ABSTRACT

Title of dissertation:	PUBLIC SCHOOL PRINCIPALS OF COLOR: AN EXPLORATION OF TRENDS IN AND PREDICTORS OF REPRESENTATION, AND INFLUENCE ON SCHOOL-LEVEL OUTCOMES
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U.S. public schools are changing and becoming more diverse, but principals and educators are still largely White. As the number of students of color served by public schools grows, the continuing disparities in outcomes between students of color and their White counterparts is an area of increasing concern. Some research indicates that teachers of color may support positive outcomes for their students of color, but far less research examines principals of color, their representation, and their effect on student of color outcomes. This study aims to address this gap by exploring trends in the representation of principals of color, predictors of change from a White principal to a principal of color, and effects of change to a principal of color on student outcomes using three collection waves of Schools and Staffing Survey data (2003-2012). Descriptive analyses are used to explore the percentages of principals of color

and change over time and in schools with different characteristics (e.g., SES level, size, etc.). Logistic regression is used to determine which school-level predictors significantly predict change from a White principal to a principal of color. Finally, schools that experienced change from a White principal to a principal of color are matched with "control" schools that experienced continuing White principals using propensity score matching, and ANCOVAs were completed to compare outcomes between the sets of schools. Results indicate that principals of color are still best represented in urban schools with high percentages of students and teachers of color and students receiving free and reduced meals. However, this trend is shifting with more principals of color serving in suburban schools with fewer students and teachers of color. The percentage of students of color predicts change from a White principal to a principal of color. While schools that experience change from a White principal to a principal of color have fewer suspensions than schools with continuing White principals, other school-level outcomes appear similar for the groups.

PUBLIC SCHOOL PRINCIPALS OF COLOR: AN EXPLORATION OF TRENDS IN AND PREDICTORS OF REPRESENTATION AND INFLUENCE ON SCHOOL-LEVEL OUTCOMES

by

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Dedication

To my family and friends who offered their support, encouragement and inspiration, especially my husband, Robert Green, who never stopped helping, pushing, and believing in me. Thank you for never letting me give up.

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Chapter 1: Introduction

The United States is becoming increasingly diverse. By 2044, the population of the country is projected to be "majority minority" – a term used to indicate that the numbers of non-White individuals surpass that of White individuals (Colby & Ortman, 2015). Public schools within the United States already include more students of Latina/o, African American, Asian, and other students of color as compared to non-Hispanic, White students (NCES, 2012). One of the most pressing, concerning and long-standing implications of the shifting demographics across the country is the continuing disparity in academic outcomes, between students of color and their White counterparts.

Though this disparity is an area of much interest, speculation, and intervention, discrepancies in achievement continue. One strategy demonstrated by research to improve academic outcomes for students of color is increased exposure to teachers of color (e.g., Downey & Pribesh, 2004; Strauss, 2015; Clewell, Puma, & McKay, 2005; Dee, 2004, Villegas & Davis, 2008; Villegas & Irvine, 2009; Grissom, Rodriguez, & Kern, in press). Less research is available regarding the influence of principals of color on student of color outcomes. Despite indications that educators of color may support student of color achievement, educators remain largely White and educators of color are underrepresented in most schools (NCES, 2012).

Principals play an important role in schools – influencing school culture and climate, staff morale, and student outcomes (e.g., Gottfredson et al., 2002). As schools become increasingly diverse, principals are called upon to serve as cultural leaders and address concerns related to navigating cultural conflicts, addressing inequities and bias in education, and making school representative of student experiences (e.g., Young,

Madsen, & Young, 2010). While much research is available on school principals, little research is available on principals of color. The limited research that is available indicates that many principals of color, like many teachers of color, may view themselves as social justice leaders dedicated to confronting and addressing inequity in education and supporting students of color (e.g., Swanson, 2013).

To broaden understanding of principals of color, increased research on their representation and effects is needed. Few studies have explored trends in and predictors of representation of principals of color. While studies indicate that the percentage of principals of color is increasing (e.g., Gates, 2003), less research explores in which schools this change is occurring. Further, little research explores what school characteristics predict the change from a White principal to a principal of color or the relations among principals of color, teacher of color representation, and school outcomes. Increased research in this area can inform policies, practices, and increase understanding of current trends in the staffing of U.S. public schools. While understanding principal of color representation is important, exploring the effects principals of color may have on their schools and students is also valuable.

Principals are one of many factors that likely play a role in shaping staff diversity and outcomes in their schools. Larger, systemic factors like racism and poverty likely influence staff demographics and student and school outcomes. Additionally, policies at the local, state, and federal level inform the hiring practices, disciplinary guidelines, and other regulations which may all affect the outcomes of interest in this study. While principal race is the variable of interest in this study, it is likely that principal race serves as a proxy for beliefs and experiences of the principal, which may more directly influence

the outcome. These points highlight some of the limitations of this study. However, as described above, a wealth of literature supports the important role of principals in shaping their schools. Federal policies echo these findings, encouraging or requiring schools to replace leaders when faced with failure to meet goals (U.S. Department of Education, 2010). Though many factors shape schools as complex, multifaceted systems, principals serve as leaders and managers of these systems. As research indicates, they can establish respect, fairness, and high morale (e.g., Gottfredson et al., 2002). For these reasons as well as the logistical difficulties of accounting for all possible variables, principals were chosen as the target of focus. Principals of color, specifically, are explored to enhance and expand the limited literature base.

Principals of color may contribute to the staff diversity and outcomes of their schools. They may support efforts to increase representation of teachers of color in U.S. public schools. This is important because, while recruitment efforts aimed at increasing representation of teachers of color seem to be working, the disparity between numbers of teachers of color and students of color continues, and turnover among teachers of color is high (Achinstein, Ogawa, Sexton, & Freitas, 2010; Ingersoll & Connor, 2009; Ingersoll, 2015, Albert Shanker Institute, 2015). The high rates of turnover coupled with the insufficient growth in recruitment of teachers of color are contributing to an expanding disparity between the numbers of students of color and teachers of color within U.S. public schools. Increasing the number of teachers of color in all of the United States' public schools may be important to improve the outcomes for the increasing population of students of color, and is an issue of social justice, employment equity, and civil rights (Achinstein et al., 2010; Carr, 1995).

Teachers of color cite dissatisfaction with their jobs and administrators as top reasons for leaving the teaching workforce (Ingersoll, 2015). As one study found, teachers of color may more often advocate for practices that address racism, inequity, and social justice in education, and feel stifled and dissatisfied in schools where there is little support for such practices (Achinstein et al., 2010). Since principals often establish expectations and provide support for teacher practices, their beliefs in the value of practices like culturally responsive and social justice-focused teaching likely shapes the acceptability of engaging in such teaching. Thus, teachers of color who work with principals who espouse similar beliefs and commitment may be more likely to be satisfied with their jobs and administrators. Principals of color, who likely began as teachers of color, may be more likely than their White counterparts to support such values, to champion beliefs related to the importance of addressing race and inequity, and to view themselves as leaders in social justice (Jones, 2002). Though research in this area is lacking, emerging research indicates that teachers of color may be more satisfied, feel their values align more closely with school goals, and experience more autonomy and influence in schools led by principals of color (Jones, 2002; Grissom & Keiser, 2011). Moreover, teachers of color may prefer and seek to work with principals of color. For example, some findings indicate that, as teachers of color gain experience, they shift into schools with principals of color (Grissom & Keiser, 2011).

Unfortunately, less research is available on the influence of principals of color on student and school outcomes, like discipline rates, attendance, and school problems. The literature that is available is mixed. For example, one study found that Black principals suspended students at significantly higher rates than other principals (Hoffman-Miller &

View, 2010) while another study found that schools with principals of color tended to have more students of color represented in high-level, gifted courses (Grissom et al., 2015). Additional research is needed to understand what role, if any, principal demographics may play on student and school outcomes.

Explanation of Language

Throughout this study, the phrase "of color" is used to describe principals, teachers, and students. While the data utilized refers to proportions of minority students and teachers, when discussing my method and analysis plans, I have chosen "of color" to describe individuals in this study who are not identified as non-Hispanic, White individuals to recognize current terminology and trends in the literature. The term "White" has been chosen to refer to all individuals who are identified as non-Hispanic, White individuals. All the research available and reviewed in this study is based on studies with Black or Hispanic individuals. This is, in part, due to the limited number of individuals of other racial or ethnic backgrounds in education. For example, while principals of color make up only a small proportion of U.S. public schools principals (<20% by most accounts), the majority of non-White principals are Black or Hispanic (>95%; NCES, 2012). As such, literature referring to individuals of color refers to Black or Hispanic individuals. Whenever possible, I will provide additional information about specific demographics of individuals studied. Based on these definitions, principals of color refer to a large, heterogeneous group of individuals who are likely more different than they are alike in many ways. This broad group was chosen for both theoretical and practical reasons. As will be reviewed in this paper, Black and Hispanic principals, more so than non-Hispanic White principals, emphasize their role as cultural leaders and

express goals related to social justice and addressing inequities in education. These principals of color may be better prepared to address cultural issues in schools which may relate to outcomes of interest in this study (e.g., Swanson, 2013; Achinstein et al., 2010). Practically, using the whole group of principals of color was the most effective way to gain an adequate sample size for the questions addressed in this study. Most of the principals of color included in this study are Black or Hispanic principals, but self-identify as being from other racial and ethnic backgrounds. While most questions will address "principals of color" as a whole group, steps will be taken throughout the study to disaggregate samples and provide information about the trends in representation of different races and ethnic groups within the larger "principals of color" group.

Study Rationale

In this study, I examine the distribution, predictors, and influence of principals of color in public schools across the United States. Regarding distribution of principals of color, I explore when, where, and to what degree educators of color serve as principals in public schools. A report from 2000, examining principals across the country found only a small proportion of principals of color (Gates, 2003). Data from the U.S. Department of Education also indicates that individuals of color are underrepresented in the principalship: a report examining data from 2011-2012 found that over 80% of public school principals are non-Hispanic White individuals; given the over 50% students of color, only 20% principals of color is a low percentage. Regarding predictors of principals of color, this particular dataset indicates that principals of color are more often in the schools with the highest needs – including those in urban environments, and those with the poorest students (NCES, 2012). While reports indicate that principals of color

are disproportionately located in the schools with the poorest students, I could not find a single comprehensive study that examined the trends in representation of principals of color over time and across schools with different characteristics (e.g., school level, size, SES, etc.).

Underrepresentation and concentration in poor, urban schools is not isolated to principals. Nearly 82% of public school teachers are non-Hispanic White individuals. In schools with the fewest students receiving free and reduced meals (FARMS), this number grows to over 90%, while in the schools with the most students receiving FARMS, only 63% of teachers are White (NCES, 2012). Non-Hispanic, White students, similarly, are overrepresented in the wealthiest schools and underrepresented in the poorest schools (NCES, 2012). Regarding the influence of principals of color, while emerging evidence supports the idea that exposure to diverse teachers benefits all students, particularly students of color, less research explores the benefits of principals of color.

In this study, I aim to explore a) Representation: if and how the representation of principals of color is changing over time, the rate of change, and how this change varies between schools with different characteristics; b) Predictors: what school-level characteristics predict change from a White principal to a principal of color, and c) Outcomes: compared to similar schools with continuing White principals, how does change from a White principal to a principal of color influence racial and ethnic diversity among the teacher workforce, specifically changing the percentages of teachers of color; how does change influence outcomes on school-level variables such as attendance, suspensions, expulsions, and school problems compared to schools with continuing White principals?

I explore these questions using data gathered from public schools as part of the Schools and Staffing Survey (SASS), a national sample survey conducted by the U.S. Department of Education's National Center for Education Statistics (NCES). The answers to these questions can inform policymakers and educators. Findings from this research may be applied to decisions regarding school staffing and school policies, will influence our understanding of representation by educators of color as teachers and leadership, and provide some information to support further exploration of strategies to improve employment equity and reduce the achievement gap in American education.

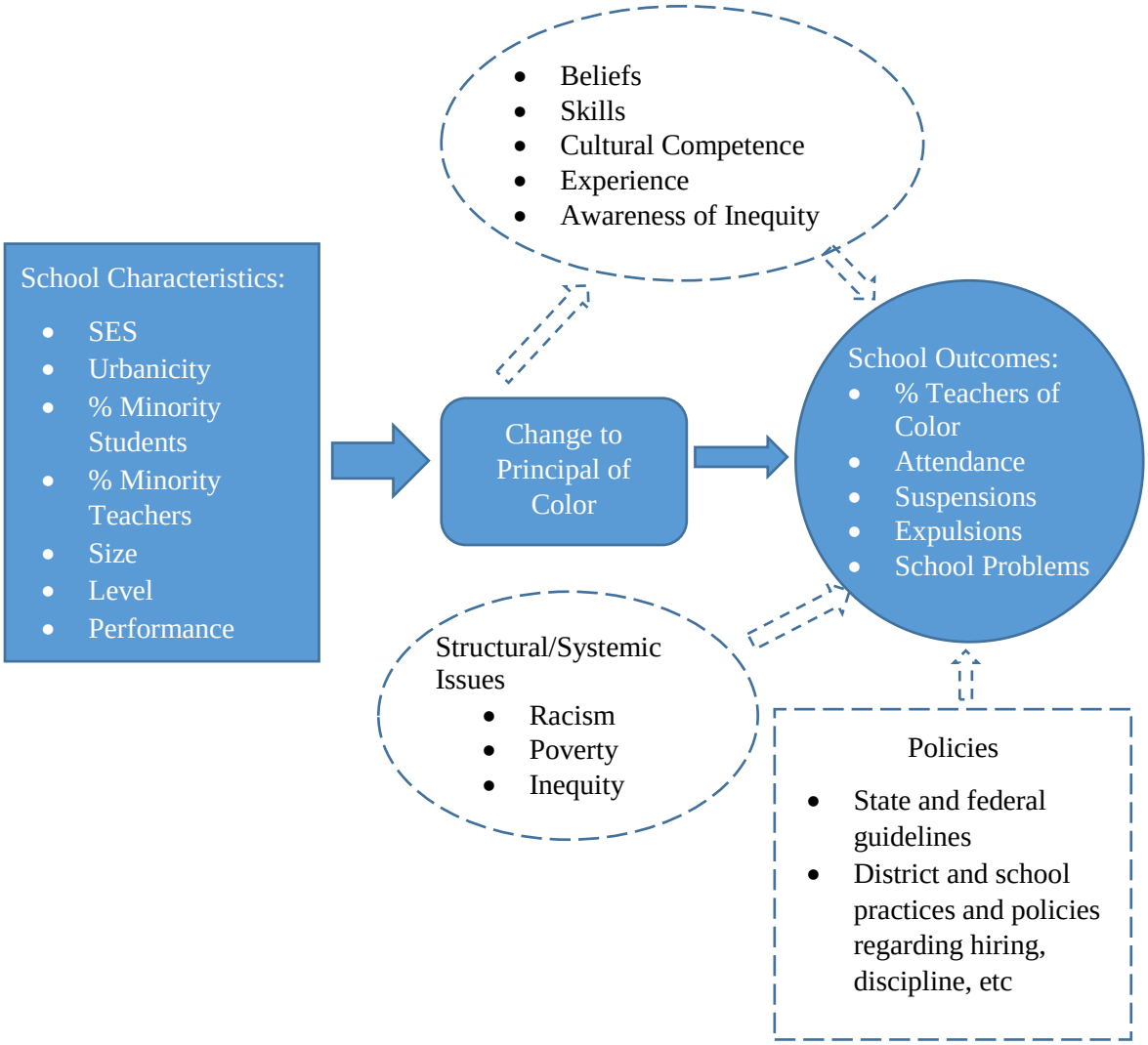


Figure 1. Proposed conceptual model of study with focus of the study highlighted: School characteristics as predictors of change to principal of color, and principal of color change as predictor of outcome scores in teachers of color, suspensions and expulsions, attendance, and school problems and other potential contributing factors included

Statement of Research Questions

1. How has representation of principals of color in the United States workforce changed in the last decade?
    a. What is the rate of change from 2003 to 2012 and how does this change in representation vary between schools with different characteristics (e.g., community type, percentages receiving free and reduced-price lunch, number of students of color)?
    b. Hypothesis 1: I expect that representation of principals of color has increased from 2003-12, but that representation of principals of color has grown more rapidly in urban schools with more students of color and students receiving FARMS. This hypothesis is supported by research indicating that principals of color are better represented in urban schools with large numbers of poor students of color (NCES, 2012). However, research has not explored whether or how this representation has changed over time.
2. What school-level characteristics predict change from a White principal to a principal of color?

a. Hypothesis 2: I expect that urbanicity, school SES, percentage of minority students, school size and school level will all play a role in predicting change from a White principal to a principal of color. I predict that urban schools and those at the elementary school level will be predictive of change to a principal of color. I also expect that schools with more students in general, and, specifically, higher numbers of students of color and students receiving FARMS will predict change to a principal of color. Finally, I expect the percentages of teachers of color and school performance standards to predict change to a principal of color in that those schools with more teachers of color and those having not met standards are more likely to experience change. These hypotheses are supported by previous research indicating that principals of color are largely segregated to urban schools with large numbers of poor students and students of color. Further, recent reports indicate that principals of color are more likely to serve in primary schools and schools with larger numbers of students (NCES, 2012). While this data exists, there has been no research indicating that these factors are also predictive of change from a White principal to a principal of color.

3. In schools with similar characteristics, how does the change from a White principal to a principal of color influence the representation of teachers of color as compared to schools without change?
4. In schools with similar characteristics, how does change to a principal of color from a White principal influence school-level outcomes such as suspensions,

expulsions, and school problems as compared to schools with continuing White principals?

Chapter 2: Literature Review

U.S. public school demographics are changing. The numbers of students of color are increasing, but this shift is not as clearly reflected in educators – who remain largely White (NCES, 2012). The lack of diversity in public school staff is alarming and important. Although the research is limited, the literature that exists indicates that all students, but particularly students of color, may benefit from increased diversity in their schools (e.g., Strauss, 2015; Dee, 2004). As such, research on strategies to increase the diversity of staff in schools and continued exploration of the benefit of diversity on student and school outcomes is critical.

Many factors may contribute to the diversity of staff in schools and school outcomes including systemic issues like racism and poverty; policies at the school, district, state, and federal level; school characteristics like student demographics, resources, opportunities for professional development, climate, and culture; and staff characteristics (See Figure 1). It is outside the scope of this paper to review all potential contributing factors related to staff diversity and school outcomes, but the breadth of potential factors is acknowledged. This paper aims to focus on the principal characteristics that may contribute to staff diversity and student outcomes and school characteristics that may contribute to principal of color representation. School characteristics provide a context for the questions explored throughout this study and may serve as predictors of increasing diversity in school staff. Principals, as leaders of their schools, play a key role in shaping school policies, staff, and culture. While there is a wealth of research on principals, research on principals of color is lacking. They are underrepresented and understudied. This is problematic as increased representation of

principals of color in U.S. public schools may increase diversity in the teaching workforce and benefit all students, particularly students of color, as described throughout this review.

This literature review provides a context for this argument by examining the key elements in the model for this study: principal of color representation in the context of an increasingly diverse country, predictors of change to principals of color, and consequences (See Figure 1). Regarding representation, I will first explore the changing demographics in U.S. public schools, the effect of educator demographics on student outcomes, and the trends in representation of principals and teachers of color in public schools. I will then describe the critical role of principals in all schools with a focus on diverse schools. This portion of the review will provide a background on principal of color representation and a justification for the focus on principals of color. The information detailed in this portion of the review will also inform the next section, which focuses on the identification of school characteristics that serve as predictors of change to principals of color in this study's model. While limited data exists exploring trends in representation of principals of color over time and cross-sectional snapshots of principal of color representation in schools with different characteristics, I was unable to find comprehensive information about trends in the representation of principals of color over time and what school characteristics predict such change over time (e.g., school level, size, urbanicity, SES level, etc.). This study aims to fill that gap.

Following exploration of principal of color representation and prediction, I will describe the literature on mechanisms by which principals change their schools and on principals of color beliefs and values. I will then outline the limited literature regarding

the role principals of color may play in influencing teachers of color representation in U.S. public schools. Two studies indicate that principals of color may attract teachers of color into the workforce or support these teachers better than White principals; however, I was unable to find additional research regarding the relation between principal of color leadership and increasing representation of teachers of color Finally, I will examine the potential effects principals of color on student outcomes. I will highlight the few studies explicitly describing the relation between principal race and student outcomes. Then, I will connect the findings presented regarding principal of color characteristics with potential effects on student and school outcomes.

Student of Color Representation, Outcomes, and the Role of Educators of Color

The demographics of U.S. public schools are shifting. This shift is related to continuing disparities in academic and other outcomes between students of color and their White counterparts. Though this disparity will not be addressed in this study, it provides a framework for understanding the importance of exploring discrepancies between student and educator demographics. In August 2014, Department of Education projections anticipated that U.S. public schools would be "majority minority" by Fall 2014, meaning that the overall numbers of Hispanic, African American, Asian, and other students of color in classrooms were expected to exceed that of non-Hispanic White students (NCES, 2014). This shift reflects changes in demographics across the country, as the U.S. Census projects that by 2044 more than half of all Americans will belong to a minority group (Colby & Ortman, 2015). As the population of students of color increases, so does the number of school-aged children in poverty across racial and ethnic groups. Unsurprisingly, the percentages of children in poverty is higher, on average, for students

of color than non-Hispanic White students, apart from Asian students for whom similar percentages are living in poverty as non-Hispanic White students (NCES, 2012). However, this may mask specific differences among Asian ethnic subgroups. For example, while fewer Japanese, Asian Indian, and Filipino students are living in poverty, more Vietnamese, and "other Asian" students experience poverty (NCES, 2012).

Schools with high proportions of low-income students and students of color tend to perform more poorly on state or national tests and have higher rates of teacher turnover, school dropout, and expulsions and suspensions than schools with higher proportions of wealthier, non-Hispanic White students (Editorial Projects in Educational Research Center, 2011). The discrepancy in academic success between White students and students of color is concerning, and as the population of low-income students of color grows, so too may this achievement gap. Poverty may account for a portion of and likely perpetuates discrepancies in achievement, but research indicates that poverty does not wholly explain the differences in achievement by race or ethnicity. Jencks and Phillips (1998) found consistent, sizeable gaps in achievement between students of different races, even when social class is held constant. Based on results from College Board (1999) wealthy Black and Hispanic students exhibit lower performance on some academic measures than poor White students. The differences do not end at academic achievement. As Howard (2010) notes, the achievement gap is "reflected most clearly in grades, standardized test scores, high school graduation rates, placement in special education and advanced placement courses, and suspension and expulsion rates" (p. 12). Students of color are more likely than White students to receive suspensions and expulsions, to drop out of school, to receive lower grades and test scores, are more likely

to be placed in special education, and less likely to be placed in advanced placement courses (Howard, 2010).

As students of color become an increasingly large portion of students served in public schools, understanding the role of educator characteristics on student outcomes becomes important. Several studies indicate that increasing educator diversity may play a role in improving student of color outcomes. Most of these studies focus on the role teachers of color may play in supporting student of color success.

Achinstein and colleagues (2010), for example, highlight the current failure of public schools to successfully serve and educate children of color, and argue that teachers of color may be particularly well-suited to serve children of color because of cultural understanding and responsivity, ability to foster relationships with families, and capacity for understanding student experiences and background. Research supports this argument. As several studies demonstrate, when taught by teachers of color, students of color may fare better on standardized tests, are more often enrolled in advanced-level courses, attend college at higher rates, attend school more frequently, and are less likely to be retained (e.g., Clewell, Puma, & McKay, 2005; Dee, 2004; Ehrenberg & Brewer, 1995; Hanushek, 1992; Haycock, 2001; Villegas & Davis, 2008; Villegas, & Irvine, 2009). This is not to say White teachers are incapable of effectively teaching and meeting the needs of their students of color, but reflects that the degree of mismatch between student and teacher cultural backgrounds may contribute to the achievement differences of students of color (Banks, 1995; Cochran-Smith, 2004, Achinstein et al., 2010).

Racial matching, specifically, may benefit students of color (Achinstein et al., 2010; Strauss, 2015; Downey & Pribesh, 2004). Project STAR in Tennessee was a 4-year

longitudinal study beginning in kindergarten, which involved random assignment of students to three different types of classes – a small class or one of two regular-sized classes. Dee (2004) explored cases in the data in which students were assigned to a racially-matched teacher (e.g., Black student with Black teacher) or non-matched teacher (e.g., Black student with White teacher) and related that matching status to student performance on reading and math portions of the Stanford Achievement Tests (SAT). Though there were issues regarding retention and attrition of students in the longitudinal sample, and teacher quality was not considered, the strength of this research lay in its use of random pairings of students and teachers under study. The findings demonstrated a consistent, significant educational benefit for Black and White students from being taught by same-race teachers in elementary school and found that racial matching of teachers and students predicts higher math and reading achievement in elementary school (Dee, 2004). Racial matching of students and teachers also appears to boost achievement of the lowest performing students over time (Egalite, Kisida, & Winters, 2015). One report also indicates that teachers of color may hold higher academic expectations for their students of color than White teachers, and these high expectations can improve academic and social growth among minority students (Albert Shanker Institute, 2015).

According to the limited research available, teachers of color may understand how to be a "change agent" for their students of color in a different way than White teachers. For example, in several studies, teachers of color more often reported a focus on reducing social and structural inequalities, combating racism, fostering social justice, and improving the lives of students of color than White teachers (Belcher, 2001; Kauchak & Burback, 2003; Rios & Montecinos, 1999; Villegas & Irvine, 2009). For teachers of

color, several studies indicate that humanistic commitments (Achinstein et al., 2010), or commitments to serving their community and humanity, are rated as highly important (Lewis, 2006). For the reasons described above, students of color may benefit from exposure to teachers of color. The benefit of encountering a diverse range of educators is not limited to minority students. Being exposed to a diverse group of educators may reduce stereotypes and implicit biases and enhance social bonding amongst non-racially matched students. Thus, encountering educators from diverse backgrounds can prepare and enable all students to succeed in an increasingly diverse environment (Albert Shanker Institute, 2015). Limited research is available regarding the effect of principals on students of color, but the research presented above indicates that educator race may play a role in shaping student outcomes and reducing disparities in achievement. Whether this finding extends to principals is unclear, and this research aims to begin to address that question.

Representation of Principals and Teachers of Color

Unfortunately, though students of color are an increasing portion of students served in public schools, educators of color remain underrepresented. As noted above, demographic characteristics of educators may influence student outcomes, so it is valuable to explore their representation.

A study using the Schools and Staffing Survey from the National Center for Education Statistics used data from the 1993, 1999, and 2003 datasets to explore national trends in principal characteristics over time and found some changes. Principals were aging, and trends were shifting to include more female principals (Gates, 2003). Other principal characteristics such as experience, education, professional development, and

school goals remained much the same over the 10 years examined (NAESP, 2006). The representation of women in the principalship (a term used to describe the position of principal) has increased dramatically since the 1990s, and nearly half of all public school principals are women (Gates, 2003). In the decade since that report, that number increased according to reports from the US Department of Education's National Center for Education Statistics (NCES). Though the increased representation of women in the principalship is encouraging, it is important to note that much of this growth was comprised of non-Hispanic, White women.

Though the population of principals of color in U.S. public schools is growing, current data indicates that principals of color are still underrepresented and largely located in poor and urban schools (Gates, 2003). While the number of principals of color is increasing, so is the number of White principals, such that the proportion of principals from various minority groups changes little from year-to-year (NCES, 2012).Though some national data exists, much of the research aiming to understand principal characteristics focuses specifically on principals in specific geographic locations, such as states or cities. For example, a 2012 report out of Wisconsin's Regional Educational Laboratory found that most school principals were non-Hispanic, White males holding a master's degree. However, rates of female principals and principals of color increased over the 10 years studied (Clifford et al., 2012). A 2015 report from Florida's Regional Educational Laboratory found that most school leaders in Florida were White females (Folson, Osborne-Lampkin, & Herrington, 2015). A national report concurred with most of the findings, stating that "only a small proportion of principals were members of an ethnic/racial minority, particularly compared to the proportions of minorities in the

student population" (Gates, 2003, p. 19), with only about 18% of public school principals being principals of color. A more recent report from 2016 also using Schools and Staffing Survey data compared representation of principals of color from 1988 to 2013 and found an increasing trend in representation of principals of color with a change from 87% to 80% White principals across the data studied (Hill, Ottem, DeRoche, 2016). Though the increase in principals of color demonstrated by this data is promising, the overall representation of principals of color is still low when compared to the population of students of color in U.S. public schools.

As will be discussed later, principals may play an important role in recruiting teachers of color. Like principals of color, teachers of color continue to be underrepresented in U.S. public schools, despite emerging research demonstrating that teachers of color may be uniquely prepared to serve students of color and improve outcomes of students of color (e.g., Dee, 2004; Dee, 2005). Increasing representation of teachers of color is important both as a demographic and democratic imperative, but also as one strategy to improve outcomes for students of color.

Though the underrepresentation is concerning, recruitment of teachers of color has improved drastically in the last decade. Minority teachers are being hired at proportionally higher rates than other teachers, though not at a rate high enough to close the gap, but they are also turning over at a higher rate. Ingersoll (2015) reviewed data from the Schools and Staffing Survey data to explore the change in presence of teachers of color over time. His research found that in many cases the numbers of teachers of color entering the workforce each year was outpaced by the numbers leaving. For example, in the 2003-2004 school year, 47,600 teachers of color entered the workforce,

but by the following year, 56,000 teachers of color had left (Ingersoll, 2015). Though efforts at recruiting teachers of color have been largely successful, the gap remains both because the numbers of teachers of color and White teachers are both increasing, and because teachers of color outpace White teachers in rates of turnover (Ingersoll, 2015). As Achinstein and colleagues (2010) write, "given the current cultural gap between teachers and students, the growing population of students of color, and the recent decline in teachers of color, we are seeing a widening of the cultural gap", and this increasing gap may exacerbate the difficulty public schools are facing in serving the needs of students of color" (p. 94).

Why Focus on Principals?: The Role of Principals in Schools

School principals serve a vital role in improving schools and determining the success and satisfaction of students and staff (e.g., Ishimaru, 2012; Keys, Sharp, Greene, & Grayson, 2003; Knapp et al., 2010; Marzano, Waters, & McNulty, 2005; Nettles & Herrington, 2007; Richards, 2005; Shen, Leslie, Spybrook, & Ma, 2012). Recently, federal policies and public opinion began to recognize the critical importance of principals in school and student success: The No Child Left Behind Act of 2001 prompted increased attention on leadership change in schools (Reardon, 2011), and President Obama's Blueprint for Education continued this focus on the importance of administrative leadership (U.S. Department of Education, 2010). A 2011 article in the Huffington Post (Oschorn, 2011) brought the issue of principal leadership from policymakers to the public, highlighting the increasing recognition of the crucial role of school principals in education reform. Policymakers and the public alike are interested in

and focusing on the influence of school leaders on education reform and school change. Research supports this focus.

Principals play a critical role in shaping the culture and policies of schools. They influence student learning; school climate, organization, and morale; and they are key to implementing quality prevention programs, shaping professional development, and examining policies (Brookover et al., 1978; Gottfredson et al., 2002; Hallinger, Bickman, & Davis, 1996; Swanson, 2013). School climate, shaped by principals, directly influences student achievement, success, and morale (Brookover et al., 1978; Hallinger, Bickman, & Davis, 1996; Swanson, 2013). Though there is some debate regarding the relative importance of principals in school success when compared to other school factors, most educators and researchers agree that principals are critical. While some researchers argue that "educational leadership is possibly the most important single determinant of an effective learning environment" (Kelley, Thornton, & Daughtery, 2005, p.17), others believe effective leadership "is second only to teaching among school-related factors in its impact on student learning" (Leithwood, Louis, Anderson, & Wahlstrom, 2004, p. 3). Although researchers may disagree on the relative importance of principals, it seems that most agree that principals and teachers together play a significant role in influencing student and school success. For example, in their policy brief examining the effects of school characteristics on student learning, the Foundation for Child Development (2011) found that principals account for 25% of the school's effect on student learning, while principal and teacher quality combined account for almost 60% of the effect.

Teachers play a significant role in predicting student success, and principals affect teacher job satisfaction and turnover (American Federation of Teachers, 1997). As the

leaders of their schools, principals influence the recruitment, motivation, and commitment of teachers as well as the characteristics of the school environment. One report from the Wallace Foundation (2011) stated, “A good principal is the single most important determinant of whether a school can attract high-quality teachers necessary to turn around schools” (p. 2). Principals set the climate for their schools and can foster an atmosphere of respect, autonomy, appreciation, recognition which may ultimately increase job satisfaction among teachers (e.g., Johnson et al., 2001; Petzko, 2004; Richards, 2005; Shen, Leslie, Spybrook, & Ma, 2012). As will be discussed later, Ingersoll (2015) reports that job dissatisfaction and, more specifically, dissatisfaction with principal leadership and administration, is the strongest predictor of teacher turnover. Principal-teacher relationships and perceptions of poor principal support are leading contributors to teacher retention or turnover (Ingersoll, 2015; Shen et al., 2012). Teachers prefer to work in schools with strong administrative leadership and support (Ingersoll, 2001; Ingersoll, 2015). As Shen and colleagues (2012) point out, “if working conditions at school drive teachers to leave, they would logically prevent people from considering the profession” (p. 201). As such, when considering recruitment and retention of effective teachers, administrative leadership is an important factor to consider. Though principals may be considered secondary in influence to teachers, they likely shape the teaching workforce within the school because of their power in recruiting, hiring, and retaining high-quality, engaged teachers. As schools and student needs become increasingly diverse, the ability of school leaders to create positive school climates and hire effective teachers may be critical in determining the success of schools and students.

Principals' Role in Serving Increasingly Diverse Schools

As outlined above, principals play an important role in shaping school culture, policies, and practices, which, in turn, affect student outcomes. This role may be particularly important in the changing public school environment. As schools are becoming increasingly diverse, principals are being called upon to challenge school dynamics, revolutionize belief systems, and create inclusive environments (Madsen & Mabokela, 2014; Thomas, 2008). Principals must be involved in building relationships with the diverse students, families, and communities with whom they work in a way that establishes school as a safe, welcoming environment where differences are celebrated and valued (Madsen & Maboklea, 2014; Swanson, 2013). Researchers argue that principals, as school leaders, are required to take an explicit "activist stance while developing the school culture" (Mansfield & Jean-Marie, 2015, p. 822) in order to support and provide educational equity and achievement in diverse schools (e.g., Mansfield & Jean-Marie, 2015; Theoharis, 2007). Principals must serve as culturally proficient leaders who recognize cultural differences and are able to address conflicts between racially different groups – whether they be between teachers, teachers and families, or teachers and students (Madsen & Mabokela, 2014; Terrell & Lindsey, 2008). Principals are called on to acknowledge student identities in curriculum, conversations, and leadership practices (Mansfield & Jean-Marie, 2015). Principals' abilities to respond to cultural conflicts, navigate defensiveness among groups of teachers, and address racial differences among staff and between staff and students play an important role in determining school success (Achinstein, 2002; Madsen & Mabokela, 2014; Thomas, 2008). They must also participate in advocating for curriculum decisions that engage and reflect the realities of

students (Swanson, 2013) as these types of culturally reflective curricula enhance student success, engagement, and academic self-concept (e.g., Glasser, 1996; Nystrand & Gamoran, 1990; Riehl, 2000; Swanson, 2013). As will be discussed in further depth below, principals may influence student outcomes through their policy and curriculum decisions, the teachers they choose to hire, and the climate they establish in the school. This may influence outcomes for all students, but particularly students of color.

Examples of principals' potential influence on students of color. The role of principals in shaping and determining school policies may be particularly important for students of color (Swanson, 2013) – an increasing proportion of students served in public schools. Principals can serve as champions for students of color (McKenzie & Schuerich, 2004; 2007; Swanson, 2013) and are "responsible for facilitating discussions of oppressive policies, procedures, and practices" (Swanson, 2013, p. ii). Their role as "champions" may relate to shifting school climate and establishing school practices. For example, principals may play a role in determining school practices regarding curriculum tracking. Academic and curriculum tracking (i.e., placing students within different levels of subjects based on perceived ability) tend to promote segregation on racial and social class lines. That is, low-income and minority students tend to be overrepresented in the lowest tracks and underrepresented in the highest tracks, AP-level classes and Gifted/Talented programs (Allen Scott, & Lewis, 2013; Ansalone & Ming, 2006; Mickelson, 2003; Noguera & Yonemura-Wing, 2006). These lower-track classes are often taught by less qualified and experienced teachers (Darling-Hammond, 2004; National Commission on Teaching and America's Future, 1996). According to one report, students in lower academic tracks are up to 60% more likely to drop out of school

than students in other tracks. Because students of color are relegated to the lower academic tracks more frequently than their White counterparts, they are largely affected by this discrepancy (Werblow, Urick, & Duesbery, 2013). Dropout from school leads to a host of negative life outcomes including unemployment or underemployment, incarceration, and even mortality (Sum, Khatiwada, McLaughlin, & Palma, 2009; Krueger, Tran, Hummer, & Chang, 2015). As such, academic tracking of students may encourage or exacerbate low graduation rates among students of color, and ultimately to negative long-term life outcomes for these individuals. Principals as leaders in examining, addressing, and shaping school policies may play a role in establishing or removing such harmful policies, with consequences for students. While academic tracking will not be explored in this study, these types of culturally insensitive policies may influence other student outcomes and illustrate one way in which principals can affect student outcomes.

Principals may also influence student outcomes through curriculum decisions that reflect (or do not reflect) their cultural values and truths (e.g., Allen, Scott, & Lewis, 2013; Duncan, 2005; Warikoo & Carter, 2009) and addressing or ignoring bias and stereotypes in schools (e.g., Henfield, 2011; Allen, 2012). The decisions and policies established by school principals may reinforce or interrupt harmful biases and attitudes, promote or oppose socially justice and culturally responsive curriculum and teaching practices, and support or reduce the hiring teachers invested in serving the needs of students of color (Madsen & Mabokela, 2012; Swanson, 2013). Principals who are unable to address cultural conflicts, racism, and biases in changing schools will face

"continual problems of low expectations, unfair discipline practices, and poor student performance" (Madsen & Mabokela, 2014, p. 76; Bell, 2002).

School Predictors of Representation of Principals of Color

Based on the literature reviewed, principals are important shapers of the school environment, particularly in diverse schools. Principals of color are currently underrepresented in U.S. public schools, but little is known about trends in their representation. Understanding where principals of color choose to work and predictors of change from White principals to principals of color may be important in understanding the current representation and influence of principals of color. Below, information is provided about the types of schools in which principals of color are most often represented. Though information is provided about where principals of color are represented as cross-sectional snapshots in time, little research explores changes in representation over time and school characteristics as predictors of change to a principal of color from a White principal. I will review several potential predictors of change that I plan to explore in this study based on the available literature including school urbanicity, SES, percentages of students and teachers of color, school level, school size, and school performance.

Predictors of representation of principals of color. Principals of color are often concentrated in the schools with the highest needs – including those in urban environments, and those with the poorest students (Gates, 2003). The National Center for Education Statistics (2010) reviewed data from 2007-2008 and found similar results: principals in high-poverty schools were more often female principals of color compared to those in low-poverty schools. Like teachers of color, principals of color are most often

found in, often under resourced, urban schools with higher percentages of low income students and students of color. Schools and Staffing Survey data indicated that 36.6% of principals in urban schools were principals of color, while only 13.9% and 10% of principals in town and rural schools were principals of color, respectively. In schools with more than 75% of students receiving FARMS, 42.2% of principals were principals of color, compared to only 8.3% in schools with fewer than 34% of students receiving FARMS (NCES, 2012). Though these snapshots of principal of color representation provide insight into their current location and general changes in representation, it is unclear whether increases in principal of color representation are occurring across all schools or focused in only these types of schools.

Little research explores principals of color representation and school level or size. The research available indicates that principals of color may be more likely to be represented in elementary or primary schools (as compared to middle or high schools) and in schools with higher student enrollment (NCES, 2012). Specifically, data from the Schools and Staffing Survey indicates that in schools with more than 1,000 students, 22% of principals are principals of color, while in schools with 100-199 students, only 14% of principals are principals of color. While 17.4% of principals in high schools are principals of color, 20.6% of principals in primary schools are principals of color (NCES, 2012). Again, this data is available for snapshots in time, but does not provide information about change over time for each type of school.

Other school-level factors may be related to change from a White principal to a principal of color including teacher demographics, school performance, regional or district-level hiring policies, and shifting demographics within a county. Though there is

little literature exploring these factors, research indicates that principals of color and teachers of color tend to be more concentrated in similar schools. While this study explores whether principals of color increase the representation of teachers of color in their schools, the reverse is also possible – that schools with more teachers of color are more likely to experience change to a principal of color.

Predictors of change in principals. Recent federal policies focus on replacement of school principals as one strategy to improve school performance for struggling schools (U.S. Department of Education, 2010). In this way, poor school performance may precede changes in principalship. So called "turnaround principals" who are hired to revitalize often poor, urban schools with many students of color may be principals of color. District or regional hiring policies may require school districts to increase their hiring of individuals of color. This may make it more likely that shifts occur from White principals to principals of color in schools within those areas. Finally, shifting demographics may predict change in principalship. As noted, teachers tend to leave schools with high numbers of students of color and shift into schools with more White students, but this trend does not hold for teachers of color. It is possible that a similar phenomenon occurs for White principals and principals of color – where White principals are more likely to leave schools with increasing numbers of students of color and principals of color are more likely to enter those schools.

Movement of principals of color. Few studies have explored the movement or change in representation of principals of color. In one study that explored predictors of movement from suburban to urban schools for Black principals, the author found that the primary theme that arose indicated that educators transitioned because they wanted to be

social change agents (McGary, 2012). As noted above, other research indicates that principals of color may seek or be largely employed in school districts with large populations of poor students of color. However, it is unclear what predicts change from White principals to principals of color and whether that change is related to differences in outcomes at the school-level.

How Principals Change Schools

The mechanisms by which principals change or influence school, staff, and student outcomes vary and may be based in their leadership style. Research indicates that workplace performance (in this case, school and student outcomes) is "a function of the skills, motivations and commitments of workplace personnel, the characteristics of work settings, and the environment" (Green, 2014, reviewing Rowan, 1996). Expectancy-theory models, outlined by Porter and Lawler (1968) describe the process by which management, expectations of employees, and performance interact and to shape employee motivation and performance. In terms of expectancy, employees (i.e., teachers) expect to be able to complete the tasks of their job, receive rewards for successful performance, and expect that rewards are equitable. When experiences match expectations, teachers are satisfied and motivated (Kach, 2015; Porter & Lawler, 1968; Lawler & Suttle, 1973). For example, several studies indicate that job performance is positively related to expectations of reward for effective performance (Lawler & Porter, 1967; Lawler, 1971; Heneman & Schwab, 1972; Lawler & Suttle, 1973). Based on this research base, effective principals establish goals for their schools, translate those goals into explicit agendas and plans, and reward teachers who support and work toward school goals (Locke & Latham, 1990). This is just one explanation of how "effective leaders"

shape work performance and outcomes. Several recent popular news articles highlight varying strategies or traits leaders must use to shape their organizations and improve performance, ranging from listening to self-assessment, understanding goals, recognizing group needs, and being optimistic and decisive (Llopis, 2014; University Alliance, 2015; Economy, 2013).

Beyond specific traits or strategies, different research perspectives call upon principals to serve as instructional (e.g., Ylimaki, 2007), transformational (e.g., Hallinger, 2003), transactional (e.g., Barnett, McCormick, & Conner, 2011), authentic (e.g., Bird, Wang, Watson, & Murray, 2012), or social justice (e.g., Bogotch & Reyes-Guerra, 2014) leaders. Each of these perspectives calls for different types of actions, beliefs, traits, and strategies. Principals are called upon to have the soft skills, or emotional intelligence, to build relationships and inspire others as well as the managerial skills to establish goals, create orderly environments, communicate with staff, assume responsibility, and be assertive (e.g., Sweeney, 1982). Further, principals serve as "human capital managers" shaping recruitment, mentoring, compensation, and recognition of staff (e.g., Grissom & Loeb, 2011).

One way principals change schools is by establishing morale, focus, and climate. Schools with high morale are characterized by common goals and purpose. Staff can depend upon each other for help and feel able to solve problems that arise. Schools with explicit, communicated, consistently enforced rules, or high organizational focus, have fewer discipline problems, delinquent behavior, and student victimization. Moreover, students expect to be treated respectfully and fairly (Gottfredson et al., 2005; Gaustad, 1992). Principals are key to establishing positive, fair school environments, which reflect

equitable and fair discipline policies, and can, in turn, increase student performance and sense of belonging (Gaustad, 1992; Schmidt-Davis & Bottoms, 2012). Principals play a large and important role in establishing and enforcing consistent, explicit, fair school rules. Furthermore, principals are often the individuals who directly communicate school goals and purpose to staff, can foster or discourage collaboration among staff members, and establish expectations (Nettles & Herrington, 2007).

Principals may seem distal from student, staff, and school outcomes, and schools are complex systems that are influenced by a variety of systemic, political, cultural, and other factors. However, significant research supports the important effect of principals on schools. Moreover, federal policies reflect the belief that principals are key to changing school outcomes (e.g., U.S. Department of Education, 2010). This belief appears to be founded in research. For example, one study utilized the natural experiment created when former District of Columbia Public Schools Superintendent, Michelle Rhee, replaced many school principals. Student outcomes improved in the year following principal change (e.g., Walsh & Dotter, 2014), though further research called some of those gains into question (e.g., Gillum & Bello, 2011). Studies like this reinforce the focus on principals, and schools continue to utilize principal change as a tool to for improvement. Currently, “turnaround principals”, or principals brought in to revive failing schools, are a hot issue, with a recent Google search of the term returning over 400,000 results. According to a document provided by the U.S. Department of Education “in low-performing schools, the principal’s role is paramount for dramatically improving student performance” (Reform Support Network, 2012, p 1). They cite key actions of school principals who change schools including collecting and analyzing data, using data to

create an action plan, focusing on early wins, interrupting organizational norms, requiring all staff to change, replacing staff when necessary, communicating vision, supporting staff in recognizing and "feeling" problems, gaining buy-in of important stakeholders, reporting progress frequently, and requiring all decision-makers to share data (Reform Support Network, 2012). While the specific methods used to change schools may vary from principal to principal, successful principals establish and communicate shared goals and rules, support staff, challenge norms as needed, focus on success, and use data to guide decision-making. As schools become more diverse, shared goals may include recognizing and shifting practices to support the diverse student body and challenging norms may require leaders to confront stereotypical beliefs, biases, and inequitable practices in education (Reform Support Network, 2012).

Principal of Color Beliefs and Values

As outlined in previous sections, principals are increasingly being called upon to serve the role of cultural leader in their schools (Bloom & Erlandson, 2003; Swanson, 2013). The ability of principals to act as cultural leaders, address cultural responsivity and confront harmful stereotypes may improve student outcomes and school climate. Unfortunately, though serving as cultural leaders may be an increasingly important role for principals, recognition or understanding of this role may be lacking or avoided by the largely White principal workforce. One study found that many White principals may see little value in directly addressing changing student demographics and exhibit low self-efficacy regarding their ability to address cultural issues or racial differences (Young, Madsen, & Young, 2010). Other studies support this result, finding that many White principals may largely ignore explicit conversations related to race or culture and exhibit

colormuteness and colorblindness (Swanson, 2013), and may turn to teachers of color to address such issues (Madsen & Mabokela, 2012).

Principals of color, on the other hand, may be particularly well-suited to serve as cultural leaders for their schools. Though the research about principals of color is limited, several qualitative studies indicate that the principals of color studied view themselves as leaders in social justice, recognize their role in addressing racism and inequity in their schools, and feel a commitment or obligation to serve their students of color (Bloom & Erlandson, 2003; Hernandez & Murakami, 2016; Mack, 2010). As schools become increasingly diverse, principals of color may play a critical role in serving as cultural leaders, navigating challenging cultural conflicts, and addressing culturally insensitive policies and practices in their schools. Through serving this role, principals of color may influence staff diversity and school or student outcomes. Cultural competence, acknowledgement of inequities, and culturally relevant teaching appear critical to establishing positive school climates and supporting student success in increasingly diverse schools (Young, Madsen, & Young, 2010). With studies, described above, indicating that some White principals avoid these issues, it is unsurprising that disparities in achievement persist. Principals of color may support student outcomes because of their willingness and desire to serve as cultural leaders and address the cultural tensions and competence within schools.

As the qualitative studies outlined above highlight, the principals of color interviewed consider themselves as leaders for social justice and emphasize a focus on combatting racism and inequities in schools, much like teachers of color (Hernandez & Murakami, 2016). In this way, it may not be the race of the principal that accounts for the

variation in outcomes, but rather a myriad of factors related to culturally relevant leadership (McCray & Beachum, 2014), such as cultural competence, social justice leadership, support for culturally relevant teaching, or just awareness of inequity in education. According to the three studies described, principals of color may be more likely to endorse or embody these types of beliefs. Unfortunately, the research base is quite limited, and this study will not enable me to explore these specific factors. Instead, I will utilize principal race as a proxy for these factors, acknowledging that the difference in outcomes may be due to beliefs, values, cultural competence, or leadership style rather than principal race. Future research exploring the influence of principals' cultural competence and other beliefs and ideologies on student and school outcomes would strengthen and enhance the literature base.

Principals' Role in Recruiting Teachers of Color

Increasing the representation of teachers of color in U.S. public schools will require both improved recruitment and retention. Most principals indicate that they have a major influence over the hiring of new teachers (NCES, 2012) and research supports the important role of principals in retaining teachers (e.g., Ingersoll, 2001). Principal characteristics, beliefs, policies, practices, and behavior may serve to attract different teachers to their schools. Teachers of color, as will be described below, may be best served by and seek opportunities to work for principals that advocate for culturally responsive practices. According to the few studies available, principals of color may be more likely to advocate for such practices (e.g., Hernandez & Murakami, 2016; Jones, 2002; Swanson, 2013) than White principals and, as such, may be well-suited to attract teachers of color.

Principals shape school culture and climate, and determine the level of autonomy and influence afforded teachers (Ingersoll, 2001). Principals may play a role in shaping the human, social, and cultural capital as well as the power structures within schools (Achinstein et al., 2010), and principal characteristics may play an important role in recruiting and retaining teachers of color and ultimately diversifying the U.S. public school workforce. In addition to the ethical value in increasing the diversity of public school teachers, teachers of color appear to benefit students of color and may serve to decrease the continuing achievement gap (e.g., e.g., Dee, 2004; Dee, 2005; Pitts, 2007). As such, increasing representation of teachers of color is an important issue facing public schools.

Teachers of color values and the influence of principals of color. In the studies available, teachers of color report that humanistic commitments and social justice concerns drive them to become educators; they are often motivated by their commitment to serve students of color and address issues of social justice, race, and inequity in schools. These teachers reported leaving the profession or individual schools when they encountered a lack of support or barriers to pursuing these goals at a school level (Achinstein et al., 2010). Research indicates that nearly 99% of school principals were teachers prior to shifting into the principalship (Gates, 2003). As such, it appears school principals of color, like teachers of color, may also value humanistic commitments and have a desire to serve students of color through culturally responsive practices, advocating for social justice, and discussing and addressing racism and inequity in the schools (Bloom & Erlandson, 2003; Hernandez & Murakami, 2016; Mack, 2010). While some White principals may also be motivated by these humanistic commitments and be

dedicated to serving the needs of students of color, based on the limited research available on differences between teachers of color and White teachers, it is possible that principals of color would be more likely than White principals to advocate for these positions.

Teachers of color job satisfaction and principals of color. Job dissatisfaction is the most commonly reported reason for a teacher's decision to leave a school or the teaching profession (Ingersoll, 2015). Limited research on teachers of color indicates that teachers of color may leave schools or teaching because they feel dissatisfied with their jobs due to dissatisfaction with administrators and when school policies and positions do not mesh with their goals of providing culturally relevant teaching and dialogue on issues related to racism and inequity (Achinstein et al., 2010; Achinstein et al., 2009). In a study of turnover using the Schools and Staffing Survey's 2012-2013 Teacher Follow-up Survey data, Ingersoll (2015) found that half of the teachers of color surveyed reported job dissatisfaction as their reason for leaving. Of those teachers reporting job dissatisfaction, over 80% indicated dissatisfaction with administration – indicating displeasure with the principal leadership. The other most commonly reported reasons for turnover included dissatisfaction with accountability and testing (65%), student discipline problems (61%), lack of influence and autonomy (57%), and poor workplace conditions (56%). All other reasons for dissatisfaction were reported by less than half of teachers (Ingersoll, 2015). Principal administration is the most commonly reported issue related to teacher of color dissatisfaction. As such, principal leadership is likely a key factor in recruiting and retaining teachers of color. Moreover, those other factors reported – such as influence and autonomy, focus on accountability, and workplace conditions – are

likely influenced by administration and principal leadership. Principals, in general, play an important role in recruiting and retaining teachers of color through their leadership skills, policies, and values. Principals of color may support teachers of color because their beliefs, values, and strategies align with those of teachers of color.

Teachers of color are more likely to be satisfied and stay in schools with goals and policies aligned with their own goals, beliefs, and humanistic commitments and principals of color may support similar goals and commitments. Though much of the research on teacher satisfaction relates to turnover, factors related to turnover may also be related to desire to pursue a job in teaching or in a particular school (Shen et al., 2012). Cultural capital, or the knowledge of culture that provides power and status (Bourdieu, 1997, as reviewed by Achinstein et al., 2010) may play an important role in teacher of color satisfaction, recruitment and retention. Achinstein and colleagues (2009) found that beginning teachers of color entered the workforce eager to serve students of color using culturally responsive teaching, and many teachers of color included in the study attended training programs specifically emphasizing these practices. Teachers of color who left their schools often reported a lack of cultural capital and support within the organization for such practices designed to address and reflect upon race and inequities in education, citing "low expectations or negative attitudes about students of color, lack of support for culturally relevant or socially just teaching, and limited dialogue about race and equity" (Achinstein et al., 2010, p. 89). In another study, teachers of color were more likely to leave schools were administrator support and autonomy or power was lacking. Specifically, teachers of color left when they felt low levels over their classrooms and little influence over decisions (Ingersoll & Connor, 2009). As Achinstein and colleagues

(2010) report, “issues of teacher control may be particularly salient for teachers of color who may enter teaching with commitments to communities of color and are teaching in school settings that historically have underserved such communities” (p. 89). Although the research is limited, the findings available indicate that teachers of color, who may be interested and invested in non-traditional teaching using culturally responsive and socially just strategies may desire greater control over the classroom, a stronger voice in school policy decisions, and administrative support for such practices than other teachers (Cochran-Smith, 1991). As such, these factors may influence teachers of color in a different way than White teachers. Principals of color, who may better understand and support such practices, may improve the recruitment and retention of teachers of color.

Because teachers of color often reported humanistic commitments to serve students of color as a driving force behind pursuing education as a career, an inability to fulfill this commitment may lead teachers of color to feel dissatisfied and frustrated in their schools (Achinstein et al., 2010). Increase teachers of color may require a better match between these teachers’ commitment to serve their students of color using socially just and culturally responsive strategies and the schools’ policies and support for such practices, which are established by the school principal. Further, the actual hiring practices used by principals may influence the representation of teachers of color. Castilleja (2014) found that so-called “colorblind” hiring processes resulted in high percentages of White teachers being hired. However, Castilleja’s (2014) study also found that principals of color tended to hold tightly to district policies and “distance themselves” from racial or cultural considerations (p. 58).

According to research on public organizations, increasing representation of individuals of color within bureaucratic organizations enhances the organization's ability to serve the needs of their clients of color (e.g., Hindera, 1993; Selden, 1997). This mirrors results indicating that teachers of color are often best able to serve the needs of their students of color, as described earlier (e.g., Dee, 2004; Dee, 2005; Pitts, 2007; Downey & Pribesh, 2004; Keiser & Haider-Markel, 2007). As Grissom and Keiser (2011) report, "the ability of public agencies to serve minority clients is directly affected by their ability to attract and retain minority bureaucrats, especially at the street level" (p. 557). Applied to schools, this means that the ability to recruit and retain teachers of color (i.e., street level bureaucrats) enhances the abilities of schools to serve the needs of their students of color (i.e., clients). Grissom and Keiser (2011) further this argument, asserting that representation of individuals of color within the supervisory level is critical for retaining and increasing the job satisfaction of street level bureaucrats of color (i.e., teachers), and hypothesize that increasing representation of individuals of color within supervisory levels will, in turn, increase the job satisfaction and retention of street-level bureaucrats of color.

The theory behind Grissom and Keiser's argument relies on the assumption that attitudes of bureaucrats are shaped, in part, by demographic characteristics, and that these attitudes likely relate to behavior in the workplace (Dolan & Rosenbloom, 2003; Grissom & Keiser, 2011). When bureaucracies are more representative of demographic groups, policies shift to benefit those groups more than in systems without that demographic representation (Hindera, 1993; Keiser et al. 2002; Grissom & Keiser, 2011). While this research focuses primarily on the benefits of bureaucrats of color on clients of color, it

follows that a similar relation may be found when considering supervisors of color and their supervisees of color. Supervisors of color and their subordinates may share some similar values, and those supervisors may tend to enact policies that benefit their employees of color (Grissom & Keiser, 2011, p. 559). In the other direction, supervisors of color may more easily gain cooperation from those employees with whom they share demographic characteristics, and this may lead to a more productive, effective environment (Grissom & Keiser, 2011). If this is the case, being managed by supervisors of color may increase job satisfaction and retention among teachers of color.

Using 2003-2004 Schools and Staffing Survey data and 2004-2005 Teacher Follow-up Survey data, Grissom and Keiser (2011) applied a bureaucratic process model to education, with principals serving in the supervisory capacity, and teachers serving as street-level bureaucrats. Their findings indicate that racial match between teachers and principals increases job satisfaction and increases retention. Moreover, they found that allocation of tangible (e.g., supplemental pay) and intangible (e.g., administrative support and encouragement, autonomy, and recognition) benefits are influenced by the racial matching of teachers and principals. For example, when African American teachers are supervised by African American principals, they receive supplemental pay at a rate equal to that of White teachers. However, when they are supervised by White principals, they receive about $540 less than White teachers, even within a single school (Grissom & Keiser, 2011). Moreover, African American teachers supervised by African American principals report receiving more administrative support and encouragement, autonomy, and recognition than those supervised by White principals (Grissom & Keiser, 2011). While this study relies heavily on the work of Grissom and Keiser to shape questions and

expectations, job satisfaction and retention are not addressed. Instead, changes in representation of teachers of color are explored. Based on this research, it seems that the increases in job satisfaction and retention that result from working for a principal of color would likely also increase overall representation of teachers of color within schools led by principals of color because of decreased turnover and increased hiring of teachers of color.

Grissom and Keiser (2011) argue that additional research into the benefits of race-congruence between teachers and principals is needed. They also argue that this racial matching may lead to increased recruitment of teachers of color to schools led by principals of color: "given these gains [in job satisfaction and benefits], we might expect that teachers will tend to sort toward principals of the same race as they gain experience, with movement of teachers to new schools run by own-race principals at least partially driving the turnover results we observe" (p. 576). Though additional research is necessary, as teachers become more experienced, they may become increasingly more likely to work with same-race principals (Grissom & Keiser, 2011). Grissom and Keiser's (2011) work strengthens the hypothesis that change to principals of color will result in increased representation of teachers of color compared to schools with continuing White principals. However, their design did not allow for direct exploration of this effect.

In one qualitative study, Jones (2002) surveyed, interviewed, observed and reviewed written materials produced by several teachers regarding their perceptions of African American principals' leadership in schools. Findings from this study seem to coincide with many of the findings produced by Grissom and Keiser (2011) and results related to principal of color beliefs and values. Specifically, results indicated that leaders

of color were critical in promoting inclusivity among diverse staff in their schools, recruiting and retaining teachers of color, and encouraging White teachers to provide culturally responsive education to students of color. These findings indicate that principals of color may be a key component in the quest to increase diversity of the education workforce in public schools and serve students of color in a culturally responsive way.

Principals of Color and Student Outcomes

Principals of color may influence the recruitment, representation, and retention of teachers of color in U.S. public schools. They may also effect outcomes for students of color both indirectly, because these students seem to experience more success when exposed to culturally congruent teachers and directly by influencing school policies and climate. Just as principal of color recognition of cultural responsivity, inequity, and racism in education may influence teacher job satisfaction and recruitment, it may also influence school and student-level outcomes (Mack, 2010; Swanson, 2013). Further, principals of color may establish school environments that are inclusive, value diversity, provide mentoring and support for students of color, encourage parent and family participation and establish respect for students, teachers, and families of color (Henderson, 2008). Unfortunately, the data in this study does not allow for exploration of cultural responsivity, awareness of inequity, or other important principal characteristics. It relies, instead, on the limited findings indicating that principals of color may be more likely to view themselves as culturally responsive, social justice leaders and uses principal race as a proxy for these characteristics.

Research on the influence of principals of color on students of color is lacking and mixed. For example, Hoffman-Miller and View (2010) examined monthly out of school suspensions given by school principals in a small, urban Pennsylvania school district and found that African American principals were responsible for significantly higher rates of suspensions across the study and for all lengths of suspensions (ranging from three to ten days) regardless of student race or gender as compared to White or Hispanic principals. The infractions that led to suspensions followed similar trends for all principals. This study seemed to indicate a negative effect of leaders of color in their students – at least in terms of harsh disciplinary practices. Conversely, a study by Grissom and colleagues (2015) found that students of color are better represented in gifted programs in schools with principals of color – indicating that principals of color may decrease disparate, negative outcomes for students of color. While research on the specific effects of principals of color is lacking, the literature supports the idea that "consciousness, knowledge, and skills in dealing with issues of race, leading professional learning around issues of race, and making connections between issues of race...and larger programmatic changes" may be critical in creating "more equitable schools" (Theoharis & Haddix, 2011, p. 2). Principals of color, who endorse roles as cultural leaders and recognize the importance of addressing race and inequity, may be well-equipped to support students and create more equitable school environments. Research on the effects of principals of color on student outcomes is needed to increase the literature base on and broaden understanding of the topic.

Implications of this Study

The country and its public schools are changing. With more students of color being taught in schools outside urban or inner city settings, it is more important than ever that United States' educators "look like America". However, representation of individuals of color in school leadership positions is still lagging. Moreover, even within inner-city or urban environments where teachers of color are best represented, 75% and 91% of teachers are White, respectively (Strauss, 2015). With continuing challenges in recruitment, and higher rates of turnover among teachers of color, it does not seem that the number of educators of color is on track to align with the students of color in the population.

Almost a quarter century ago, the Carnegie Forum on Education and the Economy declared that the nation must not "tolerate a future in which White and minority children are confronted with almost exclusively White authority figures in their schools" (Strauss, 2015). Yet, 25 years later, the public education system is still largely dominated by White educators. In the current cultural environment in the United States, the disparity between the racial and cultural background of students and school principals or teachers may be considered a demographic and democratic imperative and a civil right for students. Achinstein and colleagues (2010) argue that the demographic imperative is defined by the understanding that, "in a pluralistic society it is problematic that public school students (students of color and White students alike) experience a primarily White teaching population" (p. 71). This may be damaging for many reasons and may influence a range of outcomes from social and emotional to academic success. Increasing the population of teachers and principals of color is important and may shape the educational experiences and values of both students of color and White students.

For all the reasons described above, understanding the change in representation of principals of color and the predictors of change to principals of color is important. U.S. public schools would benefit from increased representation of principals of color. Learning about trends in representation of principals of color and gaining information about predictors of change from White principals to principals of color may help shape policies – from recruitment of students interested in administrative leadership to finding strategies to improve representation of principals of color across all types of schools. This study aims to begin to address these initial questions and provide insight into the trends in representation and predictors of change to principal of color from White principals in an effort to understand where and how recruitment efforts should be targeted.

Like principals of color, teachers of color are underrepresented. This study seeks to explore if representation of teachers of color is influenced by the availability of principals of color and whether change to a principal of color serves as a potential causal mechanism by which the number of teachers of color in a school can be increased. If the findings indicate that principals of color do attract more teachers of color, this may also inform efforts aimed at increasing the teacher of color workforce. Increasing principals of color may serve a dual role, to both improve their representation and to improve the representation of teachers of color.

Finally, little research is available on the effects of principals of color on their students, and the research that is available is mixed. More research is needed to understand what role, if any, principal demographics may play in shaping student and school outcomes. This study builds upon the small but growing body of research on educators of color. It is an initial exploration of this topics, but more research is needed to

further understand principals of color including their beliefs, values, strategies, and leadership style. The lack of research on this topic mirrors the current lack of educators of color in public schools. The lack of educators of color perpetuates a cycle in which teachers of color continue to be underrepresented, students of color fail to encounter role models of color in teaching positions and may fail to view teaching as an appropriate or viable career choice (Branch, 2001). Steps must be taken to improve the representation of all educators of color in U.S. public schools in an effort to improve student outcomes and create public schools that reflect the realities of their students. Further, more research must be conducted to include and explore the contributions of an increasingly diverse educator workforce.

Chapter 3: Method

Description of Data

This study used data from regular public schools that were sampled as part of the Schools and Staffing Survey (SASS) in three data collection waves: 2003-2004, 2007-2008, and 2011-2012. According to the SASS website, schools were identified from the Common Core of Data school survey, a survey of all U.S. elementary and secondary schools. The school list was modified to ensure alignment with SASS definitions and requirements. For example, schools with only kindergarten were eliminated. Following these modifications, sampling and stratification occurred using a stratified probability proportional to size (PSS) sample (NCES, 2017), with all schools included in this analysis undergoing multiple levels of stratification. As will be discussed later, the SASS sample design factored in response burden considerations so as to minimize the number of other NCES surveys being completed in a single school. The primary objective of the sample design was to provide information about school characteristics when analyzed at different levels or domains: national, by school level, by region, by state, etc. Schools with larger numbers of teachers were more likely to be selected in order to obtain a representative teacher sample, and teachers were sampled at a rate of one to twenty teachers per school. To obtain responses, mail-based surveys were sent to schools following an advanced letter to verify school addresses. Computer-assisted telephone-interviewing was used to verify school information. Schools established a survey coordinator. Census telephone centers were used to call schools with reminders to complete all forms and individual survey respondents were also called from telephone centers to complete questionnaires via the phone. Follow-up with survey coordinators,

teachers, and other school staff who had not completed the survey were conducted in the field. Missing data was obtained using four imputation strategies. Data were imputed by using data from other questionnaire items, extracting data from a related SASS component, extracting data from the sampling frame, or extracting data from the record of a similar case. Weighting was used to produce national, regional, and state estimates for public schools, districts, and teachers (NCES, 2017). These weighting procedures served three purposes: account for school selection probability, reduce bias from nonresponse, and use available information from outside sources to improve estimate precision. The response rate for overall public school surveys for the years included in this study ranged from 87.8% (public school district-level response) to 79.4% (public school principal response).

Charter schools, private schools, alternative schools or schools for specific populations, magnet schools, and schools with admissions criteria were omitted from this analysis. Of the public schools analyzed, only those that provided both school and principal reports were retained. Descriptive analyses were conducted regarding the racial, ethnic and gender make-up of students within each school, the number of full-time teachers, the proportion of elementary and secondary schools, and the sizes of schools included. The specific sample or dataset utilized to answer each study question varied. Details regarding the sample used for each research question are outlined below. Please note that all sample sizes from the restricted-use dataset are rounded to the nearest ten per IES restricted-used guidelines.

Question 1: Representation of Principals of Color

How has representation of principals of color in the United States workforce changed from 2003-2012 and how does this change vary between schools with different characteristics?

Sample. The first portion of this study addresses representation of principals of color. Specifically, it asks: how has representation of principals of color in the United States workforce changed from 2003-2012 and how does this change vary between schools with different characteristics? To address this question, data from each of the three data collection waves (2003-2004; 2007-2008; and 2011-2012) was analyzed using SPSS. Analyses were completed using the Complex Samples function in SPSS based on the sample weights and stratification code provided in the data. The final school sampling weight, public school sampling stratum, and sampling without replacement were used. Detailed information regarding the sample is outlined in the table below:

Table 1

Description of the Sample for Question One

	2003-2004 (T1)[1]	**2007-2008 (T2)**	**2011-2012 (T3)**
Sample Size (N)[2]	N=6180	N=5370	N=5380
Description of sample	This portion of the study was conducted with the sample of regular public schools at each collection wave indicated. The data was identified as described previously in the Description of the Data section.		

[1] T1, T2 and T3 refer to 'Time 1, Time 2, Time 3' and are used to describe data collected at each of the collection waves described. For example, T1 data refers to any data collected during the 2003-2004 collection wave.

[2] Sample size numbers are rounded to the nearest ten per IES guidelines for restricted data reporting.

Measures. Addressing the question of principal representation requires data collected at both the principal and school levels. Principal-level variables are defined as those variables that refer to characteristics of the principals (e.g., race, age, sex, etc.). School-level variables are those that refer to school characteristics (e.g. percentages of students receiving FARMS, school size, etc.). These terms are used throughout this section to refer to these two sets of variables. Principals or a representative selected by the principal responded to all questionnaires used for this portion of the study. Respondents to school questionnaires are asked to include their titles on the form. As possible, these titles were reviewed to determine what representatives were selected to complete the forms. Descriptions of the various measures used in this portion of the study are outlined below:

Principal Variables: Principal variables were utilized to determine the percentages of principals of color at each collection wave and to provide greater insight into the gender, racial and ethnic, age, and employment history of principals of color at each collection wave.

- Demographics: Principal questionnaires asked principals to provide a variety of demographic information including number of years employed as a principal, years employed as principal of this school, sex, race/ethnicity, and age. Those responses that are not numerical (e.g., sex, race) were coded numerically for analyses. The race/ethnicity variable was also recoded into a dichotomous variable representing either principal of color (“0”) or White principal (“1”) to capture information regarding the percentage of principals of color at each collection wave.

- Rating of Multicultural Awareness Goal: Principals are asked to indicate their top three goals, of which multicultural awareness is one of the options. The frequencies with which this was rated any of the top three goals was explored for White principals and principals of color.

School Variables: School variables were used to explore the trends in representation of principals of color in schools with different characteristics (e.g., how has representation of principals of color changed in the poorest schools vs. the wealthiest schools?)

- SES Level: The percentage of students receiving free or reduced-price lunches is included in each dataset and was used as a proxy for socioeconomic status of the school population.
- Size: School size was obtained from the school reports provided by the principal. Principals are asked to report the total number of students within the school. This number was used as the "school size" indicator. A categorical variable is included in the dataset and was utilized to classify schools according to size (i.e., Less than 100, 100-199, 200-499, 500-749, 750-999, 1000+).
- Urbanicity: School urbanicity was obtained from school reports provided by the principals. Principals are asked to indicate whether schools are urban, rural, suburban, or town schools. Each category of school was numerically coded for analyses.
- School Level: The school level (i.e., elementary, middle, high) is included in the dataset and was utilized to classify school level. Each school level was coded numerically for analyses.

- Percentage of Minority Students: The percentage of minority students is included in the dataset and indicates what percentage of students are not non-Hispanic White students.
- Percentage of Minority Teachers: The percentage of minority teachers is included in the dataset and indicates what percentage of teachers are not non-Hispanic White teachers. This was used to capture representation of teachers of color.

Data analysis. The first question was examined using descriptive analyses to determine the overall percentage of principals of color within each of the three data waves as well as the percentages of principals of color in schools with specific characteristics (i.e., school-level, urbanicity, SES, etc.) in each data wave. The group of principals of color were further broken down into groups based on sex (male vs. female), age (20-30, 40-50, 50-60, 60+), and experience (0-4, 5-9, 10-14, 15-19, 20-24, 25+). Trends were explored visually via graphs. Though this question explored relations between school characteristics and representation of principals of color, no analyses were conducted to predict change in representation of principals of color.

Question 2: Predictors of Change to a Principal of Color

What school variables predict change from a White principal to a principal of color?

Sample. The Schools and Staffing Survey uses a cross-sectional survey design and its sampling method minimizes the overlap in the sample from year-to-year (i.e., efforts are taken to not overburden the same schools by asking them to complete surveys at every collection wave). In this way, only a small portion of schools that responded in T1 or T2 also responded in T2 or T3. To create an adequate longitudinal sample for this

study, overlap samples for each set of collection waves were created by identifying schools that had completed two collection waves of data in the sample. This was done by first matching schools on their ID numbers across collection waves and merging files using SPSS. For example, T1 schools were merged with T2 schools in SPSS using "add variables" and matching cases by school ID number. Schools, or cases, were then selected if they had data for both T1 and T2 variables after merging. This was done for each possible overlapping set of data: T1 and T2 (Cohort 1, n = 860), T2 and T3 (Cohort 2, n = 710), and T1 and T3 (Cohort 3, n = 640). Once these overlap samples were created, I created a dichotomous race variable ("0" = principal of color, "1" = White principal) for each time point and computing a difference score between the earliest and latest timepoints in each sample. For example, for the T1 and T2 cohort, I created a dichotomous variable for principal race at T1 and T2 and calculated a difference score. A score of "1" indicated that the principal changed from a White principal to a principal of color; a score of "0" indicated no change and a score of "-1" indicated change from a principal of color to a White principal. This process was completed for each of the three overlap samples. A categorical variable corresponding to each cohort's number was created to identify each overlap sample, or cohort. The three overlap samples were merged into a master datafile that included all schools with data from at least two collection waves (n=2,220).

Measures. Again, principals or a representative selected by the principal responded to all questionnaires that were used for this portion of the study. Data at the earliest data point available for each school were utilized as the predictor measure (e.g., Cohort 1 data at T1; Cohort 2 at T2). The outcome measure was change from a White

principal to a principal of color. The list below outlines measures for all potential predictors included in the model as well as a description of the outcome measure:

School Predictors:

- SES Level: The percentage of students receiving free or reduced-price lunches is included in each dataset and was used as a proxy for socioeconomic status of the school population.
- Size: School size was obtained from the school reports provided by the principal. Principals are asked to report the total number of students within the school. This number was used as the "school size" indicator. A categorical variable is included in the dataset and was utilized to classify schools according to size (i.e., Less than 100, 100-199, 200-499, 500-749, 750-999, 1000+).
- Urbanicity: School urbanicity was obtained from school reports provided by the principals. Principals are asked to indicate whether schools are urban, rural, suburban, or town schools. Each category of school was numerically coded for analyses.
- School Level: The school level (i.e., elementary, middle, high) is included in the dataset and was utilized to classify school level. Each school level was coded numerically for analyses.
- Percentage of Minority Students: The percentage of minority students is included in the dataset and indicates what percentage of students are not non-Hispanic White students.

- Percentage of Minority Teachers: The percentage of minority teachers is included in the dataset and indicates what percentage of teachers are not non-Hispanic White teachers. This was used to capture representation of teachers of color.
- School Performance: Principal-completed reports of whether schools are meeting school performance standards are included for each data collection wave. A dichotomous variable was created to indicate whether school performance goals were met ("1") or unmet ("0").

Principal Outcome:

- Change to Principal of Color: A variable indicating whether or not change to a principal of color occurred was created using the aforementioned dichotomous race variable by subtracting the race variable at two time points for schools with multiple waves of data. "1" indicates change from a White principal to a principal of color, "0" indicates no change, and "-1" indicates change from a principal of color to a White principal. Additional exploration of those cases with "0" change was conducted to determine whether they had continuing White principals or continuing principals of color.

Data analysis. To understand general trends in the change of principals within the sample, descriptive analyses were collected for schools that experienced change in either direction or no change – meaning that there was no racial change, though the specific principal may have changed across the time explored. Descriptive information about each of the four groups, as described below, is presented.

Table 2

Description of Change Groups and Descriptive Information Examined

Group ID	Description	School-Level Descriptive Information Presented
A	Change from White Principal to Principal of Color ("1")	- SES - % Minority Students and Teachers - Urbanicity - Size - School Level - School Performance
B	No Change – White Principal to White Principal ("0")	
C	No Change – Principal of Color to Principal of Color ("0")	
D	Change from Principal of Color to White Principal ("-1")	

Note: "No Change" groups may have experienced a change in principal, but the principal race did not change.

To assess predictors of change from a White principal to a principal of color, only two groups from the larger sample were utilized: Groups A and B. Multiple logistic regression was utilized with all predictor variables outlined in the table above included as independent variables and the dichotomous change variable included as the dependent variable. Prior to conducting the regression analyses, the data was examined to ensure that it met the assumptions of logistic regression. The overall fit of the model was examined as was the significance of each predictor within the model. Those predictors within the model that were significant were considered as predictors of racial change in principals from a White principal to a principal of color.

Questions 3-4: Effects of Change to Principal of Color

In schools with similar characteristics, what is the effect of change from a White principal to a principal of color on the percent of teachers of color, the number of suspensions and expulsions, the daily attendance rate, and the number of school problems when compared to schools with continuing White principals?

Sample. The third and fourth questions addressed in this study explored the effects of change from a White principal to a principal of color. To address these questions, I identified a sample of 90 "change schools" or schools that experienced a change from a White principal to a principal of color at some point from 2003-2012. I then identified 90 "control schools" which consistently had a White principal across the collection waves using propensity score matching, described in more detail below.

As described above, three cohorts were created using the three collection waves and change in leadership was computed. Because so few "change schools" were identified within any single cohort, a larger sample was created for analyses that included schools in any of the three cohorts that experienced change from a White principal to a principal of color. This sample included a total of 90 schools with at least two collection waves of data and that experienced a change from a White principal to a principal of color. Control schools were identified using propensity score matching (described below). Detailed information regarding the change school sample is outlined in the table below:

Table 3

Description of Samples and Cohorts for Questions Three and Four

	Cohort 1 (T1→T2)	**Cohort 2 (T2→T3)**	**Cohort 3 (T1→T3)**	**TOTAL**
Sample Size (N)[1]	40	30	20	90
Explanation	Schools with data at T1 and T2 that experienced a change from	Schools with data at T2 and T3 that experienced a change from	Schools with data at T1 and T3 that experienced a change from	

	White principal to PoC[2]	White principal to PoC	White principal to PoC
Description of Sample	Public schools with at least two timepoints of data that experienced a change from White to PoC		

[1] Sample size numbers are rounded to the nearest ten per IES guidelines for restricted data reporting.

[2] PoC refers to Principal of Color

Measures. Principals or a representative selected by the principal responded to all questionnaires used for this portion of the study. Descriptions of the various measures used in this portion of the study are outlined below. Notably, some of the variables used for matching were not defined beyond the descriptors outlined below. For example, principals were asked to report a percentage of "migrant students" but the specific definition of a migrant student was not specified. As such, there may be some difference in how principals chose to report these variables. A list identifying measures used for each study question is provided below.

Principal Variables

- Change to Principal of Color: A variable indicating whether or not change to a principal of color occurred was created using the aforementioned dichotomous race variable by subtracting the race variable at two time points for schools with multiple waves of data. "1" indicates change from a White principal to a principal of color, "0" indicates no change, and "-1" indicates change from a principal of color to a White principal. Additional exploration of those cases with "0" change was conducted to determine whether they had continuing White principals or continuing principals of color.

Propensity Score Matching Criteria

- SES Level: The percentage of students receiving free or reduced-price lunches is included in each dataset and was used as a proxy for socioeconomic status of the school population.
- Urbanicity: School urbanicity was obtained from school reports provided by the principals. Principals are asked to indicate whether schools are urban, rural, suburban, or town schools. Each category of school was numerically coded for analyses.
- School Level: The school level (i.e., elementary, middle, high) is included in the dataset and was utilized to classify school level. Each school level was coded numerically for analyses.
- Percentage of Minority Students: The percentage of minority students is included in the dataset and indicates what percentage of students are not non-Hispanic White students.
- Percentage of Minority Teachers: The percentage of minority teachers is included in the dataset and indicates what percentage of teachers are not non-Hispanic White teachers.
- School Performance: Principal-completed reports of whether schools are meeting school performance standards are included for each data collection wave. A dichotomous variable was created to indicate whether school performance goals were met ("1") or unmet ("0").
- State in which School Resides: Data is provided regarding the school district, state, and region. Though district policies may have the most direct effect on

hiring decisions and outcomes, state-level data was included to allow for better matching within the sample.

- Suspensions and Expulsions: Principal reports provide space for principals to indicate the total number of suspensions and expulsions in the reporting year.
- Attendance: School-level reports completed by principals include Average Daily Attendance percentage for the year. The Average Daily Attendance percentage is calculated by dividing the daily attendees by the school's total number of students and multiplying by 100. The percentage provided indicates the average attendance over the course of the school year on which the principal was reported. Higher percentages indicate better attendance rates while lower percentages indicate more attendance issues.
- School Problems: School problems were captured using a scale completed by principals that includes several items related to problems within the school (e.g., student disrespect, gang activity, violence, etc.). A scale score for school problems was created by averaging the ratings across all items. Reliability analyses were conducted to ensure that this scale demonstrated adequate reliability.
- Principal Change: Experiencing a change in principal was included as a matching variable (i.e., change from a White principal to a different White principal or change from a White principal to a principal of color). Change was identified using the response to the question "prior to this school year, how many years did you serve as the principal of this school?" Depending on the cohort, a cutoff was

determined (i.e., >4 or >8 years). A dichotomous variable was created to indicate change and only schools with change were included in the matching process.

- Percentage of Students who Graduated: For high schools, the percentage of students who graduated is reported and was included.
- Percentage of Students who Attended College: For high schools, the percentage of students who are attending 4-year colleges was included in the matching criteria.
- Number of Students with Individualized Education Plans: The data includes reports of the number of students in the school with Individualized Education Plans.
- Number of Students Identified as Limited English Proficient: The data includes the number of students who are identified as limited English proficient.
- Number of Title 1 Teachers: The data includes the number of teachers in the school who are designated Title 1 teachers.
- Ratio of Students to Full-time Teachers: The data includes a ratio of students to full-time equivalent teachers.
- Number of Full-time Assistant Principals: Principals report the number of full-time vice principals or assistant principals. The number reported was included in the matching criteria.
- Parents Participation in School Programs: Three questions ask about the percentage of students who had parents or guardians participating in school events: open house or back-to-school night, parent-teacher conferences, special subject-area events (e.g., concerns, science fair). Principals rate the participation on a 4-point scale from 1(0-25%) to 4 (76-100%). They are also able to indicate

"not applicable". Average participation was computed by calculating the mean participation across the three events.

- Availability of Parent Resources: Three questions ask about availability of parent resources: staff member assigned to work on parent involvement, services to support parent participation, and parent drop-in center. Each item includes a dichotomous response (yes/no). The sum of the three responses was calculated to serve as the availability of parent resources score.
- Annual Salary of Principal: Principals report their annual salary which was included in the response and may account for some aspects of district resources.
- Number of Safety Measures in Place: Principals respond to a series of 13 questions related to safety practices in the school ranging from controlled access to school buildings to metal detectors, dog sniffs, and school uniforms. These items include a yes/no response. A sum of all items was calculated and used to indicate the number of safety measures in place.
- Number of Migrant Students: The number of migrant students are included in the data.

School Variables: Outcome Variables

- Percentage of Minority Teachers: The percentage of minority teachers is included in the dataset and indicates what percentage of teachers are not non-Hispanic White teachers. This was used to capture representation of teachers of color.
- Suspensions and Expulsions: The number of each was reported by the principal.
- Attendance: School-level reports completed by principals include Average Daily Attendance percentage for the year. The Average Daily Attendance percentage is

calculated by dividing the daily attendees by the school's total number of students and multiplying by 100. The percentage provided indicates the average attendance over the course of the school year on which the principal was reported. Higher percentages indicate better attendance rates while lower percentages indicate more attendance issues.

- School Problems: School problems were captured using a scale completed by principals that includes several items related to problems within the school (e.g., student disrespect, gang activity, violence, etc.). A scale score for school problems was created by averaging the ratings across all items.

Data analysis. Questions three and four were addressed using R to assess the above sample of 180 public schools with at least two waves of data. Half of those schools (n=90) were chosen because they experienced a change from a White principal to a principal of color between the two data waves of data collected (hereafter referred to as "change schools"). The other half of the sample (n = 90) included schools that experienced a change in principal, but no change in the race of principal over the data waves collected and had a White principal at both time points (hereafter referred to as "control schools"). These 90 control schools were chosen through a propensity matching process in which they were matched with the treatment schools on school-level characteristics at the earliest time point of data for that school (e.g., T1 or T2) including SES level, urbanicity, school size, school level, percentages of minority students, percentage of minority teachers, school performance, and state in which the school resides. These variables were chosen because they may play a role in whether or not schools experience a change from a White principal to a principal of color and may

influence the outcomes of interest (i.e., they may affect both group assignment and outcomes of interest). Those schools that most closely matched the treatment schools were chosen as "matched schools" and retained as the control group for analyses.

Explanation of Rationale for using Matching Methods

Random assignment provides the strongest approach for assessing the effect of an intervention, in this case the change to a principal of color from a White principal. However, randomization is not always possible. Matching methods serve to imitate the effects of randomization as much as possible by matching data on pre-selected covariates (Stuart, 2010). As described by Rubin (1976) and Stuart (2010), causal inference requires researchers to predict unobserved outcomes. In randomized experiments, individuals are randomly assigned to treatment or control conditions. Because of random assignment, variables other than treatment or control conditions are thought to differ only randomly between groups. In research without random assignment, "for efficient causal inference and good estimation of the unobserved potential outcomes, we would like to compare treated and control groups that are as similar as possible" (Stuart, 2010, p. 3). Nonexperimental studies must establish a mechanism to account for the fact that treatment and control groups may differ systematically in ways besides their belonging to treatment or control groups.

Matching methods provide one strategy to account for the systematic variation that may contribute to assignment in treatment or control groups. In this study, schools with continuing White principals may differ from schools with change to principals of color in systematic ways that may also influence the outcomes of interest – teacher of color representation, attendance, suspensions, expulsions, and school problems. By

matching the treatment schools and control schools on key indicators, these systematic differences are controlled for, strengthening the causal argument for the role of change to principal of color in influencing outcomes. It is important to note that, while propensity score matching can strengthen causal arguments by balancing observed covariates, there is obviously no mechanism to account for unobserved variables that may influence assignment to intervention or non-intervention groups. As such, variables that were not assessed in this data cannot be accounted for, though they may relate to assignment to control or change school groupings (Lee & Thompson, 2008).

Overview of Matching Methods

Matching methods include four steps: defining 'closeness', implementing matching, assessing quality of match, and analyzing outcome and treatment effect (Stuart, 2010). The Match-It program in R will be used for all matching procedures. I describe and define each step and how I completed it in the sections below.

Defining closeness and creating propensity scores. Closeness refers to the distance used to determine a "match". Variables to include as covariates must be determined; in this study those covariates included SES level, urbanicity, school level, school size, and percent of minority students. While some of these factors may have little influence on treatment assignment, research indicates that propensity score matching, as was used in this study, is not as sensitive to including unrelated variables (Stuart, 2010). Because variables that may have been influenced by treatment effect should not be included, only data at the first time point for each school was used.

Propensity scores (Rosenbaum & Rubin, 1983; Stuart, 2010) were used in this study using R's MatchIt program. The equation for a propensity score is as follows

$e_i(X_i) = P(T_i = 1|X_i)$, which indicates that for individual *i*, the probability of receiving treatment is a function of the covariates *X*. In this way "grouping individuals with similar propensity scores replicates a mini-randomized experiment, at least with respect to the observed covariates" (Stuart, 2010, p. 6). To create propensity scores, I used logistic regression to model the probability that a school experienced change from a White principal to a principal of color given its set of covariates. The resulting output indicated the probability that each school in the sample would experience change. The logs of these probabilities served as propensity scores.

Implementing matching. Once propensity scores were established, control schools with the closest propensity scores to change schools were selected to serve as the control group using nearest neighbor matching. The initial matching was done as one-to-one matching without replacement. Nearest neighbor matching means that control schools were matched with change schools with the closest propensity score (or probability that they would experience change). One-to-one nearest neighbor matching without replacement was chosen as a straightforward approach to create equally sized control and change groups with similar characteristics. This approach required a "caliper" to limit the distance of how far the nearest neighbor can be. Based on previous research, a caliper of one-quarter of a standard deviation was used (Lee & Thompson, 2008; Rosenbaum & Rubin, 1986). This means that change schools were matched to control schools with the closest propensity scores as long as the difference between scores was no more than one-quarter of a standard deviation. Change schools that could not be matched to control schools with propensity scores within one-quarter of a standard deviation were eliminated from the matching process. One-to-one matching resulted in a

matched pair design with each control school matched to one change school. Without replacement indicates that each change school was matched to only one control school.

Assessing the quality of the match. Following propensity matching, the quality of the match samples was explored by examining the distributions of covariates in the treatment and control groups. Rubin's (2001) measures of covariate balance was utilized to determine quality of the match: standardized difference of propensity score means (<.25) and the ratio of treatment and control group propensity score variances (.5-2.0) for each covariate in treatment and control groups (Stuart, 2010). The balance of covariates as well as their squares and interactions in matched samples were explored as diagnostics (Stuart, 2010). Graphical diagnostics including jitter plots, distribution of propensity scores within groups, and standardized difference plots were also examined. If the match was found to be unbalanced or not of adequate quality, changes were made to the matching procedure to improve the quality of the matches. For example, matching may have been done with replacement or alternative matching strategies may have been utilized.

Analyzing effect of change on outcomes. Outcome analyses were conducted for the third and fourth study questions – examining the influence of change to principals of color on representation of teachers of color and student outcomes – using the matched groups. Matches were pooled into change and control groups and outcome analyses were run exploring the differences in outcomes between the two groups. ANCOVAs were computed to determine whether the scores for each outcome were significantly different between treatment and control groups. Initial measures of each of the outcome variables of interest (i.e., % minority teachers, suspensions, expulsions, attendance, school

problems) were included to control for "pretest" scores on each measure. Results of ANCOVAs indicated whether there were significantly different outcomes for each variable in schools that experienced change to principals of color as compared to control schools with continuing White principals. An interaction effect was included in the analyses to examine the heterogeneity of the change effect for schools within different groups or cohorts. As such, the categorical variable used to differentiate the cohorts (e.g., a "1" indicated the data is from Cohort 1) was used to examine whether there was an influence of belonging to different cohorts.

Sensitivity analysis. A sensitivity analysis was also conducted to explore the ignorability of "treatment" assignment. This analysis provided information about the impact of unobserved criteria, or those variables not included in the matching, on the outcomes explored (Rosenbaum, 2002). Sensitivity analyses begin with the assumption that the study population is independently assigned to treatment or control conditions (e.g., schools are equally likely to have change or not have change in principals). The analysis then provides information about how much unobserved "bias can be present…. before the qualitative conclusions of the study begin to change" (Rosenbaum, 2005). The outcome data from this analysis provides information about the significance levels possible for your outcome measure based on the possible magnitudes of hidden bias included in the study. If, for example, matching failed to control an unobserved variable that relates to change in principal making it two times more likely among some schools, but the sensitivity analysis indicates that this would still not explain the differences between school outcomes, this may provide further support for the outcomes found. Ultimately, this sensitivity analysis provided information about what magnitude of

unobserved or unaccounted for bias must be included in the study for the results to be nonsignificant. The results of this analysis provided additional information about the quality of matching and the strength of the results.

Supplemental Analyses

Because of the design of the data in this study, the timing of change to principal of color may vary between schools in the sample. In schools in cohort 1, for example, change may have occurred 1, 2, or 3 years prior to the outcomes assessed at the second collection wave. Time since change to principal of color may influence the outcomes of interest as it may take time for change to occur. In addition to the aforementioned analyses, an additional analysis was conducted using the matched change and control schools to explore the importance of the time since change to a principal of color. For this supplemental analysis, a variable was created that indicates the years since change (e.g., 0, 1, 2, 3, 4+). Instead of just exploring the change or control schools, the years since change was used as the independent grouping variable. An interaction effect was included to determine whether there was an interaction between experiencing change from a White principal to a principal of color and the time since that change. ANCOVAs were again conducted to determine whether outcomes significantly differ depending on how long ago schools experienced change.

Chapter 4: Results

Question 1: Representation of Principals of Color

How has representation of principals of color in the United States workforce changed in the last decade? What is the rate of change from 2003 to 2012 and how does this change in representation vary between schools with different characteristics (e.g., community type, percentages receiving free and reduced-price lunch, number of students of color)?

This question was addressed using data from the 2003-2004, 2007-2008, and 2011-2012 Schools and Staffing Survey for public schools. Descriptive analyses of the percentages of principals of color and their characteristics were conducted for each year of data. Representation of principals of color in schools with varying characteristics (e.g., different SES levels, sizes, grade levels, etc.) were also captured using data from each of the three cohorts of data. All analyses were conducted in SPSS.

Though the representation of principals of color grew from 2003-2004 to 2007-2008 based on the percentages of principals of color in this sample, confidence intervals indicate that though there was slight growth in this sample, that growth may not be reflected in the population and is not significant. While 15.1% of public school principals were principals of color in 2003-2004, 16.6% of public school principals were principals of color in the 2007-2008 school year. Most principals of color were non-Hispanic, Black principals (see Table 4). Hispanic, White principals (i.e., those indicating that they are both White and Hispanic) made up the second largest group of principals of color. While the representation of all Hispanic principals increased from 2003-2004 to 2007-2008, it decreased slightly from 2007-2008 to 2011-2012 (See Table 4). However, the overall

trend seems to indicate growth in the population of Hispanic, White principals. The representation of principals of color who identify as having multiple races or ethnicities appears to be growing, though this growth did not appear significant across the time explored. Other groups of principals of color, including American Indian, Asian, and Hawaiian principals each comprise less than 1% of the population of principals at each of the time points explored (See Table 4; See Figure 2).

The mean age of principals of color decreased slightly over the time examined and most principals of color reported between zero and three years of experience as a principal. The largest group growth for principals of color was for female principals of color, which grew from 36.1% in 2003-2004 to 43.7% in 2011-2012 (See Table 5).

As expected, principals of color remain best represented in urban schools. However, their representation in suburban schools increased during the timeframe examined. A nonsignificant trend of reduction of principals of color in urban schools was observed in partnership with the increased representation in suburban schools. As such, though this sample indicated a decrease in principals of color, that decrease may not be present in the population. Though percentages changed, this may not reflect raw numbers of principals, but rather reflect increasing (or decreasing) numbers of White principals in these schools. In rural schools, principal of color representation generally increased, but peaked in the 2007-2008 year (See Table 6). Principals of color are about equally represented in primary and middle schools and may be increasingly represented in both high schools and combined schools (i.e., schools with multiple age groups; e.g., middle and high school age students in the same building), though the increased representation in these schools was not significant and may not be observed in the population, per the

confidence intervals (See Table 6). Principals of color appear to be best represented in larger schools with 500-2000+ students (See Table 6).

Principals of color are best represented in schools with more students and teachers of color and in schools with the highest numbers of students receiving free or reduced meals. However, their representation in schools with the highest percentages of students of color, teachers of color, and poor students appears to be decreasing. In schools where 75-100% of students are students of color, 57.3% of principals were principals of color in 2003-2004 while 49.8% of principals were principals of color in 2011-2012; the confidence intervals for this numbers do not overlap, providing confidence that they differ in the population and indicating a shift in principal of color representation. From 2003-2012, representation of principals of color decreased for schools where 75-100% of teachers are teachers of color from 87% to 73%, reaching a low of 64.7% in 2007-2008 (See Table 6). As mentioned previously, this reflected a change in the percentage of principals of color, meaning that the decrease may be related to fewer principals of color or increasing White principals in these schools. Further, for schools in which 75-100% of students receive FARMS, the representation of principals of color decreased from 2003-2012 from 46.2% to 39.1%.

Conversely, principal of color representation among wealthier, largely White schools appears to be growing. Principal of color representation among schools where 0-74% of students are students of color grew from 2003-2004 to 2011-2012, peaking in the 2007-2008 year. Principal of color representation in schools where less than 25% of teachers are teachers of color grew from 6% in the 2003-2004 year to 9.1% in the 2011-2012 year. For schools in which 25-49% of the students receive FARMS, principal of

color representation grew from 2003-2008 but dropped back to just below 2003-2004 levels by 2011-2012. Principal of color representation in schools with less than 25% of students receiving FARMS grew modestly over the time examined, but peaked in the 2007-2008 year (See Table 6). Confidence intervals for principal of color representation at schools with the fewest teachers of color and students receiving FARMS over time did not overlap, indicating that the difference in the percentage of principals in these schools differs over time in the population and there is a shift in principals of color being better represented in these schools (See Table 6).

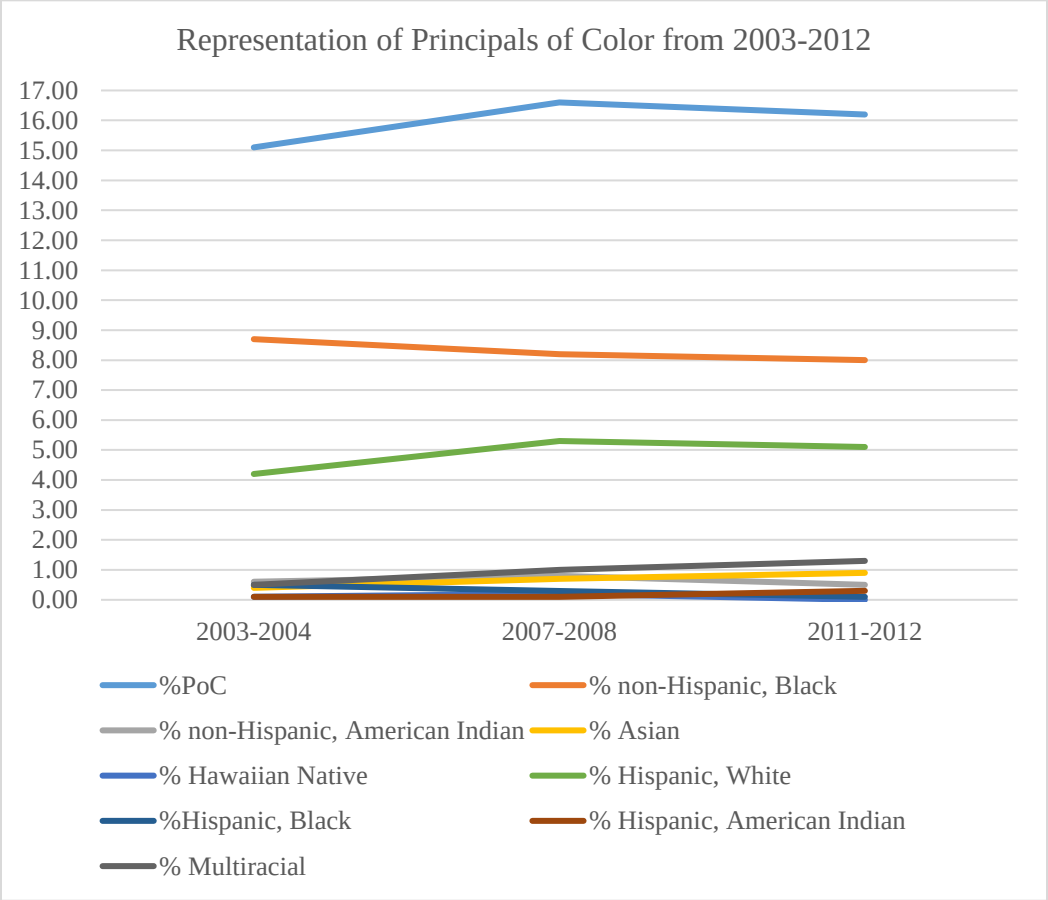


Figure 2. Representation of principals of color and principals of different ethnic or racial backgrounds from 2003-2004 to 2011-2012

Table 4

Percentages of Principals of Color from 2003-2004 to 2011-2012

Race/Ethnicity	**2003-2004**	**2007-2008**	**2011-2012**
Total Schools (n) [1]	*6180*	*5370*	*5380*
Principals of Color(n) [1]	*930*	*890*	*870*
Principals of Color	15.10 [12.3, 19.8]	16.60 [15.1, 18.2]	16.20 [14.8, 17.8]
non-Hispanic, Black	8.70 [7.7, 9.8]	8.20 [7.20, 9.40]	8.00 [7.00, 9.10]
non-Hispanic, American Indian	0.60 [.40, .80]	0.80 [.50, 1.20]	0.50 [.30, .90]
Asian	0.40 [.30, .70]	0.70 [.40, 1.20]	0.90 [.60, 1.50]
Hawaiian Native	0.10 [.10, .20]	0.20 [.10, .30]	0.00 [.00, .10]
Hispanic, White	4.20 [3.40, 5.10]	5.30 [4.3, 6.5]	5.10 [4.20, 6.10]
Hispanic, Black	0.50 [.30, 1.0]	0.30 [.20, .70]	0.10 [.00, .20]
Hispanic, American Indian	0.10 [.00, .20]	0.10 [.00, .30]	0.30 [.10, .80]
Multiracial	0.50 [.10, 2.00]	1.00 [.20, 3.70]	1.30 [.40, 3.90]

[1] Sample size numbers are rounded to the nearest ten per IES guidelines for restricted data reporting.

Note: The 95% confidence interval is listed after each percentage of number in the brackets (i.e., [LL, UL]).

Table 5

Characteristics of Principals of Color from 2003-2004 to 2011-2012

Principal Characteristic	**2003-2004**	**2007-2008**	**2011-2012**
Mean Age	**49.2** [48.3, 50.1]	**47.69** [46.7, 48.7]	**47.09** (46.1-48.0)
Mean Years of Experience	**6.48** [5.88, 7.07]	**6.11** [5.54, 6.68]	**6.55** (5.95-7.15)
Percent with 0-3 years	41.5 [30.3, 56.3]	40 [28.9, 54.6]	36.8 (26.7-50.3)
Percent with 4-7 years	24.6 [16.6, 36.1]	29.1 [20.0, 41.7]	30.8 (20.8-45.4)
Percent with 8-11 years	13.6 [8.4, 21.3]	13.4 [7.3, 24.6]	15.7 (9.8-25.5)
Percent with 12+ years	20.3 [9.6, 47.3]	17.5 [7.5, 42.0]	16.7 (6.5-44.7)
Sex			
Percent Female	36.1 [32.0, 40.3]	39.7 [43.7, 44.9]	43.7 (38.8-48.7)
Percent Male	63.9 [59.7, 68.0]	60.3 [55.1, 65.3]	56.3 (51.3-61.2)
Mean Years in this School	**3.71** [3.26, 4.15]	**3.22** [2.84, 3.60]	**3.77** (3.35-4.19)
Percent with 0-3 years	62.2 [48.6, 78.7]	65.0 [50.8, 82.3]	57.8 (45.5-72.8)
Percent with 4-7 years	23.6 [16.3, 33.9]	24.1 [15.7, 34.9]	29.3 (19.4-44.5)
Percent with 8-11 years	7.9 [4.1, 15.1]	6.8 [3.1, 14.9]	7.7 (4.0-15.1)
Percent with 12+ years	6.3 [2.1, 20.0]	4.1 [1.4, 16.2]	5.2 (1.5-20.6)

Note: The 95% confidence interval is listed after each percentage of number in the brackets (i.e., [LL, UL]).

Table 6

Percentages of Principals who are Principals of Color at Schools with Various Characteristics from 2003-2004 to 2011-2012

School Characteristic	2003-2004	2007-2008	2011-2012
Urbanicity			
Urban	36.0 [32.0, 40.2]	34.7 [30.1, 39.7]	32.7 [28.1, 37.7]
Suburb	10.7 [9.1, 12.6]	13.5 [11.6, 15.7]	14.5 [12.5, 16.7]
Rural	7.6 [6.0, 9.4]	9.5 [7.7, 11.7]	8.7 [7.3, 10.4]
School Level			
Primary	16.5 [14.6, 18.5]	18.1 [16.0, 20.5]	17.6 [15.4, 20.1]
Middle	16.4 [13.3, 20.1]	18.5 [14.9, 22.7]	17.4 [15.2, 19.9]
High	11.4 [9.9, 13.2]	11.7 [9.9, 13.7]	12.3 [10.4, 14.5]
Combined	5.5 [3.8, 7.9]	6.3 [3.7, 10.6]	7.9 [5.3, 11.6]
Percent Students of Color			
<25	2.9 [2.2, 3.9]	3.7 [2.7, 4.9]	3.3 [2.5, 4.3]
25-49	10.3 [8.2, 12.8]	11.3 [8.4, 15.0]	11.1 [8.9, 13.6]
50-74	21.8 [17.5, 26.7]	30.2 [24.9, 36.1]	22.6 [18.2, 27.6]
75-100	57.3 [52.2, 62.3]	51.1 [45.7, 56.5]	49.8 [44.5, 55.1]
Percent Teachers of Color			
<25	6.0 [5.2, 7.0]	8.5 [7.3, 9.9]	9.1 [7.9, 10.5]
25-49	52.2 [45.2, 59.2]	49.7 [41.9, 57.4]	41.9 [35.2, 49.0]
50-74	63.6 [55.0, 71.5]	64.2 [52.1, 74.6]	64.2 [51.6, 75.2]
75-100	87.0 [82.5, 90.5]	64.0 [52.7, 75.1]	73.0 [60.4, 82.8]
Percent of Students Receiving FARMS			
<25	5.0 [3.8, 6.4]	9.2 [7.0, 12.0]	7.7 [6.0, 9.9]
25-49	7.6 [6.0, 9.5]	10.3 [8.3, 12.8]	7.5 [5.7, 9.8]
50-74	18.1 [15.3, 21.3]	19.2 [15.9, 23.0]	14.9 [12.4, 17.9]
75-100	46.2 [41.0, 51.5]	38.6 [33.5, 43.9]	39.1 [34.5, 43.9]
School Size			
1-99	12.7 [10.5, 15.1]	2.6 [1.2, 5.4]	5.1 [2.7, 9.5]
100-199	8.6 [5.4, 13.5]	12.2 [7.8, 18.6]	7.6 [4.1, 13.7]
200-499	13.6 [11.7, 15.8]	15.9 [13.6, 18.4]	17.1 [14.6, 19.8]
500-999	17.8 [15.5, 20.5]	18.9 [16.2, 22.0]	16.8 [14.4, 19.4]
1000-1499	17.6 [13.8, 22.3]	17.7 [13.2, 23.3]	21.1 [16.9, 25.9]
1500-2000+	18.9 [15.2, 23.3]	20.8 [16.4, 26.1]	17.2 [13.7, 21.4]

Note: The 95% confidence interval is listed after each percentage of number in the brackets (i.e., [LL, UL]).

Question 2: Predictors of Change to a Principal of Color

What school-level characteristics predict change from a White principal to a principal of color?

To answer the question of what school-level characteristics predict change from a White principal to a principal of color, schools within the sample were first separated into four groups. Using the dichotomous variable of principal race or ethnicity created to explore question one, a difference score was created to determine whether change in principal race/ethnicity occurred over the timepoints examined. Change from a White principal to a principal of color received a score of "1", change from a principal of color to a White principal received a score of "-1" and no change – meaning no racial change, though the specific principal may have changed – received a score of "0". Once change was determined, additional analyses were conducted to determine whether schools within the no change group experienced continuing White principals or principals of color. Several characteristics of schools within these four groups were explored to determine how schools with and without different types of change compare, including percentages of teachers and students of color and students receiving FARMS and school urbanicity, size, level, and performance.

Schools with continuing principals of color had the highest percentages of teachers and students of color and students receiving FARMS. In schools with continuing principals of color, nearly 50% of teachers were teachers of color, over 75% of students were students of color, and more than 58% of students received FARMS. In comparison, in schools with continuing White principals, less than 5% of teachers were teachers of color, about 17% of students were students of color and about 32% of students received FARMS. Schools with change in either direction – from White principal to principal of color or vice versa – had similar percentages of teachers of color, students of color and students receiving FARMS (See Table 8).

The schools most likely to experience change from White principals to principals of color are suburban and rural schools, high schools, and those with 200-1499 students. Continuing principals of color were most heavily concentrated in urban and suburban schools, primary and high schools, and schools with 500-999 students. Change from principals of color to White principals was more likely to occur in suburban schools, though it was only slightly less prevalent in urban and rural schools. These schools were most likely to be high schools and those with 200-999 students. Finally, schools with continuing White principals were most likely to be rural schools, followed by suburban schools. Most of these schools were high schools with 200-999 students. In terms of meeting performance standards, 70-72% of schools with White principals – whether continuing or following change from a principal of color – met standards. On the other hand, only 50% of schools with continuing principals of color met performance standards and about 62% of schools that experienced change to a principal of color met performance standards (Table 8). This discrepancy in school outcomes may not be attributable to school principals. Instead, a variable like poverty may relate both to having principals of color and struggling to meet state performance standards.

In an effort to explore how White principals and principals of color differ in their focus on multicultural competence, I explored what percentage of principals within each of the four groups rated multicultural awareness as being within their top three goals at the second time point. While 2.1% of continuing White principals endorsed multicultural awareness as one of their top three goals, 5% of continuing principals of color did the same. On the other hand, in schools that experienced change from a principal of color to a White principal, 8.1% of principals indicated that multicultural awareness was a top goal.

In schools with change from a White principal to a principal of color, 4.4% of principals endorsed multicultural awareness as a top goal (See Table 7). Based on these reports, White principals who take over schools from principals of color appear to place more emphasis on multicultural awareness. This may be related to the characteristics of their schools. White principals who follow principals of color are more often in urban schools and schools with larger percentages of teachers and students of color than continuing White principals. These and other school characteristics may increase their awareness of and focus on multicultural awareness.

Table 7

Principal Characteristics at Time 1 for Schools With and Without Change

	Continuing White Principal	**Continuing Principal of Color**	**Change to White Principal**	**Change to Principal of Color**
Number of principals (n) [1]	1900	120	100	90
Years of Experience	8.87 [8.52, 9.21]	6.88 [5.66, 8.10]	8.63 [7.29, 9.97]	7.77 [6.52, 9.02]
Years Principal of this school	4.78 [4.54, 5.01]	3.74 [2.88, 4.60]	4.54 [3.50, 5.58]	3.44 [2.70, 4.18]
Percent of Principals Rating MC Awareness in Top 3 Goals	2.1 [1.90, 2.30]	5.0 [4.41, 5.59]	8.1 [7.40, 8.80]	4.4 [4.02, 4.78]

[1] Sample size numbers are rounded to the nearest ten per IES guidelines for restricted data reporting.

Note: The 95% confidence interval is listed after each percentage of number in the brackets (i.e., [LL, UL]).

Table 8

School Characteristics at Time 1 for Schools With and Without Change

	Continuing White Principal	**Continuing Principal of Color**	**Change to White Principal**	**Change to Principal of Color**

Percent Teachers of Color	4.69 [4.22, 5.16]	49.91 [44.3, 55.6]	13.79 [10.4, 17.2]	15.77 [11.6, 19.9]
Percent Students of Color	16.97 [16.1, 17.9]	75.31 [70.5, 80.1]	41.89 [36.1, 47.7]	41.03 [35.0, 47.0]
Percent of Students Receiving FARMS	31.59 [30.7, 32.5]	58.80 [53.3, 64.3]	42.50 [37.0, 48.0]	42.32 [36.5, 48.1]
Percent of Schools Meeting Performance Standards	72.1 [71.8, 72.2]	50.4 [50.2, 50.5]	70.7 [64.9, 76.5]	62.2 [62.1, 62.3]
Urbanicity (% of Schools)				
Urban	15.5 [15.4, 15.6]	38.7 [38.5, 38.8]	30.3 [30.1, 30.5]	17.8 [17.7, 18.0]
Suburb	39.7 [39.6, 39.7]	34.5 [34.4, 34.6]	38.4 [38.2, 38.6]	47.8 [47.6, 47.9]
Rural	44.7 [44.6, 44.8]	26.9 [26.8, 27.0]	31.3 [31.1, 31.5]	34.4 [34.3, 34.6]
School Level (% of Schools)				
Primary	22.1 [22.0, 22.2]	37.0 [36.9, 37.1]	24.2 [24.1, 24.3]	21.1 [21.0, 21.2]
Middle	16.4 [16.3, 16.5]	19.3 [19.2, 19.4]	20.2 [20.1, 20.3]	21.1 [21.0, 21.2]
High	51.3 [51.2, 51.4]	40.3 [40.2, 40.4]	50.5 [50.4, 50.6]	46.7 [47.5, 47.7]
Combined	10.3 [10.2, 10.4]	3.4 [3.3, 3.5]	5.1 [5.0, 5.2]	11.1 [11.0, 11.2]
School Size (% of Schools)				
0-99 Students	2.7 [2.6, 2.8]	0 [0.0, .4]	5.1 [4.6, 5.6]	3.3 [2.8, 3.8]
100-199 Students	6.7 [6.6, 6.8]	1.7 [1.3, 2.11]	3.0 [2.5, 3.5]	7.8 [7.3, 8.3]
200-499 Students	29.8 [29.7, 29.9]	42.0 [41.6, 42.4]	25.3 [24.8, 25.8]	24.4 [23.9, 24.9]
500-999 Students	34.9 [34.8, 35.0]	28.6 [28.2, 29.0]	32.3 [31.8, 32.8]	27.8 [27.3, 28.3]
1000-1499 Students	13.5 [13.4, 13.6]	10.1 [9.7, 10.5]	18.2 [17.7, 18.7]	21.1 [20.6, 21.6]
1500+ Students	12.4 [12.3, 12.5]	17.6 [17.2, 18.0]	16.2 [15.7, 16.7]	15.6 [15.1, 16.0]

While a portion of addressing this question was exploring differences between the four categories of schools, the primary focus was exploring which specific school characteristics best predicted change from a White principal to a principal of color. To do this, two of the four school groups were selected for analysis: schools with continuing White principals and schools with change from a White principal to a principal of color. The data was examined to ensure if the data met the assumptions of logistic regression. Then, multiple logistic regression was conducted with all the potential predictor variables included to predict the dichotomous change variable: percentages of students receiving

free and reduced meals, percentages of students and teachers of color, and school size, urbanicity, level, and performance. As outlined in Table 9, results indicate that the overall model fit was significant at the $p < .001$ level, but that the only single variable that remained as a significant predictor of change when all variables were included was the percentage of minority students in a school. Other variables, such as urbanicity and school performance, were significant prior to the addition of percentage of minority students, but once the percentage of minority students variable was added to the model, the effect of all other variables was reduced to non-significance. However, the urbanicity of the school continued to approach significance after adding the percentage of minority students to the model ($p < .10$, see Table 10). Importantly, the default model with no predictor variables assumed no change for all schools. This default model was significant and accurately predicted outcomes for 94% of schools. Because the sample used for this analysis included vastly more schools experiencing no change, the model was much better at predicting no change than change. In the model that included the percentage of minority students, the model accurately predicted the change outcome for 95% of schools. Despite that limitation, it appears that the percentage of minority students in a school is a significant predictor of whether that school will experience change from a White principal to a principal of color.

Table 9

Omnibus Test Results of Overall Fit of Logistic Regression Model with All Variables Included and Step with Minority Students Included

	Chi-Square	**df**	**p-value**
Step (Minority students)	87.997	1	.000

Block	87.997	1	.000
Model	113.005	21	.000

Table 10

Multiple Logistic Regression Results for all Predictors Included in Model

Variable	Wald Test	df	Sig
Constant	.00	1	1.0
Met Performance Standards	1.72	4	.79
Adequate Yearly Performance	4.08	2	.13
Percentage of Minority Students	43.40	1	.00
Percentage of Minority Teachers	.64	1	.43
Percentage of Students in National School Lunch Program	.00	1	.98
School Level	1.19	3	.75
School Size	.56	6	1.0
Urbanicity	4.95	2	.08

Questions 3-4: Effects of Change to a Principal of Color

In schools with similar characteristics, what is the effect of change from a White principal to a principal of color on the percent of teachers of color, the number of suspensions and expulsions, the daily attendance rate, and the number of school problems when compared to schools with continuing White principals?

To answer this question, schools were initially matched on a variety of characteristics, as described in the methods section. Three variables on which schools were matched included missing data: vacancies, performance, and number of substitute teachers. Of these three variables with missing data, two were missing more than half of the data and were eliminated from the matching process: vacancies and substitute teachers. The performance data was missing for only 5.8% of schools (n = 120). When

missing data patterns were analyzed, no clear patterns emerged. Ultimately, the schools missing performance data were eliminated from analysis and analyses were completed using the remaining schools. The final sample for this analysis, including only complete cases, was 1550 schools, 90 of which were "change" schools.

Schools were matched using the MatchIt program in R (Ho, Imai, King, & Stuart, 2011; Randolph, Falbe, Manuel, Balloun, 2014) using all variables. Nearest neighbor matching results were used for analysis. Four change schools did not have an adequate match based on the caliper of .25 and were eliminated from the matching process. The change schools that remained were matched with control schools (see Table 11). Matching resulted in significant reduction in the standardized mean differences between control and change schools for most variables included in the matching process (see Figure 3). The output of the analysis provided information about the summary of balance before and after matching as well as the percent balance improvement. The standardized mean difference post-matching ranged from -.32 to .25, with all but one standardized mean differences falling with the .25 standardized mean difference threshold (Safety at -.32). In comparison, prematching standardized difference scores ranged from -.37 to .85 (see Appendix 1). A visual inspection of both the qq plots and histograms for both sets of matched data indicated that the matched groups were similar for each (See Appendix 2).

Table 11

Description of Final Matching Samples and Cohorts for Questions Three and Four

	Cohort 1 (T1→T2)	**Cohort 2 (T2→T3)**	**Cohort 3 (T1→T3)**	**TOTAL**
Control Schools (N)[1]	40	20	20	80
Change Schools (N)[1]	30	20	40	80

[1]Sample size numbers are rounded to the nearest ten per IES guidelines for restricted data reporting.

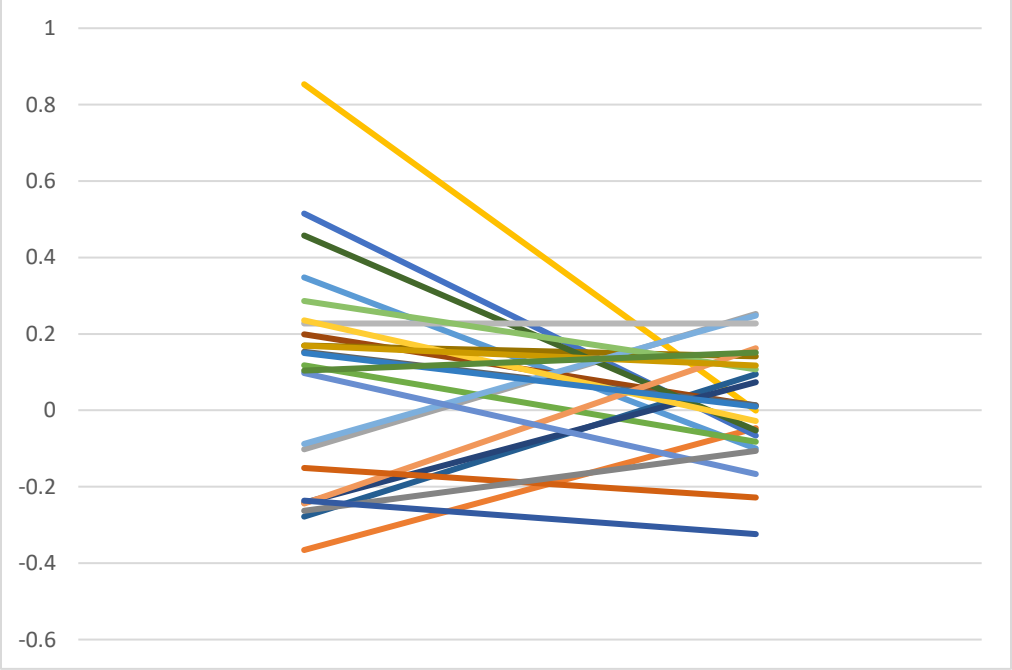


Figure 3. Comparison of pre-matching and post-matching standardized mean differences for distance and all matching variables

Following matching, analyses were conducted to determine whether there were significant differences in outcome variables at the second timepoint of data based on

whether schools experienced a change from a White principal to a principal of color or had continuing White principals. Prior to completing these analyses, simple mean comparisons were completed to explore the differences in outcome variables for control and change schools. Five outcome variables were analyzed at the second timepoint in the data: attendance, school problems, percentage of teachers of color, suspension rate, and expulsion rate (See Table 12). As outlined previously, the timepoint one version of each variable was also included in the matching process and as a covariate in the analysis of covariance procedures (ANCOVAs). After matching, the only significant difference between change schools and those not experiencing a change from a White principal to a principal of color was in the rate of suspensions ($p = .02$, see Table 13). Per the comparison of means between schools, control schools had a higher rate of suspensions than change schools (See Table 12). No other significant differences were found between the two groups on any of the outcome variables. However, significant interaction effects were identified by cohorts for suspensions and expulsions, indicating that there was a cohort effect, that the initial suspension numbers varied by cohort, and there was some heterogeneity between groups.

Table 12

Comparison of Control and Change School Means for Outcome Variables of Interest

Variable	**Control Schools**	**Change Schools**
Attendance	91.9	92.9
School Problems	4.1	4.0
Percentage of Teachers of Color	15.9	15.3
Suspension Rate	245.0	151.9
Expulsion Rate	3.5	4.6

Table 13

ANCOVA Results for Outcome Variables at T2 Comparing Schools with Change from White Principal to Principal of Color and Those with Continuing White Principals

Variable	**F**	**df**	***p***
Attendance	.24	1	.62
School Problems	.46	1	.50
Percentage of Teachers of Color	.11	1	.74
Suspension Rate	5.02	1	.02*
Expulsion Rate	.26	1	.61

* indicates significance at the $p < .05$ level

Sensitivity analysis. A Rosenbaum Sensitivity Analysis (Rosenbaum, 2005) was completed using R's rbounds package (Keele, 2014). As described previously, the sensitivity analysis relies on the sensitivity parameter Γ that measures the degree of departure from random assignment of treatment. For example, $\Gamma = 1$ indicates that the two subjects are equally likely to receive treatment (i.e., the expectation of a randomized experiment). On the other hand, $\Gamma = 2$ would indicate that if two subjects are matched identical on matched covariates, one is twice as likely as the other to receive treatment due to unobserved covariates (Rosenbaum, 2005; Keele, 2014). To complete a sensitivity analysis, several values of Γ are explored to determine how much or how large the differences in the probability of assignment to treatment would need to be to change the inference, using an odds ratio. So, Γ serves "as a measure of the degree of departure from a study that is free of bias." A range of values for Γ are explored to determine how inferences change if bias was present.

For the purposes of this study, Γ values ranged from 1 to 2 with increments of .1, based on research indicating that is an appropriate range for social science data (Keele,

2014). The sensitivity analysis provided information on how the *p*-value increases and how the magnitude of treatment effect changed with increasing values of Γ. Though sensitivity analyses were completed for all sets of variables, they were not particularly meaningful for most outcome variables as the results from the matching were not significant at the $p < .05$ level. However, all results indicated that a small amount of bias in the odds of experiencing change, not accounted for in the matching, resulted in relatively large changes to the *p*-value (see below) and the treatment effect. As such, any unobserved variables that were not included in this study but could have contributed to a slight bias in group assignment (i.e., a variable that might increase the odds of experiencing change from a White principal to a principal of color from 1.0 to 1.2) could result in large changes in the outcome variables. This result indicates that all analyses resulting from the matching process should be interpreted with caution (See Table 14).

Table 14

Sensitivity Analysis Results Indicating the Change in p-*Value Based on Odds of Differential Assignment to Treatment due to Unobserved Factors from 1.1 to 1.6 for All Outcome Variables*

Variable	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**
Attendance	.08	.14	.30	.42	.52	.62
School Problems	.04	.11	.20	.30	.40	.50
Percentage of Teachers of Color	.03	.07	.13	.20	.29	.38
Suspension Rate	.06	.15	.25	.37	.48	.59
Expulsion Rate	.11	.21	.32	.41	.48	.55

Supplemental analysis. An additional analysis was completed to explore effect of the time since change of the principal (rather than just whether schools experienced

change). A “time since change” variable was created indicating the years since change. Variable values from 0 - 4 were computed by using the principal report of how long they had been principal of *this* school. Value of 0 to three indicate that they had been principals for 0, 1, 2, or 3 years of this school. This would include both change schools and those without a change. Values of 4 indicate that they had been principals of the school for at least 4 years. This was the largest group. Because the group of interest for this analysis was those schools that had experienced a change to a principal of color, an interaction effect was included (Time Since Change * Change to Principal of Color) to determine whether there was an interaction between the time since change and experiencing a change in principal race. No significant effects were found for this supplemental analysis (See Table 15).

Table 15

ANCOVA Results for Outcome Variables at T2 Comparing Schools Grouped by the Interaction between Principal Change and Time since Change in Principal

Variable	**F**	**Df**	**Sig**
Attendance	.070	4	.991
School Problems	.376	4	.826
Percentage of Teachers of Color	.355	4	.840
Suspension Rate	1.30	4	.272
Expulsion Rate	.321	4	.864

Chapter 5: Discussion

Principals of color are historically underrepresented in public schools across the United States, though students of color comprise a large and growing portion of the students served in these schools. While research demonstrates the importance of principals in shaping school culture and success, little research exists on the representation and effects of principals of color. This research aims to fill that gap. This discussion addresses the results of analyses examining the current representation of principals of color, including their characteristics and the characteristics of the schools in which they are located; the predictors of change from a White principal to a principal of color; and the effect of such change on school-level outcomes. Implications of these results and limitations of this study are also explored.

Question 1: Representation of Principals of Color

How has representation of principals of color in the United States workforce changed in the last decade?

In the first portion of this study, principal of color representation was explored. Across the decade examined, principals of color increased from approximately 15% to 16% of all public school principals, but this growth was nonsignificant per confidence intervals and may not indicate real growth in the population. It was also inconsistent over the time explored: principal of color representation increased from 2003-2007 but decreased from 2007-2011. Most principals of color are non-Hispanic, Black principals or Hispanic, White principals – which, combined, make up approximately 13% of all principals. Notably, while representation of Hispanic, White principals has grown from 2003 to 2011, representation of non-Hispanic, Black principals may be on the decline,

though this decrease is currently not significant as the confidence intervals overlap and may not be observed in the population. Other groups of principals also appear to be experiencing similar trends in representation: Asian and multiracial/ethnic principal representation appears to be increasing, while Hispanic, Black principals (i.e., those indicating that they are both Black and Hispanic) seem to be on the decline, though, again, these changes may not be significant in the population. While improvements in principal of color representation appear inconsistent, female principals of color seem to be experiencing steady growth in representation – increasing representation from approximately 36% in 2003 to 44% in 2011. This growth in representation mirrors the general increase in female principals in public schools across the United States (e.g., Gates, 2003).

Unsurprisingly, based on existing research, principals of color tend to be represented in schools with some expected characteristics. They are best represented in large, urban schools with large numbers of teachers and students of color. They also appear more concentrated in those schools in which the most students receive free and reduced meals. This finding is unsurprising as principals of color have always been most present in these types of schools (e.g., Gates, 2003; NCES, 2010). However, the data indicate that this trend may be changing over time. Representation of principals of color in urban schools has decreased over the time examined (though this decrease may not be observed in the population), while their representation in suburban schools has significantly increased. Their representation in schools with the highest proportions of poor students of color and teachers of color also appears to be decreasing, while their representation in schools with less than 25% teachers of color appears to be increasing.

Though the overall numbers of principals of color entering the profession may be increasing, the turnover paired with increasing numbers of White principals results in little growth or decreasing percentages of principals of color in general. These changes may be due to many factors, which are not thoroughly explored in this study. As the percentages of students of color grows across all public schools in the country, principals of color may be viewed as more valuable in suburban and rural schools which are experiencing increases in students of color. More and more, public schools are becoming diverse (NCES, 2014). While the current educator workforce is lagging in diversity, it is possible that this increasing diversity in the student body is driving some of these changes in representation as principals of color desire to serve as advocates for students of color (e.g., Bloom & Erlandson, 2003; Mack, 2010; Hernandez & Murakami, 2016). On the other hand, it is also possible that incoming White principals are more interested in serving in urban schools with large percentages of poor students of color or that White principals are being brought it to serve as "turnaround principals" in poorly performing schools (U.S. Department of Education, 2010). Additional research would need to be done to explore the reasons behind these changes.

The implications of these results indicate that there is still much work to be done in increasing the representation of principals of color in public schools across the United States. Representation of principals of color may be improving and increasing, but this trend appears inconsistent and varies by specific ethnic and racial characteristics. For example, although White, Hispanic principals seem to be growing, as a group, the group of Black, non-Hispanic principals may be shrinking. There also seems to be some variability in the types of schools in which principal of color representation is increasing.

For example, principals of color representation appears to be increasing in suburban and rural districts, particularly those with larger populations of students of color and students receiving free and reduced meals. While there are benefits to principals of color being more heavily represented in those schools with the largest populations of students of color and in poverty, there are drawbacks as well. For example, the schools with the largest populations of students of color in poverty are likely also the lowest performing, high needs, high stress schools (e.g., Editorial Projects in Educational Research Center, 2011; Gates, 2003). Moreover, with the growing population of students of colors in all schools across the U.S., all schools may benefit from exposure and access to leaders of color.

Question 2: Predictors of Change to a Principal of Color

What school-level characteristics predict change from a White principal to a principal of color?

In addition to exploring representation of principals of color in U.S. public schools, this study also examined school-level predictors of school leadership changes from White principals to principals of color. The first step in addressing this question involved separating the sample schools into four categories: 1) those with continuing White principals, 2) those with continuing principals of color, 3) those with change to a White principal from a principal of color, and 4) those with change to a principal of color from a White principal. Before exploring specific predictors of change, the characteristics of principals and schools falling within each of these four groups was examined. Across the categories explored, White principals (in both groups) tended to have about one to two years more experience than principals of color, on average, both as principals in any

school and as principals within their current schools. They also tended to be about one year older than their principal of color counterparts. Interestingly, the group with the largest percentage of principals rating multicultural awareness as one of their top three goals was the White principals who had come to a school previously led by a principal of color (~8%). Similar percentages of principals of color in either group indicated that multicultural awareness was among their top goals (4.4-5.0%). However, fewer continuing White principals rated multicultural awareness as a top goal than any of the other categories, with only about 2% indicating this was among their top goals. It is possible that the variability in these ratings may be related to the school demographics. Principals of color and White principals who are taking charge of schools previously led by principals of color may be in schools with more diversity or more students and teachers of color and may prioritize multicultural awareness more than White principals in largely White schools with fewer students living in poverty, as it may feel more relevant. It is also possible that White principals who are hired to replace principals of color are more interested in multicultural awareness and serving diverse populations and this interest increases their prioritization of that goal (Theoharis & Haddix, 2011). Additional research is needed to explore the reasons behind the different perceptions of multicultural awareness' importance in schools by different leaders.

In terms of school characteristics, demographic representation of students and teachers aligned with principal demographics in those schools with continuing principals. Schools with continuing principals of color had the highest percentages of students and teachers of color, while schools with continuing White principals had the lowest percentages. A similar trend was observed for the percentages of students receiving free

and reduced meals (FARMS): the highest percentages were in schools with continuing principals of color, while the lowest were in schools with continuing White principals. On the other hand, schools that experienced change in either direction tended to be more similar. Schools experiencing change to principals of color had slightly more teachers of color than those schools changing to White principals, but the percentages of students of color or those receiving FARMS was approximately equivalent. In terms of performance, more schools with White principals met performance standards than those with principals of color, and those with continuing principals of color fared the worst in terms of meeting performance standards. The reasons behind this difference cannot be conclusively determined from this study. However, it is possible that principals of color tend to be in needier schools with needier students, which relates to lower achievement scores (Gates, 2003; Editorial Projects in Educational Research Center, 2011). As stated above, for example, schools with continuing principals of color have the largest percentage of students living in poverty. The differences in student demographics and school characteristics may relate to differences in performance as captured by the measures included in this study. The urbanicity of schools also seemed to relate to principal characteristics. Continuing principals of color were most likely to work in urban schools and more likely to work there than any other group of principals. On the other hand, both change groups were most likely to work in suburban schools. However, while White principals who replaced principals of color were about equally likely to work in urban or rural schools, principals of color who replaced White principals were more likely to work in rural schools than urban schools. These differences likely relate to the longstanding trend of more White principals in rural schools (NCES, 2010). Continuing White

principals were most likely to work in rural schools, followed by suburban and then urban schools, and were less likely to work in urban schools than the other three groups of principals.

After examining these four groups of principals, predictors of change from a White principal to a principal of color were explored using multiple logistic regression. The two groups necessary for this exploration were isolated (continuing White principals and change to principals of color). Various school-level characteristics were used in the model including teacher and student demographic variables and school size, level, urbanicity, and performance. Only one predictor remained significant when all other predictors were included in the model: percentage of minority students within a school. Urbanicity approached significance as a predictor. Notably, although percentages of minority students proved to be a significant predictor, the model was generally poor at predicting schools that would experience change from White principals to principals of color. The initial model, with no predictor variables included was able to accurately predict the outcome for 94% of schools, while the model that included percentage of minority students was able to accurately predict the outcome for 95% of schools. As such, while the overall model and, specifically, the predictor variable of minority students was statistically significant, its clinical relevance or utility was minimal because it was much more common to experience no change, than to experience a change to a principal of color. Though this issue is, in part, an artifact of the study sample, the sample is meant to be relatively representative of the nation's public schools during the time surveyed. As such, there are likely relatively few schools experiencing a change from a White principal to a principal of color and it may be difficult to find meaningful predictors of such a

change. Based on this study, the percentage of minority students is one significant predictor of that change.

In summary, although principals of color may be increasing their representation in suburban schools and those with fewer students of color than historically, they still most frequently take over for White principals in the schools with the largest populations of students of color and schools in urban environments. However, as noted previously, the utility of these factors in predicting change is limited, despite reaching a statistically significant level. So few schools experience change from White principals to principals of color, relative to schools that do not experience change, that the sample is limited and restricts the clinical relevance of these indicators in predicting such change.

Questions 3-4: Effects of Change to a Principal of Color

In schools with similar characteristics, how does the change from a White principal to a principal of color influence the representation of teachers of color and school-level outcomes such as suspensions, expulsions, attendance, and school problems as compared to schools with continuing White principals?

The final portion of this study explored the effects of change in principals on school-level outcomes, including attendance, school problems, percentages of teachers of color, suspensions and expulsions. Schools that experienced change from a White principal to a principal of color were matched to schools with continuing White principals. The schools were matched on a variety of factors predicted to potentially play a role in the outcomes of interest. The matching variables comprised school-level characteristics, such as urbanicity and level; student characteristics, such as percentages of students of color and number of migrant students; teacher characteristics, such as the

percentages of teachers of color; and parent-related variables, such as parent participation and availability of parent resources. Additionally, all "pretreatment" outcome variables were included in the matching process, i.e., using their values at the initial timepoint. Nearest neighbor matching was completed using one-to-one matching, such that each change school was matched to one control school with the closest propensity score. The matching process reduced variability and produced an adequate match for most variables. Once the groups were matched, standardized differences in outcome variables were compared. The only significant difference in outcome variables between change and control schools was for suspensions, with change schools having significantly fewer suspensions than control schools (i.e., 151 vs. 245). A cohort effect for suspensions and expulsions was also found, indicating some heterogeneity among groups assessed at different times. A supplemental analysis was completed to explore the effect of time since the change of principal on outcomes of interest. No significant effects were found for the interaction between time since change and change in principal. A sensitivity analysis was completed to explore how hidden bias or unobserved variables could influence outcomes. Because of the limited significant results, the meaningfulness of the sensitivity analysis results is limited. However, the results indicated that minimal bias would have a relatively large effect on the outcome. For example, by increasing the odds of experiencing change due to unobserved factors to 1.2 from 1.0, the resulting *p*-value for results increased, on average, by .14. As such, if the unaccounted for bias in matching increased the odds of experiencing change by a small amount, it could change the outcomes. This sensitivity analysis calls into question the significant result that was found because if only a few unobserved variables were important in determining change,

the results would likely be non-significant. However, it is also important to note that the *p*-value could change in either direction. As such, the results that were nonsignificant may have been significant (e.g., the *p*-value could decrease by .14 to fall below the .05 level). Though this study found minimal significant findings based on principal change on the outcomes of interest, the change may have influenced other outcome variables. As described below, future studies that include longer-term analysis, better longitudinal data, a larger sample size, and more matching variables, may be better equipped to explore these changes.

While improvements in the data and analyses may identify differences in outcomes that were not identified in this study, it is also possible that the minimal differences between groups identified in this study indicates that there truly is minimal difference in outcomes between the two groups. As such, principal race or ethnicity, alone, may have little bearing on the types of school-level outcome variables explored in this study. Suspensions was the only outcome that significantly differed between groups. This may be because suspensions are more directly influenced by school principals (Mukuria, 2002; Skiba et al., 2014). It may also be related to the disproportionate impact of suspensions on students of color and students of low socioeconomic status (e.g., Losen & Skiba, 2010; Skiba, Peterson, & Williams, 1997). Principals of color may be more aware of these disproportional impacts and work to alleviate the issue, reducing suspensions overall (e.g., Swanson, 2013; Jones, 2002). The overall results of this study indicate that when many school-level factors are controlled for, principal race or ethnicity has only minimal impact on the several school-level outcomes explored. This, however, does not reduce the importance and value of improving principal of color representation

in schools. It may very well be that the impact of principals of color on outcomes can be better observed at the group or individual student or teacher level rather than school level (e.g., Grissom & Keiser, 2011). These outcomes also indicate that, unlike some previous research (e.g., Hoffman-Miller & View, 2010), principals of color do not have a detrimental effect on students. Perhaps principal leadership style or skills, such as culturally relevant leadership practices, relate both to serving in certain schools, using similar practices, and ultimately, having similar outcomes (e.g., Madsen & Mabokela, 2014; Mansfield & Jean-Marie, 2015). This may relate to the ratings of multicultural awareness as a goal. In this study, White principals who were moving into schools previously overseen by principals of color were most frequent in rating multicultural awareness as a top goal. Perhaps this indicates that there is a growing body of White principals focused on the types of social justice and culturally relevant leadership observed in principals of color through qualitative research (e.g., Bloom & Erlandson, 2003; DeMatthews, 2015). Additional future research is needed to better understand what, if any, effect principal race has on school, student, and teacher outcomes as well as leadership practices.

Limitations and Future Directions

As with any non-experimental study, the causal effect of the principal race or ethnicity on any outcomes explored cannot be confirmed. The data for much of this study is descriptive in nature and, while it provides valuable information about current trends in representation, it does not provide insight into strategies to improve representation or reasons for underrepresentation. Further, though this study provides insight into factors that relate to changes from White principals to principals of color, it is limited in its

capacity to explain the reasons for the relation and cannot confirm that these factors are causal. Another major limitation in this study is the limited sample of schools that have experienced a change from a White principal to a principal of color and the narrow timeframe for which data is explored. Only about 80 schools were available that experienced the change of interest, which limits the power of the analyses completed. Small effects due to this change could not be detected with this limited sample size. Additionally, change in the outcome variables of interest may take more time than this data set provided. Though the research supports the important effect of leaders on their schools, it is possible that the outcome variables of interest may not be as strongly and directly linked to principals or principal change as other outcome variables. The sensitivity analyses completed as part of this study highlight the fact that unobserved variables that could not be accounted for in the matching process may have had large effects on the outcomes of interest, such that minimal bias in group assignment (i.e., change vs. control) that was unaccounted for in this study may have changed results to significant or nonsignificant. Between the limited sample size and the sensitivity of results, much caution should be taken in interpreting the results of the ANCOVAs following matching. If possible, future studies with a larger sample and more control variables may be able to provide further insight into the potential effects of principal change.

An additional limitation in this study is the use of principal race as a proxy for leadership style, beliefs, and experiences that may shape the way that principals lead their schools, establish school culture, and effect student, teacher and school outcomes. As observed from the limited effects on the outcomes in this study, perhaps principal race

alone is not an adequate proxy for the system of culturally sensitive beliefs that may better account for changes in the outcomes observed in this study. For example, principal beliefs about social justice or culturally relevant leadership practices may relate more clearly to student, teacher, and school level outcomes. All principals of color do not behave the same way or endorse the same beliefs or leadership practices, and the same could be said of White principals. The differences in these groups of principals aligned only by race may be large and extensive enough to make principal race an inadequate proxy for the subtle factors that may influence outcomes of interest.

Though only minimal effects of change from a White principal to a principal of color could be demonstrated in this study, additional research should be done to continue exploring this area and on other types of outcomes. Future quantitative studies continuing to explore representation, changes and predictors of representation, and the effects of representation of principals of color with larger, longer-lasting longitudinal data should be completed. However, a series of case-based studies on individual schools may be better able to illustrate specific effects than the type of large-scale research completed here, and qualitative studies will continue to add a critical voice to understanding the reasons for changes in representation of principals of color and the effects of principal of color leadership on students, teachers, parents, and schools. Many of the questions this study could not address – such as the causal factors related to principal of color representation – may be better explored through qualitative studies. Having completed this study with this data available, it seems that future qualitative and case-based studies would allow researchers to identify similar schools with change from White principals to principals of color (and vice versa); identify the beliefs, values, and ideologies of those

principals through interviews and questionnaires; and track a variety of outcomes through both quantitative and qualitative measures. For example, this research may involve identifying schools with and without change in similar communities and conducting interviews with principals, teachers, students, families, and other community members to see if and how various outcomes changed. These outcomes could include some of the objective, quantitative measures included in this study, but could also include qualitative, subjective measures such as school belonging and community ties to the school. As the impact of change to a principal of color was not clearly observed on the broad outcomes explored here using this methodology, case-based and qualitative designs as well as exploration of other principal factors (such as leadership style, beliefs in social justice, culturally relevant leadership practices, etc.) and outcomes, such as feelings toward school, feelings toward teachers, and perceptions of school fairness may provide better insight into the effects of principals of color. This case-based, qualitative approach may also allow for a better longitudinal outlook to see how these schools change over time and how long it takes for changes to occur (e.g., Duke & Landahl, 2011). It would allow for a better understanding of why shifts in representation are occurring (e.g., increasing numbers of principals of color in suburban schools) and whether changes in principals are driven by self-selection, top-down forces, bottom-up forces, or a combination of factors. This design may also allow for better insight into strategies for recruiting principals of color, improving principal of color representation, and addressing some concerning trends – such as the possible decrease in Black principals (e.g., McGary. 2012). Using this type of approach would also allow for looking at the effects of change in the other direction (e.g., from a principal of color to a White principal) to explore the differences

between similar schools with change in either direction. Additionally, with this smaller-scale, more intimate style of research, factors unaccounted for by this study – such as neighborhood, economic, and community trends could be explored and better understood in the big picture of how schools change and the possible role of principal race in school functioning and outcomes (e.g., Masumoto & Brown-Welty, 2009; Sanders & Harvey, 2002).

With the continuing growth of representation of principals of color, it is possible that a larger sample of schools experiencing change will be available along with a longer history of data to better explore the effects of these changes on outcomes. Larger data sets with more in-depth information about the communities and environments in which schools are nested – such as neighborhood, county, and state-level information may provide more variables needed to account for the complexity of school systems (e.g., Rich, 2016). This data may provide important information that adds to the complexity of school systems and may inhibit the ability of a single leader to create broad change – such as economic and mobility differences (e.g., Chetty et al., 2017; Chetty et al., 2014). It is possible that, in light of the complexity of school systems, the effect of principals on the types of outcomes explored in this research will always be small and principals may be constrained by larger sociocultural forces. But, future research with larger, longer datasets may provide better insight into how principals of various races effect the schools in which they are housed. Despite the limitations, this research provides an initial glimpse into representation of principals of color, some predictors of change, and some effects of change. In summary, more qualitative and case-based studies must be completed to understand strategies for recruiting and retaining principals of color, principal of color

beliefs and leadership styles, and effects of principals of color that may not be captured by the broad outcomes explored here. However, this study indicates that principals of color continue to be best represented in urban schools with high numbers of students of color and students in poverty, though this trend may be shifting. Principals of color may result in positive outcomes for students of color, as this study indicates fewer suspensions in schools with principals of color as compared to those with continuing White principals.

Chapter 6: Conclusions

Principals of color may be a growing body of educators, but their growth is inconsistent and currently not significant. Though these principals are moving into schools in which they were historically underrepresented (such as suburban schools or those with fewer students of color) they are still most likely to be present in urban schools with the largest numbers of students of color and in poverty. These results indicate a need to continue efforts to recruit and retain more educators of color in leadership positions, particularly as principals. Results indicate that female principals of color have grown as a group, research into strategies used to improve representation of female principals may provide some insight for how to improve representation of other underrepresented groups – such as principals of color. Though this research grouped principals of color into a single unit, different strategies may be needed to recruit and retain different groups of principals of color. For example, this research indicates a potential decline in Black principals. Research is needed to understand why this population is decreasing and what strategies may be employed to avoid turnover and avoidance of the education field. Work must be done to understand what drives individuals of color to enter education and what drives them to leave. This information will provide important insights to improve representation of principals of color and increase the diversity of the educator workforce. Additional research is needed to explore principal of color representation, strategies for improving representation, and the effects of representation on student, teacher, and school-level outcomes. While this study did not include community or family-level variables, these may also provide important information about the predictors and effects of principal of color representation in schools.

Higher percentages of students of color appear to be the only predictor of change from a White principal to a principal of color. Though a significant predictor, the percentage of students of color was not a particularly meaningful predictor as so few schools experienced that type of change. Additional research is needed to understand whether change from a White principal to a principal of color is systematic, the types of schools experiencing that change, and the outcomes for those schools. If the relation between shifts in principals from White to principals of color and increasing students of color holds in future research, it presents important implications for the field. Education in principal leadership may need to include more focus on diversity, multicultural awareness, and issues that arise in increasingly diverse schools. Research must be completed to understand what drives these shifts: whether White principals choose to leave, principals of color self-select to schools with increasing numbers of students of color, or outside forces – such as school board selections – drive this change. Understanding the reasons behind this relation will allow the field of education to a) better prepare all educators to appropriately serve their diverse students, and b) understand strategies for recruiting and retaining educators of color. In terms of outcomes for principals of color, this study only identified a significant difference in suspensions between change and control schools with change schools having fewer suspensions. This may be due to principals having more power and discretion over suspensions than the other outcomes explored and may be an important change in schools. The minimal differences in other outcomes between change and control schools may be a real finding and indicate that principal race and ethnicity has minimal effect on the types of school-level outcomes explored in this study. However, the finding may also

be a result of limited power due to small sample sizes. Caution must be used in interpreting the results from the matching analyses as sensitivity analyses indicate that minimal unobserved bias could account for large changes in *p*-values, changing results from significant to nonsignificant (or vice versa) easily.

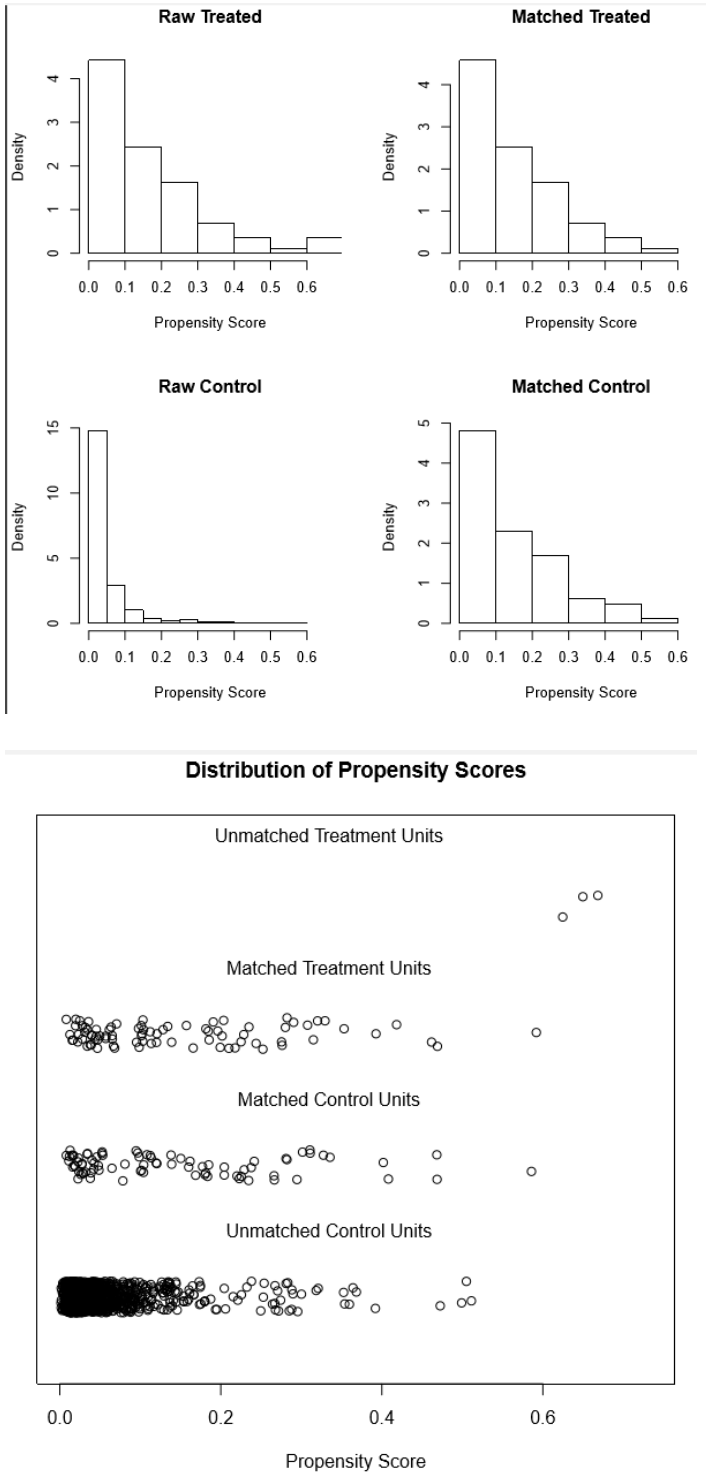
While this study provides an important glimpse into principal of color representation, predictors of change from a White principal to a principal of color and possible effects of that change, it is limited and much more research is needed to understand the role of principals of color in U.S. public schools. Additional quantitative and qualitative research should be conducted to explore the changes in principal of color representation, the leadership style and practices of principals of color, and the effects of principals of color on their schools, students, and teachers. My future research in this field would include series of case-based and qualitative studies designed to follow schools experiencing change in either direction or no change over time. This design would allow for more in-depth information about motivations for and causes of principal change, principal beliefs and ideologies, teacher and student perceptions of leadership and school climate, and community or neighborhood factors. Future research using this more focused, in-depth design or using broader, larger datasets with data on neighborhood-level sociocultural factors will provide better insight into the effects of principal change and the role, beliefs, and effects of principals of color in education.

Appendices

Appendix 1

Table of Pre- and Post-Matching Standardized Mean Differences for Matching Variables

Variable	PreMatch	PostMatch
distance	0.73	0.03
FARMS	0.35	-0.10
Urbanicity	-0.37	-0.05
School Level	-0.10	0.25
Students of Color	0.85	-0.00
Teachers of Color	0.52	-0.07
Performance	0.12	-0.08
State	-0.28	0.09
Suspensions	0.20	0.01
Expulsions	0.15	0.01
Attendance	0.17	0.14
School Problems	-0.24	0.07
Principal Change	0.46	-0.05
Graduation Rate	-0.09	0.25
Four-year College	-0.24	0.16
Students with IEP	0.23	0.23
LEP Students	0.24	-0.03
Title 1 Teachers	0.10	-0.17
Students to Full-Time Teachers	0.29	0.11
Full-Time Vice Principals	0.15	0.01
Parent Participation	-0.15	-0.23
Parent Resources	-0.26	-0.11
Salary	0.17	0.12
School Safety	-0.24	-0.32
Migrant Students	0.10	0.15



Appendix 2. Histogram and jitter plots for pre- and post-matching control and change (i.e., treatment) schools

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