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The Relationship Between Ohio Schools' Teacher Quality Indicators and Equity in Third Grade Reading Achievement

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THE RELATIONSHIP BETWEEN OHIO SCHOOLS' TEACHER QUALITY
INDICATORS AND EQUITY IN THIRD GRADE READING ACHIEVEMENT

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ABSTRACT

The purpose of this study was to identify teacher quality variables that can predict school equity in the third grade reading passage rate at the school building level. In the present study, the operational definition of equity is the difference (or gap) in passage rates between those who may struggle academically in reading and their respective peers. Teacher quality is represented by the percentage of teachers with a Master's degree, percentage of teachers who are properly certified, average teacher attendance rates, and average years of teaching experience.

A multiple linear regression model was used to determine the extent to which teacher quality variables predict equity involving socioeconomic status, mobility, and gender on the Ohio Achievement Assessment (OAA) Reading Test for 654 Ohio elementary schools. Teacher quality variables that significantly narrow the gap on the OAA Reading Test between students who may be at-risk to struggle in reading and their peers may contribute to equity in reading achievement. Equity in education requires that educational access and opportunity is guaranteed for all students (McKibbens, 2005).

Findings indicate that the percentage of teachers with a Master's degree and the percentage of teachers who are properly certified significantly improve equity on the third grade OAA Reading Test for socioeconomic status and mobility. Years of

experience were found to be significant in reducing equity for mobility, but were not found to be significant for socioeconomic status. Teacher attendance rates were found to be significant in regards to mobility but were not a significant predictor of equity involving socioeconomic status. Teacher quality variables were not found to be statistically significant predictors of gender equity on the third grade OAA Reading Test.

The study recommended that high quality teachers be equitably placed in both urban and suburban settings. Schools may require teachers to pursue advanced degrees and teach within their specialization area. It should not be assumed that experienced teachers are more adept in contributing to equity than the novice. Schools may require continuous professional development related to how best to work with divergent student populations.

Further research is needed to determine reasons teacher attendance rates did not significantly predict equity on the OAA Reading Test for any of the student population variables. Research may also consider reasons years of experience significantly decreased equity involving mobility. Teacher quality variables did not predict gender equity, as such investigations into what teacher attributes aid in equity for the genders may be significant.

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CHAPTER I

INTRODUCTION

Horace Mann once deemed education to be the “Great Equalizer”, postulating that disparities between students of varying economic backgrounds would narrow if educational opportunities were equitable for all (Spring, 2010). According to Mann, students should attend a common school in which “rich and poor children... [mingle] in the classroom” (Spring, 2010, p.31). As theorized by Mann, student success would not be influenced by factors outside of the classroom. Despite his suggestion, to this day, there is a correlation between socioeconomic status and academic achievement (Moore, 2006).

The term “at-risk” has no definitive meaning but is often used to identify children who are more likely to experience poor long-term outcomes, such as academic failure and incarceration (Moore, 2006). It should be noted that socioeconomic status (SES) does not necessarily lead to academic failure as even affluent students may meet at-risk labeling requirements. Some may suggest that all children are at-risk (Moore, 2006). Factors surrounding at-risk labeling may include determinants related to a child’s environment (e.g. community, neighborhood, and school context) (Moore, 2006). There are additional

factors that may cause a student to be labeled at-risk, including having a learning disability or having been in an abusive relationship (Moore, 2006).

Those identified as being at-risk tend to perform at a lower level than their peers on such things as achievement tests. For instance, “the U.S. Department of Education (2002- 2007) reports that urban schools, compared to the rest of the nation, have significantly more students testing below the basic level in reading, math, science, and writing on the National Assessment of Educational Progress (NAEP) test” (Sandy & Duncan, 2010, p. 297). In an era where standardized tests are highly regarded as a means to evaluate student achievement, it is important to consider what can be done to remedy this disparity.

The No Child Left Behind (NCLB) Act of 2001 sought to increase schools accountability in regards to student achievement, especially for those who are considered to be at-risk for academic failure (Akiba, LeTendre, & Scribner, 2007). According to NCLB, one way to address the issue of disparity in student achievement is to employ highly qualified teachers (Akiba, et al., 2007). The U.S. Department of Education (2004) states that “To be considered highly qualified, a teacher of core academic subjects is required to hold a Bachelor’s degree, have full state certification or licensure, and demonstrate subject matter competence” (in Silva Mangiante, 2010, p. 42). Thus, in terms of NCLB logic, the more educated and specialized a teacher is, the more effective they will be at promoting equity for all students.

Equity assures that equal educational access and opportunity are guaranteed for all students (McKibbens, 2005). As Horace Mann envisioned, factors existing outside of the school would not impede student success (Spring, 2010), and accountability within

the school would ensure that students were receiving equal access to educational resources, including highly qualified teachers (Akiba, et al., 2007). Equity in student achievement, involving such categories as socioeconomic status (SES) and disability status, was one of the main goals of the No Child Left Behind Act (Akiba, et al., 2007).

The Problem

Despite good intentions, disparities in achievement between students at-risk to struggle academically and their peers persist (Richards & Ross, 2012). For instance, in Ohio, there are achievement gaps between low-income students and their peers (Richards & Ross, 2012). This achievement gap may be a result of a disproportional allocation of highly qualified teachers; wherein high poverty schools have significantly fewer highly qualified teachers than their counterparts (Ohio Department of Education [ODE], 2007).

Academic disparities may also be perpetuated by evaluation procedures in schools, whereby schools are assessed based on adequacy, not equality (Sanders, 2008). Many United States public schools receiving distinguished awards may promote positive results for the majority while neglecting the minority (Witherspoon, 2011). Witherspoon asserts that a focus on excellence may hinder equity, where “excellence without equity is in fact neither and is no longer an option” (p.20).

The Purpose of the Study

The purpose of this study was to identify teacher quality variables that predict equity at the school building level involving those who may struggle academically in reading and their respective peers. The study focused on four quantifiable school-level teacher indicators including; (1) percentage of teachers with a masters degree, (2) percentage of teacher who are properly certified, (3) average years teaching of

experience, and (4) average teacher attendance rates. The following research questions were addressed:

1. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving socioeconomic status?
2. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving student mobility status?
3. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving gender?

Significance of the Study

In Ohio, achievement gaps between academically at-risk students and their peers persist (Richards & Ross, 2012). Students who are subject to poor teachers for three consecutive years are at an increased risk for academic failure (Wilson, 2011). At the same time, low-income elementary students who are taught by highly qualified teachers for three consecutive years may see academic improvements more comparable to their middle class counterparts (Wilson, 2011).

If teacher quality is theorized to aid in the narrowing of achievement gaps between academically at-risk students and their peers, it is important to consider the most effective qualifications. By examining perceived attributes of effective teachers and studying those influences independently as they relate to equity in student achievement, it may help to inform decisions related to the employment of quality teachers and equity for all students.

Definitions of Terms

This portion of the paper provides definitions of the basic terminology contained in this study.

Achievement – In terms of this study, achievement will be defined as scores on the third grade Ohio Assessment Achievement Reading Test.

Advantaged – Advantaged refers to those who do not meet the criteria for “disadvantaged” as outlined on the Ohio Department of Education website.

At-Risk - Children who are more likely to experience poor long-term outcomes, such as academic failure (Moore, 2006).

Disadvantaged – Disadvantaged is defined on the Ohio Department of Education website as follows;

1. Students who are known to be eligible to receive free or reduced-price lunches; a program through the United States Department of Agriculture (U.S.D.A) National School Lunch Program. Eligibility for free or reduced-price lunch can be determined through a variety of methods including the electronic direct certification process or completion by a parent or guardian of a free and reduced-price lunch application. A student with an approved application on file for a free or reduced-price lunch is qualified to be reported to ODE as economically disadvantaged.
2. Students who have not submitted an application for free or reduced-price lunch or who have not been directly certified as eligible but reside in a household in which a member (e.g., sibling) is known to be eligible for free or reduced-price lunch via an approved application or through direct certification.
3. Students who are known to be recipients of or whose guardians are known to be recipients of public assistance. A source for determining whether a student’s

family is receiving public assistance is the Education Monetary Assistance Distribution (EMAD) system.

4. Students whose parents or guardians have completed a Title I student income form and meet the income guidelines specified (ODE, 2011d)

Equity – Equity assures that equal educational access and opportunity are guaranteed for all students (McKibbens, 2005).

Mobile – “Child mobility refers to child turnover which is defined as children moving in or out of a program/district for reasons other than kindergarten transition. In general, too many changes for a student can negatively affect their performance” (ODE, 2011d).

Properly certified teachers– Properly certified teachers are those that teach core classes in which they are certified (ODE, 2006).

Stable – Children who do not meet the criteria for mobility as defined on the Ohio Department of Education Website are considered stable.

CHAPTER II

LITERATURE REVIEW

Equity

Although difficult to define, two views are often associated with equity including; (1) “equality of opportunity” and (2) “equity in results of education” (Levin, 2003). “Equality of opportunity” suggests equal access to educational resources, while “equity in results of education” refers to equity as a combination of equal opportunity and differential supports, promoting success for all (Levin, 2003). Many find it unrealistic for public policy to expect everyone to achieve to the same degree, but insist success not be attributed to such background factors as wealth (Levin, 2003).

Research suggests that equity is accomplished through access to effective teachers (Brown, 2010). The distribution of these teachers is inequitable; wherein highly qualified teachers tend to gravitate towards more affluent schools (Levin, 2003). As such, the United States is working to ensure equitable distribution of highly qualified teachers (ODE, 2012). NCLB requires schools to publish disaggregated student achievement data on standardized tests (Brown, 2010). This data allows for evaluations of student performance, teacher quality (Brown, 2010), and subsequent measures of schools’ Adequate Yearly Progress (AYP) (Sanders, 2008). AYP is used to measure schools’

progress in closing achievement gaps, encouraging math and reading proficiency for all students by 2014 (ODE, 2007).

Schools that underperform for four years may be “subject to a restructuring that could include replacing staff, instituting new curriculum, regulating the facility directly through the state, and even closing the school and reopening it as a charter school” (Sanders, 2008, p.592). NCLB allows for this type of school take over when consistent inequities are found (Brown, 2010). While NCLB was put in place to encourage equity, it seems the statute may perpetuate disparities (Sanders, 2008).

Highly qualified teachers tend to avoid seeking employment in districts that are not making AYP (Sanders, 2008). These districts are viewed as less stable and autonomous than those that are receiving excellence ratings (Sanders, 2008). The dispersion of quality teachers may contribute to a self-perpetuating cycle of educational inequality which could require significant interventions to overcome (Massey, 1990).

In this paper, the disparities in achievement between students who may struggle academically in reading and their peers are discussed. Specifically, literature related to disparities in achievement between the economically disadvantaged and their more advantaged peers, between highly-mobile students and their more stable peers, and between male and female students, are examined. In conclusion, consideration concerning teacher quality as a means to narrow gaps in academic performance between the aforementioned student populations will then be given.

Socioeconomic Status (SES)

High stakes testing is often used as a means to determine student achievement, namely to enforce accountability for student success (Akiba, et al., 2007). Disparities

between low-income students and their peers on achievement tests may be instigated by factors related to their socioeconomic status. Variables surrounding low-income students could include attending lower-quality urban schools, receiving fewer resources, and disparities in the home in terms of preparation as compared to their more affluent peers (Baker & Johnston, 2010). Moreover, these students often remain in poverty due to disparities involving educational opportunities (Sandy & Duncan, 2010; Spring, 2010).

Social reproduction theory argues that these disparities may be perpetuated by schools (MacLeod, 1995). Differential treatment is noted, wherein low-income schools employ authoritative measures while those in more affluent areas stress an internal locus of control (MacLeod, 1995). Authoritative environments are indicative of working-class jobs, promoting that standard (MacLeod, 1995). In contrast, an internalized standard of control model prepares students “to boss rather than to be bossed” (MacLeod, 1995).

Baker and Johnston (2010) agree, suggesting that the “United States public schools tend to reinforce the transmission of low SES from parents to children” (p.194). Students who live in an urban district are more likely to come from low-income households and the quality of education for these students is often lacking when compared to more affluent districts (Sandy & Duncan, 2010). Teachers in urban districts often teach classes without proper certification, lack advanced degrees and pedagogical knowledge needed to teach urban students (Sandy & Duncan, 2010). Disparities in education often lead to low-income jobs and low-quality housing (Spring, 2010).

The Title 1 provision, outlined in the No Child Left Behind Act, attempted to solve this inequity by providing additional funding to schools that serve low SES populations (Condrón & Roscigno, 2003). Research regarding increased expenditure per

child and the associated educational benefits varies (Condrón & Roscigno, 2003). A study done by Condrón and Roscigno (2003) reinforces Baker and Johnston's idea, related to the cycle of poverty, discussed in the preceding paragraph.

Acknowledging that additional funds benefit student achievement, Condrón and Roscigno (2003) highlight the disparity in the allocation of Title 1 funds within districts. Title I funds are not explicitly allocated to low-income districts (Sanders, 2008). This may contribute to further disparities in achievement between economically disadvantaged students and their peers as funds are being disproportionately distributed to schools with fewer minority and low SES students. Due to the disparity in the distribution of local resources, federal funds are not able to reverse the inequity between low-income students and their more affluent peers (Condrón & Roscigno, 2003).

Within districts, affluent schools are more likely to receive "better-paid, better-credentialed, and more experience principals and teachers, learn in better-maintained environments, and are the preferred recipients of exciting experimental programs and advanced curriculum" (Darden & Cavendish, 2011, p. 62). High-poverty schools tend to be career starting points for novice teachers who, with experience, are subsequently moved to more affluent schools (Darden & Cavendish, 2011). Further, average teacher salaries are reported for each district which may "effectively mask (often unintentionally) the fact that high-poverty schools pay their teachers less and thus have less experienced and perhaps less effective teachers" (Darden & Cavendish, 2011 p. 65). These within district disparities may allow inequities to continue (Darden & Cavendish, 2011).

Other factors relating to SES could be causing these students to underperform (Baker & Johnston, 2010). Literature examining inequity between the economically

disadvantage students and their more affluent peers has suggested factors within low SES homes that may be reinforcing the achievement gap. “Students from homes or neighborhoods of low SES tend to have less varied formative cultural or academic experiences, less support (financial, academic, technological) and encouragement from home, and less early childhood preparation than their counterparts from middle or upper classes” (Baker & Johnston, 2010, p. 194). Many economically disadvantaged families place less emphasis on the completion of school than those who are more affluent (Baker and Johnston, 2010). This lack of urgency related to educational attainment begins early and seems to continue on past the formative years.

Students from lower income homes are often less likely to be read to, subsequently entering kindergarten with lower reading scores than their more affluent peers (Spring, 2010). Bilvashree, Akshatha, Deepthi, and Narasimhan (2010) examined disparities between low SES and middle SES in their phonological awareness skill development (listening, rhyming, word awareness, phonemic awareness and syllabic awareness). The study found that low-income students were less likely to do well on all tasks (Bilvashree, et al., 2010). This notion was further reinforced by Sandy and Duncan (2010) when they assert that the higher the degree of poverty, the less likely it is for a student to be academically successful.

Mobility

Highly mobile students, or students who move often, are considered at-risk for academic failure and disparities between these students and their counterparts on achievement tests reflect this phenomenon (Isernhagen & Bulkin, 2009). Isernhagen and Bulkin (2009) found a disparity involving achievement on criterion-referenced

assessments between the highly mobile and their more stable peers. Stability has been found to be important in reading and mathematical achievement scores (Mantzicopoulos & Knutson, 2001); wherein students with high mobility rates prior to the third grade fared worse than their non-mobile counterparts (Heinlein & Shinn, 2000).

Since curriculum and pacing of instruction may vary from one school to another (Temple & Reynolds, 2000), students may find that they are either behind or ahead of their peers. These “learning gaps not only make achievement in a new classroom more difficult but can also reduce student motivation” (Isernhagen & Bulkin, 2011, p. 18). In a qualitative study (Rhodes, 2008), highly mobile students were interviewed about the effects of this status. One student explained “A lot of times when you transfer to a different school they can’t match your courses, and sometimes they can, and even if they do, they’re in different places than you were, like in English, they’re reading a different book, or they’ve read three and you’ve only read two” (in Rhodes, p.121). This type of disruption in learning, especially when a student moves during their formative years, makes it more likely that a student will end up repeating a grade (Temple & Reynolds, 2000) and potentially drop out (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008).

Mobility as a predictor of disengagement and subsequent dropout rates may have its roots in the primary grades (Gruman, et al., 2008). These students may not be involved in decisions related to the timing and location of a move, potentially causing feelings of detachment (Gruman, et al., 2008). Students with high mobility may also experience developmental issues due to a disruption in their social and physical environments (Mantzicopoulos & Knutson, 2001). When compared to their more stable peers, these students tend to have fewer meaningful relationships within the school and to socialize

with those who are less academically successful. It may be probable that they will be uninvolved in extracurricular activities and lack academic engagement (South, Haynie, & Bose, 2007). These influences could cause a mobile student to dropout (South, et al., 2007).

The lack of a common curriculum between schools may also influence teachers' attitudes towards mobile students who often view them as being less competent than their more stable students (Mantzicopoulos & Knutson, 2001). Some teachers attribute their inability to teach effectively to having highly mobile students in their classrooms (Isernhagen & Bulkin, 2011). Highly mobile students may present challenges for teachers as they attempt to create informed decisions related to goal-setting (Strand & Demie, 2005). Principals take a similar stance, citing high mobility as a variable affecting student performance and the subsequent failing grades given in terms of AYP (Thompson, Meyers & Oshima, 2011). However, Wright (2001) found that in urban schools, where as many as fifty percent of their students were mobile, teachers taught as though their students would have continuous enrollment.

There have been debates regarding mobility inquiring if it alone causes disparities in achievement between mobile and stable students or if other confounding factors are to blame (Temple & Reynolds, 2000). Mobility is often combined with multiple factors that could be limiting student ability, beginning as early as pre-kindergarten (Mantzicopoulos & Knutson, 2001). For instance, student mobility may be coupled with low SES. Economically disadvantaged students are prevalent in urban districts (Mantzicopoulos & Knutson, 2001; Isernhagen & Bulkin, 2011). These districts tend to provide an inadequate education when compared to more affluent districts (Sandy & Duncan, 2010).

Studies that have controlled for pre-mobility variables have found that mobility does stand alone as a variable negatively affecting student achievement (Gruman, et al., 2008). Thus, a mobile student who is economically disadvantaged may have to contend with issues involving low SES and mobility. Whether it is the association of other confounding factors or the discontinuity in curriculum between schools, there is a disparity in achievement between those who are mobile and their more stable peers (Stand & Demie, 2007).

Gender

Current research suggests that girls may exhibit a higher degree of verbal skills when tested for reading comprehension (Logan & Johnston, 2010). Girls, as tested, also score higher regarding receptive language abilities, general conceptual abilities and nonverbal abilities than boys, all of which aid in the development of literacy skills (Logan & Johnston, 2010). This study suggests that these disparities could increase between kindergarten and the end of first grade as females advance beyond their male counterparts in “ print familiarity, letter recognition, phonological awareness, word recognition, receptive vocabulary, listening comprehension and comprehension of words in context” (p. 179). Consequently, those who have not acquired necessary reading skills by the third grade may never catch up to their peers, academically (Prado & Plourde, 2011). Speculation surrounding this disparity includes determinants related to sociology, biology, and education (Robinson & Lubienski, 2011).

Gender role socialization theory, which examines reinforcements of anticipated gender norms, suggests that parents, teachers, and others could be perpetuating disparities (Robinson & Lubienski, 2011). Boys may be encouraged to engage in more physical

play and to be competitive, whereas girls may be more likely to be socialized into more cultural activities and may be read to more often (Orr, 2011). These differences could carry over into school where the more passive activities in which females are encouraged to engage in are often more indicative of school expectations, which may allow girls to more easily adapt (Orr, 2011).

Teachers are perceived agents of socialization and their expectations may be a significant predictor of student success (Rubie-Davies, 2010); wherein, perceived student ability mirrors student achievement (Robinson & Lubienski, 2011). Teachers often identify males as being less skilled in reading than their female counterparts, which could potentially exacerbate gender disparities (Logan & Johnston, 2010). Thus, low teacher expectations for their male students may increase the likelihood that they will be labeled as having a reading disability, while girls are disproportionately categorized as being gifted in reading (Logan & Johnston, 2010).

Although controversial, literature suggests that genetic factors may influence disparities in reading achievement between the genders (Robinson & Lubienski, 2011). Females may initially have a higher degree of verbal skills that aid in their success in literacy (Logan & Johnston, 2010). Further, “neuroimaging studies suggest that adult males and females display different patterns of functional activation during reading” (Logan & Johnston, 2010, p.176). A girl’s brain, even when at rest, is more active than a male’s (Prado & Plourde, 2011). When presented with a stimulating task, males’ lack of brain activity may cause them to become focused on what they have deemed most important (Prado & Plourde, 2011). This focus may have negative implications in regards

to reading comprehension, subsequently placing boys behind when compared to their female counterparts (Prado & Plourde, 2011).

Intrinsic motivation differences towards reading between males and females may be a contributing factor, as girls are more likely to read than boys, potentially contributing to success in reading comprehension (Logan & Johnston, 2010). Varying interests in types of text read are also cited as a possible reason for disparities between the genders in reading (Logan & Johnston, 2010). Twist and Sainsbury (2009) found that girls ten and up tend to gravitate towards narrative texts more so than boys (85% to 66%, respectively). Further, on a given reading test, girls enjoyed the reading selections included and performed at a higher level than males (Twist & Sainsbury, 2009).

Two approaches to reading instruction have been compared including; (1) analytic-phonics and (2) systematic synthetic-phonics (Logan & Johnston, 2010). The analytic-phonics approach results mirrored other research on gender disparities; girls outperformed boys (Logan & Johnston, 2010). Systematic synthetic-phonics was found to improve reading achievement for boys, producing fewer male underachievers than the analytic-phonics approach. Through the use of synthetic-phonics, scores suggest that boys outperformed girls in word reading scores and matched the girls on scores involving spelling and reading comprehension (Logan & Johnston, 2010). Girls were not negatively affected by the systematic synthetic-phonics approach (Logan & Johnston, 2010).

Teacher Quality

When looking at academic achievement between students who may struggle academically in reading and their peers, it is imperative that we consider possible mitigating effects of teacher quality on factors that contribute to disparities in academic

achievement. A solid definition regarding teacher quality does not exist; however, two categories often emerge in literature, including: (1) classroom effectiveness, and (2) teacher characteristics, professional preparation, and licensing (Heck, 2007). The former focuses on observed classroom behaviors, while the latter qualities look at teacher backgrounds, including such considerations as course work, certification, and whether or not they are assigned to teach a subject that they are properly certified in (Heck, 2007). In this section, I focus on literature that explores teacher quality and its possible relationship to equity in academic achievement. Specifically, literature related to teacher background is discussed.

Teacher qualifications have been used to represent teacher quality and those who are more qualified have been shown to yield academic results (Rice, 2009). These qualifications include such items as holding an advanced degree and being properly certified (Rice, 2009). Teachers with more advanced levels of education have been found to relate positively to reading achievement levels for elementary students (Rice, 2009). However, Croninger, Rice, Rathbun and Nishio (2006) found that teaching subject matter in which one is properly certified may be more significant than holding an advanced degree.

At the elementary level, it was found that having a teacher with an advanced degree does not affect students' achievement (Croninger, et al., 2006) unless it is coupled with teaching within their specialization area (Heck, 2007). Konstantopoulos (2009) suggests that when teachers are specialized in areas that they teach, students are positively affected. Further, Croninger et al. (2006) found that the most effective teachers have a Baccalaureate and a Master's degree in the subject area they teach. Thus,

educational attainment may aid in student success so long as teachers are employed within their specialization area.

Teacher experience has been found to be a circumstantial predictor of achievement (Heck, 2007). For instance, having experience has been shown to have a positive influence on achievement of African American students (Knostantopoulous, 2009). However, “Students taught by veteran teachers with five or more years of experience...have no advantage over students taught by teachers with more than two but less than five years of experience” (Croninger, et al., 2006, p. 320). Experience cannot necessarily be generalized as a predictor of achievement in all situations, presumably because after so many years its effects may level off (Heck, 2007).

The distribution of teachers who possess qualities thought to produce positive academic results is inequitable (Heck, 2007). For instance, teachers who are considered to be effective tend not to gravitate towards high-poverty schools (Baker & Johnston, 2010). When compared to their economically advantaged peers, low-income students are more likely to have teachers with less than three years of classroom experience (Heck, 2007). These same students may be taught by teachers who are not qualified to teach in a given content area or may not be certified at all (Heck, 2007).

CHAPTER III

RESEARCH METHODOLOGY

Data Sources

As mandated by NCLB, the Ohio Department of Education is required to report disaggregated data involving teacher information and student achievement on standardized tests for all Ohio schools; student characteristics (e.g. gender) are disaggregated. This data is used, namely, to determine schools' AYP (Brown, 2010). In the current study, data were used to determine the extent to which teacher quality variables predict equity involving socioeconomic status, mobility, and gender at the school level on the third grade OAA Reading Test.

Data were obtained from the Ohio Department of Education website and include school building data from the 2010-2011 school year for 654 Ohio elementary schools. The data provided the following teacher information data; (1) the percentage of teachers with a Master's degree, (2) the percentage of teachers who are properly certified, (3) the average years of experience, and (4) the average teacher attendance rates, for each of the 654 Ohio elementary schools. Also included were the percentages of passage rates on the third grade OAA Reading Test for student variables, disaggregated as follows; (a) disadvantaged and advantaged, (b) mobile and stable, and (c) male and female, for each

of the 654 Ohio elementary schools (ODE, 2011). Mobile and stable status were originally disaggregated on the ODE website as; (1) Longevity 0, (2) Longevity 1-2, and (3) Longevity 3 or more. The population “Longevity 0” was excluded from the data as there were not sufficient participants in that sub category. “Longevity 1-2” and “Longevity 3 or more” were renamed “mobile” and “stable”, respectively.

Variables and Measures

Independent variables include four factors related to teacher quality.

- Percentage of teachers with a Master’s degree
- Percentage of teachers who are properly certified
- Average teacher attendance rates
- Average years of teaching experience.

Dependent variables included equity in third grade reading passage rate involving socioeconomic status, mobility, and gender. Here equity is operationally defined as the difference (or gap) in passage rates between those who may struggle academically in reading and their respective peers on the OAA Reading Test. The reduction of the passage rate gaps on the OAA Reading Test may help to increase educational capital and equity.

Previous studies that have focused on equity related to economics and demographics have conceptualized sophisticated ways of measuring equity. For instance, Darden, Bagaka’s, and JI (1997) used formulae that allowed for the measurement of dissimilarities between populations in regards to racial residential segregation. The current study utilized a similar but more simplified model to predict equity on the third

grade OAA Reading Test. This formulation of equity is deemed sufficient to create dependent variables which will be analyzed further in the study.

Equity in achievement were formulated by taking the difference between the percentage of passage rates on the OAA Reading Test between students at-risk for academic failure in reading and their peers for each of the 654 Ohio elementary schools. Equity between the economically advantaged and low income students were given by ($G_1 = P_i - Q_i$), where P_i = the percentage of passage rates among economically advantaged students in school i , and Q_i = the percentage of passage rates among low income students in school i . Equity between stable and mobile students were given by ($G_2 = P_i - Q_i$), where P_i = the percentage of passage rates among stable students in school i , and Q_i = the percentage of passage rates among mobile students in school i . Equity between female and male students were given by ($G_3 = P_i - Q_i$), where P_i = the percentage of passage rates among female students in school i , and Q_i = the percentage of passage rates among male students in school i .

Data Analysis

A multiple linear regression model was used to address the following research questions:

1. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving socioeconomic status?
2. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving student mobility status?
3. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving gender?

Included in this model is the reporting of the unstandardized coefficient which will allow the researcher to assess the contribution of these variables to equity. Teacher quality variables that narrow the passage gap on the third grade OAA Reading Test may contribute to equity in reading achievement between student population variables.

CHAPTER IV
RESULTS

General Information

Table 1 presents findings in regards to the overall mean passage rates for the following sub categories; advantaged, disadvantaged, stable, mobile, female, and male for 654 Ohio elementary schools.

Table 1: Overall mean passage rates for categories involving socioeconomic status, mobility, and gender on the OAA Reading Test

Factors	Category	Mean	Standard Deviation
Socioeconomic	Advantaged	88	8
	Disadvantaged	72	15
Mobility	Stable	81	14
	Mobile	73	17
Gender	Female	79	15
	Male	75	18

According to the data, there is a 16% gap in the mean scores between advantaged (those not meeting low-SES qualifications) and disadvantaged (low-SES) students, an 8% gap

between stable and mobile students, and a 4% gap between the genders. It is important to note that passage gaps between schools may vary. School buildings that lack comparable populations (e.g. advantaged and disadvantaged) were excluded from the data. The present study examined the extent to which teacher quality variables predict the passage gap between students who may struggle academically in reading and their peers within schools.

Socioeconomic Status Equity

Table 2 presents multiple linear regression results for the extent to which teacher quality variables predict equity between economically disadvantaged students and their peers on the third grade OAA Reading Test.

Table 2: Regression results for the prediction of SES equity on the third grade OAA Reading Test by teacher quality variables.

Regression Coefficients			
Predictors	Unstandardized	Standardized	P-Values
Attendance Rates	.355	.051	.198
Years of Experience	.068	.019	.671
Properly Certified	-.495	-.161	.000
Masters Degree	-.139	-.161	.000

$R^2 = .064$

Findings suggest that there is a significant negative relationship between both the percentage of teachers with a Master’s degree ($\beta = -0.161$, $p < 0.01$) and properly certified teachers ($\beta = -.161$, $p < 0.01$). These findings reveal that schools with higher percentages of teachers with Master’s degrees and proper certification significantly improve equity

between the economically disadvantaged and their more economically advantaged peers on the third grade OAA Reading Test. With respect to the unstandardized coefficient, for every one percentage point increase of percentage of teachers with a Master’s degree and proper certification, the passage rate gaps between low-income students and their more economically advantaged peers will decrease by 0.139 and 0.495, respectively. However, teacher attendance rates ($\beta = .051$, $p = .198$) and teacher experience ($\beta = .019$, $p = .671$) were not found to be significant predictors of the passage rate gaps between the economically disadvantaged and their more economically advantaged peers on the third grade OAA Reading Test.

Mobile Equity

Table 3 presents multiple linear regression results for the extent to which teacher quality variables predict equity between mobile and stable students on the third grade OAA Reading Test.

Table 3: Regression results for the prediction of mobility status equity on the third grade OAA Reading Test by teacher quality variables.

Regression Coefficients			
Predictors	Unstandardized	Standardized	P-Values
Attendance Rates	.519	.058	.142
Years of Experience	.456	.098	.026
Properly Certified	-.498	-.126	.001
Masters Degree	-.248	-.223	.000

$R^2 = .067$

Findings suggest that there is a statistically significant negative relationship between the percentage of teachers with a Master's degree ($\beta = -.223, p < 0.01$) and the percentage of teachers who are properly certified ($\beta = -.126, p < 0.01$). These findings reveal that schools with higher percentages of teachers with Master's degrees and proper certification significantly improve equity between mobile and stable students on the third grade OAA Reading Test. With respect to the unstandardized coefficient, for every one percentage point increase in percentage of teachers with a Master's degree and proper certification, the passage rate gaps on the OAA Reading Test between mobile and stable students will decrease by 0.248 and .498, respectively. Teacher experience had a statistically significant positive relationship ($\beta = .098, p = .026$). In this case, for every additional year of experience, the passage rate gaps between mobile and stable students will increase by .456. These findings reveal that teacher experience significantly decreases equity between mobile and stable students on the third grade OAA Reading Test. Teacher attendance rates ($\beta = .519, p = 0.142$) were not found to be a significant predictor of equity.

Gender Equity

Table 4 presents multiple linear regression results for the extent to which teacher quality predicts equity between male and female students on the third grade OAA Reading Test.

Table 4: Regression results for the prediction of gender equity on the third grade OAA Reading Test by teacher quality variables

Regression Coefficients			
Predictors	Unstandardized	Standardized	P-Values
Attendance Rates	.088	.009	.829
Years of Experience	-.043	-.008	.855
Properly Certified	-.030	-.007	.866
Masters Degree	.005	.004	.930

R²=.001

Findings suggest that teacher quality variables were not significant predictors of equity on the OAA Reading Test. Teachers with a Master’s degree ($\beta = .004$, $p = 0.930$) and proper certification ($\beta = -.007$, $p = .866$), teacher attendance rates ($\beta = .009$, $p = 0.829$), and teacher experience ($\beta = -.008$, $p = 0.855$) did not predict the passage rate gap between male and female students on the OAA Reading Test.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Conclusions

The study examined the extent to which teacher quality indicators predict equity between students at-risk for academic failure in reading and their peers, within schools, on the third grade OAA Reading Test for 654 Ohio elementary schools. Three categories included were low socioeconomic status, mobility, and being male. In the present study, the operational definition of equity is the difference (or gap) in passage rates between those who may struggle academically in reading and their respective peers. Teacher quality variables including percentage of teachers with a Master's degree, percentage of teachers who are properly certified, attendance rates, and years of experience were examined in regards to the extent to which they predict equity on the third grade OAA Reading Test. The following research questions were addressed:

1. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving socioeconomic status?
2. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving student mobility status?

3. To what extent do school teacher quality indicators predict equity in third grade reading passage rates involving gender?

The percentage of teachers with a Master's degree and the percentage of teachers who were properly certified were significant predictors of increasing equity involving socioeconomic status and mobility, but did not predict equity in regards to gender on the third grade OAA Reading Test. Experience, while not significantly related to equity involving socioeconomic status and gender, was instead found to decrease equity between mobile and stable students. Teacher attendance rates were not found to predict equity involving any of the student population variables.

Discussion

Both the percentage of teachers possessing a Master's degree and proper certification were statistically significant predictors of improving equity for socioeconomic status and mobility on the OAA Reading Test. This is consistent with research that suggests that teacher qualifications (e.g. having an advanced degree) are positively related to reading achievement (Rice, 2009). Previous research also suggests that having earned an advanced degree alone did not improve scores at the elementary level (Croninger, Rice, Rathbun & Nishio, 2006) unless coupled with being properly certified (Heck, 2007).

The percent of teachers with a Master's degree and being properly certified were viewed as independent from one another, both yielding positive results for socioeconomic status and mobility. However, it would not be unreasonable to propose that continuing education in a specific specialization area be used as a qualifier related to the "highly qualified" teacher status. Although teacher quality may not be able to entirely extinguish

disparities involving socioeconomic status and mobility, having an advanced degree and being properly certified may, in the very least, help to minimize inequities in educational achievement between these student populations.

Richards and Ross (2012) report existing achievement gaps between students who may be at-risk for academic failure, including low-income students and their peers. Since having a Master's degree and being properly certified significantly improve equity on the third grade OAA Reading Test for the economically disadvantaged and their peers, one could infer that quality teachers are not being equally distributed. When looking specifically at socioeconomic status, the distribution of quality teachers is inequitable (Heck, 2007). If quality teachers are disproportionately placed in more affluent communities, disparities between low-income students and their peers will persist.

Recent Ohio legislation may require third graders to pass the state reading test before continuing on to fourth grade (Bloom, 2012). The basis for this legislation may be that success in other subjects could be attributed to reading proficiency by third grade (Bloom, 2012). Assuming that quality teachers are disproportionately placed in non-urban affluent communities, this legislation may unintentionally perpetuate disparities between those who are at-risk for academic failure and their peers.

Interestingly, teacher experience was found to decrease equity involving mobility status. This could be related to the observation that many teachers may view mobile students as a hindrance, citing them as a reason for ineffective classrooms (Strand & Demie, 2005). As a result, experienced teachers could, potentially, exacerbate disparities through differential treatment towards mobile students. On the other hand, teachers may not adjust their classrooms to accommodate mobile students by teaching as though all

their students will have continuous enrollment (Wright, 2001). One may also question if experienced teachers become complacent or “out of touch” with current educational trends.

Experience was not significantly related to equity between low-income students and their peers or between the genders. This reinforces the literature that postulates that achievement related to teacher experience is circumstantial (Heck, 2007). As mentioned, any positive effects related to experience may level off, rendering experience beyond more than two years insignificant in regards to achievement (Croninger, et al., 2006).

Teacher attendance rates were not found to be a significant predictor of equity involving any of the variables. The examined literature did not consider teacher attendance as a qualification related to equity in achievement. It is not clear why teacher attendance rates do not narrow passage rate gaps. It may be that teachers leave lesson plans that would enable a substitute teacher to deliver quality instruction in their absence. Other factors, such as peers and school environment could have a greater effect on student achievement than teachers.

The mean passage rate scores for gender and mobility status varied by 4% and 8%, respectively. Although these percentages are slight, schools that did not have both economically advantaged and economically disadvantaged populations were not included in this study. As such, mean results may not be representative of gender and mobile passage gaps as a whole. For instance, mobile students may be more prevalent in urban districts (Mantzicopoulos, et. al, 2011). Urban districts when compared to their suburban counterparts are more likely to have a high population of low-income students (Baker and Johnston, 2010).

Teacher quality variables were not found to be significant predictors of equity on the third grade OAA Reading Test for the genders. As speculated, biological and societal reinforcements may be pivotal influences in regards to disparities in gender achievement (Robinson & Lubienski, 2011). Therefore, it would not make a difference whether students had teachers with advanced degrees or were properly certified as their achievement seems to be dependent on other factors (e.g. genetics and expectations) presented by the influences around them.

Recommendations Based on the Findings of the Study

It is recommended that schools encourage their teachers to pursue advanced degrees and require that teachers teach within their specialization area. Unfortunately, quality teachers are being disproportionately represented in non-urban, affluent communities (Heck, 2007), potentially causing inequities to continue. This has implications for economically disadvantaged and mobile students who are more likely to attend urban schools (Mantzicopoulos & Knutson, 2001; Isernhagen & Bulkin, 2011). In order to increase equity involving socioeconomic status and mobility, teachers with these qualifications would have to be equitably placed in both urban and suburban districts.

It should not be assumed that teachers with experience will contribute to equity. Perhaps the experienced teacher could be evaluated at the same rate as the novice to ensure they have maintained effectiveness. Ongoing professional development for administrators, counselors, and teachers in regards to working with divergent student populations may aid in their ability to work successfully with mobile students.

Students who move frequently are less likely to develop meaningful relationships or to be involved in extracurricular activities (South, et al., 2007). As mentioned, these

associated factors can affect mobile dropout rates (South, et al., 2007). The mobile may benefit from being introduced to their teachers in a personal setting. They can be assigned a like-minded student to introduce them to the new school. Schools may consider educating families about the implications of frequent moves on academic success. Perhaps an online program that addresses this issue could be employed.

Although findings of this study indicate teacher quality does not predict equity for gender, the existing literature suggests that differential treatment may perpetuate gender disparities (Robinson & Lubienski, 2011). As such, teachers should not base teaching and assessment strategies on the assumption that one gender is more capable than the other in a given subject. When teachers have expectations that all their students are capable of succeeding, it may increase the likelihood that they will do so (Rubie-Davies, 2010).

Future Research

With speculation that gaps in achievement between students at-risk to struggle in reading and their peers will persist, it would be advisable to continue to research possible contributors factors of equity in achievement. Researchers have innumerable possibilities regarding factors that may promote equity. They may wish to investigate influences of school environments and relationships with peers on achievement. However, in relationship to the present study, there are specific areas that could be examined further.

As indicated in Table 1, the mean gap between the genders and mobility was 4% and 8%, respectively. The examined data which were examined for the present study did not include low-income schools that lacked economically advantaged populations. As

such, it may be beneficial to examine gender and mobility disparities at low-income schools that were not included in this data.

In addition, further research could be conducted to examine years of teaching experience as it relates to achievement. As mentioned, experience was not found to be a predictor of equity involving socioeconomic status and gender on the third grade OAA Reading Test, but was found to predict the widening of the passage rate gaps involving mobility status. In determining the cause of such influences, informed decisions related to how to improve this disparity can be made. It may be beneficial to study teacher professional development in regards to mobility.

Differential curriculum and pacing of instruction may be detrimental to mobile students (Temple & Reynolds, 2000). Thus, an investigation into a common core curriculum within districts as it relates to academic achievement of mobile students may prove vital. Mobile students who move within districts that have a common core curriculum could be compared to those who move within districts that do not.

Additional studies could examine teacher quality variables and the reasons they were not found to predict equity on the third grade OAA Reading Test for the genders. If biological and societal factors are responsible for disparities in achievement, research into how to moderate these effects in the classroom could aid in educational equity. Perhaps differentiated instruction is needed to accommodate the differences in brain development between the genders.

Further research may investigate if teacher quality variables in this study would contribute to equity between other student groups who may be at-risk to struggle academically and their peers. Additionally, teachers' classroom strategies can be

examined in relationship to student equity. Student-teacher relationships may also be considered as a potential facilitator of success for those likely to struggle in reading.

Research may extend on the present study by examining implications of the “third grade guarantee” on disparities in achievement between those who may have difficulties in reading and their peers. If implemented as planned, researchers may wish to identify groups of students who are more likely to be held back in third grade as a result of the “third grade guarantee”. Teacher quality disparities may also be examined as a potential predictor of repeating the third grade as a result of the legislation.

Limitations of the Study

Schools in this study included elementary schools in Ohio and focused specifically on third grade achievement on the third grade OAA Reading Test. Therefore, the results of this study cannot be generalized beyond third grade reading achievement on the OAA. Further, three student population variables involving socioeconomic status, mobility and gender were highlighted. Since additional student categories exist (e.g. coming from a single family home), one cannot assume that the teacher quality variables in this study will predict equity for all.

Schools in low poverty areas that lack an economically advantaged population were not included in this study. As indicated in Table 1, mean passage gaps involving socioeconomic status, mobility, and gender were 16%, 8%, and 4%, respectively. Passage rate gaps between students who may be at-risk to struggle in reading and their peers within schools may not represent passage rate gap disparities on the third grade OAA Reading Test between schools and student populations.

This study focused on four quantifiable teacher characteristics including; (1) percentage of teachers with a Master's degree, (2) percentage of properly certified teachers, (3) average years of experience, and (4) average attendance rates for each of the 654 Ohio elementary schools. It is important to note that teacher quality can be measured in alternative ways that focus on behavioral characteristics. Various instructional strategies and classroom management techniques may also predict equity in reading achievement.

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