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# Student-Teacher Connection, Race, and Relationships to Academic Achievement

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STUDENT-TEACHER CONNECTION, RACE, AND RELATIONSHIPS TO
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STUDENT-TEACHER CONNECTION, RACE, AND RELATIONSHIPS TO
ACADEMIC ACHIEVEMENT


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Western Michigan University, 2016

Urban, primarily minority and low-SES students continue to lag behind their suburban white non-low SES counterparts in terms of academic achievement. Some previous research suggests that strong bonds between teachers and students help such students succeed. This study therefore sought to investigate any relationships between student-teacher connection, race, and academic achievement.

Student perceptional data on student-teacher connections (i.e., a teacher caring about them) and student achievement data in the areas of math and reading from 3,359 high school students within a large urban Midwestern school district was examined. In addition, the race/ethnicity of both the students and teachers were examined to determine any connections to level of perceived care.

Descriptive statistics revealed that the students in this urban district were performing slightly better than their peers across the nation on the NWEA's MAP math and reading assessment, and that they perceived a slightly positive level of care from their teachers (using the TRIPOD student perception survey). Regression analysis did not show significant findings in the correlation between student-teacher connection and academic achievement. However, it did reveal significant findings related to the student-teacher connection and the race/ethnicity of both the student and the teacher.

Specifically, Black, Hispanic, and non-Black or Hispanic Minority students showed a significant decrease in the perception of care from White teachers.  When they had non-White teachers, Black, White, and non-Black or Hispanic Minority students showed an increase in the perception of care from their teachers, while Hispanic students showed a slight decrease.  Finally, when students were matched with teachers of the same race/ethnicity, White and Black students showed a slight increase in the perception of care from their teachers, while Hispanic and non-Black or Hispanic Minority students showed a decrease.

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CHAPTER I

INTRODUCTION

Students from low SES backgrounds, primarily minority, within urban K-12
school districts are struggling to meet the academic expectations in the United States.
The achievement gap between low-SES students and high-SES students has continued to
grow over the last three decades, and the achievement gap between white and black
students has not decreased at all (Reardon, 2013). While many interventions have been
attempted, the widening achievement gap between these urban learners and their
suburban counterparts is evidence that further interventions are necessary. Urban
students will continue to fall short of societal expectations of academic achievement
unless the educational community finds a better way of connecting with them.

**Problem Statement**

A review of the literature revealed many studies on urban schools, reform efforts,
positive teacher attributes, positive student qualities, and the effectiveness of various
teaching strategies. For example, McHugh, Horner, Colditz, and Wallace (2013) found
that urban students, especially African-American students, gain in the area of academic
achievement when they perceive that their teachers intentionally do things to build a
relationship with them.

Indeed, Hargreaves (1998) found that teaching cannot be over routinized into a set
of scientific steps that lead to success in the classroom. Teaching is an emotional
endeavor that requires not only emotional maturity on the part of the teacher, but also
emotional effort to bring passion to the classroom to get students excited about the
academic endeavor they are going to get involved in. This emotional endeavor also
involves deep connections to students that inspire them to work toward their highest

potential. Without this student-teacher connection, the internal motivation of the student is left to rely solely on the family and other social structures that make up each students social environment (Hargreaves, 1998).

In a similar manner, Holland and Farmer-Hinton (2009) found that students in small school environments or small learning communities feel they have more access to a culture at school that promotes college aspirations. More specifically, these students reported that participating in specific conversations about college with their teachers and counselors because of their higher access to them in a small school, prompted them to have higher aspirations for their futures. When students are put into an environment where they have more access to teachers who care about them, they have increased aspirations.

Such increased aspirations have been shown to predict increased academic achievement. Rothon, Arephin, Klineberg, Cattell, and Stansfeld (2011) found that for all students, having higher future aspirations was a predictor for academic achievement. Their study also found that students from low-SES backgrounds and students from minority groups were less likely to have high academic aspirations. This finding highlights the need for students from these backgrounds to have strong, positive student-teacher connections.

Other research goes on to talk about ways in which to approach educating one set of diverse learners. Nebbitt, Lombe, LaPoint, and Bryant (2009) found that a holistic approach is needed to help improve the academic achievement of low socioeconomic status African American students. Students in these circumstances will benefit from partnerships between schools and the communities that they serve to improve conditions not only in schools for the students, but also the communities themselves. Low-SES

African American students need a powerful student-teacher connection in order to help meet unmet needs that hold them back from reaching their academic potentials.

There are also some specific attributes that can be fostered through positive student-teacher connection. Knight (2004) found that fortitude must be developed to preserver through and overcome adversity through having future aspirations, and is important for diverse populations of students. She also found that teaching diverse students must involve the notion of educating the whole child. This means helping them develop not only academically, but emotionally, and socially as well.

Konishi, Hymel, Zumbo, and Li (2010) found that there is a direct link between student-teacher connectedness and academic achievement. While this is something that is becoming more common knowledge in education, Roorda, Koomen, Split, and Oort (2011) found via their meta-analysis on the topic of student-teacher relationships and academic achievement, that studies are split on whether a positive student-teacher connection makes more of a difference for a student, depending on their race/ethnicity.

In the United States, education is still viewed as the great equalizer. If students from low-SES, primarily minority backgrounds can be inspired to have increased academic aspirations, and be equipped with the tools they need to be successful, the academic outcomes of these students should follow suit (Gorski, 2013). While there is a multitude of available research on urban education, reform efforts, and the impact of different teaching techniques for urban learners, as well as legislative mandates to close the achievement gap (e.g., Balfanz & Mac Iver, 2000; Balfanz, Mac Iver, & Byrnes, 2006; Hanewald, 2011), there is insufficient research specifically on urban high school students' perceived connection with their teachers, and its relationship to academic achievement in a large Midwestern urban K-12 district. My study examined if there are

differences in effect in such student-teacher connection for students from different racial/ethnic groups. My study also explored whether students having the same or different race/ethnicity as their teachers has an effect on how students rate student-teacher connections.

By studying the perceptions of urban high school students regarding student-teacher connections and any relationship to academic achievement using quantitative methods, we can better understand the role of the teacher in urban high schools. This may allow for professional development focused on relationship building, better pre-service teacher preparation, and a greater depth of understanding for teachers in urban settings on the necessary moves they need to make to help urban students pursue greater academic achievement.

## Purpose Statement and Research Questions

The purpose of this study was to examine any relationships between one measure of student-teacher connection, race/ethnicity, and academic achievement, for high school students in an urban, Midwestern K-12 district in the United States. The quantitative measure of student-teacher connection was a measurement of how much a student perceives that a given teacher cares about them. The measure of academic achievement was spring mathematics and reading test results using data from the Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) test. The specific research questions addressed include:

1. To what extent do urban high school students report the level to which there is a student-teacher connection (i.e., teachers caring about them)?

2. To what extent do these urban high school students demonstrate academic achievement in mathematics and reading?

3. To what extent does the students' perceived level of a student-teacher connection correlate to their mathematics and reading test scores: (a) for Math and English teachers and (b) for all teachers?

4. To what extent are there differences in the correlations between the perceptions of student-teacher connections and the mathematics and reading test results as broken down by race/ethnicity?

5. To what extent does having a teacher of the same or different race/ethnicity impact students' reported student-teacher connections?

**Conceptual Framework and Narrative**

My study attempted to explore the relationship between student-teacher connection and academic achievement. While previous studies have demonstrated the positive affect that a positive student-teacher connection has on a students' academic achievement (e.g., Roorda et al., 2011), my study explored this relationship in an urban K-12 school district among high school students. My study differed from previous studies because it focused specifically on 9th through 11th grade students in an urban school, using data from this urban school district that is typically hard for researchers to obtain. This allowed me to discover if a positive student teacher connection makes more of a difference for students from certain racial/ethnic backgrounds, and whether the race/ethnicity of students and teachers makes a difference in such connections.
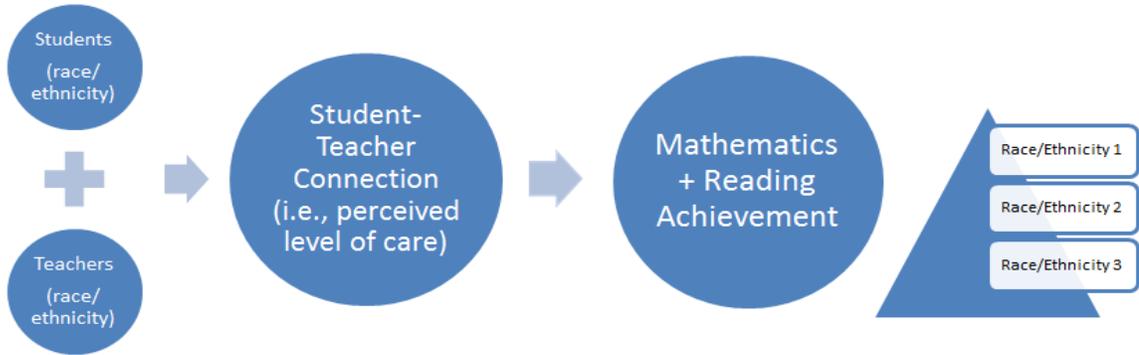
Figure 1. *Conceptual framework of research study* (Mabin, 2015).

Within Figure 1 there are four major components.  The left most circles with students and teachers within them symbolize the interactions that take place between students and teachers of the same or different race/ethnicity.  These interactions could include instruction within the classroom, individual interactions within the classroom, and interactions outside of the classroom.

The second circle from the left symbolizes the connection that can happen between students and teachers.  Students and teachers interact in a variety of ways.  They have interactions that take place between a group of students in the class with the teacher, they have individual interactions with the teacher in the class, and they have other interactions with teachers outside of the classroom.  Noddings (2012) stated that teachers must care for their students.  Teachers show this care through the variety of interactions that they have with their students.  An example of measuring the connection between a student and a teacher is through a students' perceived level of care from a teacher.  For instance, when a student rates a teacher high in terms of how much they perceive a teacher cares about them, they would be said to have a more positive student-teacher connection.

As the diagram moves to the next circle to the right, this represents the level to which students achieve academically.  Roorda et al. (2011), via their meta-analysis of

studies on the impact of student teacher relationships, found that students with better relationships with their teachers did better academically.  In this study I sought to determine if, as students' perceptions of student-teacher connection improved, did it predict an improvement for those students in their academic achievement?

In the final component of Figure 1, there is a triangle with rectangles within it that say race/ethnicity 1, then race/ethnicity 2, and race/ethnicity 3.  Roorda et al. (2011), claimed that it is unknown whether having a positive student-teacher connection makes more of a difference on academic achievement for students from certain racial/ethnic backgrounds.  My study sought to determine if students perceptions of better student-teacher connection had more of an impact for students of certain races/ethnicities.

## Methods Overview

I utilized an ex post facto quantitative design in this study, using information from two existing district-level databases.  The purpose of this design was to determine through inferential quantitative methods if there was a predictive relationship between students' perception of student-teacher connection (as measured by the amount they believe that teachers care about them), and their academic achievement.  Analysis was also conducted to determine if there are differences in the relationship depending on the race/ethnicity of the student and the teacher.

The first of the two data bases contains student perceptional data that is intended to measure various aspects of teacher practice known to be effective for students.  This data is collect twice a year by this urban district to measure the school culture, as well as to contribute to teacher evaluations.  One data element within their data base is how much a student perceives that a given teacher cares about him/her.  Students are asked to rate

one or more teachers each year, with all teachers receiving ratings from at least ten different students each year.

The second data base contains academic achievement data from the Measures of Academic Progress (MAP) test for math and reading. These data are collected in the spring of each academic year to measure the progress of each student from one year to the next.

The combined data set contained two years of data. Each year had academic achievement data and perceptional data from approximately 1,700 students.

In order to explore the data set, descriptive statistics was used. The gender make up, racial/ethnic groups present, and SES levels of the students was all determined in order to get a better understanding of the school district. Next a multiple regression model was built in a hierarchical way. I first built the model with the control variables of student gender, race/ethnicity, and SES. I then added the independent variable of student perceived student-teacher connection (i.e., level of care) from the teachers. In the next step, I then added in the interaction variables between student race/ethnicity and perceived level of student-teacher connection. Finally, I explored the effect of the interaction between student race/ethnicity, teacher race/ethnicity, and perceived student-teacher connection.

**Chapter I Summary**

Students from urban settings continue to lag behind their suburban counterparts in academic achievement. From a social equity perspective, this achievement gap must be closed. A variety of research has been done on urban education, but further exploration was necessary to determine if students' perceptions of student-teacher connection correlated with their academic achievement. It was also necessary to explore if there are

differences in this impact depending on a students' race/ethnicity.  In Chapter II, I summarize the current literature on effects of student-teacher connection, the effects of student-teacher connection and its relationship to academic achievement, and the effects of race/ethnicity on academic achievement.

CHAPTER II

LITERATURE REVIEW

Teachers of students from grades pre-k through 12<sup>th</sup> are not only responsible to present state and federal mandated content knowledge, but are held accountable through yearly evaluations to make sure that students are learning to the best of their ability. While there is a multitude of information on best practices in the classroom to help students learn, as Hargreaves (1998) found in his research, teaching cannot be broken down into a series of steps that will lead to success. While there are some really great scientifically based best teaching practices, teaching, at its core, is about so much more. Teaching involves an emotional connection between teachers and students that ultimately facilitates the teaching and learning process.

While there has been much study of the relationship between student-teacher connection and academic achievement, Roorda et al. (2011) asserted via their meta-analysis of the literature that while it is known that having a positive student-teacher connection does in fact lead to better academic achievement, there are still gaps in the literature on this topic. Specifically, findings are split on whether having a positive student-teacher connection makes more of a difference depending on a students' racial/ethnic background.

In this literature review, I first explore what some of the pertinent literature had to say about the need for student-teacher connectedness and some different effects that such connection has. I explore this from the perspective of the teacher, and then from the perspective of the student. After I explore the need for student-teacher connection, I then review the applicable literature on the relationship between student-teacher connection and academic outcomes as related to students. Finally, I explore what the literature says

about the relationship between student-teacher connection and academic outcomes as related to students from diverse racial/ethnic backgrounds.

## The Need for Student-Teacher Connection

While positive student-teacher connection may be very important for students from grades pre-k through 12th, it is also important for the people who are in the classroom providing the educational services. In most instances, teachers are the ones that initiate the student-teacher connection. It is important to have looked at how this side of the connection happens, and what were some of the effects of such connection.

### Teacher Level

Teaching is an emotional exploit on the part of teachers. Hargreaves (1998) found, via his phenomenological study of 32, 7th and 8th grade teachers using semi-structured interviews, in four school districts in the outskirts of Toronto Canada, that teaching cannot be over routinized into a set of scientific steps that lead to success in the classroom. Teaching is an emotional endeavor that requires not only emotional maturity on the part of the teacher, but also emotional effort to bring passion to the classroom to get students excited about the academic endeavor they are going to get involved in. This emotional endeavor also involves deep connections to students that inspire them to work toward their highest potential. In order to have the energy required to put forth that emotional effort, many teachers need to develop a foundation of beliefs for why they entered the profession, and why they strive each day to make the difference in the life of each child.

One of these motivational factors could be from a social justice perspective. Borrero (2011) found, via his qualitative survey of 20 pre-service teachers at a private university in California, that these pre-service teachers wanted to enter the teaching

profession in an urban area because of a social justice motivation. These pre-service teachers felt that love and care for urban children is a primary need for people who want to work with urban youth. For many teachers, the social justice motivation does not just involve a desire to want to work with their students in their classrooms. It also involves the external environment outside of the school that contributes to the overall development of their students.

Many teachers will need to get to know the environment that their students are coming from, and in many cases want to get involved in these community environments. Goldstein (2002) asserted, via her theoretical article extending Noddings' notions of care in education to the pre-service teacher preparation programs, that pre-service teacher education programs need to help aspiring teachers to become committed to caring about students, develop an intimate understanding of the communities that schools serve, and inspire passion for students and teaching. Sometimes in urban school settings teachers can get frustrated about the progress that they are seeing as a result of the efforts they are exerting.

It is important for these teachers to focus on small measurements of progress, and the little manifestations of improvements as a result of their work. Ayers, Michie, and Rome (2004) found, via their qualitative study of pre-service teachers in the Chicago area, using interviews and observations, that new teachers who survived in urban classrooms had a worldview that focused on winning small victories in the hopes that one day these would sum to a dynamic change in the educational system as a whole. This means these teachers were willing to step out of the norm, to try teaching methods and make connections with students that made a difference. Teaching can never be

compartmentalized into just a job that someone has. It is a career that involves tremendous personal investment.

The understanding of this can be solidified by Noddings. Noddings (2012) asserted, via her article that a person who cares about another is attentive to that person, watches that person, and listens to that person. A teacher must care for their students. In order to create an environment where students can blossom, educators must meet students individual needs, help them gain knowledge, and encourage them to become moral people. In addition, Noddings (2006) claimed, via her theoretical article on caring teachers and leaders that caring teachers not only decipher the needs and wants of their students, but they also act upon that knowledge to help that student learn and develop.

The assertions by Noddings are also on par with another researcher, Brophy (1986), who found via his literature review of empirical research that quality teaching matters. Students with similar backgrounds made more educational gains when teachers did certain things. Among those things that quality teachers did, was make decisions based on the individual characteristics of the students. This requires knowledge for teachers to understand a child down to the personal level.

As an example of how a teacher can impact students through their personalized knowledge of them through a student-teacher connection, Ambady, Paik, Steele, Owen-Smith, and Mitchell (2004) found, via their experimental research of 40 undergraduate female students at Harvard University, that students who were coached on their individuality before taking a math test out performed students who were not. The findings suggest that negative self-stereotypes could be defeated by individuation. This can happen best when there is a strong student-teacher connection between the teachers and their students.

Through student-teacher connection, teachers can seek to understand where students are coming from.  When they do this, they can better help students build resiliency.  Brooks and Goldstein (2008) asserted, via their article linking effective practices of teachers with encouraging resilience within students, that teachers must be empathetic with students, and realize that creating an environment that is not only physically safe, but emotionally and psychologically safe is paramount to encouraging students to be resilient in the classroom.  Resilience has to do with a students' ability to overcome obstacles that would prevent them from being successful.  Hanewald (2011) found, via his literature review of 57 empirical articles written over 40 years, that resilience is the ability of at-risk youth to overcome, sometimes extreme obstacles in order to become successful young adults.  Contributing factors that led to youth developing resilience are factors such as significant supportive relationships with caring adults such as family members, but also teachers and other school personnel, and getting plugged into positive social networks such as church, sports teams, or other clubs.

Time and time again, it has been shown that teachers have the ability to create an environment that helps support students.  Freedman and Appleman (2008) found, via their case study of three pre-service teachers out of the University of California Berkley that teachers have the ability to create classroom environments where students feel respected, valued, and challenged.  Also, when comparing teachers who stay in education to teachers who leave, teachers who stay in education contribute to more positive impact on students they come into contact with.

While teachers can create great environments for students through fostering a positive student-teacher connection, there is also a balance that must be established.  Aultman, Williams-Johnson, and Schutz (2009) found, via semi-structured interviews

with 13 pre-service teachers at a large southeastern university in the United States, that teachers pre-formed ideas about what is and is not appropriate for interactions with students are linked to their identities as teachers. A reoccurring theme of the interviews was that it is important to have balance between developing a caring relationship with students, and maintaining healthy boundaries.

**Student Level**

When considering students in urban K-12 educational environments, typically many of these students come from low-SES, primarily minority backgrounds. Very often these students are dealing with the effects of poverty, and being raised by a parent or parents that are doing their best to just make ends meet. In order to help support these students, and families, school needs to be a place of stability and security for the students. Antrop-Gonzalez (2006) found, via her qualitative constant comparative study of 'school as sanctuary' using observations and interviews of three students in Chicago Illinois, that teachers showed passion not just about their subject area, but also for students themselves, which created a sanctuary-like environment for students where they felt they could obtain success.

In a sanctuary like environment, students feel a sense of belonging. Baumeister and Leary (1995) found, via their literature review on the topic of belonging, that there is substantial evidence that the need to belong is a fundamental motivational factor. Inversely, a lack of belongingness is associated with a negative impact on overall well-being. This need of students creates a huge opportunity for teachers. Teachers therefore can also have an impact on helping students form friendship groups with other students.

When students belong to friendship groups that are positive, they yield positive results. When students are involved in friendship groups where problem behavior is

promoted, students are affected in a negative way. Montague, Cavendish, Enders, and Dietz (2010) found, via their six year longitudinal study of 212 at-risk students from 2001 to 2007, that students who had stronger interpersonal relationships with parents, or other students who were not involved in delinquent behavior, had a much smaller probability of engaging in delinquent behavior than did their peers who did not have these relationships.

The ways in which students chose to interact with teachers also has a large impact on the quality of the student-teacher connection. Sanchez Fowler, Banks, Anhalt, Der, and Kalis (2008) found, via their quantitative study of 230 elementary students and 20 teachers from two schools in a Midwestern urban area, using survey results that students who exhibited more prosocial behavior seemed to have better student-teacher relationships, which also linked with better academic ratings. It was also found, that there was a difference in rating of student behaviors between white and black teachers. This could point to further need to bridge the gap between white teachers and black students. Billings (2009) suggested that students need at least some interaction with teachers that have had similar experiences as them, and may look like them.

Some research suggests that there are personality traits that can help African American students perform better. Teachers who have established a positive student-teacher connection can help foster these for some students, and help others who do not demonstrate these traits overcome adverse effects. Steele-Johnson and Leas (2013) found, via their quantitative study of 719 students at a Midwestern university using an online survey, that certain personality traits in African American students were linked with higher academic achievement. The study found that extroversion and openness were positive correlates with academic success for males, and agreeableness for females.

Impacting students' views of themselves in a positive way is something that many educators strive for. Rudasill, Gonshak, Pössel, Nichols, and Stipanovic (2013) found, via their survey of 113 students between $5^{th}$ and $12^{th}$ grades in a residential treatment center in the southeastern United States, that students who had more positive self-image tended to have more positive student-teacher relationships, and students who had more negative self-image had more negative student teacher relationships. When students do not have positive images of themselves, this has negative results in most areas of their lives. Teachers can impact this.

Murray and Murray (2004) found, via their longitudinal study of 99 students through the survey responses of six teachers in an urban elementary school, that student teacher relationships could be a key factor in helping students who are experiencing social or emotional issues in their lives overcome those problems. Unfortunately, students with these issues were reported as having more negative student-teacher relationships. Once again this points to the need of the student-teacher connection. While connecting with students who naturally connect with teachers is important, connecting with students who struggle to build these relationships is most likely even more vital.

Fostering a positive student-teacher connection can also impact the physical safety of students. Yablon (2010) found, via his survey of 313 elementary through secondary students in public schools in Israel, that students were more likely to seek help when they were facing some form of violence from teachers with whom they had a positive relationship.

While addressing issues of violence is of the utmost importance for teachers to help students with, it is more common for teachers to need to intervene in situations that

cause students to not succeed academically. Ripple and Luthar (2000) found, via their survey of 163 students in an inner-city high school in the United States that the biggest predictors of student dropout rates where previous absenteeism, and poor academic performance. These findings suggest that early signs of academic distress are strong correlates of later failure. This would suggest that early detection, and interventions are necessary. When teachers recognize students with truancy issues, and poor academic performance, targeted interventions are necessary in order to change the trajectory of that student's life. When a strong student-teacher connection is present, both the teacher and student are more likely to work together to mitigate these issues.

It also comes as no surprise that students who are more naturally inclined toward academic success, conflict less with their teachers. Kesner (2005) found, via his survey of 257 teachers of either gifted or non-gifted students that gifted students showed less conflict with teachers than did their non-gifted counterparts. Overall, it was found that comparable levels of closeness were found between teachers and students who were gifted and non-gifted. The research suggests that for all students, a close student-teacher relationship helps in the development of both academic and non-academic factors in students.

Coming into school, statistics show that minority students are at a disadvantage to their white counterparts. Roderick, Nagaoka, and Coca (2009) found, via their analysis of national level data collected by the National Department of Education, that minority students in the United States are significantly less likely to get into, and to complete college than their white counterparts. Teachers with knowledge of a student's background are in a uniquely strategic position to help minority students develop a vision

of college as a viable component of their future plans, and help them develop the tools and drive to get there.

## Student-Teacher Connection and Outcomes

Having a positive student-teacher connection has been shown to impact many things for students. This connection has been shown to increase engagement, aspirations, the feeling of emotional safety, impact physical safety, and so much more. In the next step, I explored how student-teacher connection impacted various student outcomes.

Holland and Farmer-Hinton (2009) found, via their survey of 9,723 students in Chicago Public Schools, that students in small school environments or small learning communities feel they have more access to a culture at school that promotes college aspirations. More specifically, these students reported that participating in more specific conversations about college with their teachers and counselors because of their higher access to them in a small school, prompted them to have higher aspirations for their futures. Noted above, increased aspiration is directly tied to increased achievement.

After considering a spectrum of teaching practices Cooper (2014) found, via her survey of 1,132 students, grades 9th through 12th at Riley High School, in Riley Texas, that connective instruction had the most impact on engagement in the classroom. Connective instruction is a component of teaching that helps students create connections to the class. This is in reference to both content, and relationship with the teacher.

The idea that students will like something more when their psychological needs are being met is not rocket science. If someone comes into an environment where they feel cared for and encouraged, they are more likely to do well in that environment. Hallinan (2008) found, via his survey of 35,132 6th, 8th, and 10th grade students in public and catholic schools in Chicago, Illinois, that students who like school better, perform

academically better than students who do not.  The study showed that when teachers praised, showed care for, and respected their students, it helped the students take more satisfaction from school.

It is also important to help students become engaged.  Klem and Connell (2004) found, via their survey of 4,276 elementary and secondary students, that supportive teachers are an important factor in creating student engagement.  Engagement has been shown to be a high level predictor of student academic success regardless of the socioeconomic status of the students, as well as a predictor of long term negative behaviors.  Students from all levels of elementary and secondary schooling reported positive affects when having a supportive teacher.

Once again, the effects of student-teacher connection are confirmed to be positive. Martin and Dowson (2009) found, via their literature review of interpersonal relationships and their effect on student motivation, academic achievement, and engagement, looking at several overarching psychological theories that students need to feel connected to their teachers in order to be engaged and motivated to be successful in the classroom.

Shifting to a specific environment, urban settings tend to have more at risk students than their suburban counterparts.  Bethea and Robinson (2007) found, via their case study of ten at-risk students and three educators in New York City, that having small classes sizes, helping students build relationships among each other, and nurturing caring environments helped build resilience in these students.  Resilience is defined as the ability for at-risk students to overcome adversity and become successful as young adults. The students in this study claimed that the feeling that the staff at this school sincerely cared about them had a direct impact on their success in the school.

Having more access to teachers seems to be a contributing factor for students to be able to form better connections with them. This seems to be a natural conclusion given that it takes time to form caring connections, and if a teacher has fewer students, they will be able to do that more easily with more of them. Fenzel and Domingues (2009) found, via their survey of 322 students in two urban catholic middle schools, that the school that provided for smaller class sizes leading to better student-teacher relationship was a contributing factor to the better academic outcomes at one of the two schools. Students said that when teachers were able to give them more attention, they were able to learn better.

Students respond to being given attention. Johnson (2009) found, via his mixed methods study utilizing survey results from a large urban comprehensive high school and a small innovative high school and semi-structured interviews of ten students and five teachers from a small innovative high school in an urban area, that students in the small school felt that at least two teachers showed interest and concern for them, cared about them, and tried to motivate them to be successful. This was in direct contrast to the survey results from the comprehensive high school, where most students reported that zero teachers, or one teacher cared about them. The data that was gathered also supported the claim that greater learning was happening in the small school environment.

Direct links have been shown between student-teacher connection and academic achievement. Konishi et al. (2010) found, via their survey of over 27,000 15 year old students, and 1,000 staff in Canada, that student-teacher connectedness increased academic achievement in math and reading for both boys and girls. It was also found, that positive student-teacher relationships helped mitigate some of the negative effects that bullying can have on student academic achievement.

A study in urban schools agrees with the overall body of research. McHugh, Horner, Colditz, and Wallace (2013) found, via their qualitative study using focus groups at three urban schools across the United States with 78 participants, that one of the biggest factors that students appreciated about their teachers were when their teachers intentionally did things to make a connection with them. Students felt that these connections helped push them on toward success in school.

Some students just want to perceive that teachers are fair in their treatment of themselves, and their peers. Peter, Kloeckner, Dalbert, and Radant (2012) found, via their survey of 1,665 students, grades nine through eleven in an urban area in Germany, that students who viewed their teachers' behavior toward them to be just, achieved better academic results than students who did not. They claimed that students' feeling of how justly they have been treated in the classroom is a key component of a successful academic environment. This is definitely an ingredient to a successful environment for students, but there can be many factors.

Some schools do many things well. Having an engaged teaching staff that deeply cares about students is definitely a component a good school can do well. Pressley, Raphael, Gallagher, and DiBella (2004) found, via their case study of one school serving lower socio-economic urban students in Chicago, in which they did questionnaires, observations, and document analysis, that this school was producing students who were finding long term success for a compilation of reasons. Some of these reasons include a stable, caring, engaged teaching, administrative, and support staff, development of the student as a whole, and real tangible celebration of success.

When looking at studies from across time, and the world, Roorda et al. (2011) found, via their meta-analysis of 99 studies that included 129,423 students from

elementary through high school, that positive student-teacher relationships had the most positive impact on achievement for older students in the K-12 system, while negative student-teacher relationships were the most detrimental on achievement for younger students. The effects of positive student-teacher relationships were especially impactful for lower socioeconomic students.

At-risk students sometimes have specific needs that need to be met in order to help them move forward. DiCintio and Gee (1999) found, via their quantitative study using multiple surveys of six at-risk youth in an alternative setting school for expelled students, that when students felt that they had control over some or most of their learning objectives that their motivation increased. Creating an environment where student motivation was a central focus resulted in meeting each student's individual needs and increased motivation for them.

In urban settings, teachers have a tremendous opportunity to make a difference. Samel, Sondergeld, Fischer, and Patterson (2011) found, via they longitudinal case study of 346 secondary students from a Midwestern metropolitan city, that schools and teachers play a vital role in helping urban youth to develop resilience toward working toward graduation, and a post-secondary educational experience. If teachers focus on increasing their rapport with students, and developing better instructional skills, it helps lower the amount of resistance at-risk students have toward graduation.

Thus far, the research indicated that having a positive student-teacher connection does indeed have a positive effect on many factors that lead toward academic achievement. While this is important, there have been contradictory results when examining if having a positive student-teacher connection makes more of a difference for a student, depending on their race (Roorda et al., 2011). A positive way to frame this is

by examining if having a positive student-teacher connection makes a bigger difference on academic achievement for students from certain racial/ethnic groups.

## Student-Teacher Connection and Race

### Urban Students

Many students in urban K-12 settings are from minority backgrounds. While in the United States this could mean a multitude of things, these minority groups primarily center on African American students, and Hispanic students. Knight (2004) found, via her case study of one pre-service African-American female teacher, that fortitude must be developed to preserve and overcome adversity through having future aspirations, and is important for diverse populations of students. She also found that teaching diverse students must involve the notion of educating the whole child. This means helping them develop not only academically, but emotionally, and socially as well.

The schooling of urban students is not limited to an academic focus, but is about helping them develop a multitude of skills and behaviors that may be different than what they have learned at home, in order to help them succeed later in life. Nebbitt et al. (2009) found, via their survey of 238 African American students living in three different low income housing complexes in a large Midwestern city, that a holistic approach is needed to help improve the academic achievement of low socioeconomic status African American students. Students in these circumstances will benefit from partnerships between schools and the communities that they serve to improve conditions not only in schools for the students, but also the communities themselves.

Many times when teachers and students come from different racial or SES backgrounds, there can be an immediate disconnection between them. Thomas and Stevenson (2009) found, via their literature review of teacher expectations and academic

achievement, that there is a strong correlation between teacher expectations and standardized test scores.  Of particular interest is the effect on African American male students, which seem to suffer the most extreme effects on scores when exposed to negative or low expectations from their teachers.

There are some specific desires that diverse students want to be met from their teachers, especially when the teacher comes from a different background than their own. Douglas, Lewis, Douglas, Scott, and Garrison-Wade (2008) found, via their qualitative study of eight black 10th to 12th grade students using retrospective interviews in northern Colorado, that the biggest desire of black students from white teachers is respect. Students felt that in order to get respect, a teacher must give it.  These students believed respect was the start for a good relationship between a teacher and students.

In addition to content knowledge and pedagogical knowledge, teachers must bring a repertoire into their classrooms that include knowledge on how to form positive connections with all of their students.  Some of these relationships will be more difficult to form than others, but the positive effects of them can be huge.  Hughes (2010) found, via his review of the literature about African American students, and first-hand experience working with gifted African American males, that African American male students need to be actively engaged by faculty, administration, and other staff in a positive way.  They need to be treated with respect, and held accountable to high standards.  These students need to be pushed to be involved in student organizations, and encouraged to take leadership roles.

**Urban Students and White Teachers**

Some research indicates that students learn better from teachers who are racially matched with them.  Crosnoe, Kirkpatrick-Johnson, and Elder Jr. (2004) found, via their

quantitative study using data from the National Longitudinal Study of Adolescent Health from 1994, that all groups of students across gender, race, and SES showed better academic outcomes and less behavioral problems when they reported better student-teacher relationships. Two interesting relationships that emerged were the contributing factors of lower SES and high matching of racial groups between students and teachers having a higher correlation with better student-teacher relationships.

Some minority students just do not feel connected to white teachers. Cooper and Miness (2014) found, via their case study of 33 students using semi-structured interviews, who had taken part in a larger survey study at Riley High school, in Riley Texas, that minority students were much more likely to report the absence of teacher care from white teachers, than white students. While teacher care was closely linked to student engagement, the disconnection between white teachers and minority students is something that warrants further investigation.

Roorda et al. (2011) found, via their meta-analysis of 99 studies that included 129,423 students from elementary through high school, that positive student-teacher relationships had the most positive impact on achievement for older students in the K-12 system, while negative student-teacher relationships were the most detrimental on achievement for younger students. The effects of positive student teacher relationships were especially impactful for lower socioeconomic students. In addition to these findings, Roorda et al. also asserted that research is split on whether having a positive student-teacher connection makes more of a difference depending on the race of the student. Studies are conflicted when it comes to whether a positive student teacher connection makes more of an impact on academic achievement depending on the race of the student.

## Chapter II Summary

In this review of the literature there were several concepts that have been covered. The need for a positive student-teacher connection has been shown. Student-teacher connection has been shown to have effects on teachers and students alike. While teaching is the role of an adult, it has also been shown to be an emotional exploit that can be invigorated by a positive student-teacher connection. Teachers come to work with different sources of motivation. Seeking social justice for all children is a reason that inspires many teachers. In order to stay in education, teachers in urban settings must focus on winning small victories. Having a deep understanding of students can be a tool to help accomplish this.

For students, having a positive student-teacher connection has been shown to impact their level of aspirations, resiliency, help them feel respected, valued, and challenged, and given students a feeling of belonging. In addition, positive student-teacher connection has been shown to have a positive impact on student self-image, physical and psychological safety, and overall well-being.

Having positive student-teacher connection has also been shown to have positive effects on academic achievement. While this is good news, there are still some disconnections. For instance, there is still an achievement gap for minority and low-SES students. In the research, there was an indication of an issue between white teachers, and minority students. While having positive student-teacher connection has been found to have a positive effect on academic achievement overall, it was still unknown on whether or not it makes more of a difference for students from certain racial backgrounds.

CHAPTER III

METHODS

In this chapter I discuss the research design, population, instrumentation, data collection methods, and limitations of my study. This study was based on data provided to the researcher by a K-12 school district located in an urban area in the Midwest United States. At the end of the chapter I provide a cross walk table that easily allows readers to match the research questions, data sources, measures/variables, and statistical analysis.

**Research Design**

In order to address my research questions, post-hoc data analysis was performed on two merged data sets that were collected and managed by a large urban district, and for which I, as the researcher, had access. An ex post-facto quantitative design allowed for the linking of two quantitative data sets that contained data on the same urban high school students, in order to examine if there were significant correlations between the independent and dependent variables (Creswell, 2014). The first data set contained student perceptional data on student-teacher connection, as measured by students' perceived level of teacher care. The second data set was a measurement of student academic achievement obtained by students taking the NWEA Measures of Academic Progress (MAP) test. Also, included in these data sets was demographic data on both the students, and their teachers.

**Population, Sample and/or Site**

Survey results, demographic, and academic achievement data was collected by a K-12 school district located in an urban area in the Midwest United States. The school district contains approximately 17,000 students, with about 3,500 high school students. Approximately 86% of the population receives free or reduced lunch; 38% of the high

school students are African-American, 41% are Hispanic, and the remaining 21% are White or Other.  The high school students attend one of seven high school programs in the school system.  From the year 2000 through 2013 the school district had been losing 400 to 800 students annually.  In 2014, the number of students in the district had stabilized at around 17,000.

## Instrumentation

### Tripod Survey

The Tripod student perceptions survey is a nationally norm based survey designed to measure students' perceptions about aspects of their teachers' actions that have been shown to be best classroom practices.  There are seven major student perception categories that are measured by the survey, which include: control, care, challenge, captivate, confer, consolidate, and clarify.  The data for my study was extracted from the "care" section of the survey.

The Tripod survey was developed by Dr. Ronald Ferguson of Harvard University with a team of teachers in 2001.  It has developed into an instrument that is used all across the nation, and is considered the best instrument of its type for measuring student perceptions about teachers (Tripoded, 2015).

According to Tripod's website, over 100,000 teachers have been given useful feedback from millions of students who have taken the survey to provide them this information.  The survey has been used in a wide variety of districts from small rural districts to massive urban ones.

There have been 18 generations of the Tripod survey.  It has been continuously improved through peer-reviewed research findings, use in the field, and suggestions from the students and educators who use them.  To date, the Tripod survey is the only

classroom-level survey that has been validated by the Measures of Effective Teaching project (Tripoded, 2015).

For the school district from which data for my research is being drawn, the survey is administered twice a year for each teacher. The survey is administered in a way whereby different students rate different teachers, with at least 10 to 15 students rating each teacher. The purpose of this practice is two-fold. The first is to determine students' perceptions in their classrooms at the beginning of the year for a given teacher, and then again at the end. This allows teachers to see their strengths and areas in which they can improve. At the end of the year, after students have again rated the same teacher, that teacher can see how students perceive the teacher is doing in the different areas of measurement and if she or he has improved. Each teacher's spring rating is factored in to be 5% of their yearly evaluation. For the purposes of this study, the spring data for years 2014 and 2015 was used to determine the students' perceived level of care from their teacher.

**NWEA MAP Test**

The NWEA MAP test is a computer adaptive assessment designed to measure student learning. This includes gaining information on what the student currently knows, what they are ready to learn, and how they have grown.

NWEA stands for Northwest Evaluation Association. This began in 1973 as a group of researchers and educators who wanted to create a better way of measuring students' educational growth. MAP stands for Measures of Academic Progress. It is a test created by NWEA for measuring academic growth and level.

NWEA started as a group that included 14 school districts. It has now grown to include over 7,400 educational organizations around the world. The scale that NWEA

uses to measures results from the MAP test is designed to consistently measure a student's academic growth.

The MAP test is designed for students from K-12. It has tests in reading, language usage, mathematics, and other areas. While each test is untimed, it takes most students around an hour to complete each section. Each test is valid because it is designed to only measure specific learning goals that are clearly articulated. NWEA claims that each assessment has high reliability because of its adaptive natures. A student who takes the same subject test over will be measured in their progress each time (NWEA, 2015).

For the school district on which this research is based, the MAP test is given in reading and mathematics in grades 9-11 each year in the spring. The results of these spring assessments are used in many ways. It is first used to show the students how much they have grown in these areas over the last year. It is also used for the students to show how they compare to students across the country in their same grade level. The MAP reading scale measures students' level on a scale from 160 to 230. While scores are possible outside of this range, diagnostic information for the student is significantly diminished outside of it. The MAP mathematics scale measures students' level on a scale from 130 to 250. Similar to the reading scale, other scores are possible, but the specific feedback they indicate for the student is limited (NWEA, 2015). The MAP test result reports give teachers key areas on which they can help each student grow academically. Finally, student growth based on the MAP test results is used as a percentage of teacher evaluations.

The MAP test data that was specifically used in this study is called the Conditional Growth Index (CGI). A students' CGI in math or reading is a standardized

score measuring how much a given student grows in math or reading compared to other students in the same grade level across the nation who started out with the same math or reading score. CGI is expressed as standard deviation units with a mean of 0. Students who grow in the areas of math or reading more than their peers have a positive CGI, and students who grow less than their peers have a negative CGI. For instance, a student with a CGI score of 1.0 is said to have grown one standard deviation more than the mean of their peers starting with the same MAP test score, in the same grade level (NWEA, 2015).

## Data Collection Procedures

The survey and academic achievement data were collected by the cooperating district and stored in two data sets. For my study, the data contained results from the 2013-14 and 2014-15 school years. The two data sets were merged and de-identified by the cooperating district into one SPSS data file. The district then ran the descriptive statistics requested by me. The district then sent the data file to an outside statistical analyst to run the needed inferential statistical tests, who then sent the aggregate data from the inferential statistical tests to me. This was done to ensure complete confidentiality of the data set. This research was deemed to be non-Human subject research, and was therefore exempt from that review (see Appendix A).

## Data Analysis

In order to analyze the data and address the research questions, descriptive and inferential statistics was performed. Descriptive statistics was performed on the data set as a whole to determine the proportions of the gender, race/ethnicity, SES, and CGI scores in math and reading. In addition, teacher race/ethnicity was explored to address the final research question.

After the data set was thoroughly explored using descriptive statistics, inferential statistics were utilized to explore the relationship between student-teacher connections (as measured by a students' perceived level of care) and academic achievement, when controlled by gender, race/ethnicity, and SES. This inferential analysis was done using a multiple regression, built in a hierarchical way. First, gender, race/ethnicity, and SES was used as independent variables to measure the impact on a students' CGI in math and reading. Next, the students' rating of their perceived level of student-teacher connections was added to the model. Third, for the regression part of the analysis, interaction terms comprised of the connections between student race/ethnicity and rating of student-teacher connection was added to the model. Finally, a separate multiple-regression was run with student race/ethnicity and teacher race/ethnicity as the independent variables, and student-teacher connection as the dependent variable to explore the final research question. Please refer to Table 1.

Table 1

*Cross Walk Table*

| Research Questions | Data Sources | Measures/Variables | Statistical Analysis |
|---|---|---|---|
| To what extent do urban high school students report the level to which there is a student-teacher connection (i.e., teachers caring about them)? | Tripod Student Perceptions Survey | <u>Independent Variable</u>: Students' perceived level of student-teacher connection | Descriptive statistics |
| To what extent do these urban high school students demonstrate academic achievement in mathematics and reading? | Measures of Academic Progress test results. | <u>Independent Variable</u>: Students' CGI scores in math and reading | Descriptive statistics |
| To what extent does the students' perceived level of a student-teacher connection correlate to their mathematics and reading test scores: a) for Math and English teachers and b) for all teachers? | Merged Tripod and MAP data sets | <u>Independent Variables</u>: gender, race/ethnicity, SES, student perception of student-teacher connection. <u>Dependent Variable</u>: Student CGI scores in math and reading | Multiple Regression |
| To what extent are there differences in the correlations between the perceptions of student-teacher connections and the mathematics and reading test results as broken down by race/ethnicity? | Merged Tripod and MAP data sets | <u>Independent Variables</u>: gender, race/ethnicity, SES, student perception of student-teacher connection, and interaction between race and student-teacher connection. <u>Dependent Variable</u>: Student CGI scores in math and reading | Multiple Regression with interaction terms |
| To what extent does having a teacher of the same race impact a students' reported level of care? | Merged Tripod and MAP data sets | <u>Independent Variables</u>: student race/ethnicity and teacher race/ethnicity <u>Dependent Variable</u>: student-teacher connection | Multiple Regression with interaction terms |

**Limitations and Delimitations**

This study is limited by the fact that the data sets were collected from one urban

district in the Midwestern United States, and therefore the findings are not generalizable

to the entire population of the United States. Also, one major limitation is that the only measurement of student-teacher connection is the students' rating of their belief if a teacher cares about them. Previous research has revealed many other facets to student-teacher connection, but for the purpose of this study, only one could be measured.

## Chapter III Summary

In order to address the research questions post-hoc data from two instruments was collected from one Midwestern Urban K-12 school district with approximately 18,000 students. Specifically, the data was analyzed from the high school division which contains approximately 3,500 students and 175 teachers. Descriptive and inferential statistical procedures were utilized.

CHAPTER IV

RESULTS

My study sought to measure the extent to which student-teacher connectedness is related to academic achievement.  It also sought to determine what influence the race/ethnicity of the student, the race/ethnicity of the teacher, and the interplay between these two factors has on student-teacher connectedness and academic achievement.  The research questions that were posed for this study were as follows:

1.  To what extent do urban high school students report the level to which there is a student-teacher connection (i.e., teachers caring about them)?

2.  To what extent do these urban high school students demonstrate academic achievement in mathematics and reading?

3.  To what extent does the students' perceived level of a student-teacher connection correlate to their mathematics and reading test scores: (a) for Math and English teachers and (b) for all teachers?

4.  To what extent are there differences in the correlations between the perceptions of student-teacher connections and the mathematics and reading test results as broken down by race/ethnicity?

5.  To what extent does having a teacher of the same or different race/ethnicity impact students' reported student-teacher connections?

To address these research questions, I obtained aggregate statistical results from a large urban K-12 school district in the Midwestern United States.  The results were obtained via the analysis of a data set that was created from the merger of two years of student academic achievement data in the areas of mathematics and English as measured by the NWEA's MAP tests from the springs of 2013 and 2014, as well as student

perceptional data regarding students' perceived level of care from their teachers as measured by the TRIPOD student perception survey from the springs of 2013 and 2014.

### Description of the Population

The total number of high school students included in the data set reported by this large urban K-12 Midwestern school district was 3,359 students. This number is smaller than originally projected primarily because I was informed by the school district that 12th grade students do not take the NWEA's MAP test. Therefore, only students in grades 9th through 11th were included in the data set. Of the 3,359 students, 1,506 students were in the 9th grade (44.8%), 1,103 students were in the 10th grade (32.8%), and 750 students were in the 11th grade (22.3%).

Out of the 3,359 students, 1,723 students were female (51.3%), and 1,636 were male (48.7%). In the school district, seven different racial/ethnic backgrounds were reported by the students: 66 students reported as Asian (2%), 1,328 students reported as Black (39.5%), 1,152 students reported as Hispanic (34.3%), 19 students reported as Native American (0.6%), 203 students reported as Mixed Race (6%), five students reported as Phillipino (0.1%), and 586 students reported as White (17.4%).

In terms of socio-economic status, there were three categories reported in the data set: high, middle, and low. Of the 3,359 students 231 students were reported as high SES (6.9%), 507 students were reported as middle SES (15.1%), and 2,621 students were reported as low SES (78%). Table 2 gives the student demographic data.

Table 2

*Student Demographic Data (n = 3359)*

| Demographic | Number of Students |
|---|---|
| Grade Level | |
| 9th | 1,509 (44.8%) |
| 10th | 1,103 (32.8%) |
| 11th | 750 (22.3%) |
| Gender | |
| Female | 1,723 (51.3%) |
| Male | 1,636 (48.7%) |
| Race/Ethnicity | |
| Asian | 66 (2.0%) |
| Black | 1,328 (39.5%) |
| Hispanic | 1,152 (34.3%) |
| Native American | 19 (0.6%) |
| Mixed Race | 203 (6.0%) |
| Pilipino | 5 (0.1%) |
| White | 586 (17.4%) |
| Socioeconomic Status | |
| High | 231 (6.9%) |
| Middle | 507 (15.1%) |
| Low | 2,621 (78%) |

The number of teachers represented in the data set was 207. Of these, 127 were reported as female (61.4%), and 80 were reported as male (38.6%). In terms of racial/ethnic background of the teachers, six were reported as Asian (2.9%), 11 were reported as Black (5.3%), eight were reported as Hispanic (3.9%), one was reported as Native American (0.5%), and 181 were reported as White (87.4%).

For the reported teachers, they were divided by the district into three categories in terms of subjects taught. The categories include Math, English, and Other. For the 207 teachers, 29 were reported as teaching math (14%), 30 were reported as teaching English (14.5%), and 148 were reported as teaching other (71.5%).

Table 3

*Teacher Demographic Data (n = 207)*

| Demographic | Number of Teachers |
| --- | --- |
| Gender | |
| Female | 127 (61.4%) |
| Male | 80 (38.6%) |
| Race/Ethnicity | |
| Asian | 6 (2.9%) |
| Black | 11 (5.3%) |
| Hispanic | 8 (3.9%) |
| Native American | 1 (0.5%) |
| White | 181 (87.4%) |
| Subject Taught | |
| Math | 29 (14%) |
| English | 30 (14.5%) |
| Other | 148 (71.5%) |

## Analysis of Questions

### Research Question 1

Research Question 1 examined to what extent urban high school students reported the level to which there is a student-teacher connection (i.e., teachers caring about them).

In order to address this research question student perceptional data from the TRIPOD student survey was analyzed from the springs of 2013 and 2014. Students

scored teachers on a one through five Likert scale, with one being the most unfavorable response and five being the most favorable response. Table 4 presents the descriptive statistics for care scores from all 3,341 students in the data set which represents scores about 207 teachers.

Table 4

*TRIPOD Teacher Care Scores (n = 3,341)*

|  | Mean | St.Dev. | Median | Mode | Min | Max | Range |
|---|---|---|---|---|---|---|---|
| Care | 3.5964 | 0.9317 | 3.6666 | 3.0000 | 1.0000 | 5.0000 | 4.0000 |

Note: 1 = very unfavorable; 2 = unfavorable; 3 = neutral; 4 = favorable; 5 = very favorable

The descriptive results show a slightly positive favorable rating by students of their teachers with a mean care score of 3.5964, and a median of 3.6666. The standard deviation result of 0.9317 shows that the average student care rating varied from slightly negative to very positive.

Female and male students reported slightly different care scores. Females reported a mean care score of 3.6121, with a standard deviation of 0.9483. Male students reported a mean care score of 3.5798, with a standard deviation of 0.9317.

When breaking down care scores within the data set by race/ethnicity, the results are as follows: Asian students reported a mean care score of 3.6566, with a standard deviation of 0.9194; Black students reported a mean care score of 3.6146, with a standard deviation of 0.9250; Hispanic students reported a mean care score of 3.5517, with a standard deviation of .9063; Native American students reported a mean care score of 3.4035, with a standard deviation of 0.9466; Mixed students reported a mean care score of 3.6117, with a standard deviation of 0.9585; Pilipino students reported a mean care

score of 3.4667, with a standard deviation of 0.5578; and White students reported a mean

care score of 3.6382, with a standard deviation of 0.9878.

When breaking down the care scores in the data set by SES, the results are as

follows: High SES students reported a mean care score of 3.6472, with a standard

deviation of 0.9893; Middle SES students reported a mean care score of 3.5688, with a

standard deviation of 0.9161; and Low SES students reported a mean care score of

3.5972, with a standard deviation of 0.92955.

Table 5 shows the mean care scores and standard deviations for the students in the

data set as broken down by the various student demographics.

Table 5

*TRIPOD Teacher Care Scores by Student Demographics (n = 3,341)*

| Demographic | Mean | Standard Deviation |
|---|---|---|
| Gender | | |
| Female | 3.6121 | 0.9483 |
| Male | 3.5798 | 0.9138 |
| Race/Ethnicity | | |
| Asian | 3.6566 | 0.9194 |
| Black | 3.6146 | 0.9250 |
| Hispanic | 3.5517 | 0.9063 |
| Native American | 3.4035 | 0.9466 |
| Mixed Race | 3.6117 | 0.9585 |
| Philipino | 3.4667 | 0.5578 |
| White | 3.6382 | 0.9878 |
| SES | | |
| High | 3.6472 | 0.9893 |
| Middle | 3.5688 | 0.9161 |
| Low | 3.5972 | 0.9296 |

Note: 1 = very unfavorable; 2 = unfavorable; 3 = neutral; 4 = favorable; 5 = very favorable

**Research Question 2**

Research Question 2 examined to what extent these urban high school students

demonstrated academic achievement in mathematics and reading.

To address this question student achievement scores in math and reading were examined. Student math and reading achievement scores were measured by the NWEA's MAP tests taken by the students in the springs of 2013 and 2014. The specific measurement of each student's academic achievement was given by the NWEA's Conditional Growth Index (CGI) score, which is a standardized metric that measures each student's academic growth compared to their peers in the same grade level across the United States that began the year academically achieving at the exact same point, as measured by the same test. Table 6 presents the descriptive statistics for CGI scores in math and reading for all students in the data set.

Table 6

*CGI Scores (All Students)*

|  | Mean Growth | St.Dev. | Median | Min | Max | Range |
|---|---|---|---|---|---|---|
| Math | 0.0281 | 1.0450 | 0.0700 | -6.85 | 4.96 | 11.81 |
| Reading | 0.0576 | 1.1054 | 0.1400 | -7.34 | 5.42 | 12.76 |

The descriptive statistics for CGI scores for all students in the data set in math show a mean growth above the national average by 0.0281 standard deviation units, with a standard deviation of 1.0450. The median math CGI for all students in the data set is 0.0700 standard deviations above the national average. The minimum growth in math was 6.85 standard deviation units below the national average, and the maximum was 4.96 standard deviation units above the national average.

The descriptive statistics for CGI scores for all students in the data set in reading show a mean growth above the national average by 0.0576 standard deviation units, with a standard deviation of 1.1054. The median reading CGI for all students in the data set is

0.1400 standard deviations above the national average.  The minimum growth in reading

was 7.34 standard deviation units below the national average, and the maximum was 5.42

standard deviation units above the national average.

Table 7 displays the MAP math score means and standard deviations as broken

down by demographics.

Table 7

*MAP Math Scores by Student Demographics*

| Demographic | Mean Growth | Standard Deviation |
|---|---|---|
| Gender | | |
| Female | -0.0051 | 1.0157 |
| Male | 0.0635 | 1.0747 |
| Race/Ethnicity | | |
| Asian | 0.5089 | 0.8723 |
| Black | -0.1157 | 1.0919 |
| Hispanic | -0.0068 | 1.0004 |
| Native American | -0.4000 | 0.5771 |
| Mixed Race | -0.2093 | 0.9886 |
| Philipino | -0.3133 | 0.2103 |
| White | 0.4110 | 0.9701 |
| SES | | |
| High | 0.4583 | 0.9542 |
| Middle | 0.2538 | 1.0662 |
| Low | -0.0516 | 1.0340 |

Female and male students scored slightly different on the math and reading MAP

tests.  The CGI reading mean growth for female students was 0.0708, with a standard

deviation of 1.0169.  The CGI reading mean growth for male students was 0.0436, with a

standard deviation of 1.1922.  The CGI math mean growth for female students was -

0.0051, with a standard deviation of 1.011573.  The CGI math mean growth for male

students was 0.0635, with a standard deviation of 1.0747.

Students from different racial/ethnic backgrounds scored differently on the reading MAP test. The CGI reading mean growth for Asian students was 0.4967, with a standard deviation of 0.7836. The CGI reading mean growth for Black students was -0.0486, with a standard deviation of 1.1611. The CGI reading mean growth for Hispanic students was 0.0209, with a standard deviation of 1.0476. The CGI reading mean growth for Native American students was 0.1550, with a standard deviation of 0.9282. The CGI reading mean growth for mixed race students was -0.0451, with a standard deviation of 1.1980. The CGI reading mean growth for Phillipino students was 0.3700, with a standard deviation of 0.2506. The CGI reading mean growth for White students was 0.3175, with a standard deviation of 1.0598.

Students from different racial/ethnic backgrounds scored differently on the math MAP test. The CGI math mean growth for Asian students was 0.5089, with a standard deviation of 0.8723. The CGI math mean growth for Black students was -0.1157, with a standard deviation of 1.0919. The CGI math mean growth for Hispanic students was 0.0068, with a standard deviation of 1.0004. The CGI math mean growth for Native American students was -0.4000, with a standard deviation of 0.5771. The CGI math mean growth for mixed race students was -0.2093, with a standard deviation of 0.9886. The CGI math mean growth for Phillipino students was -0.3133, with a standard deviation of 0.2103. The CGI math mean growth for White students was 0.4110, with a standard deviation of 0.9701.

Students from different SES backgrounds scored differently on the reading MAP test. The CGI reading mean growth for high SES students was 0.5758, with a standard deviation of 0.8745. The CGI reading mean growth for middle SES students was 0.3426,

with a standard deviation of 0.8707. The CGI reading mean growth for low SES students

was -0.0415, with a standard deviation 1.1403.

Students from different SES backgrounds scored differently on the math MAP

test. The CGI math mean growth for high SES students was 0.4583, with a standard

deviation of 0.9542. The CGI math mean growth for middle SES students was 0.2538,

with a standard deviation of 1.0662. The CGI math mean growth for low SES students

was -0.0516, with a standard deviation of 1.0340.

Table 8 displays the MAP reading score means and standard deviations broken

down by demographics.

Table 8

*MAP Reading Scores by Student Demographics*

| Demographic | Mean Growth | Standard Deviation |
|---|---|---|
| Gender | | |
|   Female | 0.0708 | 1.0169 |
|   Male | 0.0436 | 1.1922 |
| Race/Ethnicity | | |
|   Asian | 0.4967 | 0.7836 |
|   Black | -0.0486 | 1.1611 |
|   Hispanic | 0.0209 | 1.0476 |
|   Native American | 0.1550 | 0.9282 |
|   Mixed Race | -0.0451 | 1.1980 |
|   Philipino | 0.3700 | 0.2506 |
|   White | 0.3175 | 1.0598 |
| SES | | |
|   High | 0.5758 | 0.8745 |
|   Middle | 0.3426 | 0.8707 |
|   Low | -0.0415 | 1.1403 |

**Research Question 3**

Research question 3 addressed to what extent does the students' perceived level of a student-teacher connection correlate to their mathematics and reading test scores: (a) for Math and English teachers and (b) for all teachers.

In order to determine if there is a correlation between students' perceived level of a student-teacher connection and their test scores in mathematics and reading, multiple regressions were run. Four different models were developed in order to determine if there was a correlation between student-teacher connection and mathematics scores for students who rated a mathematics teacher, reading scores for students who rated an English teacher, mathematics scores for all students, and reading scores for all students.

**Math scores for students with math teachers.** In order to determine if there is a correlation between a student's rating of a student-teacher connection between themselves and their math teacher, and the student's MAP math CGI score, a multiple regression was run on the data set. Only students who had rated their perception of a student-teacher connection with a math teacher were included (n = 326). The multiple regression was controlled by gender, race/ethnicity, and SES.

The results of the regression analysis did not show an overall statistically significant main effect for the independent variables, and the MAP math CGI scores (F = 1.266, p = 0.273). Additionally, the adjusted r-squared of 0.005 suggests almost no relationship among the dependent and independent variables in this data set.

**Reading scores for students with English teachers.** In order to determine if there is a correlation between a student's rating of a student-teacher connection between themselves and their English teacher, and the student's MAP reading CGI score, a multiple regression was run on the data set. Only students who had rated their perception

of a student-teacher connection with an English teacher were included (n = 326). The

multiple regression was controlled by gender, race/ethnicity, and SES.

The results of the regression analysis did not show an overall statistically

significant main effect for the independent variables, and the MAP reading CGI scores (F

= 1.447, p = 0.196). Additionally, the adjusted r-squared of 0.008 suggests almost no

relationship among the dependent and independent variables in this data set.

**Math scores for all students.** In order to determine if there is a correlation

between a student's rating of a student-teacher connection between themselves and any

teacher that they rated, and the student's MAP math CGI score, a multiple regression was

run on the data set. Only students who had a MAP math CGI score were included (n =

1947). The multiple regression was controlled by gender, race/ethnicity, and SES (see

Table 9).

Table 9

*Math Score Multiple Regression Coefficients*

| Variable | Average Math Growth Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 0.471* | |
| Female | 0.412 | -0.059 | |
| LowSES | 0.243 | -0.228* | |
| Black | 0.042 | -0.429* | |
| Hispanic | 0.155 | -0.316* | |
| Minority (not Black or Hispanic) | 0.105 | -0.366* | |
| Care | | 0.020 | |
| | | | 0.038 |

*significant at a level less than or equal to 0.05

The results of the regression analysis show an overall statistically significant main

effect for the model (F = 13.808, p < 0.001). However, not all independent variables

were significant.  Gender and a student's rating of a student-teacher connection were not significant in the model (p = 0.208 & p = 0.414 consecutively).  The adjusted r-squared of 0.038 shows 3.8% of variance accounted for minimal correlation between the dependent and independent variables in this data set.

None-the-less, because the regression analysis showed an overall statistically significant main effect for the model, the coefficients for the multiple regression equation are given in Table 9.  The reference category for this model is male, not low SES, white students.

Overall the model shows that low SES students and minority students tended to have a lower MAP math CGI scores than the reference category.  The effects of gender and level of care were not significant.

**Reading scores for all students.**  In order to determine if there is a correlation between a student's rating of a student-teacher connection between themselves and any teacher that they rated, and the student's MAP reading CGI score, a multiple regression was run on the data set.  Only students who had a MAP reading CGI score were included (n = 1926).  The multiple regression was controlled by gender, race/ethnicity, and SES.

The results of the regression analysis show an overall statistically significant main effect for the model (F = 10.791, p < 0.001).  However, not all independent variables were significant.  Gender and a student's rating of a student-teacher connection were not significant in the model (p = 0.406 & p = 0.375 consecutively).  In addition, the effects of being Hispanic or Minority (not Black or Hispanic) were not significant (p = 0.168 & p = 0.464 consecutively).  The adjusted r-squared of 0.030 shows minimal correlation, accounting for 3.0% of variance between the dependent and independent variables in this data set.

None-the-less, because the regression analysis showed an overall statistically significant main effect for the model, the coefficients for the multiple regression equation are given in Table 10. The reference category for this model is male, not low SES, white students.

Table 10

*Reading Score Multiple Regression Coefficients*

| Variable | Average Reading Growth Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 0.381* | |
| Female | 0.339 | -0.042 | |
| LowSES | -0.021 | -0.402* | |
| Black | 0.199 | -0.182* | |
| Hispanic | 0.274 | -0.107 | |
| Minority (not Black or Hispanic) | 0.304 | -0.077 | |
| Care | | 0.024 | |
| | | | 0.030 |

*significant at a level less than or equal to 0.05

Overall the model shows that low SES students and Black students tended to have a lower MAP reading CGI scores than the reference category. The effects of gender, Hispanic, Minority (not Black or Hispanic), and level of care were not significant.

**Research Question 4**

Research question 4 addressed to what extent are there differences in the correlations between the perceptions of student-teacher connections and the mathematics and reading test results as broken down by race/ethnicity. This is different from research question 3 whereby the interaction between race/ethnicity and students' perception of student-teacher connection is examined. This model sought to determine if having a

positive student-teacher connection makes more of a difference in math and/or reading scores depending on the race/ethnicity of the student.

In order to determine if there is a correlation between students' perceived level of a student-teacher connection, interaction effects between a student's race/ethnicity and their perceived level of a student-teacher connection, and students test scores in mathematics and reading, multiple regressions were run. Two different models were developed in order to determine if there was a correlation between student-teacher connection, interaction effects between a student's race/ethnicity and their perceived level of a student-teacher connection, mathematics scores for all students, and reading scores for all students.

**Math scores for all students with interactions.** In order to determine if there is a correlation between a student's rating of a student-teacher connection between themselves and any teacher that they rated, interaction effects between a student's race/ethnicity and their rating of a student-teacher connection, and the student's MAP math CGI score, a multiple regression was run on the data set. Only students who had a MAP math CGI score were included (n = 1,947). The multiple regression was controlled by gender, race/ethnicity, and SES.

The results of the regression analysis show an overall statistically significant main effect for the model (F = 9.327, p < 0.001). However, many of the independent variables were not significant. Gender and a student's rating of a student-teacher connection were not significant in the model (p = 0.204 & p = 0.770 consecutively). Additionally, the effects of being Hispanic, Minority (not Black or Hispanic), and all interactions between race/ethnicity were not significant. The adjusted r-squared of 0.037 shows minimal

correlation accounted for 3.7% of the variance between the dependent and independent variables in this data set.

None-the-less, because the regression analysis showed an overall statistically significant main effect for the model, the coefficients for the multiple regression equation are given in Table 11.  The reference category for this model is male, not low SES, white students, and the interaction between being white and the perception of student-teacher connection.

Table 11

*Math Score Multiple Regression with Interactions Coefficients*

| Variable | Average Math Growth Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 0.487* | |
| Female | 0.428 | -0.059 | |
| LowSES | 0.260 | -0.227* | |
| Black | -0.074 | -0.561* | |
| Hispanic | 0.265 | -0.222 | |
| Minority (not Black or Hispanic) | 0.120 | -0.367 | |
| Care | 0.503 | 0.016 | |
| Black * Care | -0.037 | 0.037 | |
| Hispanic * Care | 0.238 | -0.027 | |
| Other Minority * Care | 0.120 | 0 | |
| | | | 0.037 |

*significant at a level less than or equal to 0.05

Overall the model shows that low SES students and Black students tended to have a lower MAP math CGI scores than the reference category.  The effects of gender, Hispanic, Minority (not Black or Hispanic), care, and all interaction terms were not significant.

**Reading scores for all students with interactions.** In order to determine if there is a correlation between a student's rating of a student-teacher connection between themselves and any teacher that they rated, interaction effects between a student's race/ethnicity and their rating of a student-teacher connection, and the student's MAP reading CGI score, a multiple regression was run on the data set. Only students who had a MAP reading CGI score were included (n = 1,926). The multiple regression was controlled by gender, race/ethnicity, and SES.

The results of the regression analysis show an overall statistically significant main effect for the model (F = 7.274, p < 0.001). However, all of the independent variables were not significant except for the effect of a student being low SES. The adjusted r-squared of 0.028 shows minimal correlation between the dependent and independent variables in this data set.

None-the-less, because the regression analysis showed an overall statistically significant main effect for the model, the coefficients for the multiple regression equation are given in Table 12. The reference category for this model is male, not low SES, white students, and the interaction between being white and the perception of student-teacher connection.

Table 12

*Reading Score Multiple Regression with Interactions Coefficients*

| Variable | Average Reading Growth Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 0.275 | |
| Female | 0.316 | 0.041 | |
| LowSES | -0.123 | -0.398* | |
| Black | 0.145 | -0.130 | |
| Hispanic | 0.366 | 0.091 | |
| Minority (not Black or Hispanic) | 0.394 | 0.119 | |
| Care | 0.328 | 0.053 | |
| Black * Care | 0.129 | -0.016 | |
| Hispanic * Care | 0.309 | -0.057 | |
| Other Minority * Care | 0.338 | -0.056 | |
| | | | 0.028 |

*significant at a level less than or equal to 0.05

Overall the model shows that low SES students tended to have a lower MAP reading CGI scores than the reference category. The effects of gender, Hispanic, Minority (not Black or Hispanic), care, and all interaction terms were not significant.

**Research Question 5**

Research question 5 addressed to what extent does having a teacher of the same or different race/ethnicity impact students' reported student-teacher connections.

In order to address this research question, three models were developed. A student's perception of student-teacher connection is the dependent variable for all four models. Also, in all three models the race/ethnicity of the student was used as an independent variable with white students being the reference category.

The difference in the three models is the addition of independent variables, including interaction terms.  In model 1, the interaction between white teachers and white students, black students, Hispanic students, and other minority students (not black or Hispanic) are included.  In model 2, the interaction between non-white teachers and white students, black students, Hispanic students, and other minority students (not black or Hispanic) are included.  Finally, in model 3, independent variables of teacher race/ethnicity, and interaction terms of matching students and teachers' race/ethnicity were added.

**Model 1.**  In order to explore if having a teacher of the same or different race/ethnicity makes a difference on how students perceive a student-teacher connection a multiple regression model was developed.  In this model students' race/ethnicity, and the interaction between white teachers and students of the different races/ethnicities were used as independent variables.  The students' rating of a student-teacher connection was used as the independent variable.  The results of the regression analysis show an overall statistically significant main effect of the model ($F = 3.006$, $p = 0.004$).  Table 13 gives the coefficients of the multiple regression equation.

Based on the coefficients from the regression equation shown in Table 13, white students perceived the best level of student-teacher connection with white teachers, with an average care score of 3.670.  Black, Hispanic (even though this was not significant), and Minority (not Black or Hispanic) students perceived a much lower student-teacher connection with white teachers, with care scores of 3.116, 3.086, and 3.107 consecutively.

Table 13

*White Teacher Multiple Regression Coefficients*

| Variable | Average Care Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 3.184* | |
| Black | 3.701 | 0.517* | |
| Hispanic | 3.367 | 0.183 | |
| Minority (not Black or Hispanic) | 3.678 | 0.494* | |
| White Teacher | 3.670 | 0.486* | |
| Black Student * White Teacher | 3.116 | -0.585* | |
| Hispanic Student * White Teacher | 3.086 | -0.281 | |
| Minority (not Black or Hispanic) * White Teacher | 3.107 | -0.571* | |
| | | | 0.004 |

*significant at a level less than or equal to 0.05

**Model 2.** Next, to explore if having a teacher of the same or different race/ethnicity makes a difference on how students perceive a student-teacher connection a multiple regression model was developed. In this model students' race/ethnicity, and the interaction between non-white teachers and students of the different races/ethnicities were used as independent variables. The students' rating of a student-teacher connection was used as the dependent variable. The results of the regression analysis show an overall statistically significant main effect of the model (F = 3.006, p = 0.004). Table 14 gives the coefficients of the multiple regression equation.

Table 14

*Non-White Teacher Multiple Regression Coefficients*

| Variable | Average Care Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 3.184* | |
| Black | 3.115 | -0.069 | |
| Hispanic | 3.086 | -0.098* | |
| Minority (not Black or Hispanic) | 3.107 | -0.077 | |
| Non-White Teacher | 3.670 | 0.486* | |
| Black Student * Non-White Teacher | 3.700 | 0.585* | |
| Hispanic Student * Non-White Teacher | 3.367 | 0.281 | |
| Minority (not Black or Hispanic) * Non-White Teacher | 3.678 | 0.571* | |
| | | | 0.004 |

*significant at a level less than or equal to 0.05

Based on the coefficients from the regression equation shown above, Black students perceived a stronger student-teacher connection with non-white teachers than the other three categories of students, with an average care rating of 3.7. Minority students (not Black or Hispanic) perceived the second strongest student-teacher connection with non-white teachers, with an average care rating of 3.678. White students perceived the third highest student-teacher connection with non-white teachers, with an average care rating of 3.670. Hispanic students perceived the lowest student-teacher connection with non-white teachers, with an average care rating of 3.367.

**Model 3.** Next to explore if having a teacher of the same or different race/ethnicity makes a difference on how students perceive a student-teacher connection a multiple regression model was developed. In this model students' race/ethnicity, teachers' race/ethnicity, and the interaction between students and teachers of the same race/ethnicity were used as independent variables. The students' rating of a student-

teacher connection was used as the dependent variable.  The results of the regression

analysis show an overall statistically significant main effect of the model (F = 3.473, p

<0.001).  Table 15 gives the coefficients of the multiple regression equation.

Table 15

*Matched Race Teacher Multiple Regression Coefficients*

| Variable | Average Care Score | Coefficient | $R^2$ |
|---|---|---|---|
| Constant | | 3.162* | |
| Black | 3.603 | 0.441* | |
| Hispanic | 3.567 | 0.405* | |
| Minority (not Black or Hispanic) | 3.601 | 0.439* | |
| Black Teacher | 3.415 | 0.253 | |
| Hispanic Teacher | 3.291 | 0.129 | |
| Minority Teacher (not Black or Hispanic) | 2.991 | -0.171 | |
| Black Student * Black Teacher | 3.753 | -0.103 | |
| Hispanic Student * Hispanic Teacher | 3.290 | -0.406* | |
| Minority Student * Minority Teacher (not Black or Hispanic) | 2.925 | -0.505 | |
| White Student * White Teacher | 3.670 | 0.508* | |
| | | | 0.007 |

*significant at a level less than or equal to 0.05

Based on the coefficients from the regression equation shown in Table 15, Black

students perceived the strongest student-teacher connection when matched with a Black

teacher, with an average care rating of 3.753.  White students perceived the next strongest

student-teacher connection when matched with a White teacher, with an average care

rating of 3.670.  Hispanic students perceived the second lowest student-teacher

connection when matched with a Hispanic teacher, with an average care rating of 3.290.

Minority students (not Black or Hispanic) perceived the lowest student-teacher

connection when matched with a Minority teacher (not Black or Hispanic), with an average care rating of 2.925.

## Chapter IV Summary

In this chapter, aggregate data provided to the researcher by a large urban K-12 Midwestern school district was analyzed.  The data set contained information on 9th through 11th grade students in this district during the springs of 2013 and 2014.  True to the common understanding of the composition of an urban district, this data set contained information on students of whom 39.5% were Black, 34.3% were Hispanic, 8.8% were Minority (not Black or Hispanic), and 17.4% were White.  In terms of SES, 22% of the students were reported as non-low income, and 78% low income.

Contained within the data set was also information on teachers in this school district.  Of the teachers, 5.3% reported as Black, 3.9% reported as Hispanic, 3.4% reported as Minority (not Black or Hispanic), and 87.4% reported as White.  All of the teachers were secondary school teachers.  In terms of subjects taught, 14% were reported as teaching math, 14.5% were reported as teaching English, and 71.5% were reported as teaching something other than math or English.

To answer the first research question, student perceptional data taken from the springs of 2013 and 2014 TRIPOD survey was analyzed.  Care scores were analyzed to give the researcher an idea of the level the students perceived a student-teacher connection.  The care scores ranged from 1 to 5, with a mean care score for the data set of 3.5964.  The mean care scores for the four different racial/ethnic backgrounds of the students were as follows: Black – 3.6146; Hispanic – 3.5517; Minority (not Black or Hispanic) – 3.5346; and White – 3.6382.

To answer the second research question, student achievement data was taken from the springs of 2013 and 2014 NWEA's MAP math and reading, and analyzed.  Overall, students scored higher than the national mean of 0 in math and reading.  The mean growth for math was 0.0281, and for reading it was 0.0576.  For the four racial/ethnic groups in math, Black students scored below the national mean at -0.1157, Hispanic students scored -0.0068, Minority (not Black or Hispanic) students scored -0.1034, and White students scored 0.4110.  For the four racial/ethnic groups in reading, Black students scored below the national mean at -0.0486, Hispanic students scored 0.0209, Minority (not Black or Hispanic) students scored 0.2442, and White students scored 0.3175.

In order to answer the third research question, multiple regression analysis was performed.  First, to check if students' perception of student-teacher connection between themselves and their math and English teachers had an effect on student achievement in math and reading, a multiple regression was run for only students who had rated math or English teachers for student-teacher connection.  The results of both of these regressions were insignificant.  Next, to check if student's perception of student-teacher connection between themselves and any teacher they had rated had an effect on achievement in math and reading, two more multiple regressions were run.  These regressions had an overall significant main effect, and were significant in terms of correlation for many of the control variables, but were not significant when it came to the students' perceived level of student-teacher connection (as rated by their perception of care).

To answer the fourth research question, multiple regression analysis was performed.  This model sought to extended the previous model, and determine if a student had a higher perception of a student-teacher connection, and did it make more of

a difference on the math and reading scores, depending on the race of the student. Again, these models had an overall significant main effect, but none of the independent variables of interest were significant. Only the control variable of student SES had a significant correlation with the math and reading outcomes.

Finally, the fifth and last research question sought to understand if having a teacher of the same of different race/ethnicity had an effect on a student's perception of a student-teacher connection. Three multiple regression models were developed to answer this question. Model 1 investigated white teachers' effect on students of different race/ethnicity. Model 2 investigated non-white teachers' effect on students of different race/ethnicity. Finally, model 3 investigated teachers of the same race/ethnicity of the student's effects. All three models had significant main effects, and significant independent variables, including interactions terms of interest.

CHAPTER V

DISCUSSION

**Analysis of Major Results as Connected to Research Questions**

**Research Question 1**

Research Question 1 examined to what extent urban high school students reported the level to which there is a student-teacher connection (i.e., teachers caring about them). Overall, students in this large urban K-12 Midwestern district indicated a mean care score (i.e., student-teacher connection) of 3.5964.  On the one through five Likert scale that this variable is rated on, 3.00 is the indication for a neutral feeling of connection, and 4.00 is the selection for a favorable feeling toward how much the student perceives that a given teacher cares for them.  The mean student-teacher connection score seems to indicate that the students on average were slightly better that half way toward favorable, from neutral.

Looking at the students through a demographic lens, female students indicated a slightly more favorable student-teacher connection than did males (3.6121 vs 3.5798). From a socioeconomic view, low SES students indicated a less favorable student-teacher connection than non-low SES students (3.5972 vs 3.6080).  For the four categories of race/ethnicity that were used for the regression analysis White students (3.6382) reported the most favorable student-teacher connection, followed by Black students (3.6146), then Hispanic students (3.5517), and finally Minority (not Black or Hispanic) students (3.5346).

**Research Question 2**

Research Question 2 examined to what extent these urban high school students demonstrated academic achievement in mathematics and reading.  Overall, the mean Conditional Growth Index (CGI) scores indicated that the students in this district

achieved above the national average in math and reading growth, with annual growth scores of 0.0281 and 0.0576 consecutively.  A CGI score of 0 indicates that a student grew exactly as much as the $50^{th}$ percentile of their academic peers nationally, as measured by the MAP math and reading tests.  This seems to indicate that overall, for an urban K-12 district, these students are above their national peers.

When examining the results from a socioeconomic standpoint, there are some disparities that arise.  Students from high SES backgrounds performed very well when compared to their peers nationally.  In math and reading they had mean CGI scores of 0.4583 and 0.5758 consecutively.  Students from middle SES backgrounds still did well nationally, but scored below their high SES district counterparts in math and reading with mean CGI scores of 0.2538, and 0.3426.  Low SES students did not do as well when compared to their national or district peers; their mean CGI scores in math and reading were -0.0516 and -0.0415.  These results seem to indicate that a similar trend to what happens to students nationally on a SES continuum (Reardon, 2013) is also happening in this urban school district.

When the scores for the students from this district are examined by race/ethnicity there are disparities between the groups of students.  In math, White students achieved at a higher level than the other three races/ethnicities that were used for the regressions.  White students were also the only race to score above the national average in math, achieving a 0.4110 CGI.  The other three races/ethnicities scored below the national average in math.  Hispanic students did the second best in the district with a CGI of -0.0068, followed by Minority (not Black or Hispanic) students with a CGI of -0.1034, and finally Black students with a CGI of -0.1157.

Once again, looking through the lens of race/ethnicity three out of the four groups achieved above the national average in reading.  As in math, White students had the highest CGI in reading, scoring 0.3175.  Next, Minority (not Black or Hispanic) students had a CGI score in reading of 0.2494.  Hispanic students scored above the national average at a CGI score in reading of 0.2090.  Finally, Black students were the only race/ethnicity to score below the national average growth score in reading with a CGI of -0.0486.

**Research Question 3**

Research question 3 addressed to what extent do the students' perceived level of care (i.e., a student-teacher connection) correlate to their mathematics and reading test scores: (a) for Math and English teachers and (b) for all teachers.

Looking at the results of running the regression only with students who had rated their student-teacher connection (i.e., a teacher caring about them) with a math or an English teacher, neither model produced a significant main effect.  Therefore these models showed no correlation between student-teacher connection and academic achievement in math or reading.

There could be several reasons for these results.  One, the sample size of students rating their student-teacher connection with their math and English teachers was much smaller than the overall sample of students who had rated every content teacher.  Another possibility is that the measurement for student-teacher connection (i.e., a teacher caring about them) did not accurately depict the depth of the student-teacher connection.

The results of the regression analysis to determine if a student's perception of a student-teacher connection correlated to their math and reading achievement produced unclear results.  While the main effect was significant for both the math and reading

models, the variable representing the student-teacher connection was not significant in either model. This indicates that the significant control variables of SES and race/ethnicity had some correlational value, but the students' perceptions of a student-teacher connection did not.

**Research Question 4**

Research question 4 addressed to what extent are there differences in the correlations between the perceptions of student-teacher connections and the mathematics and reading test results as broken down by race/ethnicity. This was different than research question 3 whereby the model was designed to investigate if having a positive student-teacher connection had more or less of an effect on academic achievement results, depending on the race/ethnicity of the student.

Similarly to the results from the regression analysis attempting to address research question three, the results of the regressions to answer research question four were in many ways the same. Overall, there was a significant main effect for the models. This shows that there was some correlational value to the models for both math and reading. Again, continuing where the models from the last research question left off, the variables of interest failed to be significant. All correlational value from the models derived from control variables such as the SES of the student, or their race/ethnicity.

**Research Question 5**

Research question 5 addressed to what extent does having a teacher of the same or different race/ethnicity impact students' reported student-teacher connections. Three models were developed to address this research question, with all three models yielding significant results.

The first model that was developed looked at how having a White teacher impacted the rating of a student-teacher connection for students of different races/ethnicities. White students' average rating of a student-teacher connection was not substantially changed when rating a white teacher. On the other hand, Black and Minority (not Black or Hispanic) showed a significant decrease in their rating of a student-teacher connection. Both types of students had around a half point deduction in rating of their connection, when compared to their mean rating for all teachers. The results for Hispanic students were not statistically significant. Table 16 shows the comparison for students' of the different races/ethnicities average care scores, with their average care scores when paired with a White teacher.

Table 16

*Overall Average Care Scores vs Average Care Scores with a White Teacher*

| Demographic | Overall Care Average | Care Average (with a White Teacher) | Difference |
|---|---|---|---|
| Black | 3.615 | 3.116 | -0.499 |
| Hispanic | 3.552 | 3.086 | -0.466 |
| Minority (not Black or Hispanic) | 3.535 | 3.107 | -0.428 |
| White | 3.638 | 3.670 | 0.032 |

The second model that was developed looked at how having a non-white teacher impacted the rating of a student-teacher connection for students of different races/ethnicities. White, Black, and Minority (not Black or Hispanic) students' average rating of a student-teacher connection was slightly increased. Hispanic students showed a slight drop in their rating of a student-teacher connection. Table 17 shows the comparison for students' of the different races/ethnicities average care scores, with their average care scores when paired with a non-white teacher.

Table 17

*Overall Average Care Scores vs Average Care Scores with a Non-White Teacher*

| Demographic | Overall Care Average | Care Average (with a non-White Teacher) | Difference |
|---|---|---|---|
| Black | 3.615 | 3.700 | 0.085 |
| Hispanic | 3.552 | 3.367 | -0.185 |
| Minority (not Black or Hispanic) | 3.535 | 3.678 | 0.143 |
| White | 3.638 | 3.670 | 0.032 |

The third and final model that was developed looked at how having a teacher of the same race/ethnicity as the student impacted their rating of a student-teacher connection. Black students showed an increase from their average overall rating of student-teacher connection. White students also showed a slight increase from their average overall rating of student-teacher connection. Hispanic and Minority (not Black or Hispanic) students actually showed a decrease in their rating of student-teacher connection. Table 18 shows the comparison for students' of the different races/ethnicities average care scores, with their average care scores when paired with a teacher of the same race/ethnicity.

Table 18

*Overall Average Care Scores vs Average Care Scores with a Same Race/Ethnicity Teacher*

| Demographic | Overall Average | Average (with a matching Teacher) | Difference |
|---|---|---|---|
| Black | 3.615 | 3.753 | 0.138 |
| Hispanic | 3.552 | 3.290 | -0.262 |
| Minority (not Black or Hispanic) | 3.535 | 2.925 | -0.610 |
| White | 3.638 | 3.670 | 0.032 |

Overall White students' rating of a student-teacher connection remained very consistent, no matter the race/ethnicity of the teacher. Students from the three minority categories showed substantial drops in their rating of a student-teacher connection with White teachers. Black students gained in their perception of a student-teacher relationship when matched with a Black teacher, or a teacher from any non-white racial/ethnic background.

## Relationship of Results to Existing Studies

### Research Question 1

The statistical results from my study show that overall students felt somewhere between neutral and favorable toward their student-teacher connections, as measured by how much their teachers cared about them. Unfortunately, when digging deeper into the results there became a clear divide along the lines that typically have high predictive value for an urban student in the United States. Both minority and low-SES students showed less connection to their teachers, than did white students. Goldstein (2002) asserted that teachers must be committed to caring about their students, and understanding the communities that they serve. For that to hold true, all students must feel cared for. The results of this study show that students from low SES backgrounds felt less of a student-teacher connection than their non-low SES peers. Whether this is a result of the behavior of the students, or of the teachers' lack of ability to reach across the SES divide, somehow this gap must be closed.

Simple moves from a teacher can make a student feel cared for, and therefore help them do better in school. Ambady et al. (2004) found that students who were coached about their individuality did better on math assessments than students who were not

coached. Yet in my study, minority students perceived a less favorable student-teacher connection than did White students. Teachers must make a concerted effort to connect with their students, make them feel cared for, and help them overcome the barriers that would prevent them from reaching their future goals. In my study, 80% of the teaching staff are White, but only 15% of the student body are White. It seems that there are bridges that need to be built in order to help minority students build better student-teacher connections.

**Research Question 2**

Results from my study showed that overall, in this urban K-12 Midwestern school district, students are achieving above the fiftieth percentile in math and reading annual growth. Unfortunately when digging deeper, the low SES students, which represent about 80% of the data set, are achieving below the fiftieth percentile in both math and reading growth. In addition to this, only White and Asian students were performing above the fiftieth percentile nationally in math growth. For reading, in this district only Black and mixed race students were performing below the fiftieth percentile nationally.

All of these results seem to line up with what Reardon (2013) found. His research stated that the achievement gap between low SES and high SES students had continued to grow over the last three decades. In addition, he found that the achievement gap between White and Black students had not decreased at all. The findings from this study seem to clearly agree with Reardon's findings.

Many believe that this can be fixed. Gorski (2013) voiced that students from low SES and minority backgrounds can be inspired to have increased academic aspirations, and be equipped with the tools they need to be successful. When that happens, their academic achievement outcomes cannot help but follow suit.

**Research Questions 3 and 4**

Research question 3 sought to confirm what Roorda et al. (2011) found via their meta-analysis of the research on student-teacher relationships that when students have better student-teacher connection, it has a positive effect on their academic achievement. Yet the results of my study were inconclusive about this. My regression analysis that attempted to determine the correlation between student-teacher connection and academic achievement, controlling for gender, SES, and race/ethnicity of the student, did not yield a significant result when it came to the variable of interest (student-teacher connection).

Furthermore, research question 4 sought to determine what Roorda et al. (2011) found was inconclusive in their research, whether a positive student-teacher connection made more of a difference in terms of academic achievement for a student, depending on their race/ethnicity. The results of my study were also inconclusive on this question. While the overall main effect for the regression analysis that attempted to address this research question was significant, the variables of interest were not. Therefore, this study did not bring any further clarification to this issues that were brought up by Roorda et al.

**Research Question 5**

Crosnoe et al. (2004) found that there was a higher correlation of a positive student-teacher connection rating between students who were the same race/ethnicity as the teachers they were rating. They also found that higher ratings of student-teacher connections, led to better academic outcomes. In my study, it was also found that minority students, especially Black students, rated their teachers higher in student-teacher connection when they were matched with a minority teacher. Black students especially rated Black teachers higher in student-teacher connections.

In addition to this, Cooper and Miness (2014) found that minority students were much more likely to report the lack of student-teacher connection when matched with a White teacher. My study also corroborates this finding. Minority students of all types reported a lower level of student-teacher connection when paired with White teachers. Once again, this was especially impactful for Black students.

Table 19 summarizes the key findings of my study compared to previous research findings.

Table 19

*Key Findings from My Study Compared to Previous Research Findings*

| Findings Mabin (2016) | Previous Research |
|---|---|
| Minority and low SES students perform more poorly than White and non-low SES students. | Similar to Reardon (2013) who found that the achievement gap still exists between White and minority students, and that the gap has increased between low SES and non-low SES students. |
| The relationship between student-teacher connection and academic achievement was not found to be significant. | Different than Roorda et al. (2011) who found that when students have positive student-teacher relationships, academic achievement increases. |
| The relationship between student-teacher connection, race, and academic achievement was not found to be significant. | Different than Roorda et al. (2011) who claimed that findings were contradictory on whether having a positive student-teacher relationship made more of a difference on academic achievement, depending on the race/ethnicity of the student. |
| Students of all minority groups reported a statistically significant lower student-teacher connection when paired with a White teacher. | Similar to Cooper and Miness (2014) who found that minority students perceived a more negative relationship with White teachers than White students. |
| Black and other minority students that were not Hispanic reported a statistically significant higher student-teacher connection when paired with a non-White teacher. | No previous research found, thus a new finding. |
| Black students reported a statistically significant higher student-teacher connection | Similar to Crosnoe et al. (2004) who found there was a high rating of student-teacher |

| when paired with Black teachers. | relationships when the race/ethnicity of the student and teacher matched. |

## Implications for Future Research

Two of the foci of my study were to seek to test hypotheses that having a better student-teacher connection led to increased academic achievement, and to determine if having a stronger student-teacher connection made more of a difference on academic achievement depending on the race/ethnicity of the student. Neither one of these focus areas resulted in significant findings. This may have been the case given the limitations of my study, specifically the lower number of students from some of the racial/ethnic backgrounds, and the non-robust measurement of student-teacher connection which had only a single measure of such a connection, the level of perceived care. It could also have been because of the measurements of academic achievement in mathematics and reading that were used had a very low variance, and therefore under emphasized the correlation.

Undaunted by this, it is still the hypothesis of the researcher that a more robust, nationally representative data set may yield results that bring more clarity to these two questions. Many studies have confirmed that student-teacher connection does make a difference on the academic achievement of the student. Further study is warranted to determine if students from different racial/ethnic backgrounds benefit more or less. It would also be warranted to determine if students from different SES groups benefit more or less academically, when they have a stronger student-teacher connection.

## Other Implications

It is important to recognize that low SES and minority students are still struggling to keep pace academically with their non-low SES and white peers. This research was

based on data obtained by the cooperating district in the springs of 2013 and 2014. The K-12 educational system must engineer systems to help these lower achieving students close the gap between themselves and their more academically successful peers.

In addition, urban districts must continue to put systems in place that encourage the hiring of more racially/ethnically diverse educators. My research revealed that low SES, minority students perceive better student-teacher connection with teachers that look like them. Students need inspirational adults that they can connect with, that help them visualize a future for themselves where they are a working professional, find fulfillment in their lives, and changing the cycle of poverty for their families.

## Concluding Thoughts

This has been a long and grueling process, but as a working professional from a low SES, minority background, it has been worth it. The knowledge and wisdom that I have been exposed to in this doctoral program have already, and will continue to impact, both my personal and professional lives. I believe that my life can be a testament to other low SES minority background students that the cycle of poverty can be broken. A new future can be had for yourself and your family through finding the purpose to which your life calls to, and working unrelentingly toward bringing the vision for which you want to accomplish to light. Having teachers who made a difference, through their relationship with me, pushed me to be a better student has improved my life. I hope through this research, and future studies, that the key to unlocking the endless potential of all students in the United States will be discovered and capitalized on, to bring a brighter future for all of us.

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Appendix

HSRIB Approval Letter

# WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date:   November 19, 2015

To:     Louann Bierlein Palmer, Principal Investigator
        Timothy Mabin, Student Investigator for dissertation

From:   Amy Naugle, Ph.D., Chair   *Amy Naugle*

Re:     Approval not needed for HSIRB Project Number 15-11-28

This letter will serve as confirmation that your project titled "Student-Teacher Connection, Race, and Relationships to Academic Achievement" has been reviewed by the Human Subjects Institutional Review Board (HSIRB).  Based on that review, the HSIRB has determined that approval is not required for you to conduct this project because you are analyzing aggregate data and you are not collecting personal identifiable (private) information about individuals.  The scope of your research does not meet the Federal definition of human subject.

**45 CFR 46.102 (f) Human Subject**

(f) *Human subject* means a living individual **about whom** an investigator (whether professional or student) conducting research obtains

(1) Data through intervention or interaction with the individual, or
(2) Identifiable private information.

*Intervention* includes both physical procedures by which data are gathered (for example, venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes. Interaction includes communication or interpersonal contact between investigator and subject. *Private information* includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information) in order for obtaining the information to constitute research involving human subjects.

Thank you for your concerns about protecting the rights and welfare of human subjects.

A copy of your protocol and a copy of this letter will be maintained in the HSIRB files.

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