to elementary schools, high schools and non-Title I schools.

Middle schools have consistently lagged behind other schools in achievement for a range of academic subjects (math, reading, science, and so forth) and in their quest for AYP. In 1995, eighth graders scored significantly below the international average in math and science though this same cohort of students scored significantly above average in the same areas four years previously as fourth graders (U. S. Department of Education, National Center for Education Statistics [NCES], 2000). Another indication of the weaker academic performance of middle schools is that eighth grade math scores increased by only 15 points over a twenty-five year period (i.e., 1973 to 2008) on the

National Assessment of Education Progress (NAEP), a nationally-based math assessment. By comparison, fourth grade math scores increased by 24 points during the same period (Rampey, Dion, & Donahue, 2009). In 2006-07, eighth grade students were less likely than fourth grade students to achieve at levels of proficiency in reading and math whether on state assessments or national assessments (Stullich, Abrams, Eisner, & Lee, 2009).

Middle schools have also faced difficulties demonstrating progress towards AYP. Summative reports have consistently documented the disproportionate number of middle schools that fail to make AYP as compared to elementary and high schools (Government Accounting Office [GAO], 2007; Stullich, et al., 2009). In 2005-06, 41% of middle schools did not make AYP, as compared to 19% of elementary schools and 34% of high schools (Zinth, 2009). In the following year, 22% of middle schools were likely to be slated for corrective action or restructuring status, as compared to 13% of high schools and 14% of elementary schools (Stullich et al.).

Demonstrating accountability as a function of AYP is especially problematic for schools that serve students from impoverished backgrounds (e.g., Title I schools or schools that have a substantial percentage of poor students), although middle schools, in particular, have had profound struggles. In 2004-05, middle schools constituted 37% of the Title I schools slated for improvement while they comprised only 14% of all Title I schools (cited in Yecke & Finn, 2005). Recent reports by the Government Accounting Office (GAO, 2007) and the U. S. Department of Education (e.g., Rampey et al., 2009) have highlighted the problems facing Title I schools. In 2006-07, a substantial number of Title I schools (10,781) were identified as “needs improvement” under NCLB; this figure

constituted 20% of all Title I schools and an 11% increase of schools needing improvement from the prior year (Stullich et al., 2009). A school enters corrective action status if it fails to make AYP for four consecutive years; a school enters into restructuring if it fails to make AYP for six consecutive years (GAO, 2007). In 2005-2006, there were 2,790 Title I schools that had not consistently made AYP in four or more, consecutive years. By the following year, the number of Title I schools in corrective action or restructuring status had increased to 4,500 (GAO, 2007).

These findings are important for several reasons. First, it is apparent that academic problems are trending upward for poor schools and particularly, poor, middle schools (GAO, 2007; Rampey et al., 2009; Zinth, 2009). Second, findings indicate that poor schools have difficulties reversing negative academic trends once they are in a state of minimal progress (Stullich et al., 2009). Third, findings indicate that Title I middle schools need assistance in identifying factors that impede progress towards meeting AYP and improving academic progress (GAO, 2007; Stullich et al.).

The intense focus on the effectiveness of schools in the NCLB era has led to greater contemplation of factors that can threaten their effectiveness such as community characteristics, number of AYP subgroups, school enrollment, and so forth (GAO, 2007; Johnson, Peck, & Wise, 2007). In particular, two factors that may threaten academic performance in high poverty schools have been proposed by researchers: school size (Devos & Selah, 2007; McMillan, 2004; Stevenson, 2006) and school-level mobility (Bourque, 2009; Kerbow, 1996; Rhodes, 2005; Sanderson, 2003; Thompson, Meyers, & Oshima, in press).

Research on school size has had mixed findings. For example, Stevenson (2006) reviewed three studies of school size and academic outcomes in middle schools. One study found no relationship between school size and school outcomes (Gettys, 2003). Another study found a small but statistically significant impact for school size (Roberts, 2002). The third study found that school poverty was a stronger predictor of performance than school size. Additional investigations provide further support for mixed findings regarding school size (Stevenson, 2001). A North Carolina study of three separate cohorts of public school students (e.g., one elementary school, one middle school and one high school) found no relationship between middle school size and achievement after controlling for school and student demographics (McMillen, 2004). Lee and Smith (1997) found that academic gains in reading and math were most pronounced in medium-sized schools that ranged in enrollment from 600 to 900 students. Finally, Howley & Bickel (1999) found that poverty and achievement correlated more strongly in large schools than small schools. This suggests that the correlation between poverty and schools' academic outcomes may be lessened in small schools.

The second important factor proposed as a threat to schools' success is *school-level mobility*. But to understand school-level mobility, it is first important to understand the research on *student-level mobility*. Student mobility is commonly defined as students changing schools for reasons other than being promoted from one grade to another (Rumberger, 2002). It has been found that highly mobile students perform more poorly on a range of student outcomes compared to their peers who experienced less mobility (Audette & Algozzine, 2000; Engec, 2006; Government Accounting Office, 1994; Heinlein & Shinn, 2000; Mehana & Reynolds, 2004; Pribesh & Downey, 1999; Ream,

2005; Reynolds, Chen, & Herbers, 2009; Rumberger, 2003; Rumberger & Larson, 1998; Rumberger, Larson, Ream , & Palardy, 1999; Temple & Reynolds, 1999). Congruent with this observation, Reynolds et al. (2009) conducted a meta-analysis of sixteen research studies on student mobility. They concluded that student mobility plays a pivotal role in lower achievement and high school dropout but that more studies are needed to further understand mobility and its effects (Reynolds et al., 2009).

Additionally, a national survey of educational stakeholders found that most viewed student mobility as a major contributor to schools' failure to continuously meet AYP standards (GAO, 2007). This sentiment parallels evidence-based conclusions about the negative effects of mobility already demonstrated at the student level. However, few research investigations have been designed to examine the role of mobility in student outcomes when mobility is conceptualized at the school level and when schools are used as the unit of analysis. School-level mobility is a social policy issue that may have implications for the overall performance of schools that serve a large number of highly mobile students. It is also a social policy issue that could prove pivotal in better understanding the challenges that Title I middle schools face in making AYP (e.g., Stullich et al., 2009). Finally, school-level mobility is a social policy issue that has potential implications for educational policy and school outcomes. For example, local policies might be established to create different curricula for schools that have high mobility. Support for this suggestion is found in the fact that this use of alternative curricula is currently an allowable but underused option under NCLB (Stullich et al.).

Defining mobility as a school-level variable. At the school level, mobility is generally referred to as the school mobility rate or transiency rate (Ligon & Paredes,

1992; Pike & Weisbender, 1988). As reported by the San Diego Unified School District (Bell, 2006), the school mobility rate *"measures movement in and out of a school during the school year and is best used to compare mobility to that at other schools and to examine trends over time*." The school mobility rate may be best conceptualized as a measure of movement or flow within the school caused by student moves. Most often, it is calculated by dividing the number of students who enter and exit a school by the average student enrollment for the school, multiplied by 100 (Bell, 2006; Bourque, 2009; Ligon & Paredes, 1992; Pike & Weisbender, 1988). When a school is characterized by frequent mobility, disruptions to the school's instructional environment occur thereby contributing to poor school performance and failure to meet AYP (Lash & Kirkpatrick, 1990; Pulliam, 2007; Rhodes, 2005; Sanderson, 2003).

One of the critical issues that inhibit the study of school-level mobility is that there is not a universal criterion regarding the degree of school level mobility that constitutes high or low mobility. Some studies have used the average of multiple schools' mobility rates to follow school district trends over time (Pike & Weisbender, 1988). Other studies have examined the mobility rates of school groupings that corresponded to state-wide, AYP rankings (Rhodes, 2005). Still other researchers have compared the one or two schools with the highest mobility to the one or two schools with the lowest mobility rates to test mean differences in student achievement scores (Pulliam, 2007). However, none of the above studies have clearly defined what they use to classify schools as high or low mobile. This definitional constraint makes it difficult to compare the impact of school level mobility across studies, a point that has also been raised in research on student-level mobility (Reynolds et al., 2009).

Despite this limitation in the research, a recently published dissertation describing 21, Massachusetts school districts may have some implications for criteria to define high mobility. Bourque (2009) created two groups of schools defined by their rates of mobility. These two groups were referred to as *highly* mobile schools and *hypermobile* schools. Bourque (2009) defined *highly* mobile schools as those with mobility rates between 10.0 and 19.9. *Hypermobile* schools had mobility rates greater than 20.0. As applied to the school setting, this rate would be the equivalent of 20 school entries and/or withdrawals for every 100 students enrolled. In other studies, more conservative averages of school mobility rates have been reported. For example, Pike and Weisbender (1988) found a district average transiency rate of 33.79 in their study to reflect the status of mobility in the Los Angeles Unified School District.

School-level mobility and school outcomes. Few studies have attempted to investigate school-level mobility and its impact on school outcomes. Rhodes (2005) sought to determine whether the schools' measure of mobility could forecast AYP rankings for 506 Ohio schools, inclusive of elementary and secondary schools, from eight urban school districts. Mobility in this study was defined by the percentage of students enrolled in a school for less than 50% of the school year; the average school enrollment was 476 indicating relatively small school sizes. Study findings revealed that the schools with the two highest AYP rankings, i.e., Effective and Excellent, had the lowest percentages of mobility, 18.9 and 12.3 respectively. Schools with the lowest AYP rankings, i.e., Academic Watch and Academic Emergency, had the highest percentages of mobility, 29.4 and 33.6 respectively. A similar conclusion was drawn in a state-wide study of elementary schools in Texas (Pulliam, 2007). In that study, schools with the two

highest AYP rankings, i.e., Exemplary and Recognized, had percentages of mobile students that averaged 13.6 and 19.0, respectively. Schools with the lowest AYP ranking, i.e., Academically Unacceptable, had school mobility percentages that averaged 23.4.

Thompson, Meyers and Oshima (in press) used a larger, more diverse sample of elementary schools. Their definition of school-level mobility was the rate of school entries and withdrawal per 100 students, a definition that is consistent with most state education departments (Ligon & Paredes, 1992; Pike & Weisbender, 1988). Thompson et al. investigated the relationship between schools' mobility rates and performance on state assessments for a sample of 1062 elementary schools. Comparisons were made between schools that met and did not meet AYP requirements. Study findings yielded moderate, negative correlations of schools' mobility rate with schools' reading, math and language achievement scores in grades one through five. In addition, when school size and poverty status were controlled, small but significant variations in reading, language arts and math scores were related to school mobility rates. When the average mobility rate of AYP schools was tested against the average mobility rate of non-AYP schools, the means between the two groups were not significantly different.

Findings from these studies have created a better understanding of the relationship between school-level mobility and school outcomes. Pulliam (2007) and Rhodes (2005) supported the hypothesis that school-level mobility has a negative relationship to schools' AYP status. Thompson et al. (in press) found that school-level mobility has academic implications for the school as a whole, above and beyond both school size and status as a Title I school. None of the previous studies exclusively focused on middle schools and/or middle school outcomes. Thus, further research is needed to examine the

relationship between these variables for middle schools that have historically lagged in both AYP attainment and academic performance as compared to other schools. While adding a longitudinal focus on middle schools, the present study is designed to replicate some of the findings from the Rhodes and Thompson et al. studies. The longitudinal focus of the research examines the relationships between mobility and school size in Title I schools over a three year period.

This investigation was designed to add to the literature in several ways. First, mobility was analyzed using a school-level definition of mobility with schools rather than students as the unit of analysis. Second, this investigation focused only on middle schools with particular attention to Title I middle schools, because of challenges faced by these schools in academic performance and progress towards AYP. This particular component of this current investigation focused on Middle school (grades 6 -8) reading achievement, and Eighth grade reading achievement in particular, because of its significant role determining schools' AYP status and because eighth grade has been a focal point in national and international assessment programs such as the National Assessment of Educational Progress. Third, this investigation examined the impact of school level mobility in the context of school poverty and school size. Finally, this study paid particular attention to the long-term impact of school-level mobility by comparing academic outcomes from Title I schools with high versus low rates of mobility and determining whether this relationship remains constant over time. To meet the aims of this study, two primary research questions were addressed:

1. What proportion of variation in reading achievement is explained by school-level mobility rate above and beyond the variation in achievement explained by the percentage of low income students and enrollment at each school?
2. For Title I schools that vary in mobility rates (e.g., high versus low) and size of student enrollment (e.g., big versus small):
    a. Do low mobile schools perform better in eighth grade reading achievement than high mobile schools?
    b. Do small schools perform better than large schools in eighth grade reading achievement?
    c. Is there an interaction between mobility and school size such that the differences in achievement between high and low mobile schools are less for small schools than large schools?
    d. Do the effects of a, b and c hold constant over time?

Method

Research Design

Using archival data made available by the state education agency and data retrieved from the state education agency's website, this investigation examined the impact of school-level mobility on middle school academic performance and addressed the two primary research questions described above. The first research question utilized middle school data from the 2005-06 school year and included schools' poverty data (e.g., Title I school status and percentage of student enrollment eligible for free and reduced lunch), mobility data (e.g., schools´ mobility rates), school size data (i.e., student enrollment) and criterion-referenced reading test scores for grades 6, 7 and 8. The second

research question used 8th grade, middle school data from the 2005-06 school year as well as 8th grade criterion-referenced reading test scores for the 2006-07 and 2007-08 school years.

Descriptive statistics were used to summarize data and Pearson product moment correlations were conducted to examine the relationships between three primary variables: school poverty, school size and school mobility rate. In addition, regression analyses were used to examine the relationships between school mobility rate and reading achievement above and beyond the relationship of school poverty and school size with reading achievement for a state-wide sample of Title I and Non-Title I schools. Finally, highly impoverished, or Title I schools were examined to analyze the differences in reading achievement for schools with high versus low rates of mobility and big versus small student enrollment sizes, over a period of three test administration years using a mixed design with a 2 x 2 x 3 repeated measures ANOVA with two between factors (mobility and school size) and one-within factor (years).

School Population

A state-wide population of middle schools from a southeastern state was used for this investigation wherein schools served as the unit of analysis. Prior to executing statistical analyses, preliminary data analyses were used to remove schools from the data set that (1) were not sixth through eighth grade (6-8) middle schools and (2) did not have data available for key variables (i.e., mobility rate, school's percentage of impoverished students, school enrollment size, and grade level reading scores). For research question one, middle schools included Title I and non-Title I, urban, suburban and rural schools (N=387). Included schools represented all of the various ethnicities, school sizes (student

enrollment), and regions of the state. For research question two, only the lowest third and highest third of Title I middle schools based on mobility rates were used in data analyses (N=141).

Data Sources

The criterion-referenced achievement measure designed to help determine Adequate Yearly Progress (AYP), a function prescribed by the No Child Left Behind Act of 2001, was used as the source of grade level reading performance. This measure is mandated by state law and was developed to assess performance on state standards in five content areas: Reading, English/Language Arts, Math, Social Studies and Science. Reading, English/Language Arts, and Mathematics are administered in grades 1 through 8, and in Science and Social Studies in grades 3 and 8. These measures assess students' acquisition of skills and knowledge based on state curriculum standards.

In addition, state requirements mandate that third grade students who do not meet state standards in reading, and fifth and eighth grade students who do not meet state standards in reading and math will not be promoted to the next grade level. During the time-span addressed in this study, a change in the criterion-referenced math measure was instituted that resulted in a different math measure than was given in prior years. Because of this change, longitudinal school-based performance in the area of math was not assessed because test versions differed. Unlike math, the criterion-referenced reading measure was administered continuously throughout the span of time targeted in the longitudinal investigation of academic performance. As such, only the criterion-referenced reading measure was used in this investigation of schools' performance. For this measure, scaled scores at or above 850 indicate a level of performance that is *well*

above the state standard. Scaled scores from 800 – 849 indicate a level of performance that *is at or above* the state standard. Scaled scores below 800 indicate a level of performance that *is below* the state standard for the test.

For research question one, the results of middle schools' 2006 criterion-referenced reading performance in grades 6, 7 and 8 were used to examine schools' reading achievement. For research question two, the results of eighth grade criterion-referenced reading performance from 2006, 2007 and 2008 were used to examine schools' reading achievement.

Mobility Data. The school mobility index used by the state educational agency in this study is the number of students entering or leaving a school divided by the average number of continuously-enrolled students within the student-count dates established by the state, multiplied by 100. This is similar to the definition of school-level mobility used in most of the prior research on this topic (Bourque, 2009; Ligon & Paredes, 1992; Pike & Weisbender; 1988; San Diego Unified School District, 2006; Thompson et al., in press). The 2005-2006 mobility rate data for the schools examined in this study were made available by the state education agency.

For research question one, school mobility data from both Title I and Non-Title I schools were used and examined as a continuous variable. For research question two, only Title I schools' data were used. To develop criteria for defining schools as either high or low mobility, the school mobility literature was searched. As noted in the introduction to this paper, prior literature does not include clear criteria for what rates constitute high or low mobility (Bourque, 2009; Pike & Weisbender, 1988). Low mobility rates have been reported in ranges from 10.0 to 19.0 (Bourque, 2009; Pulliam,

2007; Rhodes, 2005). High mobility rates have been reported in ranges from 20.0 to 33.79 (Bourque, 2009; Pike and Weisbender, 1988; Pulliam, 2007; Rhodes, 2005).

Since there is no clear criterion in the literature that establishes what is meant by high and low mobility rates, schools' mobility rates at the upper and lower thirds of the school population were used to define rates of high and low mobility in this investigation. This delineation produced two groups, high mobility schools and low mobility schools. The high mobility schools were schools in the upper third (relative to mobility rates) and had scores of 26.1 and above (N=71). Low mobility schools were schools in the lower third (relative to mobility rates) and had scores of 16.8 and below (N=70). As such, both groups of schools ultimately contained ranges of mobility rates congruent with those observed in prior research.

Poverty Data. Title I, Part A is a component of the No Child Left Behind Act of 2001 (NCLB). This act provides federal funds through state education agencies to local educational agencies (LEAs) and public schools with high percentages of impoverished children to help equip all children with supports needed to meet challenging state academic content and achievement standards. Title I funds may be used for children from preschool to high school and for programmatic efforts designed to support state and local school reform tied to challenging state academic standards.

For each Title I school, the *Title I Programs Annual Report* provides a yearly performance summary that includes information on Title I funding, student demographics, percentage of students in the school eligible for free and reduced lunch and percentage of students meeting or exceeding AYP standards in the five content areas of the criterion-referenced academic measure used to gauge student progress. This report

was used in this study to determine the percentage of students in each school who were eligible for free and reduced lunch. In research question one, poverty was defined by the percentage of low income students enrolled (e.g., those students eligible to receive free and reduced lunch) and was used as a continuous variable. In research question two, poverty was defined categorically by the school's Title I status and included a total of 141 schools, e.g., seventy-one (71) high mobility schools and seventy (70) low mobility schools.

School Size Data. The K-12 Public Schools Annual Report Card summarizes data relative to AYP accountability, such as state tests, national tests, student and school demographics, and fiscal data for each public school and public school system in the state. The 2005-06, K-12 Public Schools Annual Report Card was used to retrieve the student enrollment data that determined school size. For research question one, school size was used as a continuous variable.

For research question two, Title I schools' student enrollment size was used to categorically separate schools into two groups, big schools and small schools. Big schools are generally identified as schools whose student enrollment size is greater than 900 students (e.g., Lee & Smith, 1996). For middle schools, researchers have even suggested that as few as 600 students should be the maximum student enrollment (Howley, 1997). For this research, schools were divided into large and small categories based on the Title I schools' median enrollment. Those middle schools with enrollment above the median enrollment (725 students) were defined as big schools (N=69), those below median enrollment were considered small (N=72).

Data Analysis

Several types of analyses were used to address the first research question. First, descriptive analyses were conducted to describe the data set and summarize data about school size, mobility rate and school poverty. Then, correlation analyses were used to examine the relationships between mobility, poverty, school size and reading achievement in grades 6, 7 and 8. Finally, regression analyses were used to determine the extent to which school level mobility rate contributed to variance in reading achievement in grades 6, 7, and 8 after controlling for school size and school poverty. For the second research question, a mixed design, or repeated measures ANOVA, was used to test for main and interaction effects between school mobility (low mobile, high mobile) and size of school (small school, big school) over three, consecutive, test administration years (2006, 2007 and 2008) on grade eight reading achievement. The lower third and upper third of Title I schools (N=141) based on schools' mobility rates were used to classify schools' mobility level. Schools below the median school size of 725 were used to classify schools as small schools. Schools above and below the median school size of (*MDN* = 725) were used to classify schools as big and small schools. For question two, only Title I, middle schools were used.

Results

Research Question One: What proportion of variation in reading achievement is explained by school-level mobility rate above and beyond the variation in achievement explained by the percentage of low income students and enrollment at each school?

The dataset consisted of 387 Title I and Non-Title I middle schools that ranged in mobility rates from 4.12% to 45.18% (*M* = 20.02, *SD* = 7.60*).* The percentage of

schools' disadvantaged/impoverished student populations ranged from 2% to 94.88% (*M* = 52.35, *SD* = 21.02) and school size via student enrollment ranged from 100 to 2770 (*M* = 848.17, SD = 371.24. See Table 1.

Bivariate correlations examined the relationships between school poverty, school size, school mobility rate and 2006-2008 criterion-referenced reading scores. Findings indicated significant, positive relationships between school size and reading achievement, and between school poverty and school mobility rate. In addition, a moderate, positive relationship was observed between poverty and school level mobility rate. However, significant negative relationships were observed between school poverty and reading achievement across grade levels and between school mobility rates and reading achievement across grade levels. See Table 2.

Regression analyses were used to examine the proportion of variation in reading achievement attributable to school mobility, above and beyond the variation in reading achievement explained by the percentage of low income students and student enrollment at each school. In each grade level (6, 7 and 8), a modest, but significant amount of variation in reading achievement was attributable to school-level mobility above and beyond variation in reading achievement attributable to school size and percentage of impoverished students. For example, R-square change values (after controlling for school size and poverty) indicated that school level mobility accounted for a modest, but significant amount of variation in 8th grade reading achievement ($R^2\Delta = .019, p < .001$). In other words, mobility rate accounted for another 1.9% of the variation in 8th grade reading, above and beyond the variation in reading achievement attributable to school

Table 1

Descriptive Summary for the 2005-06 Dataset

Descriptives	Range	Minimum	Maximum	Mean	Standard Deviation
School Size	2670	100	2771	848.17	371.24
Poverty %	92.88	2.00	94.88	52.35	21.01
Mobility Rate	41.06	4.12	45.18	20.02	7.60
6th Grade Reading[a]	48.36	802.69	851.05	825.98	9.21
7th Grade Reading[b]	48.90	795.40	844.30	819.00	8.51
8th Grade Reading[c]	37.63	807.50	845.13	824.37	7.15
n[d]	387	387	387	387	387

Note: [a]Sixth grade criterion-referenced reading data based on the middle school dataset. [b]Seventh grade criterion-referenced reading data based on the middle school dataset. [c]Eighth grade criterion-referenced reading data based on the middle school dataset. [d]Total number of middle schools in the dataset = 387.

poverty and school size. School poverty, school size *and* school mobility together comprised 81.7% of the total variation in 8th grade reading. See Table 3 for a description

of all of the results addressing this research question.

Table 2

Pearson Correlations of School Level Mobility Rate, School Size, School Poverty and Reading Achievement by Grade Level

Factors	1	2	3	4	5	6
1. School Size	----	-.366**	.062	.322**	.307**	.344**
2. Poverty		----	.554**	-.879**	-.850**	-.893**
3. Mobility			----	-.627**	-.637**	-.597**
4. 6th Grade Reading				----	.930**	.928**
5. 7th Grade Reading					----	.922**
6. 8th Grade Reading						-----

Note. **Correlation is significant at the .001 level (2-tailed).

Research Question Two: For Title I schools that vary in mobility rates (e.g., high versus low) and size of student enrollment (e.g., big versus small):

a. *Do low mobile schools perform better in eighth grade reading achievement than high mobile schools?*

b. Do small schools perform better than large schools in eighth grade reading achievement?

c. Is there an interaction between mobility and school size such that the differences in achievement between high and low mobile schools are less for small schools than large schools?

d. Do the effects of a, b and c hold constant over time?

Table 3

$R^2\Delta$ Grade Level Regression Analyses of Mobility Rate and Reading Achievement, Controlling for School Size and Title I Status

Grade Level	6th		7th		8th	
	R^2	$R^2\Delta$	R^2	$R^2\Delta$	R^2	$R^2\Delta$
Size	.104**	.104**	.094**	.094**	.119**	.119**
Size/Poverty	.772**	.668**	.722**	.628**	.798**	.678**
Size/Poverty/Mobility	.804**	.032**	.776**	.054**	.817**	.019**

Note. Statistics are reported in R -Square and R-Square Change values. "**" $p < .001$.

Data were analyzed using a mixed-design ANOVA with between-subjects factors of school mobility level (low, high) and school size (small, big) and a within-subjects factor of test administration year (2006, 2007, 2008). Mauchley's test indicated that the assumption of sphericity had been violated ($\chi 2(2) = 7.60$, $p = .022$), therefore degrees of

freedom were corrected using Greenhouse-Geisser estimates of sphericity. Main effects were revealed for test administration year, $F(1.897, 259.864)$, $p < .001$, partial eta-squared = .33, mobility level of the school, $F(1, 137) = 70.54$, $p < .001$, partial eta-squared = .34 and size of school $F(1,137) = 12.00$, $p < .001$, partial eta-squared = .08.

A paired-samples t-test indicated that scores were significantly higher for the 2007 reading assessment ($M = 821.08$, $SD = 6.27$) than for the 2006 reading assessment ($M = 819.89$, $SD = 5.46$), $t(140) = -4.56$, $p < .001$, $d = .202$. In addition, a paired-samples t-test indicated that scores were significantly higher for the 2008 reading assessment ($M = 823.22$, $SD = 6.44$) than for the 2007 reading assessment ($M = 821.08$, $SD = 6.27$), $t(140) = -7.49$, $p < .001$, $d = .337$.

The interaction among test administration years, mobility level of the school and school size was not significant, $F(1.879, 259.864) = 2.29$, $p = .107$, partial eta-squared = .016. In addition, the interaction between mobility level of the school and school size was not significant, $F(1, 137) = .003$, $p = .956$, partial eta-squared = .00. In all, no significant interactions were found.

Question Two results produced several key findings. First, 8th grade, reading achievement for these Title I schools significantly increased over the three-year period. Second, big Title I schools had significantly higher reading achievement than small, Title I schools across the three-year period. See Figure 1. Third, low-mobile Title I schools had significantly higher reading achievement than high-mobile Title I schools across the three-year period. See Figure 2. Finally, there was no significant interaction between school size and school mobility. As such, school size (big or small) did not moderate the

impact of high mobility. That is to say, school size was not a protective factor for schools with high, school-level mobility rates. See Figure 3.

Figure 1. Schools' (big versus small) test performance over a three-year time span.

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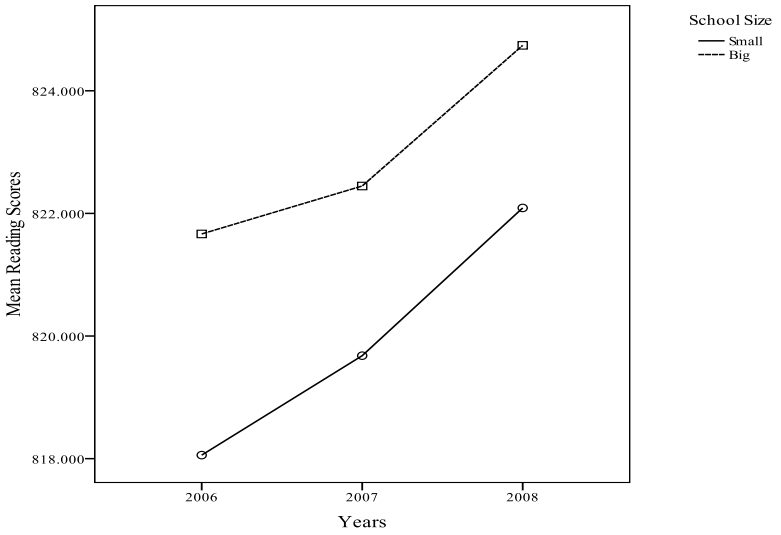

Figure 1. Schools' (big versus small) test performance over a three-year time span.

Discussion

For research question one, the data used were drawn from a state-wide sample of middle schools, inclusive of Title I Schools and Non-Title I schools. The unique finding for this question was that a significant and negative relationship existed between school-level mobility and middle school reading achievement over and beyond the relationships of school poverty and school size with reading achievement. This finding is important for several reasons. First, it is important for middle schools because research attention has not specifically focused on school-level mobility and its impact on middle school achievement.

Figure 2. High mobile versus low mobile schools' test performance over a three-year time span.

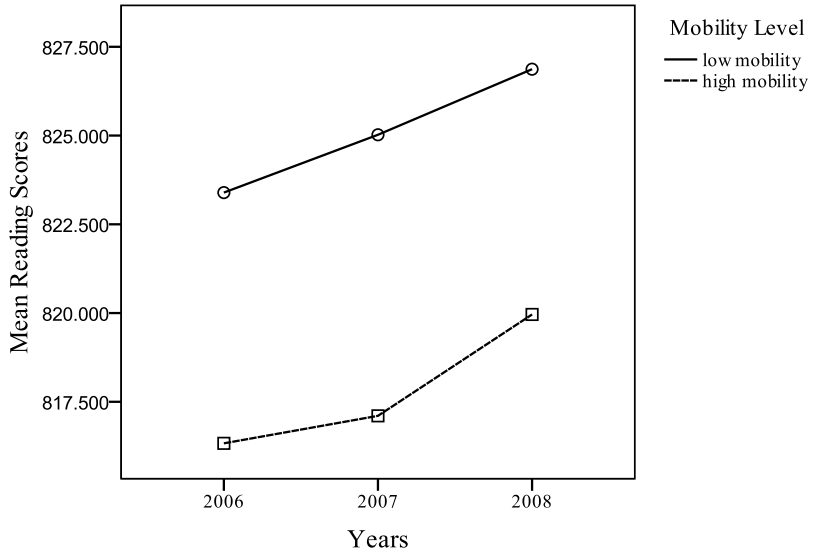

Figure 2. High mobile versus low mobile schools' test performance over a three-year time span.

Second, this finding is important because it suggests that school-level mobility can encumber schools' performance on high-stakes tests used to determine school outcomes under NCLB. With similar findings observed at the elementary school level (Thompson, Meyers & Oshima, in press) and the growing concern found in research suggesting that school mobility is negatively related to schools' AYP rankings (e.g., Pulliam, 2007; Rhodes, 2005), the importance of addressing the issues surrounding school-level mobility is reaffirmed. The relationship of school-level mobility and reading achievement is even more important when considering the long-term effects of school-level mobility on achievement in middle schools. These findings and implications for social policy are discussed in more detail in the sections that follow.

Figure 3. No interaction was demonstrated between size of school (i.e., big, small) and mobility rate of the school (high, low).

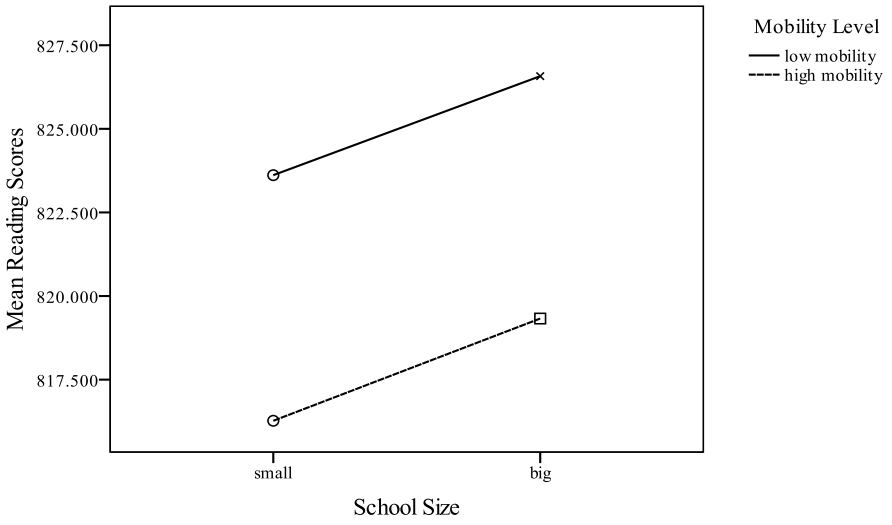

Figure 3. No interaction was demonstrated between size of the school (i.e., big, small) and mobility rate of the school (high, low).

The second research question examined the long-term impact of school-level mobility by comparing the academic progress of schools with low versus high mobility rates and small versus large student enrollment sizes over a three-year time span. Only data from Title I (i.e., low income) schools, were used in the second research question. There were several distinctive findings from research question two. First, Title I schools with low mobility rates significantly outperformed those with high mobility rates over a three year period, despite significant gains in reading achievement demonstrated yearly by both groups of schools. Second, though all schools made academic gains with each progressive year, a gap existed in achievement scores between impoverished schools with high mobility rates and impoverished schools with low mobility. This gap did not close

over the three-year period covered in the study. Thus, in addition to the negative long term effects of school-level mobility on school-level achievement, mobility may also perpetuate achievement gaps that NCLB legislation seeks to close. The implications for social policy will be discussed later in this section.

This current investigation replicates previous research but also adds to the research literature by focusing on the implications for middle schools, considering the long term effects of school-level mobility on middle school achievement and exploring the differential effects of various levels of mobility for high poverty schools. Both research questions produced findings which further the need to consider the importance of school-level mobility for middle school outcomes. Similar to studies that focused primarily on student issues (e.g., Audette & Algozzine, 2000; Engec, 2006; Government Accounting Office, 1994; Heinlein & Shinn, 2000; Mehana & Reynolds, 2004; Pribesh & Downey, 1999; Ream, 2005; Reynolds, Chen, & Herbers, 2009; Rumberger, 2003; Rumberger & Larson, 1998; Rumberger, Larson, Ream, & Palardy, 1999; Temple & Reynolds, 1999), this current study addressed schools as the units of analysis and still demonstrated that high mobility can be detrimental to school-based-achievement.

Importantly, all of these findings indicate that school-level mobility has social policy implications for middle schools. As previously reviewed, reports have indicated that middle schools represent the most endangered school grouping relative to academic achievement and that Title I middle schools represent the most endangered school grouping for continuously failing to meet the Adequate Yearly Progress standard of No Child Left Behind (Government Accounting Office, 2007; Stullich, Abrams, Eisner, & Lee, 2009). Findings from this study suggest that Title I middle schools with the highest

rates of mobility fare worst in their academic progress and the current findings indicate that this trend continues over time. This threat to academic performance in high poverty, high mobility schools may place enormous pressures on the students that matriculate in these schools and the staff and administrations that serve them.

Students in the highly mobile schools may feel the impact of mobility and experience disruption to the flow of instructional practices within the classroom (Kirkpatrick & Lash, 1990; Sanderson, 2003). For example, teachers may have to slow the pace of curriculum in order to re-teach previously covered material; create opportunities to acclimate new students with the classroom environment; or, take time to evaluate where students stand academically. Any one of these events has the potential to disrupt educational progress. In combination and over time, the long-term implications for schools given the ongoing ebb and flow of changing and returning students with diverse academic needs can have unintended negative effects on the instruction provided to students as well as their academic performance. For example, educators may feel hampered in their ability to expose students to the entire set of curriculum standards covered on tests that determine AYP. Or, some educators might feel pressured to give the greatest amount of academic and instructional attention to students whose test scores might have more relevance in determining schools' AYP outcomes. Unfortunately, given the current climate that emphasizes school-level, AYP academic outcomes, the instructional needs of the most academically at-risk students might actually go unmet.

For school staff and school administrations, the threats of lagging behind other schools in academic outcomes are not just professional (i.e., challenges in instruction), but are also political. Stigma is attached to schools that fail to make AYP. Failing to

make AYP, often results in schools being labeled as "failing schools" (Bracey, 2009). If schools are viewed as failing, teachers' jobs and professional futures are at risk. No Child Left Behind requires that supports be provided to schools that do not make AYP, such as assistance with data analyses, technical supports, change in local school governance and specifically developed plans designed to identify and address school improvement (NCLB, 2001). Yet, these supports are not designed to overcome problems associated with poverty and mobility. Predictably, these supports have not brought about the needed changes in schools that continuously fail to make AYP (GAO, 2007). Unfortunately, the frequent result is the removal of school staff and administration rather than the exploration of new approaches to curriculum and instruction (Stullich, Abrams, Eisner, & Lee, 2009).

In the end, school level mobility can be conceived as a social policy issue that could prove pivotal in better understanding the challenges that Title I, highly mobile middle schools face in making AYP (e.g., Stullich et al., 2009). It could also prove vital in better understanding the professional and political stakes that educators face in schools at early- risk for academic failure. Because of the stakes for schools at risk, including their students and educators, more attention should be given to the needs and instructional approaches used when working in these schools. This might include investigation of systemic interventions, such as differentiated, evidence-based curricula to determine which are best suited for highly mobile school populations. Other areas of focus might include the examination of differentiated, academic cycles to examine the pace of instruction best suited for highly mobile school populations or the types of instructional

delivery methods, such as, virtual, direct and small group that are best suited for schools that service highly-mobile school populations.

There were limitations to this investigation that need to be addressed in future research to bring about an even greater understanding of the role played by school-level mobility on middle school achievement and middle school outcomes relative to NCLB. This investigation did not have disaggregated data that would have allowed the researchers to address grade-level mobility. Grade-level mobility data would enable investigation of relationships between school-level mobility rates and other important academic variables, and it would help researchers to identify whether or not student movement at particular grade levels is most critical in determining schools' Adequate Yearly Progress rankings or students' academic performance.

Another limitation of this study was that only mobility data from one school year were available for use in analyses. The availability of mobility data from multiple years could help guide understanding of school-level mobility in several ways. First, analyses of subsequent years' school-level mobility data could inform discussion about long-term academic effects by determining whether changes in rates of mobility over time are correlated with changes in academic performance. In addition, such findings could help to determine whether or not certain schools maintain the same threat to achievement inferred by a consistently high degree of school-level mobility over time. Second, analyses of subsequent years' school-level mobility data could be used to more accurately identify schools that are at greater risk for school failure and that need school-level interventions to combat the potential negative effects of school level mobility. Finally, analyses of school-level mobility data over multiple years could help to further replicate

findings by Rhodes (2005) and others, about the connections between school-level mobility, AYP rankings and other school outcomes, such as mandated school reorganization , which carry enormous consequences for students, educational staffs and communities.

In sum, school-level mobility has relevance to academic achievement for all schools, Title I or not. School-level mobility has relevance in identifying schools that are at the greatest risk for academic failure. School-level mobility has relevance in understanding the persistent gaps in academic achievement for schools that appear to be underperforming. School-level mobility has relevance for the overall school, administration, staff and students who might feel marginalized and stigmatized by being cast in the role of the underperformer.

The present study attempted to further understanding of school-level mobility and its long-term effects on middle school achievement. More research is needed to create and test school-level interventions that combat the negative effects of school-based mobility. More research is needed to better understand what levels of mobility are critical in placing schools at risk.

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