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The Effect of Teacher Race on Student Perceptions in Low-Income Schools

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Public Policy

by

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Abstract

In the wake of the *Brown v. Board of Education* (1954) decision, thousands of teachers of color lost their jobs as black students were integrated into mostly white schools. The number of black teachers in schools across the United States has never recovered resulting in a teaching workforce that is less diverse than the student population that they teach. Many studies have examined the possible impact of this discrepancy including the possibility that this has contributed to the black-white achievement gap that exists in the United States. Other studies have examined the non-academic impacts of a less diverse workforce including the impact on the perceptions of minority students. Indeed, our increased awareness of teacher diversity issues and the need for a more diverse teaching force is based on assumptions that student's having a same-race teacher can be a positive thing. This study seeks to examine these assumptions by looking at how race may actually affect student perceptions of their teacher's effectiveness and their relationship with that teacher. This study focuses on students and teachers in a low-income area of the state of Arkansas to assess student perceptions of their teachers on several key attributes of quality teaching. The aim of the study is to see if classrooms of students with similar races to that of their teacher perceive their teachers differently. More directly, do students share more favorable perceptions of their teacher's effectiveness and relationships if they are of the same racial background? This study finds that students perceive that teachers of the same-race are more effective and have more positive relationships with them but this finding seems to be driven by white students matched with white teachers. The study does find that black students find the expectations and rigor of their same-race teachers to be higher. Last, the study does find that teachers of all races recruited and trained to teach specifically in high-minority, low-income areas have a positive impact on student perceptions of their teacher's effectiveness and

relationships. The study concludes with a call for more research and a continued push to diversity the teacher workforce.

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Chapter 1: Introduction - Problem and Context

Brown v. Board of Education (1954) was seen as one of the most important victories for the education of black¹ students in the United States. The case overturned *Plessy v. Ferguson* (1893) and deemed segregation unconstitutional, leading to the integration of schools across the United States, but the outcome of the case had unintended consequences that are rarely discussed. Malcolm Gladwell (2017), in his podcast Revisionist History, replays a speech by Linda Brown Thompson who, as a young girl, was the student at the forefront of the *Brown v. Board of Education* case. She reads a letter from a superintendent to a black teacher in the midst of the *Brown* decision which unfortunately informs the black teachers that she will not have a job next year. The unintended consequence of the *Brown* decision was that black teachers who formerly taught in all black schools were now being fired from school districts in droves as district leaders gave preference to the white teachers over the black teachers.

The *Brown* case (as Gladwell comments) makes only one mention of teachers in the text of the decision. The *Brown* decision was about integrating black and white students, not teachers. Oakley et al. (2009) conducted a study of courts' desegregation orders to determine the impact of desegregation on the population of black teachers. They found in areas that were forced to desegregate (mainly the South), the population of black teachers was negatively affected (p. 1593). Gladwell (2017) recounts stories of principals and superintendents who were pressured by white parents in now integrated schools to not hire black teachers. Nearly 40,000 black teachers lost their jobs (Tillman, 2004). From 1975 to 1985 the number of black students choosing

¹ To be consistent with the current body of research and data sources, I use the terms "Black" and "White" throughout this study. I fully recognize that there is a healthy debate around the appropriateness of these terms as well as others.

education as a major fell 66%; new teacher certification requirements caused an additional 21,515 black teachers to be displaced (Tillman, 2004, p. 286). Oakley et al. (2009) conclude that the desegregation of students, which lead to reductions in black teachers across the South, contributed to the low number of black teachers in schools today (p. 1597-1598). But why is a diverse teaching workforce so important? I will discuss below the potential impacts of a lack of black teachers in today's workforce, most importantly how this lack of teacher diversity may have an impact on the students the *Brown* decision intended to help.

The ideas surrounding how race impacts our education system have been shrouded in controversy due to the sensitive nature of the topic and its troubled past in our nation. Since *Brown*, many education programs, policies and interventions have been reasserting the ways in which a more diverse teaching workforce in schools can be a positive change. Specifically, some programs hoped to expose students to a more diverse teacher workforce, especially those of a similar race to the students, to serve as built-in role models. Indeed, our increased awareness of teacher recruitment practices and the need for a more diverse teaching force is based on some of those assumptions that students having a same-race teacher can be a positive thing. The study described in the following chapters will assess student perceptions of their teachers on several key attributes of quality teaching to determine if students and classrooms of similar races to that of their teacher perceive their teachers differently. More directly, do classrooms of students share more favorable perceptions of their teachers if they are of the same racial background?

While *Brown v. Board of Education* was seen as a step forward for black students, students of color have continued to be underserved by public education throughout our nation's history; this continues today. A recent movement in education has focused on the recruitment and retention of teachers of color, especially in low-income, high-minority schools, with an

expectation that students learn better or relate more closely to individuals who look like them or come from similar cultural backgrounds. However, successful recruitment of teachers of color has been a struggle for schools and districts across the United States. A study by Ingersoll (2015) found that the rate of growth in the minority student population is much faster than the growth in the number of teachers of color. The student population is made up of roughly 44% minority students, yet the minority teacher population is only 17% (p. 18). The statistics in the state of Arkansas (the context of this study) are similar. The Arkansas Department of Education (2017) reports that while nearly 40% of the student population is made up of minority students, barely 10% of teachers are reported as minority teachers.

Some studies (discussed at length in chapter 2) shed light on the potential impacts of this disparity by highlighting the white-black achievement gap coupled with the positive impact that minority teachers can have on their students. While many of these studies focus on the academic outcomes of students with a same race teacher, it is also important to understand some of the perceptions that students have of their teachers and relate those to key attributes of effective teaching. In other words, do students perceive their teacher's abilities differently if they are of the same race? Furthermore, do students perceive their relationship with their teacher differently if they are of the same race? We do not fully know the impact that having a teacher of the same race has on students in low-income schools, or whether those students perceive and, in turn, interact with their teachers differently because of their race. This study will look at the classroom effect, that is, the way in which student perceptions differ when the race of the majority of students in the classroom matches or doesn't match that of the teacher.

This is an important dilemma for policymakers. As you will see in the next chapter, teachers of color can play an important role in the academic and social mobility of students from

all backgrounds, but most importantly students of color. With an increasingly diverse population of students across the country, we need to ensure that we recruit a teaching force that accurately reflects that diversity in our society.

Brief Historical Context

Race has seemingly always played a role in the way we view and shape public education in the United States. It has also spawned some of the most controversial and contentious issues in our society from slavery and segregation, to affirmative action and the more recent Black Lives Matter movement. Understanding some of this history is key to understanding the complexity of education and its intersection with race, the diversification of the teaching workforce, and the potential policies necessary to bring about such change.

Since the time of colonization in America, race has been a factor considered in the public policy surrounding education. Langhorne (2000) describes the formation of laws regarding the education of black slaves in the 1700's. South Carolina was one of the first states to pass a law, in 1740, making it illegal to educate slaves (p. 13). Soon after, several other states followed South Carolina in passing laws restricting the education of slaves and free blacks. Even with these prohibitions in many states, schools for black students began to crop up across the north and south. After the civil war, funding for the education of blacks and freed slaves became a policy priority. Separate school systems for whites and blacks in the south were created and expanded from 1890 to 1954 (p. 16).

In 1893, *Plessy v. Ferguson* (163 US 537) upheld the laws allowing segregation and created the separate but equal principal when it came to the education of whites and blacks. In his dissent, Justice John M. Harlan stated that “there can be no doubt but that segregation has

been enforced as a means of subordinating the Negro” and that the “thin disguise of equal accommodation...will not mislead anyone nor atone for the wrong this day done...” (Gossett, 1997, p. 275). As stated earlier, *Plessy* was replaced by the landmark *Brown v. Board of Education* (347 U.S. 483) decision in 1954 that deemed segregation unconstitutional. While segregation was technically outlawed, the challenges with equality in the education of minority groups continued. While the *Brown* decision meant integration for black students, it did not mean the same for black teachers. Over the course of the next 20-30 years after the *Brown* decision, over 50,000 black teachers lost their jobs, and the number of black students wanting to study education was drastically reduced, as well (Tillman, 2004, p. 286). While few would question that the end to segregation was a positive thing, the consequences of the *Brown* decision failing to account for these black teachers has caused the lack of black teachers we see in the workforce today.

In the post-*Brown* era, many still were not convinced that black students were getting a quality education. The Coleman Report (Coleman, 1966) was commissioned by the U.S. Department of Education in the wake of desegregation orders. It was one of the first and the largest studies of educational equality in the United States. Coleman found that schools across the nation were still largely segregated and that, although they had similar funding, they did not have equal quality of resources, opportunities or outcomes (p. 3, 8-9). It found that the majority of black students were taught by black teachers who had lower ability levels than that of their white teaching peers (p. 12). Nearly 100% of white students in virtually all white schools were taught by white teachers. It also found that teacher quality was one of the, if not the most important, factor affecting student achievement (p. 20-23). One could argue that the teacher

quality and diversity problems that Coleman found were potentially caused by the purge of black teachers in the wake of the *Brown* decision.

Nearly 20 years after the Coleman Report, the U.S. Department of Education commissioned a report on the state of the American education system through the newly created National Commission on Excellence in Education. The report, titled “A Nation at Risk,” detailed many challenges that the commission found with the nation’s “failing” education system (Gardner et al., 1983). The only substantive mention of race or segregation would lead one to believe that racial problems were non-existent even boasting the education of blacks as a success story. The report states:

Despite the obstacles and difficulties that inhibit the pursuit of superior educational attainment, we are confident, with history as our guide, that we can meet our goal. The American educational system has responded to previous challenges with remarkable success. In the 19th century our land-grant colleges and universities provided the research and training that developed our Nation's natural resources and the rich agricultural bounty of the American farm. From the late 1800s through mid-20th century, American schools provided the educated workforce needed to seal the success of the Industrial Revolution and to provide the margin of victory in two world wars. In the early part of this century and continuing to this very day, our schools have absorbed vast waves of immigrants and educated them and their children to productive citizenship. Similarly, the Nation's Black colleges have provided opportunity and undergraduate education to the vast majority of college-educated Black Americans. (Gardner et al., 1983, p. 33-34)

In truth, it was not a complete success story. To this day black and minority students still underperform and are underserved by the education system. Even a heavy focus on student achievement in the post-“No Child Left Behind” era hasn’t been able to substantially narrow the gap between black and white students. It has, however, provided more data that can be used to assess and understand the black-white achievement gap.

The Black-White Achievement Gap

Given the focus of this study, it is important to examine why a diversified teacher workforce is important. This study (coupled with several studies described in chapter 2) will shed light on the possible impacts of a more diversified teacher workforce, but what is the underlying problem attempting to be addressed? In other words, why is a diverse teacher workforce so important? The central aspect of the underlying problem is the black-white achievement gap, that is the difference in educational achievement between black and white students.

The racial achievement gap has long been a topic of concern for educators and policymakers. Since 1988, the black-white achievement gap has either remained or widened (Kober, 2001, p. 10). An analysis of current data regarding the gap, including data on educational attainment and achievement data from the National Assessment of Educational Progress (NAEP), reveal the current status of the black-white achievement gap. According to the results of the NAEP, 13% of black students scored proficient or better on the 8th grade math assessment compared to 43% of white students (USDE, 2015a, p. 16). The trend is similar in 8th grade reading as well, where 16% of black students scored proficient or better compared to 44% of white students (USDE, 2015b, p. 16). Black students in the state of Arkansas fared even worse with only 8% proficient or better in reading and 10% in math compared to 33% and 31% for white students (USDE, 2015a and 2015b, p. 16). In fact, in every state in the nation in each subject and grade level assessed on the NAEP, white students outperformed their black peers. This discrepancy in achievement can also lead to a discrepancy in attainment. The U.S. Department of Education (2016) reports that the dropout percentages among 16-24 year olds are

5.2% for white students and 7.3% for black students. It is clear from these this data that the racial achievement gap continues to be a problem both in Arkansas and across the United States.

Studies in the past have attempted to unpack the NAEP data to better understand the black-white achievement gap and factors that may contribute to it. Lubienski (2002) conducted a study that examined NAEP scores in mathematics with the aim of looking deeper at the black-white achievement gap. The author found several significant and troubling results connected to the gap and potential links to socioeconomic status (SES). First, the lowest-SES white students scored as well or better than the highest-SES black students. This finding was consistent across all grade levels and persisted over the datasets analyzed (p.277). The authors claim that this dispels any belief that the black-white achievement gap is driven solely by SES (p. 283). One of the most troubling findings is that black 12th graders performed at a lower level than white 8th graders, putting them potentially 4 years behind their white peers at graduation (p. 283). It is important to note that these differences persisted after controlling for SES though the impacts were slightly lessened (p. 285).

Beyond the obvious equity and civil rights issues, the black-white achievement gap has long lasting effects on individuals. Wilson and Rodgers's (2016) report on the black-white wage gap details the increasing challenge facing our society. The report finds that the wage gap between whites and blacks has widened since 1979 (p. 8). In 2015, white individuals earned 26.7% more than black individuals, which compares to an 18.1% gap in 1979 (p. 8). While education does not fully explain the black-white wage gap, the authors state that between a quarter and a third of the black-white wage gap is explained by the education attainment gap between black and white individuals (p. 3). It is clear that these disparities in our society must be addressed by educators and policymakers alike.

While these educational and economic effects are the main focus of those concerned about black-white inequalities for students, there are other potential challenges with the disparity between the racial makeup of students and that of the teacher workforce. Egalite et al. (2015) outline several studies that detail the possible problems that could be addressed by a more diversified teacher workforce including a lack of built-in role models for minority students, the risk of negative stereotyping, and potential lack of perceived advocates for their students (p. 44-46). These studies indicate that there may be additional underlying problems that are somewhat unmeasured which could be potentially influenced by a more (or less) diversified teacher workforce.

Current Efforts

Much attention has been paid to the black-white achievement gap, but the lack of a diversified teacher workforce has been given slightly less attention, though it has not gone completely unnoticed. Some acknowledgment of the problems with teacher diversity and possible solutions have been recognized in educational research and in some government policies. Recent policies and studies have examined the impact of same-race teachers on student education achievement with specific reference to the black-white achievement gap.

Studies have explored how different programs have been successful at recruiting teachers of color. Given the fact that a high percentage of minorities reside in urban areas, most of the programs that have been successful in diversifying recruitment of teachers have focused on cities. Ciesielski (2015) identified eight programs across the country that have been successful at recruiting and/or retaining minority teachers. These programs use a range of methods to attempt to recruit a diverse teacher workforce including tuition support, local residencies (including grow your own strategies), strategic university partnerships, and alternative routes to teaching. A few

key similarities arise across many of these programs. First, these programs target recruitment to areas and institutions with high populations of minorities. The Teacher Quality and Retention Program and Call Me MISTER program have both been successful at attracting and retaining teachers of color through their targeted partnerships with historically black colleges and universities (Ciesielski, 2015, p. 105-4, 109). This targeted and purposeful recruitment has led to higher numbers of minority teachers, both in the programs themselves and in the teacher workforce in the region. Another method used by these programs is tuition or monetary support. Most programs described by Ciesielski (2015) include some sort of financial incentive for students to enter the program. With higher proportions of minorities being from lower SES backgrounds, tuition or financial support can be a key driver for both recruitment and retention. The problems that arise with these incentives are how they could be potentially applied to a wider geographic area, especially rural ones.

Teach for America (TFA) is one non-traditional teacher training program that has been successful at recruiting teachers of color for both urban and rural areas and has helped to increase student achievement for students of color. TFA specifically places teachers in areas with high poverty, high minority populations of students. Even though TFA teachers are placed in struggling schools, several recent studies have highlighted the success that TFA teachers have had increasing student achievement in these districts and areas they serve (Clark, et al., 2015; Antecol et al., 2013; Darling-Hammond et al. 2005; Raymond et al., 2001). TFA also prides itself on having a more diverse corps of teachers than the more traditional routes into teaching. For the 2015 TFA cohort, 49% of teachers were teachers of color (Teach for America, 2016). Similar to the programs here, many attribute this diversified recruitment to both the mission of the program (a focus on placing in high minority schools) and the targeted recruitment at

colleges across the country, especially colleges that have been successful at enrolling minority students (Lavigna, 2010). In Arkansas, Teach for America has had some success recruiting individuals of color to teach in classrooms across the Delta region. Comparatively, state-wide educator prep programs enroll around 20% teachers of color, while TFA has 33% teachers of color (Arkansas Department of Education, 2016). Overall recruitment numbers for TFA in Arkansas, however, are down drastically over the past few years, from 295 in 2013 to only 63 in 2015 (ADE, 2016).

One response to this reduction in recruitment and increased need for quality teachers in certain parts of Arkansas was the creation of the Arkansas Teacher Corps (ATC). ATC incorporated many of the methods mentioned by Ciesielski (2015) regarding successful recruitment of teachers of color, including targeted recruitment, financial incentives, and a home-grown approach (ATC, 2017a). The most recent cohort of teachers consists of 50% teachers of color and boasts the largest cohort to date (ATC, 2017b). While these programs have been successful at increasing diversity in teacher recruitment, the state still has a teaching force that looks drastically different from that of the student population. State leaders must recognize the need for additional, widespread approaches to increasing diversity in the teacher workforce.

As mentioned previously, recruiting and retaining a diverse teacher workforce can be a difficult and potentially expensive task. It is logical, then, to ask if the effort required to diversify recruitment is worth the potential costs. While this study seeks to shed some light on this subject regarding teacher-student relationships based on race, other studies (as mentioned previously) have given us some insight into the possible benefits of recruiting more minority teachers. Cherng and Halpin (2016) found that students from all races preferred their teachers of color on all measures compared to their white teachers. Additionally, other studies have provided

evidence of the potential benefits of having a teaching workforce that is similar to that of the student population. Dee (2004) found that students with a teacher of the same race (both white and non-white) had significantly higher achievement in both math and reading (p. 209). Egalite et al. (2015) found similar results. Their study found that black and white students who were matched to a teacher of the same race performed slightly better in both reading and math (p. 49-50). The study also found that lower-performing students seemed to benefit the most from a teacher of the same race (p. 50). These studies provide evidence that a diversified teacher workforce that is more similar to that of the student population could lead to an achievement gain for students, especially students of color and those from low-SES backgrounds.

Policy and Political Problems

There are several potential barriers to policies that would promote a more diversified teacher workforce. As a public policy, the idea has only recently resurfaced in the policy discussion given the stigma caused by segregation or any policy that dealt with race. Given the large and persisting achievement gap mentioned previously, coupled with the evidence supporting the potential benefits of a more diverse teaching force, the racial makeup of our teaching workforce and its potential effects on students has become an issue that needed to be better understood.

Some policies and programs have attempted to address the discrepancies between the diversity of the teaching workforce and the diversity in the student body. The US Department of Education (2010) launched an advertising and recruitment campaign that attempted to increase “the number, quality and diversity of people seeking to become teachers, particularly in high-need schools”. Scholarship programs and other incentives began to crop up in states across the country. In Arkansas, several laws and programs attempted to address this discrepancy within the

state. Since 1991, Arkansas has required any school with “more than five percent (5%) African-American or other minority students” to submit a “minority teacher and administrator recruitment plan” (Ark. Code Ann. § 6-17-1901, 1991). There is no detail of enforcement or accountability for these plans. Additionally, the Arkansas Department of Education (2012) outlined three programs that aimed to assist with diversifying the teacher workforce by providing loan forgiveness or scholarships for minority teachers: the Arkansas Geographical Critical Needs Minority Teacher Scholarship, the Minority Masters Fellows program, and the Minority Teachers Scholars Program. Of these three programs, all but one have been discontinued. In the end, these policies seemingly did not properly address the issues, and the disparity continues. The lack of success may be due, in part, to the past and current policy climate in which addressing problems based on racial disparities are not popular.

Issues Problem Definition

Rochefort and Cobb (1994) outline the importance of problem definition as an initial and necessary aspect of the policymaking process. They argue that it is essential for public policymaking to be understood “as a function of the perceived nature of the problems being dealt with” (p. 4). This may help us understand why a more diversified teacher workforce has not been treated as a serious priority; policymakers don’t recognize a well-defined problem. Baumgartner and Jones (2009) also argue the importance of the “public understanding of policy problems” and how this can “affect policy development” (p. 25). The half-hearted approaches to dealing with the issues outlined above are likely caused by the lack of a clear understanding of the problem as an actual problem. While most agree that the racial achievement gap is an important matter, it is not widely agreed (though the evidence suggests it) that the discrepancies between the racial

makeup of the teaching workforce and that of the student population contribute to this gap. In that sense, this study may actually serve to assist with that problem definition.

Rocheft and Cobb (1994) describe some of the important rhetoric that can have a significant impact on problem definition. They point out that part of the definition of a problem is the question of who is to blame for the problem in the first place, additionally pointing out that “blaming is one of the great pastimes of politics” (p. 15-16). When considering causality for problems such as the lack of diversity in the teacher workforce, it is important to look at what rhetoric may come out of the definition of the cause of the problem. Tuch and Hughes (1996) state that one of the reasons individuals (specifically whites) tend to be unwilling to support such policies is because “they attribute racial inequality to perceived lack of effort or ability on the part of blacks” (p. 741).² Instead of the institutional racism that seems to still exist in American society, especially in education, policymakers may blame the target groups themselves.

Another aspect of the rhetoric around the definition of the problem of teacher diversity in Arkansas could be the description of proximity within the problem definition. Rocheft and Cobb (1994) argue that for a problem to be seen as a public interest it must be seen as having a close proximity to the audience you seek to influence (p. 21). Policymakers in Arkansas may see the lack of diversity in the teaching workforce as a problem for only schools in rural, southern Arkansas. It will be important to make sure that the issue is defined in a way that emphasizes the possible impacts across the state not simply in “those” districts.

² Also referenced in Tuch and Hughes (2011, p. 149-150).

Inciting Social Change

One view of policymaking and the influences on how and why policies are acted on revolves around the idea of inciting social change. Many of the theories on this topic originate from E.E. Schattschneider's (1960) work on conflict in American society. Schattschneider describes how policies are often effective (and majorities are formed) when they are able to rally the public around certain divisions (or cleavages) in society that generally revolve around conflict (p. 62). He further argues that changes take place when the contagion of a conflict shifts to a difference cleavage in society. A good example of this would be the problem of police violence and the Black Lives Matter movement. Issues involving police violence were rarely seen on the political agenda until well-publicized shooting deaths of several unarmed black men across the nation. This conflict caused societal views to shift around the contagion of the conflict, causing it to be recognized by policymakers and even make it on the policy agenda in some states. Schattschneider might argue that the failures of policies around a diversified teacher workforce are due to the lack of contagion of the issue coupled with the lack of conflict arising from it. This research fits into a body of research that will hopefully begin to bring the topic of the effects of race on education to the surface, in turn increasing the contagiousness of the issue.

Importance of Language

For a public policy to gain traction in both the social environment (public) and the political environment, it is important to consider the specific language being used. Rochefort and Cobb (1994) claim that the use of language can be "crucial" to public policymaking and problem definition (p. 9). Riker (1986)³ claims that the language used in political institutions can often be

³ Also referenced in Rochefort and Cobb (1994).

a determining factor in the success or failure of a policy or idea. It seems important for a policy to be framed carefully in order for it to make it to the policy agenda and possibly garner public and political support. Why so often do policies aimed at supporting a struggling portion of the population fail?

In their sociological study that they have replicated several times since the 1980s, Tuch and Hughes (2011) look at the attitudes of “whites” towards racial policies. Using two respected nationwide surveys, they assessed white individuals’ feelings towards policies aimed at aiding black individuals. They find that even when the questions detail the effects of past discrimination against people of color in our country, whites overwhelmingly feel that preferential treatment or targeted support from the government is not needed (p. 142-143). Two of the most telling results are that only 4.5% of whites “unequivocally endorse the idea of government giving special treatment to blacks” while 88.5% strongly oppose or oppose “preferential hiring and promotion” of blacks (p. 141). The authors also look at possible factors that could be causing these attitudes in whites, including racial resentment. They argue that there have been an increasing percentage of white respondents to the survey over the past 20 years who “downplay the role of slavery and discrimination in making it difficult for blacks to move out of the lower class” (p. 143). Some might argue that the resistance of support for racial policies is simply a resistance to government social support for the underprivileged as a fiscally conservative policy. A recent report of the General Social Survey results by Smith et al. (2015) shows that 63.6% of the general public think the government are spending “too little” on “assistance to the poor” but when the question is worded as “assistance to blacks” only 27.5% feel we are doing “too little” (p. 6, 12-14).

These two studies highlight the challenges involved with the wording and language used in policies and how it can affect the potential support for that policy. The findings make it

increasingly clear how potentially problematic it can be when policies or ideas such as increasing teacher diversity unavoidably use language around a particular race or group. The studies referenced in this chapter indicate that these policies are not likely to gain much public or political support. When looking at the potential policy implications of this study, one thing is clear: a policy that seeming only supports students or teachers of color is less likely to gain traction in the political sphere at the national or state level. While this study may shed light on why a “racial” policy supporting the recruitment, hiring, and retention of minority teachers would be beneficial or even necessary, it is unlikely to gain support at higher levels of government if there is no support for it from the public. The question then becomes: what can be done? Is there an institution where a policy such as this may succeed or even thrive?

Conclusion

The study outlined in the following chapters adds to a growing body of research on the effects that race has on students and teachers, and their relationships. As mentioned previously, little has been done with regards to teacher diversity on the policy side in the state of Arkansas, with several attempts falling well short of an actual change. It is my hope that this research and continued research around the topic will help to better inform policymakers and begin to motivate policymakers to act to better diversify the teaching workforce. While some of the discussions in this chapter paint a bleak picture for this particular type of policy, there is some hope for a policy that could begin to change the way that we look at the diversity of teacher recruitment. Additionally, this study serves a dual purpose for policymakers as a critique of the current state of diversity in the teacher workforce in Arkansas (and current policies), as well as a source of evidence for advocacy. It will allow policymakers to critically assess the impact (or lack thereof) that the current policies have had on recruitment of teachers of color, and also

consider the possible benefits of having a teacher workforce that is more diverse and which more accurately represents the students they teach.

Chapter 2: Review of Current Literature

The question of how race can impact the lives of individuals has been asked by researchers and scholars for over a decade. Some of that research comes from the field of psychology and focuses on how race can impact our thoughts, actions, and relationships, be it consciously or unconsciously. Since teaching can be as much about interactions and relationships as it can be about content and pedagogy, it is understandable why a focus on psychological and sociological research may be important. In the field of education, there has been a fair amount of research that looks at the impact that race has on the education of students and possible implications of that impact. A few of these studies do focus on factors that can affect student teacher relationships. This chapter will provide a brief overview of the research in these areas, and others, regarding race, education, and teacher diversity.

Language: Race vs. Ethnicity

In Chapter 1, I discussed the importance of language in public policymaking. It is equally important to use clear and intentional language in policy research. The study described in the chapters to follow seeks to evaluate the connections between student and teacher race and perceptions of teacher effectiveness and relationships. In this case, the term race is used instead of ethnicity intentionally based on the current language used in the literature. Cornell and Hartmann (2007), in their book on identities, outline the difficult distinctions between race and ethnicity across research disciplines. For the purposes of this study, I accept their definition of race as a “human group defined by itself or others as distinct by virtue of perceived common physical characteristics that are held to be inherent”; simply put “a race is a group of human beings socially defined on the basis of physical characteristics” (p. 25). This aspect of physical characteristics that are socially (not biologically) attached to particular groups of people is

important and will be discussed further below. Ethnicity is slightly different than race in that it has more of a focus on culture and ancestry than simply physical characteristics. Cornell and Hartmann (2007) use a definition of ethnicity from Schermerhorn (1978), which defines it as “a collective within a larger society having real or putative common ancestry, memories of a shared historical past, and a cultural focus on one or more symbolic elements defined as the epitome of their peoplehood” (p. 19). It is important to note that, given these definitions, ethnicity is more difficult to simply observe while race may be observable based on social constructs.

As discussed in the following section, many psychological studies on individuals’ perceptions focus on a perceived likeness between individuals and how that can impact social behaviors and interactions between individuals (see Montoya, Horton, & Kirchner, 2008). The study described in the following chapters focuses on race of students and teachers and uses the term race as opposed to ethnicity because race, based on physical characteristics, is the most obviously observable “likeness” that teachers and students could easily recognize about each other. Students and teachers may not know each other’s ethnicities or ethnic backgrounds, yet they are likely to understand each other’s socially-constructed race. This perceived likeness is the matching that is being referred to in the study described in the following chapters. The race of teachers and the race of the students in each class are known, the ethnicities are not; hence, the more appropriate terminology that will be used throughout this study is the term race.

Psychology of Race and Perceptions

In the field of psychology and sociology, there have been numerous studies regarding the ways in which individuals interact with one another and what can have an effect on those interactions. These studies can shed some light on the important interactions that students have with their teachers and how important those relationships and interactions may be. The research

presented here seeks to assess some perceptions of both effectiveness of and relationships with teachers from the perspective of the student, so it is important to take a brief look at the literature that may help us understand those interactions and perceptions. Montoya, Horton, and Kirchner (2008) conducted a meta-analysis of 313 studies that looked at general attraction (or liking) between individuals based on both perceived and actual similarities (p. 895). The authors discuss the overwhelming evidence of what they call the similarity effect that is similarity breeds attraction within individuals. They discuss the early work by Byrne (1964 and 1971), which they say has been replicated numerous times and finds that similarity and attraction have a positive linear relationship. The evidence seems to contradict the age old saying of “opposites attract.” According to Montoya et al. (2008), Byrne’s theory was a patchwork of “cognitive dissonance and social comparison theories” mixed with classical conditioning theories (p. 891). The theory was that “individuals have a fundamental need for a logical and consistent view of the world” and we therefore seek out and are generally attracted to individuals that reinforce our own views (p. 891-892). In other words, someone who reinforces our ideas or our view of the world becomes more attractive to us because of the positive feeling that come with their support. On the other hand, people who are different than us or disagree with us “create inconsistency in our world...and are associated with anxiety and confusion, feelings that lead to repulsion or, at the very least, a lack of attraction” (p. 892).

Further studies discussed by Montoya et al. (2008) focus on the difference between actual and perceived similarities and how that can affect our perceptions and interactions (p. 890-892). The authors argue that much of the research on similarity and attraction depends on the individuals believing that they are similar regardless of whether or not they actually are similar (p.892). The purpose of their meta-analysis was to look at studies of both perceived and actual

similarities, and the effects they had on perceptions and attraction. The results of the meta-analysis generally found that perceived similarity has a positive and significant affect on attraction in both field and laboratory settings (p. 898, 901). It should be noted that perceived similarity was stronger in some subgroups (like existing relationships) than actual similarity; in other words, just the perception of likeness often resulted in a stronger attraction between individuals than actual similarities (p. 905-906).

The results of this meta-analysis, as well as the work of Byrne, are significant in considering the effects that having a like-race teacher may have on individual students. Both the empirical evidence and the underlying theory suggest at least some possible benefit to students of having a teacher that is similar, in some way, to them. There will also be a further discussion in the methods chapter about how this may support some of the race identification methods used in this study.

Impact of Race on Education

In Chapter 1, I discussed the historical context of the present and past challenges regarding race and its impacts on education, as well as the persisting black-white achievement gap. Much of the literature regarding race and education has attempted to better explain and understand the impact that race has on education and why that impact exists.

As mentioned previously, one of the earliest and most comprehensive studies regarding race and education was the Coleman Report (1966), which was commissioned in the wake of desegregation in the US. The report found that schools were both largely segregated by race and fundamentally unequal (p. 3, 8-9). The report sparked a debate among those from various fields about differences between black and white students and why they may exist. Arguably the most

controversial of those studies was research by Arthur Jensen (1969), which looked to explain differences in IQ and educational achievement. One of his most controversial conclusions was that potentially up to 80% of IQ score and academic performance can be hereditary and therefore linked to race and ethnicity (p. 84-88, 62, 70). Many argued that Jensen's work was simply a racially motivated study that reflected the ill-formed beliefs of the times. But the arguments of environment vs. heredity continue in recent years as well. Several more recent studies, while softening the rhetoric, claim that "new" evidence backs up Jensen's claims (Herrnstein and Murray, 1994 and Rushton and Jensen, 2005).

The claims by Jensen (as well as others) have been seen by many as dangerous because they suggest and even state bluntly that current efforts to increase achievement and the intellectual abilities of non-white students (and specifically black students) are misguided and potentially useless. In response to the claims by both Jensen and Herrnstein and Murray, the American Psychological Association commissioned a task force to issue a report on the topic to dispel any dangerous myths in the field (Neisser et al., 1996). The report examined the full body of evidence in the field regarding intelligence to evaluate what is known and unknown. The task force made some important findings that were unanimously agreed upon among the members (p. 77; 97). The report dispels many of the claims made by Jensen and others by concluding that environmental factors clearly contribute to intelligence and that there is no support for the claim that differences in intelligence between blacks and whites is genetic (p. 96-97). The task force does admit that the true reason for disparities in intelligence among races is not truly known (p. 97).

Beyond the complicated and controversial genetics arguments as an attempt to describe the black-white achievement gap, there have been numerous other studies that attempt to better

describe why this gap exists and persists. As mentioned previously, the Coleman Report (1966) was one of the first major pieces of research to acknowledge that there was a disparity between the education of black and white students. During the period of time following desegregation, the black-white achievement gap rapidly narrowed but was not all together eliminated (Jencks and Phillips, 2011). While desegregation can potentially account for some of the initial narrowing of the gap, it does not account for all of the change since blacks in the Northeast, where segregation had long been legally forbidden, also narrowed the gap in educational achievement during that time (p. 206-208). While the gap narrowed through the 1970s and 1980s, the narrowing stalled in the early 1990s and by some accounts began to widen again leading into the 2000s (Lee, 2002). As mentioned in the previous chapter, the gap remains today with no evidence of major narrowing.

Recent studies have focused on the potential reasons why the gap began to widen again and why the gap persists. Most of the debate revolves around whether “school” factors or “home” factors have a larger impact on addressing the gap, but some researches have argued that even these cannot account for all of the variability (Lee, 2002). Hanushek and Rivkin (2009) argue that school factors, like the quality of the teacher and the racial make up of classmates, can have an impact on student performance. Using their study of student data in Texas, they found that black students performed far worse than their white peers, especially in schools that were predominately segregated (majority black school). They also noted that black students were more likely to have an inexperienced teacher, which they found could also negatively affect student outcomes (p. 386-388). The authors also cite several studies (Boyd et al., 2005; Hanushek et al., 2004) that found that certain schools with higher populations of minority students, or schools in low income areas, struggle to attract high quality teachers who are more likely to teach at schools

similar to where they grew up (p. 388). The authors conclude that while school-based factors do not entirely account for the racial achievement gap, they certainly explain some of the issues that contribute to it. The authors conclude with an important finding for the study described in the following chapters. They state that the “teacher experience effects and other research on school quality point to the importance of improving the quality of instruction” also stating that overarching policy changes have little impact (p. 389).

A slightly more recent analysis by Braun et al. (2010) examined 7 years of NAEP achievement data across 10 states. They found that the achievement gap between black and white students persists and does so across levels and concentrations of poverty (p. 25). The authors sought to examine whether or not policy changes like the accountability measures in No Child Left Behind had a significant impact on narrowing the racial achievement gap. Like Hanushek and Rivkin, the authors concluded that these overarching policy changes had a very limited impact on the gap, and that the gap itself will likely continue for years to come (p. 41-42).

Other authors argue that we must focus on family and home circumstances of students to best understand their impacts on the achievement gap. Sirin (2005) conducted a comprehensive meta-analysis of studies seeking to describe a relationship between SES and student achievement. This meta-analysis included 58 studies and 75 independent samples spanning 10 years of published research (p. 432). The overall findings of the study concluded that there is a moderate correlation between SES and student achievement with an average effect size of .31 (p. 433-434). Several samples in this study examined the effect of SES independently within certain races and found that the correlation persisted (p. 424-429). Further studies have attempted to determine whether or not the black-white achievement gap is truly a racial gap or rather a socioeconomic gap. Yeung and Conley (2008) looked at the black-white achievement gap in

relation to family wealth. They argue that the black-white achievement gap essentially disappears when you add covariates related to wealth and a child's home life, leading one to believe that the racial achievement gap may be more about poverty or family circumstances (p. 321). The authors admit that much more must be done to better understand the racial achievement gap (p. 322). Fryer and Levitt (2005) similarly examined wealth and the black-white achievement gap. Their findings were similar to the findings of Yeung and Conley in that they found that as students enter school, the racial achievement gap is nearly erased when you control for measures of wealth (p. 9-10). The key difference in the study by Fryer and Levitt is that they found that the gap then began to grow roughly 10% of a standard deviation per year through the first four years of schooling with wealth no longer explaining that difference (10-11). The authors attempted to test several assumptions regarding why this may be the case, including looking at school quality, testing bias, and parental factors. None of these factors seemed to explain the difference (19-20). This study raises some important questions about what might happen to students once they enter school that would cause the black-white achievement gap to reemerge while the wealth effect seems to lose weight.

One aspect of the black-white achievement gap that is evident in the literature is the impact that high quality teachers can have on students. Many of the studies discussed in this chapter provided some evidence to the idea that great teachers are able to improve student outcomes such as achievement and attainment (Boyd et al., 2005; Hanushek and Rivkin, 2009; Hanushek et al., 2004). While the impact of teachers on students of different races is discussed in more detail later in the chapter, it is important to first look at how this may help explain the achievement gap itself. A study by Grissom and Redding (2016) hoped to explain why students

of color were underrepresented in gifted and talented classes.⁴ Using a nationally representative dataset of elementary school students, the authors find that even when you match black and white students with similarly high test scores and control for other factors, the black students are still less likely to be identified as gifted and talented (p. 6-8). When attempting to better understand this discrepancy, the authors look to how students end up in a gifted and talented class: teacher discretion. They found that black students were 3 times more likely to be assigned to a gifted and talented class when taught by a black teacher compared to a non-black teacher (p. 10). The authors conclude that since black students in the sample are overwhelmingly taught by white teachers, this could very well be the biggest impact on why black students are underrepresented in gifted classes. This study begins to shed some light on the importance of teacher race and a more diverse teaching workforce.

The studies discussed in this section certainly paint a complicated picture as to why the black-white achievement gap exists and how to work to close it. There are, however, several key points that are important to understanding the context of the research around race and education. First, the black-white achievement gap is an ongoing problem that must be addressed. While we understand some of the factors that impact the gap, no study has (or likely ever will) account for all of the differences in achievement between black and white students. We do know that some key factors can have an impact on the gap, most importantly a high quality teacher. Regardless of one's view on the school v. home debates, it is clear that teachers are an important factor in a child's education and academic achievement. The next section describes the importance of this student-teacher relationship and the research that surrounds it.

⁴ This study was also reference in the podcast by Malcolm Gladwell (2017) mentioned in Chapter 1.

Impacts of Student and Teacher Relationships

Student-teacher relationships and their impacts on students have been the topic of several areas of research in recent years. Baker et al. (2008) examined the ways in which student-teacher relationships can have an impact on students with particular behavior problems. The authors used data from elementary schools in a city in the southeastern United States. The students were predominately black and in grades K-5. The researchers used a student-teacher relationship scale in which teachers were asked about their relationship with each student in the study (p. 6). Several outcome variables were used, including grades in reading for achievement and a school appropriate behavior scale that again asks teachers about the behaviors of the student to measure acclimation and settling into school (p. 7) They found that positive relationships with their teachers allow students with behavior difficulties to better acclimate to their school setting and achieve better outcomes in school (p. 9-10). Another study by O'Connor et al. (2010) had similar findings. They found that high quality student-teacher relationships made elementary school students less likely to externalize their behaviors in a disruptive way (p. 30). One could assume that positive relationships would improve student behavior, but how does it impact actual outcomes for students?

Lee (2012) conducted a study that examined the impact that academic pressure from schools and student-teacher relationships had on academic outcomes. The author uses a sample of nearly four thousand 9th and 10th grade students and examined their reading assessment outcomes (p. 330-331). Teacher-student relationships were measured using a short student survey which asked about how well “that teachers get along well with students, are interested in students’ well-being, really listen to what students have to say, will provide extra help when students need it, and treat students fairly” (p. 335-336). She found that while both academic

pressure and positive student-teacher relationships had an impact on behavior (in line with the research above), only supportive student-teacher relationships were found to have a significant impact on reading test scores (p. 338-339). This supports the argument that high expectations and accountability for students are not the only factors that can impact student performance; positive and supportive relationships can be equally if not more important.

Other studies that looked specifically at students in high-poverty schools found similar results. Murray and Malmgren (2005) conducted a study that included an intervention with students in a high-poverty, high-minority, urban high school where the student begins to build a strong positive relationship with one of their teachers. Students were nominated by their teachers to participate in the study based on having significant behavior problems (p. 141-142). These students were then provided with additional positive interaction over a 5-month period of time with a one particular teacher. These interactions included after-school meetings, increased levels of feedback and praise given to the student, and a phone call from the teachers one to two times a month (p. 144-145). The authors concluded that while they did not see immediate effects on students' social and emotional development, the intervention did have a positive impact on students' academic outcomes, in this case grade point average (p. 146-147).

The research discussed in this section exemplifies the importance of student-teacher relationships. At a minimum, the studies lend some weight to the idea that positive student-teacher relationship could have an impact on student success and outcomes. The studies also shed some light on how these relationships are measured; in nearly all circumstances, they consist of a survey which asks students or teachers about key aspects of their relationships and interactions. What is not discussed at length in these studies is how different attributes of the

teacher or the student can have an impact on these relationships. The studies in the next sections take on this subject in more depth.

Impacts of Minority Teachers

As mentioned in Chapter 1, several studies have been conducted on the impact that minority teachers can have on their students. Ehrenberg et al. (1995) were one of the earlier authors to look specifically at how teacher characteristics (such as race, ethnicity, and gender) have an impact on their students. The authors were particularly interested in how a match between a student's characteristics and the teacher's characteristics would impact student performance, as well as the teacher's perceptions of that student's performance (p. 547-548). Using data from the National Education Longitudinal Study of 1988, the authors assessed both the actual and perceived academic impact teachers with certain characteristics had on their students. For the actual impact on achievement, the authors used cognitive tests developed by the Educational Testing Service (ETS); for the perceived outcomes, the authors gave teachers a yes/no survey which asked questions about each student (p. 549). The questions included items like "whether they thought the student would probably go to college; whether they would recommend the student for academic honors; whether they believed the student related well to others; whether they spoke to the student outside of class; and whether they believed the student worked hard" (p. 549-550). The authors concluded that the race and gender of the teacher compared to the student had little to no impact on student's academic performance (p. 554-555). They did find that teachers were likely, in some instances, to subjectively give higher ratings to students with a similar gender and race to their own (558-559).

Further studies found slightly different results. Dee (2004) used data from a study in Tennessee where students were randomly assigned to teachers in classrooms in participating

schools. The data set used in the study was based on an original experiment called Project STAR (Student Teacher Achievement Ratio) from the late 1980s. The project focused on students from kindergarten through to the third grade and included over 11,000 students (p.195, 198). While the initial focus of the study was on class size, students and teachers were both randomly assigned to classes. In the sample, 94% of white students had an own-race teacher while only 45% of black students had an own-race teacher (p. 199). The author ran a regression controlling for several key factors that might impact student performance and generally found that students with an own-race teachers performed better in both math and reading (p.202-204). This finding was consistent across all races and genders. Interestingly, Dee also look at the possible impact of several years (cumulative) of an own-race teacher on student performance. The study found that having several years of an own-race teacher had a compounding effect on student performance, especially after the 3 years with an own-race teacher (p. 209). Dee suggests that the evidence presented in this study presents a clear departure from previous, less rigorous studies. Importantly for the context of the study described in the following chapters, Dee argues that his study provides little evidence as to why an own-race teacher has this positive impact (209).

Following Dee's study, Howsen and Trawick (2007) conducted a study using the same methods Dee employed to assess a separate data set which included some of the demographics that Dee admitted were missing from the data set in Tennessee. The authors used data from "individual elementary schools" in Kentucky, which included around 26,000 students (p. 1024). Similar to Dee, the authors find that when using the same model and controls, having an own-race teacher seems to have a positive impact on student performance in both math and reading (p. 1024-1025). They then employ additional controls that were not available to Dee: student abilities and teacher gender. When these controls are added to the model, the impact of a same-

race teachers is decreased (though remains positive) and becomes statistically insignificant (p. 1026-1027). The authors conclude by cautioning researchers on drawing conclusions when these factors cannot be controlled. While the authors here criticize the lack of certain controls in Dee, using a completely different data set where random assignment was not employed does not seem to completely discredit Dee's findings, especially given the more rigorous experimental design used by Dee. In the end, both studies found positive impacts across the models for students who had an own-race teacher, though Howsen and Trawick's additional controls decreased the statistical significance.

A recent study by Egalite et al. (2015) was conducted to assess the impact of a same-race teacher on student performance in both math and reading. The authors used a large historical data set which included 7 years of testing across nearly 3 million students matched to nearly 100,000 teachers in the state of Florida. While Dee as well as Howsen and Trawick focused only on elementary aged students, Egalite et al. used a data set that included students across all tested grade levels, third through tenth grade (p. 46). The authors found that students who had a same-race teacher generally performed slightly better than those without a same race teacher in both math and reading (p. 48). The relationship was slightly stronger in math, where the finding holds up across all grade levels. In reading, there seems to be no significant relationship between having a same-race teacher and test scores at the middle and high school level (p. 48). The authors also examined the effect of having a same-race teacher on students by performance level. Egalite et al. found that lower performing black and white students benefitted the most from having a same-race teacher (p. 51).

Gershenson et al. (2016) conducted a study that attempted to explain why minority teachers may help improve academic outcomes. The authors used data from the Education

Longitudinal Study of 2002 completed by the National Center for Education Statistics, which included a nationally representative sample of 10th graders (p. 212). Part of the study asked two teachers of each student to identify how much education they expected the student to complete, which formed the variable they call “expectations” (p. 216). The authors found that black teachers were more likely to have higher expectations of black students than non-black teachers (221-222). This bias in teacher expectations may be part of the reason why black students (as discussed previously) achieve more academically when they are taught by a same-race teacher. Further studies discussed below may shed additional light on the impacts of a same-race teacher beyond academic outcomes.

Villegas and Irvine (2010) conducted a review of the literature on the impacts of having a more diversified teaching workforce and more same-race teachers for minority students. The authors found several key themes amongst the research on outcomes for students, most of which focused on non-academic outcomes and the experiences of students. First, they found that the literature suggests that a more diversified teaching workforce allows for additional role models for minority students (p. 176-177). The authors caution the reader, though, since no empirical studies were found to support this claim. Additionally, they find that the literature supports the idea that teachers of color improve not only the academic performance of students of color, but also the school experience of students of color (p. 185). Many of the studies reviewed focused on these non-academic outcomes that minority teachers can improve in schools, such as maintaining high expectations for minority students, using cultural relevant teaching, acting as an advocate for students of color, and confronting racism through their teaching (p. 180-185). The studies reviewed by the authors indicate that there may be additional non-academic benefits to having a same-race teacher.

Clearly a debate is beginning to build on whether or not a same-race teacher has a beneficial impact on students, though the evidence seems to favor a positive impact. None of the studies are advocating for the segregating or even assigning of teachers to classes of students based on race. Each of the articles that found support for having a same-race teacher (and even some of those that did not) advocate instead for diversifying the teaching workforce as the student population becomes more diverse. These studies, however, focused mainly on the academic outcomes of students. In the section below, additional studies are discussed that focus more on the experience and specifically the perceptions of students.

Importance of Perceptions

While it is important to understand how having a same-race teacher can impact student achievement, it is also important to examine how this might influence student perceptions of the relationship with their teacher, or their perceptions of teacher effectiveness. Indeed, this study focuses on the non-academic outcome of student perceptions, specifically regarding teacher effectiveness. As mentioned previously, few studies have focused on how students perceive their teacher's effectiveness, especially using a student's race (and more specifically the majority race of a class) compared to the race of the teacher. There is no denying that a focus on student achievement is important, but the studies above do not fully explain the full impact of a same-race teacher, leaving a possible need to look beyond test scores (especially in subjects where test scores are non-existent) and assess the impact that student-teacher relationships can have on students and their perceptions of their teachers. Students will spend the majority of their childhood in front of teachers, and most would agree that we want those students to have a positive experience with their own education. In many ways, that starts with the relationship they have with their teachers, and thus we should be concerned about their perceptions of that teacher

and their relationship with them. Additionally, it is important to understand why these benefits to student achievement described in the previous section occur so that we can better implement them in classrooms. The answer may lie in how students perceive and interact with their teacher.

One of the earlier studies on student perceptions of teachers was a study by Coats et al. in 1972. The study examined a large scale survey given to students about the image of their teachers. A factor analysis was then completed to identify how individual factors may explain variations in student responses about their teachers (p. 358). The study claims that one single factor which the authors claim is “teacher charisma and teacher popularity” accounts for 61% of the variance in the 12 questions on the survey (p. 359-360). The authors here only speculate what that factor is, with no real evidence to suggest its validity. It should be noted that this study cautions the use of student surveys as a measure of teacher effectiveness, claiming that most of the student perceptions vary based on the popularity of the teacher, and that students do not accurately respond to how effective the teachers is (p. 360). This study does not address how characteristics of the student or teacher may affect these results. We know from the psychological research described earlier in this chapter that attraction and similarity are highly correlated. Coats et al. claim that the variance is accounted for mainly by teacher charisma or popularity, this could very easily be linked to similarities and attractions described by psychologists. Regardless, what is the benefit to students from these positive feelings about their teacher? The studies below begin to shed light on this question.

Gehlbach et al. (2016) examined how perceived similarities between students and teachers can affect student achievement and student/teacher perceptions. In the experiment, students and teachers took a “getting to know you” survey to determine similarities between students and their teacher (p.6-7). The authors found that when told of their similarities with their

students, teachers later felt they had better relationships with those students (p. 10). Furthermore, they found that in the group where students were told of their similarities with their teachers, the achievement gap between advantaged and disadvantaged students was closed by over 60% (p. 11-12). The similarities here were general similarities that may not have initially been apparent to either the student or the teacher. What impact do actual similarities based on observable characteristics (like race) have on students?

Another recent study began to tackle this question by specifically looking at how student perceptions of their teacher differ based on their teacher's race. Cherng and Halpin (2016) used data from the Gates Foundation's Measure of Effective Teaching (MET) to see how students perceived teachers differently based on the teacher's race. The authors focused on one year of the study and only on middle school students in the sample from grades six to nine. The MET data included student surveys of their teachers on seven key attributes: academic challenge, classroom management, care and relationships, openness to student opinions, captivating student interest, pedagogical strategies, and connecting all learning (p. 409). Each of these subtopics related to effectiveness were made up of three to eight survey questions with Cronbach's alphas ranging from .78 to .85 (p. 409). They found that minority teachers were preferred by all students over white teachers on all measures (p. 411-412). The authors conducted further analysis to see if students from different races preferred teachers of the same race. Here, they found slightly different results for different ethnicities. Latino students did not score Latino teacher any differently than their white or black teachers, while black students preferred their black teachers over teachers from other races (p. 412). Last, they show that all student groups (including white students) preferred their minority/ethnically diverse teachers over their white teachers (p. 416). The authors conclude that this is an indication that recruitment of a more ethnically diverse

teacher workforce is essential (p. 417). Cherng and Halpin did not look at how the racial makeup of a particular classroom compared to the race of the teacher might affect the perceptions of students (i.e. a majority black class with a black teachers). Also, the sample used here was mainly urban and across the U.S.; the proposed study discussed here seeks to look at the impacts of same-race teachers in low-income and rural schools. Last, the authors focused only on middle school students, whereas the study described in the next chapters will look at a range of grade levels.

While these studies begin to address the research questions proposed here, there are still questions to which we do not know the answers. For instance, given the increased effects of having a same-race teacher on student achievement for low-income students observed by Egalite et al. (2015), does having a same-race teacher have a more significant effect on the perceptions of students in low-income areas such as those in the proposed sample described in Chapter 3? Additionally, are these classroom effects based on having a teacher that matches the majority race of the student population for a class? These questions get to the heart of the reasons policymakers may be interested in increasing minority teacher recruitment. They may well shed additional light on reasons why the diversification of the teaching workforce could be an effective educational intervention.

Chapter 3: Research Questions and Methods

Chapters 1 and 2 describe the challenges of diversifying the teaching workforce, the continuing black-white achievement gap, and the body of research that hopes to better understand these challenges. This study seeks to add to that body of research by assessing the impact that a same-race teacher has on the perceptions of a classroom of students. While in theory most of us agree that a more diverse teacher workforce is a positive thing, we must ask what impact it has on students. This study will seek to answer several questions regarding the relationship between student perceptions of their teacher and race.

The central questions of this research are:

1. Does the proportion of students in a classroom with a same race as their teacher have an impact on how those students perceive their teacher's **effectiveness**?
2. Does the proportion of students in a classroom with a same race as their teacher have an impact on how those students perceive their **relationship** with their teacher?

Methods

Data

To address these questions, this study uses a set of student surveys given during the 2015-2016 school year to the students in schools across southern, central, and northeast Arkansas. The schools were part of a partnership of schools served by the Arkansas Teacher Corps, a program of the University of Arkansas that provides teachers for low-income, high need schools. Surveys were administered to students who had both ATC and non-ATC teachers; the sample, then, is not limited to only teachers from one training pathway. The aim of the survey was to assess the students' perceptions of their teacher's effectiveness and their relationship with that teacher

across several constructs. The survey and the constructs were adapted from the Panorama Student Surveys (2015) which is a validated and piloted student survey developed with the Harvard Graduate School of Education.

The survey instrument was made up of 41 multiple-choice items (each with four answer choices) and three open response items. The four answer choices differ based on the question, but were ordered in a consistent format: very negative, negative, positive, very positive. These answers were coded 1, 2, 3, and 4 respectively during data entry. No middle or neutral choice was given to force students to make a decision one way or another.

Student surveys were administered on paper to students in their classes by survey administrators hired by the University of Arkansas. The survey administrator was asked to record the number of male and female students in the class as well as the number of white, black, and other race students in the class. The survey team were asked to use all resources available to them, including information from the teacher, to determine students' race and gender. In cases where no other information was available, the survey administrator simply identified, as best they could, a student's race and gender by sight. Given the findings of Montoya et al. (2008) mentioned in Chapter 2 regarding the importance of perceived similarities (versus actual similarities), this method of identifying students by race seems appropriate as students and teachers do not necessarily know each other's races by anything other than observable factors. The majority of schools served by the Arkansas Teacher Corps are predominately made up of a population of both white and black students with a very small population of students from other races. Administrators did not report any issues with identifying the race of students in the classes surveys based on the information available to them.

Teachers had no access to completed surveys for privacy reasons and to eliminate bias or tampering. Students were given 20-30 minutes to complete the survey, but survey administrators were told to give extra time if needed and available. Students in the 3rd through 5th grades were given the same survey with slightly simplified wording to adapt to their reading level. The survey was also read aloud to these students. Students were told in the directions and verbally that all individual data would be kept confidential and not individually released to their teachers. Letters were sent home to the parents of the students giving them an opportunity to opt out of the study if they wished. Students were also made aware that no punishments or promotion would result based on their responses. All surveys were collected by the survey staff and returned to the university for data entry.

Seven general topics (or constructs) were covered by the survey based on the original concepts used in the Panorama Student Surveys (2015) as well as similar indicators of effective teaching from other sources (Bill and Melinda Gates Foundation, 2012).

On average, there were 3-5 items based on each construct. Below are the seven original topics covered by the survey.

1. Pedagogical Effectiveness

- Items on this topic aim to measure students' perceptions of a teacher's ability to deliver content through instructional methods. Items ask about student participation, feedback to students, how much students learn, and how clearly content is presented.

2. Content Knowledge

- Items on this topic aim to measure students' perceptions of how well a teacher knows the actual content they are teaching. Items ask about a teacher's knowledge of the content and ability to answer questions regarding content.

3. Classroom Environment

- Items on this topic aim to measure students' perceptions of the physical, social, and physiological climate in a teacher's classroom. Items ask about fairness of rules, teacher's mood, and student behavior.
4. Expectations & Rigor
 - Items on this topic aim to measure students' perceptions of the extent to which a teacher holds high expectations for students regarding students' effort, understanding, persistence, and performance in class. Items ask about encouragement from the teachers, perceived expectations, and perceived challenges.
 5. Student Engagement
 - Items on this topic aim to measure students' perceptions of how well students pay attention and are invested in a teacher's class. Items ask about participation and student interest in the class and content.
 6. Supportive Relationships
 - Items on this topic aim to measure students' perceptions of a teacher's care and support for the personal development and well-being of their students beyond the classroom. Items ask about a teacher's concern for students, interest in students' extracurricular activities, approachability, and general concern for students.
 7. Time & Commitment
 - Items on this topic aim to measure students' perceptions of a teacher's commitment to students and amount of time put in to their work. Items ask about a teacher's preparedness and time spent assisting students outside of class.

These original constructs aim to assess very specific areas of teaching that relate to both effectiveness and student/teacher relationships, while the research questions here ask about the effectiveness and relationships in a broader sense. Thus, two grand constructs have been created based on combinations of items from the original constructs in order to answer the research questions posed. The grand construct of Effectiveness is made up of the items from the original constructs of Pedagogical Effectiveness, Content Knowledge, Student Engagement, Classroom Environment (2 items), Expectations & Rigor (1 item), and Time & Commitment (1 item). The grand construct of Relationships is made up of the items from the original constructs of Classroom Environment (1 item), Expectations & Rigor (1 item), Supportive Relationships, and

Time & Commitment (1 item). You will notice that some of the items from the original constructs are split across the two grand constructs based on their relevance more to Effectiveness or Relationships, however, no items are used in both grand constructs. These outcome variables are discussed in detail later in this chapter. In the analysis described later in this chapter, the grand constructs will lead the analysis in answering the research questions, but I will look at several of the original constructs to identify any key areas where the same-race variable might have a significant effect.

Outcome Variables

As mentioned above, the key outcome (dependent) variables for this study are the two grand constructs created from multiple items around aspects of quality teaching. The two grand constructs used in this study were based on the original constructs used in the Panorama Student Surveys (2015) as well as similar indicators of effective teaching from other sources including the Bill and Melinda Gates Foundation (2012).

The grand construct of Effectiveness is the first of the two grand constructs used as the primary outcomes for this particular study. This construct aims to measure students' perceptions of a teacher's effectiveness based on key characteristics of effective teaching that can be observed by the students themselves. The items ask about a teacher's instructional methods, knowledge of the content, ability to engage students, level of rigor, and maintenance of high expectations. Subgroups (the original constructs) based on these specific topics will also be analyzed to see if any distinctions between specific measures of effectiveness. Below is a list of the items included in the grand construct of Effectiveness:

- Overall, how much have you learned from this teacher about <SUBJECT>?

- For this class, how clearly does this teacher present the information that you need to learn?
- How often does this teacher give you feedback that helps you learn (for example: comments or grading on assignments or projects)?
- How often does this teacher require everyone to participate in class?
- How knowledgeable is your teacher about <SUBJECT>?
- How often is your teacher able to answer your questions regarding <SUBJECT>?
- How fair are the rules for the students in this class?
- How often do students behave well in this class?
- Overall, how high are this teacher's expectations of you?
- In this class, how much do you participate?
- Overall, how interested are you in this class?
- Overall, how interesting does this teacher make what you are learning in this class?
- How prepared is your teacher for class?

Figure 1 displays a sample of format and coding of items from the Effectiveness grand construct. The overall score for the grand construct is the average of the answers to all items in the grand construct ranging from 1 to 4. The full surveys including the list of constructs and corresponding items are included in Appendix A, B, and C.


	Coding			
	1	2	3	4
				
1. Overall, how much have you learned from this teacher about <SUBJECT>?	Almost nothing <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
2. For this class, how clearly does this teacher present the information that you need to learn?	Not at all clearly <input type="radio"/>	Slightly clearly <input type="radio"/>	Quite clearly <input type="radio"/>	Extremely clearly <input type="radio"/>
3. How often does this teacher give you feedback that helps you learn (for example: comments or grading on assignments or projects)?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
8. How knowledgeable is your teacher about <SUBJECT>?	Not at all knowledgeable <input type="radio"/>	A little bit knowledgeable <input type="radio"/>	Quite knowledgeable <input type="radio"/>	Extremely knowledgeable <input type="radio"/>
9. How often is your teacher able to answer your questions regarding <SUBJECT>?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>

Figure 1: Sample of Effectiveness (Grand Construct) Items

The grand construct of Relationships is the second of the two grand constructs used as an outcome variable for this study. The grand construct of Relationships aims to measure students' perceptions of a teacher's care and support for the personal development and well-being of their students beyond the classroom. The items ask about a teacher's concern for students, interest in students' extracurricular activities, approachability, and general demeanor with students. On face, one may think this is simply how likeable a particular teacher is, but the items within the construct measure specific actions that attribute to positive teacher student relationships and interactions outside of academics. Below is a list of the items included in the grand construct of Relationships:

- How often does this teacher encourage you to do your best?
- How interested is this teacher in what you do outside of class?
- On most days, how pleasant is your teacher's mood?
- If you walked into class upset, how concerned would your teacher be?

- How approachable is your teacher outside of class?
- How willing is this teacher to take time outside of class to help you?

Figure 2 below displays a sample of format and coding of items from the Relationship grand construct.

	Coding			
	1	2	3	4
18. How often does this teacher encourage you to do your best?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
29. How interested is this teacher in what you do outside of class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
30. If you walked into class upset, how concerned would your teacher be?	Not at all concerned <input type="radio"/>	A little bit concerned <input type="radio"/>	Quite concerned <input type="radio"/>	Extremely concerned <input type="radio"/>
31. How approachable is your teacher outside of class?	Not at all approachable <input type="radio"/>	A little bit approachable <input type="radio"/>	Quite approachable <input type="radio"/>	Extremely approachable <input type="radio"/>
37. How willing is this teacher to take time outside of class to help you?	Not at all willing <input type="radio"/>	Slightly willing <input type="radio"/>	Quite willing <input type="radio"/>	Extremely willing <input type="radio"/>

Figure 2: Sample of Relationships (Grand Construct) Items

The overall score for the grand construct is the average of the responses to all items in the grand construct ranging from 1 to 4.

Table 1 displays the descriptive statistics of the outcome variables in this study. As each question in the survey is coded from 1 (most negative answer) to 4 (most positive answer), any value above 2.5 is considered a positive perception. All of the constructs show that students have generally positive perceptions of their teachers. There is some variability across the constructs. The Supportive Relationships original construct has the lowest average at 2.886 and the Content Knowledge construct has the highest at 3.390. The grand construct of Effectiveness has an average of 3.183 and the grand construct of Relationships has an average of 3.041.

Table 1: Construct Descriptive Statistics

	Grand Constructs		Original Constructs						
Measure	<i>Effectiveness</i>	<i>Relationships</i>	<i>Pedagogical Effectiveness</i>	<i>Content Knowledge</i>	<i>Classroom Environment</i>	<i>Expectations & Rigor</i>	<i>Student Engagement</i>	<i>Supportive Relationships</i>	<i>Time & Commitment</i>
n (classes)	508	508	508	508	508	508	508	508	508
Mean	3.183	3.041	3.203	3.390	3.098	3.315	3.035	2.886	3.168
Median	3.234	3.092	3.262	3.465	3.141	3.389	3.051	2.917	3.210
Mode	3.31	3.25	3.25	3.50	3.33	3.50	3.00	3.00	3.00
Standard Deviation	0.352	0.409	0.381	0.359	0.437	0.399	0.403	0.440	0.382
Sample Variance	0.124	0.167	0.145	0.129	0.191	0.159	0.161	0.193	0.146
Minimum	1.04	1.08	1.00	1.00	1.00	1.00	1.00	1.17	1.25
Maximum	4	4	4	4	4	4	4	4	4
No. of items in construct	13	6	4	2	3	2	3	3	2
n (students)	7,100	7,081	7097	7082	7079	7020	7009	7,001	6951

Table 2: Correlation Matrix for Outcome Variables

	Grand Constructs		Original Constructs						
Measure	<i>Effectiveness</i>	<i>Relationships</i>	<i>Pedagogical Effectiveness</i>	<i>Content Knowledge</i>	<i>Classroom Environment</i>	<i>Expectations & Rigor</i>	<i>Student Engagement</i>	<i>Supportive Relationships</i>	<i>Time & Commitment</i>
Effectiveness	1	.895***	.951***	.860***	.858***	.895***	.914***	.815***	.892***
Relationships	.895***	1	.827***	.729***	.830***	.866***	.843***	.965***	.902***
Pedagogical Effectiveness	.951***	.827***	1	.776***	.725***	.845***	.860***	.756***	.829***
Content Knowledge	.860***	.729***	.776***	1	.755***	.761***	.679***	.625***	.752***
Classroom Environment	.858***	.830***	.725***	0.755***	1	.749***	.709***	.723***	.774***
Expectations & Rigor	.895***	.866***	.845***	.761***	.749***	1	.787***	.775***	.822***
Student Engagement	.914***	.843***	.860***	.679***	.709***	.787***	1	.809***	.798***
Supportive Relationships	.815***	.965***	.756***	.625***	.723***	.775***	.809***	1	.822***
Time & Commitment	.892***	.902***	.829***	.752***	.774***	.822***	.798***	0.822***	1

N (classes) = 508; *** = *p*-value < 0.001

To help understand how the outcome variables relate to each other beyond the differences in descriptive statistics, Table 2 displays a correlation matrix of the outcome variables. As expected, all of the outcome variables are moderately to highly correlated at a statistically significant level. It is important to note that all of the effectiveness measures from the original construct are highly correlated with the grand construct of Effectiveness.

Reliability of the Instrument

As described previously, the instrument used to quantify the dependent variable in this study is a student survey adapted from the Panorama Student Surveys (2015), which is a validated and piloted student survey developed with the Harvard Graduate School of Education. When using constructs made of several combined items, it is important to know how consistent the items are at measuring the underlying construct you are seeking to describe. Cronbach (1951) created a measure now known as Cronbach's alpha which seeks to measure the reliability of the construct. This measure gives an indication of the "inter-item homogeneity" of the items in the scale, thus, how reliable or effective is the scale at measuring the underlying concepts or construct (Cronbach, 1951, p. 297). Alpha is a value between 0 and 1 and represents the average of all the split-half reliabilities of a test (Cronbach, 1951, p. 331). In other words, Cronbach's alpha represents "the correlation of [a] test with itself" (Tavakol and Dennick, 2011, p. 53). A higher value of alpha means that there is a higher level of internal consistency within a given set of items. A scale or construct is generally seen as acceptable or reliable with an alpha coefficient of 0.70 to 0.95 (Tavakol and Dennick, 2011, p. 54). Different values of the coefficient alpha may give us certain indications about the scale that we are using. For instance, a low value of alpha ($\alpha < 0.70$) could mean that either there is not a high level of internal consistency within the construct or that there are simply too few items in the construct. Similarly, an extremely high

value of alpha ($\alpha > 0.95$) could mean that you have too many items in the scale and that they are becoming artificially redundant (Tavakol and Dennick, 2011, p. 53-54). Using Cronbach's alpha should give us a good understanding of how reliable (or internally consistent) the constructs used in this study are.

Table 3, below, displays the Cronbach's alpha values for the original 7 constructs and the grand constructs of Effectiveness and Relationships.

Table 3: Cronbach's Alpha Values for Constructs

<i>Construct</i>	<i>Number of Items</i>	<i>Alpha</i>
Effectiveness (Grand Construct)	13	.902
Relationships (Grand Construct)	6	.854
Pedagogical Effectiveness	4	.774
Content Knowledge	2	.668
Classroom Environment	3	.706
Expectations and Rigor	2	.737
Student Engagement	3	.786
Time & Commitment	2	.643
Supportive Relationships	3	.795

Most of the original constructs have a good level of internal consistency. Two of the constructs (Content Knowledge and Time & Commitment) fall slightly below the desired level of reliability with an alpha value of less than .7, but this is somewhat to be expected with only 2 items in the construct. Of the original constructs, Supportive Relationships is the most reliable. The Effectiveness grand construct is made up 13 items from the survey which measure aspects of teacher effectiveness. The alpha value for this construct is rather high, which may be slightly

inflated due to the large number of items, but not overly so as it is not above .95. Similarly, the Relationships grand construct is made up of 6 items from the survey which measure aspects of positive relationships between students and teachers. The alpha value for this construct is also rather high at .954. Overall, the reliability analysis shows that the constructs are generally effective with a decent level of internal consistency. Care should be taken though, when drawing conclusions based on the Content Knowledge and Time & Commitment original constructs as they fall below the desired level of reliability.

Sample

There are 98 teachers in the sample. The vast majority of teachers are white females teaching in high schools. Table 4 displays the key characteristics of teachers in the sample.

Table 4: Teacher Characteristics

<i>Characteristics</i>	<i>N</i>	<i>Percentage (valid data)</i>	<i>Percentage (all data)</i>
<i>Race</i>			
White	66	77%	67.3%
Black	13	15.3%	13.3%
Other	6	7.1%	6.1%
Not reported	13		13.3%
<i>Gender</i>			
Male	37	37.6%	37.6%
Female	61	62.3%	62.3%
<i>Grade level</i>			
Elementary (3-5)	9	9.2%	9.2%
Middle (6-8)	24	24.5%	24.5%
High School (9-12)	65	66.3%	66.3%
<i>Teacher Training</i>			
Traditional	51	52.0%	52.0%
Arkansas Teacher Corps	39	39.8%	39.8%
Other Non-Traditional	8	8.2%	8.2%

These teachers taught a range of subjects. Table 5 displays the subjects taught by these teachers and the total number of classes taught in each subject.

Table 5: Subjects Taught and Number of Classrooms

<i>Subject</i>	Teachers		Classes	
	<i>N</i>	<i>Percentage</i>	<i>N</i>	<i>Percentage</i>
Art	6	6.2%	30	5.9%
Elementary	9	9.2%	25	4.9%
English/Literacy	22	22.4%	102	20.1%
Foreign Languages	4	4.1%	26	5.1%
Mathematics	18	18.4%	96	18.9%
Science	26	26.5%	158	31.1%
Social Science/Business	13	13.3%	71	14.0%

The sample includes 7,265 students in 508 classrooms taught by these 98 teachers within 23 schools across southern Arkansas. The majority of students in the sample are students of color and from low-income families given the types of schools that ATC serves. Table 6 displays some of the key characteristics of students in the sample. While the level of analysis will be classes of students, this data will give an idea of the student population that makes up those classes.

Table 6: Student Characteristics

<i>Characteristics</i>	N	Percentage (valid data)	Percentage (all data)
<i>Race</i>			
White	1,911	29.2%	26.3%
Black	4,108	62.8%	56.5%
Other	523	8.0%	7.2%
Not reported	723		10.0%
<i>Gender</i>			
Male	3,220	48.7%	44.3%
Female	3,395	51.3%	46.7%
Not reported	650		8.9%
<i>Grade level</i>			
Elementary (3-5)	967	13.7%	13.3%
Middle (6-8)	1,990	28.2%	27.4%
High School (9-12)	4,111	58.2%	56.6%
Not reported	197		2.7%

It is important to note that there are stark differences between the racial makeup of the students and the teachers in the sample with over 70% of the students are non-white while just over 20% of teachers are non-white.

Regression Modeling

To assess the impact that similar race teachers have on student perceptions, we use a linear regression model controlling for other characteristics that might also impact perceptions.

We use several models controlling for different variables in each model. Each model is based on a variation on the equation:

$$Y_i = \beta_0 + \beta_1 X_{\text{SameRace}} + \beta_2 X_{\text{School}} + \beta_3 X_{\text{Subject}} + \beta_4 X_{\text{GradeLevel}} + \beta_5 X_{\text{FRL}} + \beta_6 X_{\text{Achievement}} + \beta_7 X_{\text{StudentBlack}} + \beta_8 X_{\text{StudentOther}} + \beta_9 X_{\text{TeacherBlack}} + \beta_{10} X_{\text{TeacherOther}} + \beta_{11} X_{\text{TeacherMale}} + \beta_{12} X_{\text{ATC}} + \varepsilon$$

where:

- Y_i is the average perceptions score on the construct of interest (effectiveness or relationships) for students in class i
- β_0 is the intercept
- β_1 is the coefficient for the variable X_{SameRace} which is based on the proportion of students who have the same race as the teacher in class i
- β_2 is the coefficient for the variable X_{School} which is a vector of dummy variables that corresponds to the school that students in class i attend
- β_3 is the coefficient for the variable X_{Subject} which is a vector of dummy variables that corresponds to the subject that students in class i are studying
- β_4 is the coefficient for the variable $X_{\text{GradeLevel}}$ which is a vector of dummy variables that corresponds to the grade level for students in class i
- β_5 is the coefficient for the variable X_{FRL} which is a continuous variable relating to the proportion of pupils within the school of class i that receive free- or reduced-lunches

- β_6 is the coefficient for the variable $X_{\text{Achievement}}$ which is a continuous variable relating to the percentage of pupils within student i's closest tested grade and subject within their school that met the benchmark on the state exam relative to the state average
- β_7 is the coefficient for the variable $X_{\text{StudentBlack}}$ which is a continuous variable based on the proportion of class i that are black
- β_8 is the coefficient for the variable $X_{\text{StudentOther}}$ which is a continuous variable based on the proportion of class i that are of another race than black or white
- β_9 is the coefficient for the variable $X_{\text{TeacherBlack}}$ which binary dummy variable as to whether or not the teacher for class i is black
- β_{10} is the coefficient for the variable $X_{\text{TeacherOther}}$ which binary dummy variable as to whether or not the teacher for class i is black
- β_{11} is the coefficient for the variable $X_{\text{TeacherMale}}$ which is a binary dummy variable as to whether or not the teacher for class i is male
- β_{12} is the coefficient for the variable X_{ATC} which is a binary dummy variable as to whether or not the teacher for class i was trained through the ATC program
- ϵ is the error term.

Several variations of the models are used to control for different possible variables.

Below is a brief description of the controls included in each different model.

- Model I: Controls for school, subject, grade level, FRL, achievement, and teacher gender
 - This is the base model controlling for general class demographics and possible school effects.

- Model II: Controls for school, subject, grade level, FRL, achievement, teacher gender and ATC
 - Expanding on Model I, this model adds the ATC variable, which will control for any positive or negative effects being an ATC teacher has on the outcome variables. Given the rigorous selection, on-going support, and bespoke race and consciousness training ATC provides, this may have an impact on the outcome variables.
- Model III: Controls for school, subject, grade level, FRL, achievement, teacher gender, ATC, and student race
 - Expanding on Model II, this model adds a student race control in case students of certain races categorically respond more positively or negatively to the survey items.
- Model IV: Controls for school, subject, grade level, FRL, achievement, teacher gender, ATC, and teacher race
 - This model removes the ATC variable but adds a teacher race control to account for any differences there may be in how all students perceive teachers of certain races. There is a concern that this may control away some of influence of the SameRace variable.
- Model V: Controls for school, subject, grade level, FRL, achievement, teacher gender, and student race
 - This model simply removes the ATC variable from Model III.

- Model VI: Controls for school, subject, grade level, FRL, achievement, teacher gender, and teacher race
 - This model simply removes the ATC variable from Model IV.

Control Variables

Included in the above models are several control variables, which may have an impact on the outcome variables of interest in this study. These variables have been included in several of the models above because of this possible impact and to better measure the actual effect of having a same-race teacher. Below are brief descriptions of these variables, why they have been included in the models, and the possible impacts of including them.

Most of the control variables that are included in the models are based on the belief that that certain circumstances may lead a student to rate a teacher higher or lower that are beyond the control of the teacher, and not necessarily linked to that teacher's abilities, effectiveness, or relationships with their students. All models include dummy variables for the subject being taught to potentially control away the effect of teaching a "popular" subject as opposed to less popular or more challenging subject. The subjects taught have been grouped into 7 subject categories of English language arts/literacy, mathematics, sciences, social sciences/business, fine arts, languages, and elementary. All classes in the study fit into one of these 7 categories and all classes were categorized.

All models also include school controls. These are included as there may be cultures in certain schools for students to give more constructive or harsher feedback to teachers than others. School level control created by simply using dummy variables to indicate which school the class was taught in. Similarly, grade level controls are used to control away the potential effects of

students giving feedback slightly differently as they get older. For instance, one might hypothesize that younger students in elementary or middle schools might feel closer to their teachers than older students in a more disconnected secondary setting. Each class was assigned a predominate grade level. In instances where there were multi-grade level classes, the predominate grade level assigned was the grade level that represented the highest proportion of students. To avoid fractional grade levels, in the rare situation where there were an even number of students from two grade levels, the higher grade level was chosen. Grade levels were then grouped into three categories: elementary (3rd-5th), middle school (6th-8th), and high school (9th-12th).

Several variables regarding the student demographic information of the class were included in all models. Free- and reduced-lunch status is included as control variables in case students from different socioeconomic backgrounds tend to respond differently. Each class was assigned a free- and reduced-lunch status value based on the FRL percentage for that particular school. These were represented as continuous percentages between 0 and 100. Similarly included in all models, achievement levels for groups of students are included since classes with higher levels of achievement may rate their teachers differently than classes with lower levels of achievement. A class was assigned an achievement variable based on the closest state achievement test that could be linked to that particular grade level, subject, and school. For instance, for a 10th grade English class at a particular school, the 9th grade ELA state exam average from the previous year for that school would be used as it would be the achievement scores most likely to be associated with that class of students. These scores are then converted to a positive or negative value based on the difference between the class score and the state average for that exam in an attempt to normalize the values across subjects. Last of the control variables

in all models is TeacherMale which is a binary variable that simply reports whether or not the teacher is male or not. This control is included because it is possible that students may respond to male or female teachers differently.

Other controls are included in some, but not all, models as there are concerns over potentially controlling away some of the effects of a same-race teacher. A binary variable referring to whether or not the teacher was a member of the Arkansas Teacher Corps (ATC) is included in several models. Since ATC specifically recruits teachers to train and teach in areas with a high concentration of minority students, it is plausible that students of ATC teachers might react to them slightly differently given that these teachers specifically chose to be in a program that serves minority populations. Additionally, ATC trains teachers for the specific settings in which they will teach, high poverty areas of the state with diverse populations, which may also affect the effectiveness of the teacher and the relationships they build with students.

Both student race and teacher race are directly linked to the key independent variable of having a same race teacher. Given the possibility that students of different races may respond differently to all teachers (regardless of the teacher's race), several models include student race as a control. The teacher's race is obviously a large part of the "treatment" of having a same race teacher, but there is still a possibility that students generally (regardless of their own race) react differently to teachers of certain races. The teacher race variable is included in some models but there is a concern that it may be controlling away some of the treatment effect.

Table 7 below displays the descriptive statistics for the continuous control variables used in the models described.

Table 7: Continuous Control Variable Descriptive Statistics

<i>Measure</i>	<i>Proportion Same-Race</i>	<i>Proportion White Student</i>	<i>Proportion Black Student</i>	<i>Proportion Other Student</i>	<i>FRL %</i>	<i>Achievement</i>
n (classes)	461	508	508	508	508	508
Mean	.314	.255	.658	.088	77.192	-17.280
Median	.259	.222	.667	.053	74.000	-18.000
Mode	.000	.000	1.000	.000	58.000	-19.000
Standard Deviation	.283	.223	.248	.126	12.327	9.693
Sample Variance	.080	.050	.062	.016	151.967	93.951
Minimum	0	0	0	0	40	-41
Maximum	1	1	1	1	94	2

Table 8 displays a frequency table based on the number of classes in the sample for the categorical control variables in the models.

Table 8: Categorical Control Variable Frequencies

<i>Variables</i>	<i>N of Classrooms</i>	<i>% of Classrooms</i>
<i>Total Number of Classes</i>	508	
<i>Teacher Race</i>		
White	371	73.0
Black	51	10.0
Other	39	7.7
Not Reported	47	9.3
<i>Teacher Gender</i>		
Male	197	38.8
Female	311	61.2
<i>Teacher Training</i>		
Arkansas Teacher Corps	211	41.5
Other Training Route	297	58.5
<i>Class Grade level</i>		
Elementary (3-5)	53	10.4
Middle (6-8)	125	24.6
High School (9-12)	330	65.0
<i>Class Subject</i>		
Arts	30	5.9
Elementary	25	4.9
English/Literacy	102	20.1
Foreign Languages	26	5.1
Mathematics	96	18.9
Science	158	31.1
Social Science/Business	71	14.0

It is important to note that 47 classrooms have a teacher whose race is not reported which means those classrooms cannot be included in the analytic sample since the percent of same-race students in the class cannot be determined. Table 9 and 10 display the differences between the classes that are excluded and those in the analytic sample.

Table 9: Frequencies for Analytic and Non-Analytic Samples

<i>Variables</i>	<i>Excluded Classrooms</i>	<i>Included Classrooms</i>
<i>Number of Classes</i>	47	461
<i>Teacher Gender</i>		
Male	21.3%	40.6%
Female	78.7%	59.4%
<i>Teacher Training</i>		
Arkansas Teacher Corps	0%	45.8%
Other Training Route	100%	54.2%
<i>Class Grade level</i>		
Elementary (3-5)	23.4%	9.1%
Middle (6-8)	17.0%	25.4%
High School (9-12)	59.6%	65.5%
<i>Class Subject</i>		
Arts	12.8%	5.2%
Elementary	0%	5.4%
English/Literacy	12.8%	20.8%
Foreign Languages	0%	5.6%
Mathematics	19.1%	18.9%
Science	38.3%	30.4%
Social Science/Business	17.0%	13.7%

Table 10: Means for Analytic and Non-Analytic Samples

<i>Variables</i>	<i>Excluded Classrooms</i>	<i>Included Classrooms</i>
Number of Classes	47	461
<i>Student Race</i>		
White	0.30	0.25
Black	0.62	0.66
Other	0.08	0.09
FRL	73.70	77.55
Achievement	-10.74	-17.95
Effectiveness (Grand Construct)	3.11	3.19
Relationships (Grand Construct)	2.86	3.06

Most of these differences are likely accounted for by the ATC variable which is also controlled for in several models. That is, we were able to gather the necessary information for all ATC classrooms but not for the other classrooms; ATC students are more likely to be male and minority and are more likely to be placed in high school. Despite these differences between the included and excluded classes, the number of excluded classes is relatively low only accounting for less than 10% of the entire sample. Additionally, since we are controlling for these variables in the regression models, the slight differences are less of a concern.

Subgroup and Additional Analysis

To better understand the findings of this study, additional subgroup analysis will be conducted. The analysis will include subgroups separated by majority race of the class to determine if the same-race variable seems to have a different effect on the outcomes between

races. Additional subgroup analyses will be included, such as separate examinations of the ATC and non-ATC teachers. Another aspect of previous studies that will be replicated here is an assessment of the “minority teacher effect”, that is, do students generally find minority teachers more or less effective.

Hypothesized Findings

Research question 1: Given the previous research on the topic of race and student perceptions of teacher effectiveness, I expect to find that classrooms of same-race students to that of their teacher have higher perceptions of their teacher’s effectiveness.

Research question 2: Given the previous research on the topic of race and student-teacher relationships, I expect to find that classrooms of same-race students to that of their teacher have higher perception of their relationship with that teacher. Previous research would also lead us to believe this outcome measure may be more strongly related to the presence of a same-race teacher than will the effectiveness outcome variable.

Chapter 4: Results and Discussion

Before describing the results of my regression analyses, I will present the results of an initial straightforward analysis of the simple differences (uncontrolled) in outcomes between classes that have or do not have a same-race teacher. For this initial analysis, I created a binary variable to identify if the class has a same-race teacher. A class will be identified as having a same-race teacher (=1) if the highest proportion of race in the class matches that of the teacher. For instance, in a class where 14 students are black and 4 students are white, and 2 students are other races, this class would be considered “same-race” with a black teacher (SameRace = 1); alternatively, this class would be considered not “same-race” with a white or other race teacher (SameRace = 0). If there were 2 or more races with an equal proportion as the largest proportion of race, students were not considered to be “same-race” with any race (SameRace = 0). Table 11 below shows the frequencies of this binary same-race variable.

Table 11: Frequencies of Binary Same-Race Variable

	<i>N Classes</i>	<i>Percentage (valid data)</i>	<i>Percentage (all data)</i>
Same-Race Classes	115	24.9%	22.6%
Not Same-Race Classes	346	75.1%	68.1%
Same-Race Not Determined	47		9.3%

Most classrooms are not considered to have a same-race teacher with just under a fourth of the classes considered same-race classes. Table 12 and 13 displays the descriptive statistics for the continuous and categorical variables by same-race and non-same-race classrooms.

Table 12: Categorical Descriptives by Same-Race and Non-Same-Race Classes in Sample

<i>Variables</i>	<i>All Classes</i>	<i>Same-Race Classes</i>	<i>Non-Same-Race Classes</i>
N of Classrooms	461	115	346
<i>Teacher Race</i>			
White	80.5%	53.9%	89.3%
Black	11.1%	41.7%	0.9%
Other	8.5%	4.3%	9.8%
<i>Teacher Gender</i>			
Male	40.6%	36.5%	41.9%
Female	59.4%	63.5%	58.1%
<i>Teacher Training</i>			
Arkansas Teacher Corps	45.8%	51.3%	43.9%
Other Training Route	54.2%	48.7%	56.1%
<i>Class Grade level</i>			
Elementary (3-5)	9.1%	11.3%	8.4%
Middle (6-8)	25.4%	35.7%	22.0%
High School (9-12)	65.5%	53.0%	69.7%
<i>Class Subject</i>			
Arts	5.2%	7.0%	4.6%
Elementary	5.4%	3.5%	6.1%
English/Literacy	20.8%	17.4%	22.0%
Foreign Languages	5.6%	3.5%	6.4%
Mathematics	18.9%	22.6%	17.6%
Science	30.4%	31.3%	30.1%
Social Science/Business	13.7%	14.8%	13.3%

Table 13: Continuous Means by Same-Race and Non-Same-Race Classes

<i>Variables</i>	<i>All Classes</i>	<i>Same-Race Classes</i>	<i>Non-Same-Race Classes</i>
Number of Classes	461	115	346
<i>Student Race</i>			
White	0.25	0.39	0.20
Black	0.66	0.52	0.70
Other	0.09	0.08	0.09
FRL	77.55	74.55	78.55
Achievement	-17.95	-16.26	-18.51

The t-test analysis compares the means of the two groups of classes. Table 14 below displays the outcome of the t-tests across all constructs.

Table 14: T-Test Results Using Binary Same-Race

Constructs	Means (SD)		Difference	
	<i>Same-Race</i>	<i>Non-Same-Race</i>	<i>p-value</i>	<i>Difference</i>
Effectiveness (Grand)	3.27 (0.29)	3.16 (0.37)	.000	+0.12***
Relationships (Grand)	3.14 (0.35)	3.03 (0.42)	.004	+0.11**
Pedagogical Effectiveness	3.29 (0.31)	3.18 (0.40)	.004	+0.11**
Content Knowledge	3.49 (0.28)	3.36 (0.38)	.000	+0.13***
Classroom Environment	3.21 (0.36)	3.08 (0.45)	.002	+0.13**
Expectations & Rigor	3.42 (0.36)	3.29 (0.41)	.001	+0.13***
Student Engagement	3.13 (0.36)	3.01 (0.42)	.003	+0.12**
Supportive Relationships	2.98 (0.40)	2.88 (0.44)	.015	+0.10*
Time & Commitment	3.27 (0.32)	3.16 (0.39)	.002	+0.11***

* = $p\text{-value} < 0.05$, ** = $p\text{-value} < 0.01$, *** = $p\text{-value} < 0.001$; Standard deviations in parentheses.

With all constructs, classes identified as having same-race teachers scored their teacher higher than classes without a same-race teacher; these differences were statistically significant in all cases. Since these findings are both statistically significant and of significant size, most around 10-20% of a standard deviation, it is suggestive that my hypothesized relationships are showing up in these data. However, as I also show above, there are real differences between same-race classes and the non-same-race classes on a variety of measures, which might also be driving the differences in student ratings of teachers. Moreover, this initial analysis crudely split up the classrooms into two broad groups. The regression analysis that follows will take advantage of the continuous nature of the same-race variable by including it in the right side of the regression model.

Prior to conducting the regression, it is also important to understand how the variables in the models interact with each other, absent of the other variables. To achieve this, Table 15 displays a correlation matrix for key variables in the model. It is also useful to see how the key outcome variables differ across different categorical groups in the sample. Table 16, below, displays the means for the outcome variables across these groups.

Table 15: Correlation Matrix for Outcome and Control Variables

	Grand Constructs		Control Variables								
	<i>Effectiveness</i>	<i>Relationships</i>	<i>Same-Race</i>	<i>% White Student</i>	<i>% Black Students</i>	<i>% Other Students</i>	<i>White Teacher</i>	<i>Black Teacher</i>	<i>FRL</i>	<i>Achievement</i>	<i>Male Teacher</i>
<i>Effectiveness</i>	1	.895***	.185***	.114**	-.089*	-.026	-.099**	.132*	-.038	.061	-.121**
<i>Relationships</i>	.895***	1	.152***	.102**	-.063	-.056	-.027	.100*	-.007	.055	-.097*
<i>Same-Race</i>	.185***	.152***	1	.416***	-.364***	-.014	-.417***	.638***	-.152***	.097*	-.009
<i>% White Student</i>	.114**	.102*	.416***	1	-.862***	-.071	.049	-.178***	-.545***	.409***	-.062
<i>% Black Students</i>	-.089*	-.063	-.364***	-.862***	1	-.445***	-.009	.232***	.579***	-.324***	.059
<i>% Other Students</i>	-.026	-.056	-.014	-.071	-.445***	1	-.069	-.142**	-.176***	-.085	-.006
<i>White Teacher</i>	-.099*	-.027	-.417***	.049	-.009	-.069	1	-.716***	-.025	.081	.006
<i>Black Teacher</i>	.132*	.100*	.638***	-.178***	.232***	-.142**	-.716***	1	.221***	-.172***	.047
<i>FRL</i>	-.038	-.007	-.152***	-.545***	.579***	-.176***	-.025	.221***	1	-.460***	-.052
<i>Achievement</i>	.061	.055	.097*	.409***	-.324***	-.085	.081	-.172***	-.460***	1	-.006
<i>Male Teacher</i>	-.121**	-.097*	-.009	-.062	.059	-.006	.006	.047	-.052	-.006	1

N (classes) = 508; * = *p*-value < 0.05, ** = *p*-value < 0.01, *** = *p*-value < 0.001

Table 16: Categorical Groups Means for Outcome Variables

<i>Categorical Groups</i>	<i>N of Classrooms</i>	<i>Effectiveness</i>	<i>Relationships</i>	<i>% White Students</i>
<i>All Classes</i>	461	3.19	3.06	25.01
<i>Teacher Race</i>				
White	371	3.17	3.05	25.55
Black	51	3.32	3.17	13.78
Other	39	3.18	2.96	34.55
<i>Teacher Gender</i>				
Male	187	3.14	3.01	23.28
Female	274	3.22	3.09	26.20
<i>Teacher Training</i>				
Arkansas Teacher Corps	211	3.26	3.15	27.50
Other Training Route	250	3.13	2.98	22.91
<i>Class Grade level</i>				
Elementary (3-5)	42	3.27	3.13	30.45
Middle (6-8)	117	3.21	3.04	26.63
High School (9-12)	302	3.17	3.06	23.63
<i>Class Subject</i>				
Arts	24	3.24	3.07	43.45
Elementary	25	3.15	3.02	20.89
English/Literacy	96	3.13	3.03	22.83
Foreign Languages	26	3.34	3.20	17.49
Mathematics	87	3.24	3.11	23.27
Science	140	3.16	3.01	27.31
Social Science/Business	63	3.21	3.07	23.37

As you can see from Table 15, many of the variables are correlated with each other but more importantly with the outcome variables. This confirms the need to control for these in the regression models. Additionally, you can see from Table 16 that there are differences between many of the categorical groups, which again confirms the need to control for these in the regressions that follow.

Research Question 1: Effectiveness

The first research question was whether or not the proportion of students in a classroom with a same race as their teacher has an impact of how those students perceive their teacher's effectiveness. To address this question, the regression models described in detail in Chapter 3 are used to analyze the factors that have an impact on student perceptions of their teacher's effectiveness. Table 17 shows the results of that regression for the Effectiveness grand construct.

Table 17: Regression Model Coefficients for Teacher Effectiveness - Grand Construct

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.172 ** (.066)	.161 * (.066)	.137 + (.072)	.186 + (.098)	.152 * (.072)	.219 * (.098)
Class Achievement	-.007 + (.004)	-.006 + (.003)	-.006 + (.004)	-.006 + (.004)	-.006 + (.004)	-.007 + (.004)
Teacher Male	-.054 (.040)	-.075 + (.041)	-.070 + (.041)	-.068 (.042)	-.048 (.041)	-.045 (.041)
ATC		.096 ** (.034)	.093 ** (.035)	.094 ** (.035)		
% Black Students			-.118 (.123)		-.100 (.124)	
% Other Students			-.119 (.179)		-.246 (.180)	
Black Teacher				-.042 (.097)		-.071 (.098)
Other Teacher				-.079 (.073)		-.076 (.074)
Constant	3.628 (.232)	3.588 (.231)	3.675 (.248)	3.593 (.231)	3.701 (.250)	3.632 (.233)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.163	.176	.175	.175	.163	.163
N of Classes	461	461	461	461	461	461
<i>Mean of Outcome Var.</i>	3.189	<i>Standard Deviation</i>		.352		

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

+ = p -value < 0.10, * = p -value < 0.05, ** = p -value < 0.01, *** = p -value < 0.001.

1: Vector of variables included in the models.

Using the grand construct of Effectiveness, the model shows that the proportion of students having a same-race teacher across all models has a positive effect on students' perceptions of that teacher's effectiveness. All models show statistically significant results (p-value of 0.10 or less) for the coefficient of the SameRace variable. There was a concern that models controlling for teacher race or student race may actually be controlling away some of the effect of the intervention of having a same-race teacher. While the level of statistical significance is reduced in several of these models, the result is still positive and statistically significant. While the effects of a same-race teacher on a class's perceptions of that teacher's effectiveness are relatively small, this finding is still significant given the appropriate controls in the model. In all models where ATC is included, we find that students of ATC teachers rate those teachers slightly higher on effectiveness. Overall, the models in Table 17 show that having a same race teacher seems to have a positive effect on student perceptions of their teacher's effectiveness.

The Effectiveness construct is made up of items from the original constructs that sought to measure specific aspects of teacher effectiveness. To better understand in which areas students find teachers of the same race more or less effective, the same regression model is used with several of the original constructs. Many of the constructs simply mirror the findings of the grand construct of Effectiveness. Below are the results of several of the unique findings from the original constructs. Table 18 shows the results of the regression for the original construct of Classroom Environment. In this construct, students were asked about how their teacher created a positive learning environment, which included behavior management.

Table 18: Regression Model Coefficients for Classroom Environment

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.242 ** (.080)	.230 * (.080)	.182 * (.087)	.237 * (.119)	.200 * (.087)	.272 * (.098)
Class Achievement	-.007 + (.004)	-.007 (.004)	-.006 (.004)	-.007 + (.004)	-.007 (.004)	-.007 + (.004)
Teacher Male	-.073 (.049)	-.096 + (.050)	-.091 + (.050)	-.089 + (.051)	-.067 (.049)	-.063 (.050)
ATC		.103 ** (.042)	.104 * (.042)	.103 * (.042)		
% Black Students			-.219 (.149)		-.199 (.150)	
% Other Students			-.231 (.217)		-.283 (.217)	
Black Teacher				-.022 (.147)		-.054 (.118)
Other Teacher				-.130 (.088)		-.126 (.089)
Constant	3.468 (.281)	3.425 (.280)	3.586 (.301)	3.431 (.280)	3.615 (.302)	3.475 (.281)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.185	.195	.195	.195	.186	.185
N of Classes	461	461	461	461	461	461
<i>Mean of Outcome Var.</i>	3.111	<i>Standard Deviation</i>		.431		

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

In all models, the Same-Race variable had a statistically significant positive effect on students' perceptions of the Classroom Environment created by their teacher. The Same-Race effect on this particular construct is slightly higher than the grand construct of Effectiveness. All models also maintained a higher level of statistical significance across the models with p-values of 0.05 or less. ATC teachers again fared well on this particular construct with another significant positive relationship.

The Expectations & Rigor original construct asks questions about student perceptions of their teacher's level of challenge and expectations of them. This was particularly an area of interest given the previous research by Gershenson et al. (2016) which found that black teachers were more likely to have higher expectation of their black students than white teachers. Table 19 displays the results of the regression for this original construct.

Table 19: Regression Model Coefficients for Expectations & Rigor

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.265 *** (.076)	.253 *** (.075)	.196 * (.082)	.340 ** (.112)	.212 ** (.082)	.372 *** (.112)
Class Achievement	-.006 (.004)	-.006 (.004)	-.005 (.004)	-.006 (.004)	-.005 (.004)	-.006 (.004)
Teacher Male	-.091 * (.046)	-.113 * (.047)	-.107 * (.047)	-.098 * (.048)	-.084 + (.046)	-.076 (.047)
ATC		.097 * (.039)	.097 * (.040)	.093 * (.040)		
% Black Students			-.268 + (.140)		-.249 + (.141)	
% Other Students			-.305 (.204)		-.354 + (.204)	
Black Teacher				-.124 (.111)		-.152 (.111)
Other Teacher				-.082 (.083)		-.078 (.084)
Constant	3.617 (.265)	3.575 (.264)	3.773 (.283)	3.581 (.264)	3.799 (.284)	3.620 (.265)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.156	.165	.170	.166	.160	.157
N of Classes	461	461	461	461	461	461
<i>Mean of Outcome Var.</i>	3.324	<i>Standard Deviation</i>		.399		

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

+ = p -value < 0.10, * = p -value < 0.05, ** = p -value < 0.01, *** = p -value < 0.001.

1: Vector of variables included in the models.

Across all models, the Same-Race variable is positively related to students' perceptions of a teacher's Expectations & Rigor. Similar to the Classroom Environment outcome, the coefficients for the Same-Race variable are higher than the coefficients for the grand construct of Effectiveness. The coefficients for the Same-Race variable also have a higher level of statistical significance with some at the 0.001 level. As it has been with other constructs reported thus far, the ATC variable is significant and positive; this seems to be consistent across constructs.

The pattern regarding the relationship between the number of students in a class with the same race as the teacher and their perceptions of that teacher's effectiveness is clear. Across all constructs and models, there is a positive relationship between the Same-Race variable and the given constructs. In all cases, this relationship is statistically significant. To assess the magnitude of this relationship, Table 20 displays the expected mean score for a low same-race class (one standard deviation below the average for the continuous Same-Race variable) and a high same-race class (one standard deviation above the average for the continuous Same-Race variable). This will allow us to better understand the expected magnitude of the coefficients for the Same-Race variable. Given the mean (0.314) and standard deviation (0.283), this will demonstrate the difference between a class with nearly 0% same-race students to a class with nearly 60% same-race students. For this analysis, I use Model III which seems the most appropriate given the concerns about controlling for teacher race.

Table 20: Magnitude of Same-Race Coefficients Using Expected Scores

Models Predicting Construct	<i>Construct Mean</i>	<i>Construct SD</i>	<i>Regression Coefficient Same-Race</i>	<i>P-Value</i>	<i>SD of Same- Race</i>	<i>Construct Score for Low Same- Race Class</i>	<i>Construct Score for High Same- Race Class</i>	<i>Construct Raw Difference</i>	<i>Construct Difference in SD Units</i>
Effectiveness (Grand)	3.189	.352	.137	.058	.283	3.1502	3.2278	.078	0.220
Pedagogical Effectiveness	3.210	.382	.115	.145	.283	3.1775	3.2425	.065	0.170
Content Knowledge	3.396	.360	.123	.084	.283	3.3612	3.4308	.070	0.193
Classroom Environment	3.111	.431	.182	.036	.283	3.0595	3.1625	.103	0.239
Expectations & Rigor	3.324	.399	.196	.017	.283	3.2685	3.3795	.111	0.278
Student Engagement	3.043	.405	.156	.061	.283	2.9989	3.0871	.088	0.218
Time & Commitment	3.184	.378	.140	.075	.283	3.1444	3.2236	.079	0.210

+ = $p\text{-value} < 0.10$, * = $p\text{-value} < 0.05$, ** = $p\text{-value} < 0.01$, *** = $p\text{-value} < 0.001$

Having a same race teacher seems to have an impact on student's perceptions of their teacher's effectiveness. This effect seems to be driven mostly by these same-race teachers having high levels of expectations and rigor, as well as, positive classroom environments. Interestingly, the score for the construct related specifically to the pedagogical effectiveness of the teacher, is the only one not significantly influenced by the presence of a same-race teacher. The results in Table 20 lend weight to the argument that students seem to notice the atmosphere the same-race teacher creates in the classroom and less that teacher's actual abilities to teach or their command of the subject itself.

In Chapter 1, the problem of the lack of minority teachers in classrooms with high minority populations was discussed. This problem highlights the need to analyze what effect the Same-Race variable has on the perceptions of students in classrooms where the majority of students represent a minority. Given the demographics of the schools involved in this study, the following subgroup analysis will focus on classrooms where 50% or more of the students in the class are black. Table 21, below, displays the descriptive statistics for the categorical variables for the classes with 50% or more black students.

Table 21: Categorical Descriptive for All Classes and 50% or More Black Classes

<i>Variables</i>	<i>All Classes</i>	<i>50% or More Black Classes</i>
<i>N of Classrooms</i>	461	352
<i>Teacher Race</i>		
White	80.5%	80.4%
Black	11.1%	13.6%
Other	8.5%	6.0%
<i>Teacher Gender</i>		
Male	40.6%	40.2%
Female	59.4%	59.8%
<i>Teacher Training</i>		
Arkansas Teacher Corps	45.8%	40.2%
Other Training Route	54.2%	59.1%
<i>Class Grade level</i>		
Elementary (3-5)	9.1%	9.1%
Middle (6-8)	25.4%	25.4%
High School (9-12)	65.5%	65.5%
<i>Class Subject</i>		
Arts	5.2%	6.0%
Elementary	5.4%	5.4%
English/Literacy	20.8%	19.9%
Foreign Languages	5.6%	5.4%
Mathematics	18.9%	18.4%
Science	30.4%	30.3%
Social Science/Business	13.7%	14.5%

Note: The class grade level percentages are exactly the same in both groups; this is not a mistake in the table though it may seem unlikely.

Table 22 displays the descriptive statistics for the continuous variables in the 50% or more black students group.

Table 22: Continuous Means for All Classes and 50% or More Black Classes

<i>Variables</i>	<i>All Classes</i>	<i>50% or More Black Classes</i>
Number of Classes	461	352
<i>Student Race</i>		
White	0.25	0.16
Black	0.66	0.77
Other	0.09	0.07
FRL	77.55	80.70
Achievement	-17.95	-19.35

There are certainly some differences between the two groups, which warrants the additional regression for this subgroup. Table 23, below, shows the regression for the subgroup of classes with 50% or more black students.

Table 23: Regression Model Coefficients for Effectiveness – Grand Construct in Classes with 50% or more Black Students

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.088 (.082)	.086 (.082)	.068 (.086)	.171 (.164)	.069 (.086)	.202 (.163)
Class Achievement	-.007 ⁺ (.004)	-.006 (.004)	-.006 (.004)	-.006 (.004)	-.007 ⁺ (.004)	-.007 ⁺ (.004)
Teacher Male	-.046 (.049)	-.061 (.049)	-.053 (.050)	-.057 (.050)	-.038 (.049)	-.041 (.049)
ATC		.066 (.041)	.061 (.042)	.067 (.043)		
% White Students			.111 (.204)		.112 (.204)	
% Other Students			-.202 (.302)		-.261 (.300)	
Black Teacher				-.086 (.143)		-.115 (.142)
Other Teacher				-.040 (.107)		-.006 (.105)
Constant	3.780 (.334)	3.715 (.336)	3.709 (.337)	3.734 (.339)	3.770 (.335)	3.807 (.336)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.196	.200	.198	.196	.195	.193
N of Classes	352	352	352	352	352	352
<i>Mean of Outcome Var.</i>	3.179	<i>Standard Deviation</i>			.365	

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

While the coefficients for the Same-Race variable are not statistically different from zero, they did all remain positive. The loss of statistical significance may be due to the decreased number of classes and the lower number of black teachers in the sample. There is a concern, though, that the Same-Race results reported previously may be mainly driven by white students. The results for all other original constructs are similar; positive coefficients but not statistically significant. The one exception is the construct of Expectation and Rigor. Table 24, below, displays the results for the Expectations and Rigor construct when the sample is restricted to classes of students with 50% or more black students.

Table 24: Regression Model Coefficients for Expectations & Rigor in Classes with 50% or more Black Students

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.195 * (.094)	.192 * (.094)	.135 (.098)	.366 + (.188)	.136 (.099)	.407 * (.187)
Class Achievement	-.005 (.005)	-.004 (.005)	-.004 (.005)	-.004 (.005)	-.005 (.005)	-.005 (.005)
Teacher Male	-.091 (.056)	-.109 + (.057)	-.093 (.057)	-.102 + (.057)	-.075 (.056)	-.081 (.056)
ATC		.081 + (.048)	.072 (.048)	.086 + (.049)		
% White Students			.406 (.233)		.407 + (.233)	
% Other Students			-.222 (.345)		-.292 (.342)	
Black Teacher				-.176 (.164)		-.214 (.163)
Other Teacher				-.144 (.123)		-.099 (.120)
Constant	3.691 (.384)	3.612 (.385)	3.575 (.385)	3.647 (.388)	3.647 (.383)	3.740 (.385)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.158	.163	.169	.165	.166	.159
N of Classes	352	352	352	352	352	352
<i>Mean of Outcome Var.</i>	3.320		<i>Standard Deviation</i>		.410	

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

+ = p -value < 0.10, * = p -value < 0.05, ** = p -value < 0.01, *** = p -value < 0.001.

1: Vector of variables included in the models.

In the subgroup of majority black classes, the Same-Race variable is positively related to students' perceptions of a teacher's Expectations & Rigor in all models with all but one model maintaining statistical significance. This seems to support the findings of the research on teacher expectations of black student by Gershenson et al. (2016) discussed previously.

While the findings for this subgroup do cast some doubt on the robustness of the impact of same-race teachers with black students, evidence from these models, at a minimum seem, to indicate that having a same-race teacher in majority black classes seems to have an impact on students' perceptions of their teacher's expectations of them.

The same analysis is repeated with classes where 50% or more of the student in the class are white. While this is a smaller number of classes given the sample, it is valuable to look at different racial subgroups. Table 25, below, displays the descriptive statistics for the categorical variables for the classes with 50% or more white students.

Table 25: Categorical Descriptive for All Classes and 50% or More White Classes

<i>Variables</i>	<i>All Classes</i>	<i>50% or More White Classes</i>
<i>N of Classrooms</i>	461	79
<i>Teacher Race</i>		
White	80.5%	81.0%
Black	11.1%	2.5%
Other	8.5%	16.5%
<i>Teacher Gender</i>		
Male	40.6%	34.2%
Female	59.4%	65.8%
<i>Teacher Training</i>		
Arkansas Teacher Corps	45.8%	51.9%
Other Training Route	54.2%	48.1%
<i>Class Grade level</i>		
Elementary (3-5)	9.1%	16.5%
Middle (6-8)	25.4%	24.1%
High School (9-12)	65.5%	59.6%
<i>Class Subject</i>		
Arts	5.2%	10.1%
Elementary	5.4%	5.1%
English/Literacy	20.8%	17.7%
Foreign Languages	5.6%	1.3%
Mathematics	18.9%	17.7%
Science	30.4%	35.4%
Social Science/Business	13.7%	12.7%

It is important to note that only 2.5% of majority white classes are taught by black teachers.

Table 26 displays the descriptive statistics for the continuous variables in the 50% or more white students group.

Table 26: Continuous Means for All Classes and 50% or More White Classes

<i>Variables</i>	<i>All Classes</i>	<i>50% or More White Classes</i>
Number of Classes	461	79
<i>Student Race</i>		
White	0.25	0.64
Black	0.66	0.31
Other	0.09	0.06
FRL	77.55	67.18
Achievement	-17.95	-11.57

Table 27 below displays the results of the regression for this subgroup of classes with 50% or more white students.

Table 27: Regression Model Coefficients for Effectiveness –Grand Construct with 50% or more White Students

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.719 *** (.199)	.509 * (.220)	.362 (.250)	.804 * (.318)	.602 ** (.226)	.979 ** (.317)
Class Achievement	-.004 (.013)	-.006 (.012)	-.003 (.013)	-.008 (.012)	.000 (.014)	-.006 (.013)
Teacher Male	.239 * (.118)	.201 + (.117)	.164 (.120)	.199 + (.048)	.198 (.122)	.240 (.118)
ATC		.175 * (.087)	.179 * (.089)	.185 * (.087)		
% Black Students			-.491 (.353)		-.435 (.201)	
% Other Students			-.094 (.545)		.157 (.545)	
Black Teacher				Excluded ²		Excluded ²
Other Teacher				.270 (.210)		.229 (.216)
Constant	3.213 (.278)	3.341 (.278)	3.623 (.350)	3.171 (.307)	3.451 (.349)	3.063 (.312)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.309	.345	.345	.353	.309	.310
N of Classes	79	79	79	79	79	79
<i>Mean of Outcome Var.</i>	3.230	<i>Standard Deviation</i>			.304	

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

+ = p -value < 0.10, * = p -value < 0.05, ** = p -value < 0.01, *** = p -value < 0.001.

1: Vector of variables included in the models. 2: Variable excluded in model due to collinearity tolerance

With the subgroup of classes with mostly white students, there is a strong positive relationship between the Same-Race variable and the Effectiveness grand construct nearly with much higher coefficients than previous models. It seems that with classes of mainly white students having a white teacher significantly increases students' perceptions of that teacher. This should be viewed with caution though, since there are an extremely small number of white classes taught by black teachers.

The last subgroup to be analyzed is looking at the results of the regression for ATC and non-ATC teachers separately. In Chapter 3 it was discussed that ATC actively recruits teachers to train and eventually teach in areas with a high concentration of minority students. Also, ATC incorporates into its training methods aspects of the specific settings in which they will teach, high minority, low income areas of the state. While there are some indications from the models that ATC teachers have a positive impact on student perceptions, it is also important to look at how the Same-Race variable may interact differently with classes taught by ATC or non-ATC teachers. Tables 28 and 29 describe the difference between the two groups across the variable in the models.

Table 28: Categorical Descriptive by Classes with an ATC Teacher and a Non-ATC Teacher

<i>Variables</i>	<i>All Classes</i>	<i>Classes with ATC Teacher</i>	<i>Classes with Non-ATC Teacher</i>
N of Classrooms	461	211	250
<i>Teacher Race</i>			
White	80.5%	75.4%	84.8%
Black	11.1%	12.3%	10.0%
Other	8.5%	12.3%	5.2%
<i>Teacher Gender</i>			
Male	40.6%	42.7%	38.8%
Female	59.4%	57.3%	61.2%
<i>Class Grade level</i>			
Elementary (3-5)	9.1%	9.5%	8.8%
Middle (6-8)	25.4%	25.1%	25.6%
High School (9-12)	65.5%	65.4%	65.6%
<i>Class Subject</i>			
Arts	5.2%	8.1%	2.8%
Elementary	5.4%	4.3%	6.4%
English/Literacy	20.8%	21.2%	20.4%
Foreign Languages	5.6%	9.5%	2.4%
Mathematics	18.9%	22.7%	15.6%
Science	30.4%	26.1%	34.0%
Social Science/Business	13.7%	8.1%	18.4%

Table 29: Continuous Means by Classes with an ATC Teacher and a Non-ATC Teacher

<i>Variables</i>	<i>All Classes</i>	<i>Classes with ATC Teacher</i>	<i>Classes with Non-ATC Teacher</i>
Number of Classes	461	211	250
<i>Student Race</i>			
White	0.25	0.28	0.23
Black	0.66	0.64	0.68
Other	0.09	0.08	0.10
FRL	77.55	75.69	79.12
Achievement	-17.95	-17.38	-18.43

The focus of this analysis will be on Models I, V, and VI since the other models include the ATC variable. These separate regressions are run for the two groups: classes with ATC teachers and those with non-ATC teachers. Tables 30 and 31 display the results of those regressions.

Table 30: Regression Model Coefficients for Teacher Effectiveness - Grand Construct for Classes Taught by an ATC Teacher

<i>Variables</i>	<i>Model I</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.059 (.105)	-.102 (.130)	.311 * (.142)
Class Achievement	-.013 * (.006)	-.013 * (.006)	-.013 * (.006)
Teacher Male	.106 (.085)	.141 (.087)	.192 (.089)
% Black Students		-.475 (.190)	
% Other Students		-.385 (.238)	
Black Teacher			-.256 (.207)
Other Teacher			-.510 (.292)
Constant	3.816 (.232)	4.310 (.381)	3.875 (.357)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.099	.124	.129
N of Classes	211	211	211
<i>Mean of Outcome Var.</i>	3.265	<i>Standard Deviation</i>	.332

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

The findings here indicate that the impact of the Same-Race variable is diminished in subgroup of classes taught by ATC teachers only. Only one model shows statistically significant results for the Same-Race coefficient and it is the model with previously discussed concerns regarding controlling for teacher race. Additionally, for the first time we see a negative (though insignificant) coefficient.

Table 31: Regression Model Coefficients for Teacher Effectiveness - Grand Construct for Classes Taught by a Non-ATC Teacher

<i>Variables</i>	<i>Model I</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.071 (.104)	.072 (.110)	.148 (.344)
Class Achievement	-.006 (.005)	-.006 (.005)	-.007 (.005)
Teacher Male	-.084 (.061)	-.086 (.063)	-.076 (.063)
% Black Students		.000 (.171)	
% Other Students		.055 (.272)	
Black Teacher			-.108 (.145)
Other Teacher			-.085 (.135)
Constant	3.601 (.308)	3.600 (.322)	3.557 (.316)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.286	.279	.282
N of Classes	250	250	250
<i>Mean of Outcome Var.</i>	3.126	<i>Standard Deviation</i>	.356

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

In contrast, the analysis of the subgroup of only non-ATC teachers finds the Same-Race variable remains positive but still statistically insignificant. This seems to add some weight to the argument that the methods of training ATC teachers undergo may reduce the impact of having a same-race teacher while maintaining rather positive levels of student perceptions.

Overall, the results are slightly mixed regarding whether or not the proportion of students in a classroom with a same race as their teacher has an impact on how those students perceive their teacher's effectiveness. While in all cases, but for the ATC subgroup, positive coefficients remain for the Same-Race variable across the range of effectiveness outcome variables, not all models or constructs maintain statistical significance allowing clear conclusions to be drawn. There is stronger evidence that there seems to be a relationship between having a same-race teacher and more positive perceptions of that teacher's classroom environment and expectation and rigor. With the expectation of the ATC subgroup which has been discussed previously, in no other model or subgroup using any of the effectiveness constructs is there evidence that having a same-race teacher has a negative effect on students' perceptions of their teacher's effectiveness. There are, though, at least some indications that having a same-race teacher can have a positive effect on students.

Research Question 2: Relationships

The second research question asks whether or not the the proportion of students in a classroom with a same race as their teacher has an impact of how those students perceive their relationship with their teacher. An analysis is completed using the same six original models used for the grand construct of Effectiveness. Table 32 displays the results of the regression using the grand construct of Relationships as the outcome variable.

Table 32: Regression Model Coefficients for Relationships – Grand Construct

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.232 ** (.066)	.216 ** (.077)	.185 * (.083)	.195 + (.114)	.207 * (.084)	.242 * (.114)
Class Achievement	-.006 (.004)	-.006 (.004)	-.006 (.004)	-.007 (.004)	-.006 (.004)	-.007 + (.004)
Teacher Male	-.063 (.047)	-.094 * (.048)	-.082 + (.048)	-.086 + (.049)	-.051 (.048)	-.052 (.048)
ATC		.136 *** (.040)	.130 *** (.040)	.138 *** (.040)		
% Black Students			-.162 (.143)		-.137 (.145)	
% Other Students			-.412 * (.208)		-.477 * (.209)	
Black Teacher				.007 (.113)		-.035 (.114)
Other Teacher				-.221 ** (.085)		-.216 * (.086)
Constant	3.494 (.272)	3.436 (.269)	3.556 (.288)	3.448 (.268)	3.592 (.291)	3.505 (.270)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.132	.153	.157	.163	.139	.141
N of Classes	461	461	461	461	461	461
<i>Mean of Outcome Var.</i>	3.059	<i>Standard Deviation</i>			.404	

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

As you can see from the table, the Same-Race variable has a positive effect on students' perceptions of their relationship with their teacher in all models. The findings maintain statistical significance across all models. The ATC variable again has a significant positive impact on student perceptions in all models where the variable is included.

Several of the studies mentioned in Chapter 2 argue that same-race teachers can serve as role models and specifically have an impact on minority students based on the relationships they build with those students. It is then important with this study to see what impact same-race teachers have on student perceptions of their relationships with their teacher in classes where 50% or more of the students represent a minority; in this sample we will focus on black students. Table 33, below, displays the regression analysis for this subgroup.

Table 33: Regression Model Coefficients for Relationships – Grand Construct in Classes with 50% or more Black Students

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.137 (.097)	.133 (.096)	.096 (.101)	.130 (.192)	.098 (.101)	.189 (.192)
Class Achievement	-.008 ⁺ (.005)	-.007 (.005)	-.007 (.005)	-.007 (.005)	-.007 (.005)	-.008 (.005)
Teacher Male	-.060 (.057)	-.086 (.058)	-.067 (.058)	-.087 (.059)	-.042 (.058)	-.057 (.058)
ATC		.114* (.049)	.102* (.049)	.125* (.050)		
% White Students			.221 (.238)		.222 (.239)	
% Other Students			-.489 (.352)		-.587 ⁺ (.351)	
Black Teacher				.002 (.168)		-.053 (.168)
Other Teacher				-.136 (.126)		-.071 (.124)
Constant	3.687 (.393)	3.575 (.394)	3.566 (.394)	3.563 (.397)	3.667 (.393)	3.699 (.396)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.129	.141	.146	.139	.137	.124
N of Classes	352	352	352	352	352	352
<i>Mean of Outcome Var.</i>	3.053	<i>Standard Deviation</i>			.413	

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

As with the Effectiveness variables, in the subgroup of classes with majority black students we find that while the coefficients for the Same-Race variable remain, in all models, positive, it loses statistical significance. Again this may be caused by the reduction in the number of classes that are included in the models and the limited number of black teachers that are included in the sample. Alternatively, this may mean that the affect that the Same-Race variable has on the grand construct of Relationships may be driven by white students.

The same analysis is repeated with classes where 50% or more of the students in the class are white. As mentioned previously, while this is a smaller number of classes given the sample it is valuable to look at different racial subgroups. Table 34, below, displays the results of this analysis.

Table 34: Regression Model Coefficients for Relationships – Grand Construct in Classes with 50% or more White Students

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	1.118 *** (.222)	1.019 *** (.253)	.962 ** (.291)	1.162 ** (.369)	1.066 *** (.255)	1.245 *** (.356)
Class Achievement	.004 (.014)	.003 (.014)	.006 (.015)	.002 (.014)	.007 (.015)	.003 (.014)
Teacher Male	.343 * (.132)	.325 * (.134)	.301 * (.140)	.323 * (.135)	.316 * (.138)	.331 * (.164)
ATC		.083 (.100)	.079 (.104)	.088 (.101)		
% Black Students			-.235 (.411)		-.211 (.408)	
% Other Students			.117 (.634)		.227 (.615)	
Black Teacher				Excluded ²		Excluded ²
Other Teacher				.131 (.244)		.112 (.243)
Constant	2.834 (.310)	2.894 (.319)	3.019 (.407)	2.812 (.356)	2.944 (.393)	2.760 (.351)
School ¹	Y	Y	Y	Y	Y	Y
Subject ¹	Y	Y	Y	Y	Y	Y
Grade Level ¹	Y	Y	Y	Y	Y	Y
Adj. R ²	.434	.431	.414	.423	.419	.426
N of Classes	79	79	79	79	79	79
<i>Mean of Outcome Var.</i>	3.099	<i>Standard Deviation</i>		.374		

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance; 2: Variable excluded in model due to collinearity tolerance

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

As with the effectiveness construct, there is a strong positive relationship between the Same-Race variable and the Relationships outcome variable with extremely large coefficients. Having a same-race teacher seems to dramatically impact the perceptions of students in majority white classrooms in the sample. This likely means that same-race teachers in white classes are driving up the overall effect of the Same-Race variable on the grand construct of Relationships.

The last subgroup analyzed is the ATC and non-ATC subgroups. As discussed previously, it is important to understand possible difference in the effects of the Same-Race variables between these two groups. Tables 35 and 36, below, show the results for these subgroups using models I, V, and VI.

Table 35: Regression Model Coefficients for Teacher Relationships - Grand Construct for Classes Taught by an ATC Teacher

<i>Variables</i>	<i>Model I</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.044 (.117)	-.165 (.143)	.352 * (.157)
Class Achievement	-.011 + (.007)	-.010 (.006)	-.010 (.006)
Teacher Male	.091 (.094)	.147 (.096)	.205 (.098)
% Black Students		-.643 ** (.208)	
% Other Students		-.595 * (.261)	
Black Teacher			-.251 (.228)
Other Teacher			-.755 * (.322)
Constant	3.765 (.362)	4.428 (.418)	3.776 (.393)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.099	.145	.144
N of Classes	211	211	211
<i>Mean of Outcome Var.</i>	3.151	<i>Standard Deviation</i>	.369

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

Table 36: Regression Model Coefficients for Teacher Relationships - Grand Construct for Classes Taught by a Non-ATC Teacher

<i>Variables</i>	<i>Model I</i>	<i>Model V</i>	<i>Model VI</i>
Same-Race	.145 (.124)	.150 (.132)	.205 (.186)
Class Achievement	-.008 (.005)	-.008 (.006)	-.009 (.006)
Teacher Male	-.066 (.073)	-.064 (.075)	-.051 (.075)
% Black Students		.023 (.205)	
% Other Students		-.004 (.326)	
Black Teacher			-.103 (.173)
Other Teacher			-.171 (.161)
Constant	3.432 (.368)	3.420 (.385)	3.400 (.378)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.252	.245	.250
N of Classes	250	250	250
<i>Mean of Outcome Var.</i>	2.982	<i>Standard Deviation</i>	.417

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

Similar to the findings of the same subgroups for the Effectiveness construct, the Same-Race variable is diminished in the ATC only subgroup and is statistically insignificant in all but the

model which controls for teacher race. The the same race coefficient for the non-ATC subgroup remains positive across all models, though again, is statistically insignificant. As discussed before, it seems that the effect of the same-race variable could be diminished with teachers trained by ATC which seems to be in line with their mission and training methods.

Overall, the results are again slightly mixed regarding whether or not the proportion of students in a classroom with a same race as their teacher has an impact on how those students perceive their relationship with that teacher. While the coefficients for the Same-Race variable in the main regression are positive and statistically significant in all models, this seems to be driven by the white students with a same-race teacher. Again like with the effectiveness constructs, there is no evidence to suggest that having a same-race teacher would have a negative impact on students' perceptions of their relationship with that teachers. In the end, the results show that there is evidence that there is a positive or no relationship between the Same-Race variable and the relationship construct.

Additional Analysis – Minority Teachers

In previous studies mentioned in Chapter 2, it was argued that having a more diverse teaching workforce was positive for all students because in many cases minority teachers were preferred over white teachers. Some of the results reported previously in this chapter suggests this might not be the case for this sample, with several negative coefficients reported for black and other race teachers though often not statistically significant. In those models the Same-Race variable is also included as it was an independent variable of interest. Given the concerns about the potential issues of the race of the teacher controlling away some of the effects of the Same-Race variable the opposite could also be true; the Same-Race variable may be controlling away some of the effect that a black or other race teacher might be having on student perceptions.

To assess the potential impacts that black or other race teachers have on student perceptions of their teacher's effectiveness and relationships, Models I-III are used where the Same-Race variable is removed and replaced with teacher race variables. Table 37 displays the results of this regression analysis.

Table 37: Regression Model Coefficients including Teacher Race using the Effectiveness – Grand Construct

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>
Black Teacher	.089 (.066)	.094 (.066)	.101 (.066)
Other Teacher	-.090 (.074)	-.092 (.073)	-.106 (.074)
Class Achievement	-.007 * (.004)	-.007 * (.004)	-.006 + (.004)
Teacher Male	-.054 (.041)	-.077 + (.042)	-.075 + (.042)
ATC		.102 ** (.035)	.101 ** (.035)
% Black Students			-.238 * (.115)
% Other Students			-.224 (.178)
Constant	3.703 (.231)	3.649 (.230)	3.786 (.238)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.155	.170	.175
N of Classes	461	461	461
<i>Mean of Outcome Var.</i>	3.189	<i>Standard Deviation</i>	.352

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

While the coefficients for black teachers is positive in all models, it is not statistically significant in any model (with p-values across the models of .342, .153, and .126 respectively). These results approach significance, but are not statistically different from zero.

Table 38 displays the results of the same regression models using the grand construct of Relationships construct as the outcome variable.

Table 38: Regression Model Coefficients including Teacher Race using the Relationships – Grand Construct

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>
Black Teacher	.141 ⁺ (.077)	.149 ⁺ (.076)	.159 * (.076)
Other Teacher	-.233** (.086)	-.235** (.084)	-.251 ** (.085)
Class Achievement	-.008 ⁺ (.004)	-.007 ⁺ (.004)	-.006 (.004)
Teacher Male	-.062 (.048)	-.096 * (.048)	-.089 ⁺ (.048)
ATC		.146 *** (.040)	.143 *** (.040)
% Black Students			-.347 ** (.132)
% Other Students			-.434 (.205)
Constant	3.584 (.269)	3.506 (.266)	3.707 (.274)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.134	.159	.172
N of Classes	461	461	461
<i>Mean of Outcome Var.</i>	3.059	<i>Standard Deviation</i>	.404

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

The regression shows positive coefficients for black teachers that are in this case statistically significant in all models. This lends weight to the argument that students view their relationships with black teachers more positively than with white teachers.

This additional analysis regarding the effect that minority teachers have on student perceptions shows little significant results for student perceptions of teacher effectiveness and positive significant results for student perceptions of their relationships with black teachers. While there is some indication with the Effectiveness constructs that black teachers have a positive effect on student perceptions, those results are not statistically significant in any model. With the grand construct of Relationships, we do see significant positive coefficients for black teachers in all models.

Additional Analysis – ATC Effect

Throughout the main analysis in this chapter, one consistent outcome of the models and subgroups across the constructs was the positive coefficients of the ATC variable. In Chapter 2, programs like ATC and TFA are mentioned as possible solutions to the issues facing the recruitment of teachers in areas of the country and specifically in an area of the state of Arkansas where there are schools with a high population of minority students. To further assess if the ATC variable has an impact when the Same-Race variable is not included in the model, a regression is run using models II, III, and IV with the Same-Race variable removed. Table 39 displays the coefficients for these regression models for the Effectiveness grand construct.

Table 39: Regression Model Coefficients including ATC using the Effectiveness – Grand Construct

<i>Variables</i>	<i>Model II</i>	<i>Model III</i>	<i>Model IV</i>
ATC	.123 *** (.033)	.115 *** (.033)	.102 ** (.035)
Class Achievement	-.004 (.004)	-.004 (.003)	-.007 * (.004)
Teacher Male	-.100 * (.041)	-.094 * (.040)	-.077 + (.042)
% Black Students		-.302 ** (.104)	
% Other Students		-.293 + (.172)	
Black Teacher			.094 (.066)
Other Teacher			-.092 (.073)
Constant	3.680 (.235)	3.862 (.241)	3.649 (.230)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.115	.128	.170
N of Classes	461	461	461
<i>Mean of Outcome Var.</i>	3.189	<i>Standard Deviation</i>	.352

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

The ATC variable again maintains a consistent positive and statistically significant coefficient in all models. This result adds additional evidence that ATC teachers seem to have a positive impact on student perceptions of their effectiveness.

Table 40, below, displays the results of the same regression used previously with the Relationship grand construct.

Table 40: Regression Model Coefficients including ATC using the Relationships – Grand Construct

<i>Variables</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>
ATC	.182 *** (.035)	.169 *** (.039)	.146 *** (.040)
Class Achievement	-.005 (.004)	-.005 (.004)	-.007 + (.004)
Teacher Male	-.108 * (.047)	-.096 * (.047)	-.096 * (.048)
% Black Students		-.346 ** (.122)	
% Other Students		-.490 * (.202)	
Black Teacher			.149 + (.076)
Other Teacher			-.235 * (.084)
Constant	3.559 (.276)	3.769 (.283)	3.506 (.238)
School ¹	Y	Y	Y
Subject ¹	Y	Y	Y
Grade Level ¹	Y	Y	Y
Adj. R ²	.153	.112	.159
N of Classes	461	461	461
<i>Mean of Outcome Var.</i>	3.059	<i>Standard Deviation</i>	.404

Note: Coefficient standard errors in parentheses clustered at the class level; the FRL variable was excluded in model due to collinearity tolerance;

*+ = p-value < 0.10, * = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001.*

1: Vector of variables included in the models.

The ATC variable seems to have an even stronger effect on the grand construct of Relationships with significant positive effects in all models. The evidence again seems to suggest that ATC teachers have a positive impact on student's perceptions of their relationship with that teacher. Overall, the ATC variable has maintained a consistent positive effect on student perceptions in all models and subgroups adding weight to the argument of ATC and similar programs potentially being a part of the solutions to the problems outlined in Chapter 1.

While some of the results in this section are mixed as to whether or not the Same-Race variable has an effect on student perceptions of their teachers, there are some interesting findings worth discussing and helping answer the research questions posed in Chapter 3. Chapter 5 will discuss a summary of these findings and the implication for both policymakers and other researchers.

Chapter 5: Summary and Conclusion

The results outlined in Chapter 4 add to a body of research attempting to explore the impact of same-race teachers. The outcomes of this study shed additional light on the possible impacts that having a same-race teacher may have on student perceptions and their relationship with their teacher. In this brief chapter, I will summarize the context and findings of this study and discuss what possible impacts this may have on future research and policies.

Summary of the Problem

One of the unintended consequences of the *Brown v. Board of Education* decision was the lack of protection for black teachers who formerly taught in all black schools. Combined, over 60,000 black teachers were displaced, and fewer began studying education in colleges, which likely led to the low number of black teachers we have in classrooms today (Tillman, 2004; Oakley et al., 2009). Now, only 17% of the teacher population in the U.S. are teachers of color and, in the state of Arkansas, just over 10% are reported as minority teachers, while over 40% of the student populations in the U.S. and in Arkansas are considered minorities (Ingersoll, 2015; ADE, 2017). While we may not fully know the impact of these discrepancies, what is clear is that a gap between the achievement of white and black students continues to exist in American schools. Many researchers have attempted to find out why, especially recently, this gap still exists. There is a healthy debate in the literature over whether or not this gap is caused by “home” factors such as parents’ education or socioeconomic status or by “school” factors like resources or the quality of teaching.

Some of the efforts to address this gap have focused on the recruitment of a more diverse teaching workforce. While many policies have been put in place to increase the number of

teachers of color both locally and nationally, few have been able to make widespread gains in this area. Some of the current efforts that seem the most successful are those who use targeted recruitment methods to recruit more teachers of color to teach in areas with large minority populations.

Even with these minor success stories, policymakers have yet to make the diversification of the teaching workforce a priority. Policies at both the state and national level have attempted to entice more teachers of color into schools with little success. From a policy standpoint, many of the issues with a policy that seeks to diversify the teaching workforce stem from some very basic political theories such as the lack of a clear problem definition, the use of language in policy discussion, and the lack of a cleavage in society creating a conflict (Rocheffort and Cobb, 1994; Baumgartner and Jones, 2009; Schattschneider, 1960). These issues create a difficult political climate for any policy that would favor one race over another, even when that race has endured years of discrimination over the past century.

From these problems comes a wealth of research around the impact of race on education outcomes for students and, more directly, is there a connection between a teacher's and various outcomes for their students?

Context of the Research

At the heart of ideas around the benefit of students having a same-race teacher is a psychological theory of similarity and attraction. There is a body of evidence that claims that when individuals see themselves as similar to another they are more likely to be generally attracted to that individual and also engage in pro-social behaviors with them (Montoya et al., 2008; Byrne, 1964; Byrne, 1972). In other words, there is a correlation between similarity with

individuals, be it perceived or actual similarities, and positive feeling and interactions with that individuals. This provides the basis for the idea of the positive effects of a same-race teacher.

Beyond the psychological underpinnings of the hypothesis regarding same-race teachers, there is a large body of research attempting to better explain the impact that student and teacher race has on education. As discussed, the black-white achievement gap persists with black students consistently underperforming compared to their white peers. Many scholars have offered potential reasons the gap continues to exist, from socioeconomic status of minorities (Sirin, 2005; Yeung and Conley, 2008) to school-based factors like the quality of the teacher and school resources (Hanushek and Rivkin, 2007). Others have pointed to the potential discrepancies in expectation for black students compared to white students, which in turn leads to less academic challenge (Villegas and Irvine, 2010). Others have taken this a step further to say that white teachers are less likely to academically challenge black students and less likely to recommend them for more rigorous courses (Grissom and Redding, 2016; Gershenson et al., 2016). This raises the question of the impact of the lack of minority teachers, especially in high-minority schools.

Several studies document the positive impacts that minority teachers can have on students, especially students of color. Studies focused on academic achievement found that students with an own-race teacher performed better academically than those who had a different race teacher (Dee, 2004; Egalite et al, 2015). This positive impact was even larger when students had several years of a same-race teacher (Dee, 2004) and had a greater impact with students from low-income backgrounds (Egalite et al, 2015). Researchers in this area, additionally, suggest that there may be other potential benefits that are not related narrowly connected to academics.

Given that students spend the majority of their childhood in schools, it is also important that students have a positive experience both in school and in interacting with their teachers. To assess this, some studies have looked at the impact that teachers can have on student perceptions. While some studies claim that student perceptions are mainly based on teacher popularity (Coats et al., 1972), others found that student experiences and even their academic outcomes could be correlated with the student's similarity with their teacher (Gehlbach et al., 2016). Finally, a relatively new area of research looks specifically at how the race of the teacher can impact student perceptions of their teacher and school experience. A recent study found that having a same-race teacher increased students' perceptions of that teacher and their effectiveness (Cherng and Halpin, 2016). The summary of the findings of this study described in the previous two chapters adds to this body of research to assess the potential impacts of a same-race teacher on student perceptions and relationships with that teacher.

Summary and Discussion of the Findings

Chapters 3 and 4 describe a study that seeks to assess what impact having a same-race teacher has on the perceptions of a classroom of students on the key areas of effectiveness and relationships. Using classroom level data from student surveys about their teacher's effectiveness and relationships with their teacher, I estimated regression models to determine the impact that the proportion of students with the same race as their teacher had on student perceptions. Table 41 summarizes the results of the regression models.

Table 41: Summary of Main Findings

	<i>Effectiveness</i>	<i>Relationships</i>
<i>Same-Race - All Classes</i>	Positive Moderate positive impact	Positive Moderate positive impact
<i>Same-Race – Majority Black Classes</i>	Mixed No impact with grand construct; no impact to positive impact on Expectations & Rigor	No Impact Positive but not statistically significant
<i>Same-Race – Majority White Classes</i>	Mixed No impact to positive impact	Positive Strong positive impact
<i>Black Teachers</i>	No Impact Positive but not statistically significant	Positive Weak positive impact
<i>ATC Teachers</i>	Positive Strong positive impact	Positive Strong positive impact

While the results are mixed across several models and subgroups, in all models across both main outcome variables (with the exceptions of the ATC subgroup) the proportion of students in a class with the same race as their teachers had a positive impact on perceptions on both effectiveness and relationships. In the subgroups analysis for the grand construct of Effectiveness, we find that classes of white students are likely driving the positive results in the main analysis. One finding that seems to be consistent with the previous research is analysis on

the Expectations & Rigor original construct. In classes with 50% or more black students, the Same-Race variable is positively related to student perceptions of their teacher's expectations of them. In other words, it seems as though black teachers may hold higher expectations for classes with mostly black student than do white teachers.

Even with the mixed results, we can draw some important conclusions about the impact of a same-race teacher. First, there is at least some evidence provided in the results that having a same-race teacher can positively influence student perceptions of their teacher's effectiveness and relationships with that teacher; at a minimum, there is certainly no evidence that it has a negative effect. Given this finding coupled with the previous research on the positive impacts of same-race teachers, I would argue that having a same-race teacher, at a minimum, *may* have a positive impact on a student's experience in school by raising their perceptions of their teacher and their interactions with their teacher. While I would caution extending this finding nationally, the results of this study certainly make a case for this being the situation in low-income schools across southern Arkansas where the sample was drawn.

Some may argue that increasing the number of black teachers, even in high minority schools, will disadvantage white students in those schools. This is a fair argument and one that must be considered. It is though important to note that across the sample, black teachers were preferred to white teachers when it came to student perceptions of their relationships with their teacher. Moreover, the diversification of the teaching workforce in high minority schools would leave more students with same-race teachers. I would argue that the possible benefits outweigh the possible negative impacts, especially since the negative impacts (if they occur) are most likely to impact the students that, research shows, are already outperforming their peers (the black-white achievement gap). In middle or high schools where students see several teachers a

day, a truly diverse teacher workforce would mean that it is more likely for the largest proportion of students to have at least one or more same-race teachers which could lead to a more positive overall experience for students.

In the first chapter, I discussed current efforts to increase the number of minority teachers. One of those efforts was the Arkansas Teacher Corps, whose teachers appear in this sample. The one consistent finding across all models was that ATC teachers had a positive impact on student perceptions of both teacher effectiveness and student-teacher relationships. This finding is impossible to ignore. Even in the models that control for all possible variables, ATC teachers have a positive impact on perceptions. As discussed in previous chapters, this may very well be due to the type of recruitment and training practices that ATC employs to find and to prepare teachers for teaching in low-income, high minority schools. In the subgroup analysis for ATC teachers, the Same-Race variable even becomes negative at times (though not significant for both outcome variables). Some may see this as a cause for concern, but I would argue that what it may indicate is that culturally relevant training, such as that provided by the ATC, can mitigate the potential negative effects of not having a same-race teacher. In other words, with recruitment targeted toward socially aware individuals and intentional training, white teachers can be just as effective at maintaining positive student perceptions as black teachers. Given the literature on other possible benefits of having a same-race teacher, this is not to say that we should not continue to increase the number of black teachers in high minority schools. Rather, in the absence of more black teachers, training and recruitment practices aimed at teaching in low-income, high minority schools may diminish the possible negative effect (if one exists) of not having a same-race teacher.

It is important then to return to the research questions posed in Chapter 3 to answer them given the results of this study.

1. Does the proportion of students in a classroom with a same race as their teacher have an impact on how those students perceive their teacher's **effectiveness**?

Yes, but this result seems mostly driven by white students in the sample, though there is at least some evidence that this extends to classes of black students with certain aspects of effectiveness (expectations and rigor).

2. Does the proportion of students in a classroom with a same race as their teacher have an impact on how those students perceive their **relationship** with their teacher?

Yes, but this result seems almost entirely driven by white students in the sample.

There is, though, no evidence of a negative or positive impact in black classrooms (positive outcomes in all models but statistically insignificant results).

In summary, while there are some limitations to conclusions that can be drawn from the findings, there certainly is some evidence of a positive effect of having a same-race teacher. In the absence of this, there also seems to be some evidence of an alternative which could at least minimize the possible ill effects of not having a same-race teacher. These findings add to a growing body of research on the potential benefits of a more diverse teacher workforce.

Limitations and Further Research

One of the major limitations of this research has been the lack of student-level demographic information so that the Same-Race variable can be assessed at the student level. This would allow for a clearer, more direct analysis of the impact of having a same-race teacher on student perceptions. The results that are reported here are complicated by the lack of clear

links between students and teachers by race which causes the results to be diluted by having to analyze only at the classroom level instead of assessing “pure” race matches. These limitations cause the need for additional research on this topic. Future surveys given to this or similar populations will have additional demographic questions so that better links can be made between teachers and students. Beyond this, additional research is needed to better understand the possible impacts of a same-race teacher, especially on non-academic outcomes for students.

Policy Implications

This study has several important policy implications. First, it illuminates the possible problems in the state of Arkansas related to the lack of diversity in the teaching workforce. Both the sample for this study and data from the Arkansas Department of Education show a major discrepancy between the very white teaching workforce and the far more diverse student body. The studies outlined in Chapter 2, coupled with several of the findings from this study, lend some weight to idea of diversifying the teaching workforce to employ more teachers of color, especially in high-minority areas.

This study also has a parallel finding that could be of interest to policymakers. A consistent finding across the models and subgroups was that Arkansas Teacher Corps teachers had a positive impact on both student perceptions of effectiveness and relationships. In fact, it seemed in several models that ATC teachers diminished the impact of having a same-race teacher to no relationship. This seems to suggest that ATC and similar programs may be successful avenues of recruiting and training teachers for high-minority, low-income areas. Students certainly have favorable attitudes toward these teachers and perceive positive relationships, which, as was detailed in Chapter 2, can have a positive impact on students’ academic trajectories.

In conclusion, while the study detailed in these chapters has found mixed results, there are certainly findings that add to a body of research on the impacts of a same-race teacher. One thing is clear, there is certainly no evidence that a same-race teacher has a negative impact on student attitudes toward their teachers and their school, which lead me to conclude that having a more diverse teaching workforce is still something to be desired.

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Appendix A

Example of survey for 3rd to 5th grade English class.

2015 Student Survey (3-5)

The purpose of this survey is to evaluate how effective you think your **ENGLISH** teacher has been this year. Please read each question carefully and mark only one answer choice. You do not have to fill in the circles perfectly, you can just mark the circle with a "checkmark" or an "x" if you prefer. There are no right or wrong answers. This survey is anonymous and your teacher will have no way of knowing what your answers are as they will not see the results of this survey. If you have any questions, please raise your hand and ask the proctor.

Please write in the blank the subject and school you are taking this survey for and your current grade level:

Subject: _____ School: _____ Grade: _____

1. Overall, how much have you learned from this teacher?	Almost nothing <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
2. How clearly does this teacher present the information that you need to learn?	Not at all clearly <input type="radio"/>	Slightly clearly <input type="radio"/>	Quite clearly <input type="radio"/>	Extremely clearly <input type="radio"/>
3. How good is this teacher at helping you learn?	Not at all good <input type="radio"/>	Slightly good <input type="radio"/>	Quite good <input type="radio"/>	Extremely good <input type="radio"/>
4. How often does this teacher require everyone to participate in class?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
5. How much have you learned from this teacher compared to your teacher last year?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
6. This teacher helps me learn ____ than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
7. This teacher requires everyone to participate in class ____ than my teacher last year.	A lot less often <input type="radio"/>	Less often <input type="radio"/>	More often <input type="radio"/>	A lot more often <input type="radio"/>
8. How much does your teacher know about what you learn in class?	Almost nothing <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A lot <input type="radio"/>
9. How often is your teacher able to answer your questions?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
10. This teacher knows _____ than my teacher last year?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
11. My teacher is able to answer my questions ____ often than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
12. How fair or unfair are the rules in this class?	Very unfair <input type="radio"/>	Slightly unfair <input type="radio"/>	Slightly fair <input type="radio"/>	Very fair <input type="radio"/>
13. On most days, how pleasant is your teacher's mood?	Very unpleasant <input type="radio"/>	Slightly unpleasant <input type="radio"/>	Slightly pleasant <input type="radio"/>	Very pleasant <input type="radio"/>
14. How often do students behave well in this class?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
15. The rules in this class are ____ than my teacher's rules last year.	Much more unfair <input type="radio"/>	Slightly more unfair <input type="radio"/>	Slightly more fair <input type="radio"/>	Much more fair <input type="radio"/>

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (3-5)

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. My teacher's mood is ____ compared to my teacher last year.	Much more unpleasant <input type="radio"/>	Slightly more unpleasant <input type="radio"/>	Slightly more pleasant <input type="radio"/>	Much more pleasant <input type="radio"/>
17. The students in this class are ____ than the students in my class last year.	A lot less behaved <input type="radio"/>	Less behaved <input type="radio"/>	More behaved <input type="radio"/>	A lot more behaved <input type="radio"/>
18. How often does this teacher encourage you to do your best?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
19. Overall, how high are this teacher's expectations of you?	Not high at all <input type="radio"/>	Slightly high <input type="radio"/>	Quite high <input type="radio"/>	Extremely high <input type="radio"/>
20. This teacher encourages me to do my best ____ than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
21. This teacher's expectations are ____ than my last teacher's expectations.	Much lower <input type="radio"/>	Lower <input type="radio"/>	Higher <input type="radio"/>	Much higher <input type="radio"/>
22. Compared to your other teachers, the work in this class is ____ challenging.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
23. In this class, how much do you participate?	Not at all <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
24. Overall, how interested are you in this class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
25. Overall, how interesting does this teacher make what you are learning in this class?	Not at all interesting <input type="radio"/>	A little bit interesting <input type="radio"/>	Quite interesting <input type="radio"/>	Extremely interesting <input type="radio"/>
26. Compared to your class last year, how much do you participate in this class?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
27. This teacher makes what we are learning ____ than my last teacher.	A lot less interesting <input type="radio"/>	Less interesting <input type="radio"/>	More interesting <input type="radio"/>	A lot more interesting <input type="radio"/>
28. Compared to my last teacher this teacher makes learning ____.	A lot less fun <input type="radio"/>	Less fun <input type="radio"/>	More fun <input type="radio"/>	A lot more fun <input type="radio"/>
29. How interested is this teacher in what you do outside of class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
30. If you walked into class upset, how concerned would your teacher be?	Not at all concerned <input type="radio"/>	A little bit concerned <input type="radio"/>	Quite concerned <input type="radio"/>	Extremely concerned <input type="radio"/>
31. How friendly is your teacher outside of class?	Not at all friendly <input type="radio"/>	A little bit friendly <input type="radio"/>	Quite friendly <input type="radio"/>	Extremely friendly <input type="radio"/>
32. This teacher is ____ interested in what I do outside of class than my teacher last year.	A lot less interested <input type="radio"/>	Less interested <input type="radio"/>	More interested <input type="radio"/>	A lot more interested <input type="radio"/>
33. My teacher would be ____ if I was upset than my teacher last year.	A lot less concerned <input type="radio"/>	Less concerned <input type="radio"/>	More concerned <input type="radio"/>	A lot more concerned <input type="radio"/>

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (3-5)

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. My teacher's mood is ____ compared to my teacher last year.	Much more unpleasant <input type="radio"/>	Slightly more unpleasant <input type="radio"/>	Slightly more pleasant <input type="radio"/>	Much more pleasant <input type="radio"/>
17. The students in this class are ____ than the students in my class last year.	A lot less behaved <input type="radio"/>	Less behaved <input type="radio"/>	More behaved <input type="radio"/>	A lot more behaved <input type="radio"/>
18. How often does this teacher encourage you to do your best?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
19. Overall, how high are this teacher's expectations of you?	Not high at all <input type="radio"/>	Slightly high <input type="radio"/>	Quite high <input type="radio"/>	Extremely high <input type="radio"/>
20. This teacher encourages me to do my best ____ than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
21. This teacher's expectations are ____ than my last teacher's expectations.	Much lower <input type="radio"/>	Lower <input type="radio"/>	Higher <input type="radio"/>	Much higher <input type="radio"/>
22. Compared to your other teachers, the work in this class is ____ challenging.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
23. In this class, how much do you participate?	Not at all <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
24. Overall, how interested are you in this class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
25. Overall, how interesting does this teacher make what you are learning in this class?	Not at all interesting <input type="radio"/>	A little bit interesting <input type="radio"/>	Quite interesting <input type="radio"/>	Extremely interesting <input type="radio"/>
26. Compared to your class last year, how much do you participate in this class?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
27. This teacher makes what we are learning ____ than my last teacher.	A lot less interesting <input type="radio"/>	Less interesting <input type="radio"/>	More interesting <input type="radio"/>	A lot more interesting <input type="radio"/>
28. Compared to my last teacher this teacher makes learning ____.	A lot less fun <input type="radio"/>	Less fun <input type="radio"/>	More fun <input type="radio"/>	A lot more fun <input type="radio"/>
29. How interested is this teacher in what you do outside of class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
30. If you walked into class upset, how concerned would your teacher be?	Not at all concerned <input type="radio"/>	A little bit concerned <input type="radio"/>	Quite concerned <input type="radio"/>	Extremely concerned <input type="radio"/>
31. How friendly is your teacher outside of class?	Not at all friendly <input type="radio"/>	A little bit friendly <input type="radio"/>	Quite friendly <input type="radio"/>	Extremely friendly <input type="radio"/>
32. This teacher is ____ interested in what I do outside of class than my teacher last year.	A lot less interested <input type="radio"/>	Less interested <input type="radio"/>	More interested <input type="radio"/>	A lot more interested <input type="radio"/>
33. My teacher would be ____ if I was upset than my teacher last year.	A lot less concerned <input type="radio"/>	Less concerned <input type="radio"/>	More concerned <input type="radio"/>	A lot more concerned <input type="radio"/>

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (3-5)

34. My teacher is ____ friendly outside of class than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
35. My teacher cares ____ about me than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
36. My teacher believes in me ____ than my teacher last year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
37. How willing is this teacher to take time outside of class to help you?	Not at all willing <input type="radio"/>	Slightly willing <input type="radio"/>	Quite willing <input type="radio"/>	Extremely willing <input type="radio"/>
38. How prepared is your teacher for class?	Not at all prepared <input type="radio"/>	Slightly prepared <input type="radio"/>	Quite prepared <input type="radio"/>	Extremely prepared <input type="radio"/>
39. This teacher is ____ to help me outside of class than my teacher last year.	A lot less willing <input type="radio"/>	Less willing <input type="radio"/>	More willing <input type="radio"/>	A lot more willing <input type="radio"/>
40. My teacher is ____ for class than my teacher last year.	A lot less prepared <input type="radio"/>	Less prepared <input type="radio"/>	More prepared <input type="radio"/>	A lot more prepared <input type="radio"/>
41. How often do you videos or give you worksheets to do on your own?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>

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Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (3-5)

Open Ended Questions

1. Does this teacher make you work hard in class? Why or why not?
2. Do you feel that you have a good relationship with this teacher? Why or why not?
3. If there is anything else you want to tell us about this teacher, please do so here.

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

Appendix B

Example of survey for 6th to 12th grade English class.

2015 Student Survey (6-12)

The purpose of this survey is to evaluate how effective you think your **ENGLISH** teacher has been this year. Please read each question carefully and mark only one answer choice. You do not have to fill in the circles perfectly, you can just mark the circle with a "checkmark" or an "x" if you prefer. There are no right or wrong answers. This survey is anonymous and your teacher will have no way of knowing what your answers are as they will not see the results of this survey. If you have any questions, please raise your hand and ask the proctor.

Please write in the blank the subject and school you are taking this survey for and your current grade level:

Subject: _____ School: _____ Grade: _____

1. Overall, how much have you learned from this teacher about English?	Almost nothing <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
2. For this class, how clearly does this teacher present the information that you need to learn?	Not at all clearly <input type="radio"/>	Slightly clearly <input type="radio"/>	Quite clearly <input type="radio"/>	Extremely clearly <input type="radio"/>
3. How often does this teacher give you feedback that helps you learn (for example: comments or grading on assignments or projects)?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
4. How often does this teacher require everyone to participate in class?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
5. How much have you learned from this teacher compared to your other teachers this year?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
6. This teacher gives me feedback that helps me learn _____ often than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
7. This teacher requires everyone to participate in class _____ than my other teachers this year.	A lot less often <input type="radio"/>	Less often <input type="radio"/>	More often <input type="radio"/>	A lot more often <input type="radio"/>
8. How knowledgeable is your teacher about English?	Not at all knowledgeable <input type="radio"/>	A little bit knowledgeable <input type="radio"/>	Quite knowledgeable <input type="radio"/>	Extremely knowledgeable <input type="radio"/>
9. How often is your teacher able to answer your questions regarding English?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
10. This teacher knows _____ about English than my previous English teacher?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
11. My teacher is able to answer my questions about English _____ often than my previous English teachers.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
12. How fair are the rules for the students in this class?	Very unfair <input type="radio"/>	Slightly unfair <input type="radio"/>	Slightly fair <input type="radio"/>	Very fair <input type="radio"/>
13. On most days, how pleasant is your teacher's mood?	Very unpleasant <input type="radio"/>	Slightly unpleasant <input type="radio"/>	Slightly pleasant <input type="radio"/>	Very pleasant <input type="radio"/>
14. How often do students behave well in this class?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (6-12)

15. The rules in this class are ____ than my other teachers' rules this year.	Much more unfair <input type="radio"/>	Slightly more unfair <input type="radio"/>	Slightly more fair <input type="radio"/>	Much more fair <input type="radio"/>
16. My teachers' mood is ____ compared to my other teachers this year.	Much more unpleasant <input type="radio"/>	Slightly more unpleasant <input type="radio"/>	Slightly more pleasant <input type="radio"/>	Much more pleasant <input type="radio"/>
17. The students in this class are ____ than the students in my other classes this year.	A lot less behaved <input type="radio"/>	Less behaved <input type="radio"/>	More behaved <input type="radio"/>	A lot more behaved <input type="radio"/>
18. How often does this teacher encourage you to do your best?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>
19. Overall, how high are this teacher's expectations of you?	Not high at all <input type="radio"/>	Slightly high <input type="radio"/>	Quite high <input type="radio"/>	Extremely high <input type="radio"/>
20. This teacher encourages me to do my best ____ than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
21. This teacher's expectations are ____ than my other teachers' expectations.	Much lower <input type="radio"/>	Lower <input type="radio"/>	Higher <input type="radio"/>	Much higher <input type="radio"/>
22. Compared to your other teachers in English, the work in this class is ____ challenging.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
23. In this class, how much do you participate?	Not at all <input type="radio"/>	A little bit <input type="radio"/>	Quite a bit <input type="radio"/>	A tremendous amount <input type="radio"/>
24. Overall, how interested are you in this class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
25. Overall, how interesting does this teacher make what you are learning in this class?	Not at all interesting <input type="radio"/>	A little bit interesting <input type="radio"/>	Quite interesting <input type="radio"/>	Extremely interesting <input type="radio"/>
26. Compared to your other classes this year, how much do you participate in this class?	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
27. This teacher makes what we are learning ____ than my other teachers in English.	A lot less interesting <input type="radio"/>	Less interesting <input type="radio"/>	More interesting <input type="radio"/>	A lot more interesting <input type="radio"/>
28. Compared to my other teachers in English this teacher makes learning this subject ____ to learn.	A lot less fun <input type="radio"/>	Less fun <input type="radio"/>	More fun <input type="radio"/>	A lot more fun <input type="radio"/>
29. How interested is this teacher in what you do outside of class?	Not at all interested <input type="radio"/>	A little bit interested <input type="radio"/>	Quite interested <input type="radio"/>	Extremely interested <input type="radio"/>
30. If you walked into class upset, how concerned would your teacher be?	Not at all concerned <input type="radio"/>	A little bit concerned <input type="radio"/>	Quite concerned <input type="radio"/>	Extremely concerned <input type="radio"/>
31. How approachable is your teacher outside of class?	Not at all approachable <input type="radio"/>	A little bit approachable <input type="radio"/>	Quite approachable <input type="radio"/>	Extremely approachable <input type="radio"/>
32. This teacher is ____ interested in what I do outside of class than my other teachers this year.	A lot less interested <input type="radio"/>	Less interested <input type="radio"/>	More interested <input type="radio"/>	A lot more interested <input type="radio"/>
33. My teacher would be ____ if I was upset than my other teachers this year.	A lot less concerned <input type="radio"/>	Less concerned <input type="radio"/>	More concerned <input type="radio"/>	A lot more concerned <input type="radio"/>

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (6-12)

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. My teacher is ____ approachable outside of class than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
35. My teacher cares ____ about me than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
36. My teacher believes in me ____ than my other teachers this year.	A lot less <input type="radio"/>	Less <input type="radio"/>	More <input type="radio"/>	A lot more <input type="radio"/>
37. How willing is this teacher to take time outside of class to help you?	Not at all willing <input type="radio"/>	Slightly willing <input type="radio"/>	Quite willing <input type="radio"/>	Extremely willing <input type="radio"/>
38. How prepared is your teacher for class?	Not at all prepared <input type="radio"/>	Slightly prepared <input type="radio"/>	Quite prepared <input type="radio"/>	Extremely prepared <input type="radio"/>
39. This teacher is ____ to help me outside of class than my other teachers this year.	A lot less willing <input type="radio"/>	Less willing <input type="radio"/>	More willing <input type="radio"/>	A lot more willing <input type="radio"/>
40. My teacher is ____ for class than my other teachers this year.	A lot less prepared <input type="radio"/>	Less prepared <input type="radio"/>	More prepared <input type="radio"/>	A lot more prepared <input type="radio"/>
41. How often do you have classes when this teacher does not engage with you (for example, show videos or give you worksheets to do on your own)?	Almost never <input type="radio"/>	Once in a while <input type="radio"/>	Often <input type="radio"/>	Almost always <input type="radio"/>

(Continued on next page)

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

2015 Student Survey (6-12)

Open Ended Questions

1. Does this class require you to put forth a lot of effort? Why or why not?
2. Do you feel that you have a positive relationship with this teacher? Why or why not?
3. If there is anything else you want to tell us about this teacher, please do so here.

Adapted from the Panorama Student Survey (<https://www.panoramaed.com/panorama-student-survey>)

Appendix C: Original Constructs

1. Pedagogical Effectiveness

- Core Questions - 1, 2, 3, 4
- Comparative Questions – 5, 6, 7

2. Content Knowledge

- Core Questions – 8, 9
- Comparative Questions – 10, 11

3. Classroom Environment

- Core Questions – 12, 13, 14
- Comparative Questions – 15, 16, 17

4. Expectations & Rigor

- Core Questions – 18, 19
- Comparative Questions - 20, 21, 22

5. Student Engagement

- Core Questions – 23, 24, 25
- Comparative Questions – 26, 27, 28

6. Supportive Relationships

- Core Questions – 29, 30, 31
- Comparative Questions – 32, 33, 34, 35, 36

7. Time & Commitment

- Core Questions – 37, 38
- Comparative Questions – 39, 40

Grand Constructs

1. Effectiveness

- Core Questions – 1, 2, 3, 4, 8, 9, 12, 14, 19, 23, 24, 25, 38

2. Relationships

- Core Questions – 13, 18, 29, 30, 31, 37

Appendix D: IRB Approval



UNIVERSITY OF
ARKANSAS

Office of Research Compliance
Institutional Review Board

June 12, 2017

MEMORANDUM

TO: Elise Swanson
Benton Brown
John Hall
Gary Ritter

FROM: Ro Windwalker
IRB Coordinator

RE: PROJECT CONTINUATION

IRB Protocol #: 15-04-676

Protocol Title: *An Evaluation of Arkansas Teacher Corps - Student Level*

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Previous Approval Period: Start Date: 04/27/2015 Expiration Date: 04/25/2017

New Expiration Date: 04/25/2018

Your request to extend the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

This protocol is closed to enrollment. If you wish to make *any* modifications in the approved protocol, including enrolling more participants, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or irb@uark.edu.