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Potential Associations of Racial Similarity and Certification Pathways on Teacher Retention

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POTENTIAL ASSOCIATIONS OF RACIAL SIMILARITY AND CERTIFICATION

PATHWAYS ON TEACHER RETENTION

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by

Mary Michelle Atherley

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To: Dean Michael Heithaus
        College of Arts, Sciences and Education

This dissertation, written by Mary Michelle Atherley, and entitled Potential Associations of Racial Similarity and Certification Pathways on Teacher Retention, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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The dissertation of Mary Michelle Atherley is approved.

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Dean Michael Heithaus
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Andrés G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2021

DEDICATION

I dedicate this thesis to my children- Dr. Alejandra David, Tyler David, and Sedric

Cherry; my mother, Amira Atherley; my father, Cordell Atherley Sr.; my sister, Amira

deQuesada; my brother, Major Cordell Atherley; and Fernando Carrington. Without your

understanding, support, and most of all love, the completion of this work would not have

been possible.

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ABSTRACT OF THE DISSERTATION

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Professor Ethan Kolek, Major Professor

What has caused the struggle to retain teachers? Like other school districts, Miami-Dade County Public School district has a high percentage of racial minority teachers and continues to seek ways in which to address teacher retention. Such findings are of importance since retaining effective teachers has been linked to positively affecting student achievement.

The purpose of this study was to investigate the possible associations of teacher retention with certification pathways (Traditional Preparation Programs or Alternative Certification Programs) and the racial similarity of the teachers to the students at their schools. Additionally, teacher and school factors such as gender, age, college majors, percentage of low socioeconomic students (Title 1), population size, magnet status, and school grade were included. The findings of some similar studies indicated that alternative certification and traditional preparation programs had comparable results on teacher retention. Furthermore, some research showed that racial congruency reflected a positive relationship with increased teacher retention. Five years of M-DCPS

administrative data for the school years between 2015-2020 yielded a sample population

of 4,419 teachers. Using IBM's SPSS software, the data were recoded and run through

logistic regression analyses, crosstabulations, and bivariate analyses.

       The findings of this study suggest that the relationship between teacher retention

and certification pathways was not significant. Additionally, the relationship between

teacher retention and racial similarity was statistically significant but it was weak.

Population size had weak statistically significant positive association with teacher

retention, while school grade and age had weak, negative associations with teacher

retention. This would suggest that policymakers should consider these results as they

formulate onboarding guidelines for the school district.

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ABBREVIATIONS AND ACRONYMS

ACP	Alternative Certification Programs
AP	Advanced Placement course
CTE	Career and Technical course
EPI	Educator Preparation Institutes
FDOE	Florida Department of Education
FIU	Florida International University
G/T	Gifted or Talented Program
ITP	Initial Teacher Preparation
M-DCPS	Miami Dade County Public Schools
MINT	Mentoring and Induction for New Teachers
PLC	Professional Learning Community
SASS	Schools and Staffing Survey
TFA	Teach for America
TFS	Teacher Follow-up Survey
TOT	Teachers of Tomorrow

Chapter I: Introduction

Background

Teacher shortage continues to be the focus of copious studies in education

(Ashiedu & Scott-Ladd, 2012; Costigan, 2005; Hill & Jones 2020; Ingersoll, 2001). Data

reveal that over 2.7 million new teachers were needed to fill the teacher shortage between

1998-2009 and each succeeding year after, close to 200,000 new teachers were needed

(Swanson, 2011). The high turnover rate and teachers retiring from the profession have

led to increased interest in teacher retention and recruitment strategies (Donaldson,

2012). Research suggests that between 18 and 20 percent of teachers worldwide leave the

profession in their first year. Scheopner (2010) shared that the number climbs to 50

percent in the first five years. He also discussed that attrition rates are higher in lower

socioeconomic areas. According to Swanson (2011), although the 1,300 schools and

colleges of education in the United States were graduating sufficient numbers of teachers

to fill the open positions, thirty percent of the candidates did not enter the profession for

various reasons, including better paying jobs in private industry.

Sutcher, Darling-Hammond, and Carver-Thomas (2019) claimed that

approximately 316,000 new teachers will need to be hired by 2025. Miami-Dade County

Public Schools serves over 345,000 students and 40,000 employees across a range of

communities with 392 schools and is hard pressed to hire and retain teachers. As a result,

alternative methods of certification, including Grow Yo1ur Own (GYO) programs like

Teach for America (TFA) and Teachers of Tomorrow (TOT), have been utilized to staff

schools in the more challenged areas of the county. With increased calls for

accountability, it is imperative to find teachers who are fully prepared in content

knowledge, have a disposition to teach and able to culturally assimilate with the communities that they serve.

As shared by Avalos and Valenzuela (2016), the rate of teacher attrition in the United States was in the mid 40 percent range. Sutcher, Darling-Hammond, and Carver-Thomas (2019, p.13) shared that the need for teachers was comprised of twenty-nine percent retiring, seven percent workforce growth due to pupil-teacher ratio reduction, six percent workforce growth due to student enrollment increases, and fifty-nine percent preretirement attrition. Researchers are responding to the national outcry of the existence of a teacher shortage. So, what has caused the struggle to retain teachers? Numerous causes for teacher attrition have been studied, including salaries, workload, administrative support, job prestige, campus conditions, parental involvement and opportunity for growth (Ingersoll, May, & Collins, 2019; Sass et al.,2012). Additional studies have explored demographic characteristics and teacher-specific factors such as age and certification status (Guarino et al., 2006; Gulosino et al., 2016; Hanushek et al., 2004).

Investigated in this study was the possible associations of teacher certification pathways and racial similarity on the longevity of a teacher's career. After reviewing articles on teacher attrition and with my administrative school site experience in five different schools over 20 years, I saw a decline in the number of traditionally prepared new teachers and an increase of the alternatively certified teachers hired in the school system. Knowing that some certification programs, such as TFA, accepts candidates from America's top universities to teach in low-income schools (Evans, 2009), I thought of the

fact that such recruits did not serve beyond their contractual two to three year period. With that information adding to the framework of my study, I questioned whether there was a difference if the AC teacher was the same race as the residents in the locale where they were teaching? Furthermore, research showed a genesis of numerous Grow Your Own (GYO) programs, especially in areas where there were higher concentrations of underrepresented groups. The GYO programs actively recruited candidates who were parents at the schools or who were otherwise employed in the neighborhood. As I contemplated these data from the viewpoint of associations rather than causality, I wondered if there would be a connection between certification pathway, racial similarity and teacher retention. My independent variables are certification pathways and racial similarity. Certification pathway refers to the manner by which the teacher obtains a teaching license. Racial similarity is the percentage of students in a school who are of the same race as the teacher. To conduct this study, I used secondary data from the Miami-Dade County Public School district. Included in the data was information on high school teachers employed by the school district during the school years between 2015 and 2020. The dependent variable was teacher retention. In this study, teacher retention was identified as senior high teachers who were teaching in M-DCPS in 2015 and remained in the school system at the end of the time span of the study in 2020. Certification pathway and racial similarity were the independent variables. Control variables included college major, age, and gender. Additional control variables included school characteristics such as free/reduced lunch status of the schools, ethnic majority of the student body, design of the school whether it was a neighborhood school, partial magnet, or full magnet school, population size, and the school grade.

Statement of the Research Problem

Although a robust volume of studies on teacher retention exists, we do not know enough about how certification pathways and racial similarity are associated with teacher retention. Some existing research showed the following. In their study on how teacher preparation affects teacher retention, Ingersoll, Merrill, and May (2012) stated that the type and amount of teacher preparation does indeed affect teacher attrition. Warshauer Freedman and Appleman (2008) stated that a solid core of teachers was needed for the country and they considered whether programs like the TFA, criticized for the short period of commitment by their recruits, and similar preparation programs, were any better.

Ingersoll, May, and Collins (2019) completed a study on racial minority teachers and their recruitment, employment, and retention. The teachers worked in urban schools with high poverty and high student racial minority populations. Although there was a higher percentage of racial minority teachers entering the teaching profession, they had a higher attrition rate than the White teachers. The researchers attributed this finding to the working conditions of the schools being below par. Kohli (2019) voiced that the teaching profession is still a White profession and she shared that only 2.6 percent of the teachers in California are Black women. With that in mind, she put forth that much effort should be invested in recruiting and retaining teachers of color. As noted by Rooks (2018), teacher retention has been steadily decreasing over the decades resulting in the disheartening statistic of almost a twenty-five percent teacher turnover rate in the schools with a lower socio-economic status. In her study, Schmidt (2017) found that the ties with

one's environment and daily life did impact the longevity of teachers in the profession. As in other large school districts, MDCPS leadership has asked similar questions as they work to address teacher retention. The current study is one of many that have been selected to determine possible factors that influence teacher retention in M-DCPS. As a problem of practice, this study aimed to discover the extent to which these factors may be important to the school district.

Purpose of the Study

The purpose of this study was to investigate whether teacher certification pathways (Traditional Preparation Programs or Alternative Certification Programs) and the racial similarity of the teachers to the students at their school were associated with senior high school teacher retention in MDCPS. Additionally, control factors such as the teacher characteristics of gender, age and college major were included in the study since they were found to have associations with teacher retention in prior studies (Blazer, 2011; Evans, 2011; Fairchild, et al., 2012; Hansen., 2004; Sagali, 2018). Furthermore, school characteristics that were control factors found to have possible associations with teacher retention in other studies, were included in this study as well. Said factors are percentage of low socioeconomic students, population size, racial composition of student body, magnet status, and school grade (Brown & Earthman, 2019; Fowler & Walberg, 1991; Lochmiller et al., 2016).

Rationale

With research showing such alarming statistics of approximately one third teacher attrition in schools, M-DCPS district liaisons and Florida International University's

Educational Leadership and Policy Studies leadership team collaborated on a plan to gain insight into teacher retention and possible causes. It was determined that the school district would be able to provide the necessary administrative data for studies to be conducted on teacher retention in the school district. Cohort 1 of doctoral students from Florida International University (FIU), who were also school site administrators, were tasked dissertation topics related to teacher retention. The design of the study approximates that of the studies noted hereafter. Researchers such as Hansen, Backes, and Brady (2016) investigated alternative certification, most specifically teacher attrition and mobility during the Teach for America (TFA) clustering strategy in Miami-Dade County Public Schools. The researchers collected administrative longitudinal data from Miami-Dade County Public Schools' teacher personnel files between 2008-2014. The variables included hire data, assigned schools, time and manner of exit from the original placement. This study is aligned closely to the intention of this current study in that, senior high teachers, who enter the teaching profession for M-DCPS via alternative certification pathways, was investigated, including Teach for America and Teachers of Tomorrow members. As noted in the previously shared studies, this study compares the relationships of the rate of senior high teacher retention of participants from different certification pathways. This study also looked at the racial similarity, or lack thereof, between the teacher and the school. Therefore, my research question includes a combination of variables which differs from variables that have been investigated in other studies in that it combines the possible association of certification pathways and racial similarity with teacher retention.

Research Questions

The study is guided by the following research questions:

Is racial similarity (defined as the percentage of students at the school of the same race as the teacher) associated with teacher retention?

Is certification pathway that the teacher takes to obtain a teaching license associated with teacher retention?

Statement of Significance

The significance of this study is that it provides additional information on factors that may possibly be related to teacher retention. We are witnessing, in the United States, significant changes in the ethnic composition of the population. As evidenced in the comparison of the data for the 2010 and the 2020 census for the United States, the white alone non-Hispanic population decreased by 5.9 percent (U.S. Census Bureau). The following studies concur with this study in that as the non-White population continues to rise in Miami, Florida, educational policy needs to be adjusted to account for the varying needs of the new majority. Kannan (2019) shared an impactful statistic that in schools in 1966, twenty percent of the student body was comprised of racial minority students and by 2005, the percentage had increased to forty-two percent. The numerous changes in languages, traditions, and expectations require an improvement in cultural intelligence by the educators. Kannan (2019) also stated that there were resulting educational inequalities across the various groups. Furthermore, having the right disposition to teach could be intertwined with feeling comfortable in ones' surroundings due to a similarity in race between the teacher and the majority of the student population for the school. The school

district does have relatively high numbers of racial minority teachers; consequently, determining whether racial/ethnic similarity of the teacher to the community within which they teach was thought to be significant.

Another component of this study was to shed light on the possible effectiveness of hiring alternatively certified teachers. Sutcher, Darling-Hammond, and Carver-Thomas (2019) shared that a review of 2016-2017 state teacher workforce reports by the Learning Policy Institute revealed that 36 states had 87,000 teaching positions filled by uncertified teachers. Some states like Florida do not report such data but did share that they had 6,638 unfilled vacancies in the 2017-2018 school year. Rose and Sughrue (2020) shared that in the 1980s, teacher shortage resulted in an increase in the number of alternative certification programs and up to the present day, such programs can be found in virtually every state in the United States. With the increased calls for accountability, it is imperative to find individuals licensed to teach who are fully prepared in content knowledge and aware of their professional duties. Rose and Sughrue (2020) shared that alternatively certified teachers were found to be ill-prepared for the demands of the teaching profession since their exposure to the job requirements are usually brief and does not encompass the facets of student diversity and daily teaching routines. Brantlinger and Smith (2013) found that since alternative certification programs afforded a rapid entry into the teaching profession, individuals who would not have considered the profession, entered teaching. This then gave rise to increased diversity in the field of teaching. Hence, determining which certification pathway leads to retaining teachers at an increased rate could be of importance to the school district. Such information could

possibly be useful not only for human capital management but could also be impactful for the formulation of educational policies. Furthermore, much research has shown that losing experienced and highly effective teachers negatively impacts student performance (Sun, 2018); therefore, reducing teacher retention is beneficial to the stakeholders of Miami-Dade County Public Schools.

Delimitations/Assumptions of Study

I assumed that the data files shared by the school district were accurate. There are a few delimitations for this proposed study. Only data for high school teachers were included in the study; hence, teacher retention at other levels, such as elementary and middle schools, were not measured. In order to measure retention, I coded the teachers as a) Stayers & Transfers and b) Leavers. There may be differences between Stayers and Transfers that this study cannot detect. Since the data utilized in this study were secondary administrative files, actual reasoning for employment decisions were not recorded. There was no distinction as to whether the teachers left voluntarily or if they were terminated. Furthermore, charter high schools and technical centers were not included in the data set for this study. Any other factors, such as teachers' experience of working conditions, were not accounted for in this study based on its design. In compiling these data, the various AC programs were grouped under the pathway of alternative certification as compared to traditional preparation programs regardless of the differences in AC programs such as recruiting methods and institutional design. This came about as it became evident that the data provided by the school district was not recorded in such a manner as to distinguish between the various alternative certification programs. Although the term racial similarity/ethnicity is utilized, it is necessary to point

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out that the percentages measured in the data set were the race that the participants self-identified as being a part of during their onboarding process into the school district. In the data that the school district provided, there was a field for race and one for ethnicity. Although some teachers marked themselves as Black under the race category, they also selected Hispanic/Latino under the ethnicity field. For some of the teachers who considered self-identified as White for race, they selected Hispanic as their ethnicity. The categories for the teachers in the raw data were Hispanic, White, Black, Asian, or Other, whilst the students had Hispanic, White, Back, Asian, American Indian and Pacific Islander. Those last two groups and the teachers who were coded as "Other" in the race field were not included in the analysis. It is important to keep in mind that the terminology utilized for the various racial/ethnic groups were used as provided by the data from the school system.

Definition of Terms

TP- Traditionally Prepared teachers are those individuals who completed a four-year degree in education, inclusive of a semester long internship and they have shown mastery in a subject area. Individuals who complete this program are eligible for a professional educator's certificate. The state of Florida refers to this as Initial Teacher Preparation (ITP) Programs.

AC – Alternative Certification is a route for individuals who earned a baccalaureate degree outside of education and then seek alternate means of obtaining teacher certification while teaching students. The Florida Department of Education refers to this pathway as Educator Preparation Institutes (EPI). For the purposes of this study, the term

AC will also encompass the Professional Development Certification Programs (PDCP) which are Florida school district competency-based programs within which professional preparation and education requirements are met, for example MINT in M-DCPS.

MINT - Mentoring and Induction for New Teachers to M-DCPS

ACP- Alternative Certification Programs are offered by different organizations such as Teach for America (TFA) or Teachers of Tomorrow (TOT).

Magnet Status-

- Traditional School- a regular neighborhood school
- Partial Magnet School- a combination of a regular neighborhood school with a magnet program in the school. To increase the school population and to provide an attractive program at the location, the school district's Schools of Choice office created an academy that falls within the parameters of a highly coveted instructional program. Students must apply to gain admittance to the particular magnet program.
- Full Magnet School- the entire school is divided into academies. All prospective students, including neighborhood students, must apply via the district's Schools of Choice program to obtain acceptance into an academy within the school.

Racial Similarity- The proportion of students who share the same race as the teacher

M-DCPS: Located in South Florida, Miami-Dade County Public Schools is the fourth largest school district in the United States of America.

Summary

As a former Biology teacher for 10 years and a school site administrator for 20 years, I have born witness to the reduction in length of service for my colleagues and employees. Therefore, when my cohort of doctoral students was charged with completing dissertations in the area of teacher retention, the importance of that choice resonated with me. As I delved into the course work for my program and then even more so into my research, the magnitude of the importance of this work was highlighted. M-DCPS evolved into the fourth largest school district in the U.S. and with that came the growing pains of providing a stellar education in an urban melting pot of students from over 119 countries. The instructional staff is similar to the student body in that it is also comprised of a high percentage of minorities. The rate of teacher attrition is a concern for the district as it has been shown that it leads to a loss of teaching expertise which thereby negatively impacts student achievement. Hence, this quantitative study is of value as it contributes information on possible associations of teacher certification and racial similarity with teacher retention, which could be utilized to inform district policy.

Organization of the Remainder of the Study

Chapter 2 begins with a review of research on teacher retention and the possible causes of it (Brandehoff & Gist, 2019; Donaldson, 2012; Ingersoll, 2011; Rogers-Ard et al.,2019), The chapter then goes on to elaborate on teachers having organizational fit with their schools and how that reduces teacher turnover (Little and Miller, 2007). The concept of direct proportionality between student performance and teacher retention as

shared by Barley and Beasley (2007) is then discussed. As the chapter progresses, certification pathways is defined and the history of AC programs in education is reviewed (Eckert, 2011). With its high need for teachers, M-DCPS accessed numerous alternative certification and GYO programs to obtain teachers (Blazer, 2012). With a distinction apart from cultural match, racial similarity research information is discussed. Then teacher characteristics of age, gender, and college majors, research on each of the variables and their associations with teacher retention were presented. As chapter 2 concludes, information on school characteristics such as magnet status, Title 1 status, population size and school grades are shared.

Chapter 3 discusses the methodology and research design of the study. The reasoning behind the selection of the data for the model from the data that were provided by M-DCPS is shared. Next, the counts and percentages of each subgroup was presented. This included independent variable information on certification pathways and racial similarity as well as teacher characteristics of age, gender, and college majors and school characteristics of magnet status, Title 1 status, school grades and population size. Then, the utilization of IBM's SPSS software to run various analyses including correlations, cross tabulations, and logistic regression was reviewed. Finally, the chapter concludes with the discussion of data integrity.

I reported the findings of my study in Chapter 4. Of all the factors in the study, the correlations data showed Title 1 status and school grade C as having the strongest relationship. I ran logistic regression analyses on two models and discussed possible associations between the factors in the models. Both models had teacher certification

pathway, age, gender, college major, magnet status, population size, Title 1 status and school grade C. Model one included racial similarity and Model two had race as a variable. Model one (racial similarity) showed that racial similarity, age, and population size had weak but statistically significant relationships with teacher retention. Model two (race) revealed that White and Black subgroups in addition to age, school grade C and population size had weak, statistically significant associations with teacher retention. For both models, teacher certification pathways did not have a significant association with teacher retention.

In Chapter 5, I discuss the study's findings and the possible influence on teacher retention. The implications for practice, policy, and research are addressed and recommendations are made for M-DCPS district personnel. This chapter sums up all of the previous chapters.

Chapter II: Literature Review

Introduction

This literature review examines prior research on some possible causes for teacher attrition. After that introduction, a differentiation between teachers who leave the school site and those who leave the profession entirely, ensues. Furthermore, the literature review speaks of the effects of teacher characteristics such as age, gender, and college majors on teacher retention. Then, findings on school characteristics such as population size, school grade, percentage of low socioeconomic students, and magnet status of schools as they relate to teacher retention is discussed. Finally, research on certification pathways and racial similarity and teacher retention is shared. Clarification is provided on the two paths to teacher licensure as addressed in this study, Alternative Certification (AC) and Traditional Preparation (TP) programs. Then, I share empirical research on racial data for teachers and students and the concept of racial homophily. To differentiate between the two concepts, I discuss cultural match and racial similarity. Finally, the research attempts to elucidate the relationship between the variables and their impact on teacher retention.

Possible Causes for Teacher Attrition

Numerous researchers have shared that the problem of staffing schools is a result of teachers leaving the profession due to job dissatisfaction that could be attributed to various reasons, including inadequate compensation, unsatisfactory teaching conditions, lack of administrative support, parental response, and the teaching profession not being held in high regard (Brandehoff & Gist, 2019; Donaldson, 2012; Ingersoll, 2011; Rogers-Ard et al.,2019). One of the areas in research that ties together a number of possible

causes for teacher attrition is the concept of the importance of how well the teachers' social identity is in common with the school within which they work. The school site is not only the edifice but all of the human interactions, school culture, daily conditions that persist on campus. Yin Yin et al., (2017) shared Kristof-Brown's statement that Person-Organization Fit Theory generally refers to "the compatibility between individuals and organizations" (p. 161). They found that a person's affective commitment is greatly impacted by the organizational culture. Yin Yin et al., (2017) found that a person's affective commitment is greatly impacted by the organizational culture, and they shared that if employees identify their values with the values of the organization, they commit emotionally to the organization's culture. Smircich (1983) defined organizational culture (OC) as "key assumptions, beliefs, norms, and values shared continuously by members of an organization" (p.345). Thompson (2014) determined that the phenomenon of "fit" was a factor that positively influenced teacher retention. Slade et al., (2016) stated that values congruence and work environment congruence were both related to job satisfaction and organizational commitment which leads to numerous positive results including a reduction in teacher turnover. Little and Miller (2007) shared that person-organization fit theory supports personnel decision making and ultimately teacher turnover. Even though this theory is not used directly for this study, it informs the thinking of how "fit' aligns with cultural match and the socialization processes that go with certification. Finding the factor or factors that have the most significant impact on teacher retention continues to be the spark for much ongoing research.

The loss of teachers has been a primary concern as discussed by numerous researchers who have found a direct proportional relationship between high teacher

attrition and low student performance (Barley & Beasley, 2007; Buchanan, 2010; Jacobson, 1998; Scheopner, 2010; Swanson, 2011; Weiqi, 2007). Barley and Beasley (2007) shared in their study of High Performing High Needs (HPHN) versus Low Performing High Needs (LPHN) schools that teacher retention was one of the 13 factors that principals deemed critical in moving schools towards beating the odds. Zhang (2006) supports this thinking that high teacher turnover rates equate to a significant financial and human capital loss for education. Consequently, determining impediments to teacher retention is of great import for all school districts, including the M-DCPS district.

As in this study, researchers and policy makers differentiate between teacher retention in terms of leaving the profession and teacher retention from leaving for a particular school (Costigan, 2005; Dahlkamp et al., 2017; Hilton, 2017; Holme et al., 2017). There are some similarities in disruption for schools when teachers leave a particular school site or leave the profession; however, the reasons for leaving do differ. Hancock and Scherff (2010) listed family reasons, retirement, child rearing, salary and pursuit of another career as reasons for teachers leaving the profession. They stated that teachers transferred mainly due to heavy workload, student behavior, and lack of influence over school policy. Donaldson (2012) shared that the teachers' maturity level affected whether the teachers remained at their school site or performed a different role in the education field. Keeping said prior research in mind and based on data that were available from the school district's administrative files, the model for this study includes teacher certification pathways and racial similarity as the independent variables. Bogan et al. (2016) offered that teacher attrition depends on there being a similarity between a teacher and the student population of their respective school sites. In the United States,

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Hispanic and Black teachers continue to be in the racial minority with Black teachers not rising above 9 percent in representation in the U.S. teacher workforce over the past fifty years (Farinde-Wu et al., 2019). M-DCPS's racial minority teachers for all schools in the district are noted as follows: 54.8 percent Hispanics and 25.1 percent Black (M-DCPS Statistical Highlights 2019-2020). In her study in M-DCPS, Blazer (2012) found that racial minority teachers tend to lead the way in difficulties in recruitment and teacher turnover (Blazer, 2012).

Retention of High School Teachers

Adams, Plisch, and Plantt (2019) shared a statistic from the U.S. Department of Education's longitudinal study which found that after the first five years of teaching, high school teachers had an attrition rate of 22 percent. They stated that high school teachers in their study shared numerous reasons for their contentment with their profession, including the comradery with their colleagues and the annual calendar with sufficient breaks. For those who taught non-tested subjects like Physics, they felt they had academic freedom. There were also teachers who had sentiments contrary to that, especially those who taught courses with high stakes end of course testing. In their study, Nguyen, Pham, Lam, Crouch, and Springer (2020) proffered that the odds of leaving the teaching profession was 31 percent higher for high school teachers than for elementary school teachers. Similarly, other researchers found that elementary school teachers reported higher levels of organizational fit than high school teachers in a study of 548 teachers in Los Angeles which resulted in lower attrition rates for elementary teachers as compared to high school teachers (Fuller, Waite, & Torres Irribarra, 2016). Finally, an Arizona school district study showed the rate of attrition for the high school teachers in a

mentoring program for new teachers, 22 percent within the first three years and another 32 percent of the teachers moved to other schools within the district (Patterson, Roehrig, & Luft, 2003). The causes for the results as discussed by those researchers included the challenges of teaching assignments, workload, a lack of collegial interaction, and limited professional development opportunities.

Teacher Retention and Certification Pathways

This literature on certification pathways discusses how the shortfall of providing sufficient numbers of certified teachers via Traditional Preparation Programs (TPP) from universities gave rise to alternative certification programs. Sutcher et al. (2019) asserted that enrollment in teacher preparation programs saw a 12 percent decline with 35 percent dropping to 23 percent, and fewer candidates are completing the preparation programs. Also, the research discusses how Alternative Certification Programs (ACP) came about and how they have evolved to address specific needs in most states. Also included are Grow Your Own (GYO) programs and other alternative certification programs like Teach for America and details of interest for some programs. The pros and cons of alternative certification compared to traditional preparation programs are also discussed.

How do teachers obtain their license to teach? Aspiring teachers may obtain their professional license via the Traditional Preparation (TP) program or, through an Alternative Certification (AC) pathway. The TP program involves completing an accredited, baccalaureate level college or university-based teacher education program, inclusive of a teaching internship (Zhang & Zeller, 2016). As discussed in the research, traditional preparation programs also face challenges in that they are not uniform in the level of difficulty and expectations. The National Council on Teacher Quality (2014)

shared that a number of traditional programs tend to award unwarranted A's to the student teachers which results in honors level designations in the college of education being more than in other college majors. This notion includes the suggestion of the need for the curriculum to be adjusted to offer more criterion referenced work and problem-solving assignments to better prepare the teacher candidates for the realities of teaching (National Council on Teacher Quality, 2014). Various versions of AC programs exist in all states (Hanna & Gimbert, 2011). One AC pathway involves a professional having a Bachelor's degree in another field and then beginning to teach immediately, without taking any education courses. Another AC pathway is for non-education majors to take part in an alternative licensure program that involves a brief orientation or preparation to ease the person into teaching.

According to Eckert (2011), as a part of Title V of the Higher Education Act of 1965, a National Teacher Corps (NTC) program was proposed. She disclosed that "corps members were to be dispatched in teams consisting of one expert and four novice teachers to local school districts, at the request of the district" (Eckert, 2011, p. 935). The NTC quickly became unpopular with the universities who saw the concept as a slight against their traditional preparation programs. Eckert (2011) reported that "because of the resistance of faculty and the highly political denationalization of the corps, the program was unable to create a cohesive impact" (p. 941). The commitment to funding changed and the AC programs that were created across the nation all varied in their design. Uriegas et al. (2014) discussed that ACP "were designed to mitigate teacher shortages as well as fast track interested individuals into education" (p. 1). They continued to share that, graduates with non-education backgrounds, are given a short introductory training

and are placed in classrooms to teach while they receive professional development. Hanna and Gimbert (2011) similarly discussed the historical perspective on alternative pathways to teacher certification which included the intent to reduce the pressure of teacher shortages and the possible hiring of quality instructors of the education system. This led to an increased demand for quality teachers which could not be met by only traditional preparation programs. Some researchers posited that overall, the U.S. does have sufficient numbers of teachers being prepared each year; however, the issue is that there is usually an excess of elementary teachers but shortages in the areas of Math, Science, and Special Education. Teacher shortage can also be identified by geographical location and rural areas were the geographical areas with the highest percentage of need (National Council on Teacher Quality, 2018).

Researchers like Rogers-Ard et al. (2019) have pursued the idea that alternative certification programs, termed Grow Your Own Programs (GYOP), might be the solution to teacher retention. They shared the National Center of Education's 2015 statistics that "of the 3.2 million public school teachers educating the nation's 49 million children, only six percent are Latinx, and seven percent are African American" (Rogers-Ard et al., 2019, p. 25). The authors posit that GYOs must seek to staff the schools in the communities of color with residents of said communities while ensuring that they receive full support to attain the appropriate training including culturally responsive courses. McCarty and Dietz (2011) shared that "alternative paths to teacher certification account for one third of new teacher hires" (p. 47). Additionally, each state has a version of an Alternative Certification Program (ACP). Unruh and Holt (2010) imparted a similar

statistic that nearly one third of all new teachers enter the profession through alternative

certification methods.

Some non-supportive notions of AC programs have been shared in the literature

regarding AC programs such as Humphrey and Wechsler's (2007) thinking that there is

no clear definition of what constitutes an AC program and Mungal (2016) who shared

that AC programs focus on teacher's experience in the classroom rather than academic

training. Powell (2008) reflected on the practice of alternatively certifying individuals

with an undergraduate degree via a fast track. He shared that not everyone is cut out to be

a teacher and that the individuals should have teaching as a primary career choice, not a

secondary choice because the candidate needs to care about students learning and be able

to inspire students to learn. In spite of the not well received attempt by President Johnson

four decades earlier to incorporate AC programs nationally, in 2001 the United States

Department of Education made grant money available for alternative certification

programs in education in order to staff challenged schools with teachers to increase

student achievement. Per the United States Department of Education (2008), such grants

were in the amounts of $468,000 awarded to over ninety-three recipients.

In some states, to diversify the teaching pool and to strengthen the pipeline

between students and teachers, alternative certification programs like, Grow Your Own

(GYO) programs, were formed based on the experiences of the specific communities and

their ability to collaborate and plan with institutions of higher learning. The 2000 Florida

State Statutes 231.17(7)(a) declared that by 2002, the department of education and,

subsequently school districts in Florida, were to develop teacher preparation programs for

those who were not able to complete the certification process via the traditional avenue.

M-DCPS created the MINT program when the state also passed Florida Statute 1012.56

which called for support being provided for beginning teachers. MINT has three tracks

starting with education majors who are new to the profession, non-education majors new

to the profession, and experienced teachers new to the school district. All branches of the

program involve varying numbers of hours of professional development, learning walks,

and coaching by a mentor. The MINT participants, who are non-education majors, must

have a Bachelor's degree and a temporary teaching certificate or statement of eligibility

from the department of education. The mentors may have up to two mentees and

maintain meeting logs on which at least 35 contact hours per mentee must be

documented. Mentors are given a stipend once the paperwork is submitted.

A report on teacher shortages and surpluses as affected by teacher preparation

programs in all 50 states featured Florida as one of eight states that collects information

on the number of teachers completing the preparation programs (National Council on

Teacher Quality, 2018). However, it was noted that although Florida provides

information on critical shortage areas, the data is not listed by program, the information is

used for planning by districts, but the authors suggested that the districts could use the

information to predict areas of future shortage. As shown in the research, some GYO

programs arise from the needs of the local communities; hence, the participants are from

the area and have connections to the communities. Christianakis (2019) explained that

although GYO programs are a version of AC programs, they differ in that GYO programs

recruit non-traditional candidates from within the communities within which they reside.

Hanna and Gimbert (2011) reviewed ACP like Grow Your Own (GYO) programs,

namely Teach for America (TFA) and suggested that unlike TP programs which included

applicants from the bottom third of college cohorts, this program "targeted and successfully recruited a substantial number of new teacher recruits from the top third of graduation college cohorts" (Hanna & Gimbert, 2011, p.42). Some such programs have been in existence for decades, yet the data shows the majority of participants do not become career teachers. Hanna and Gimbert (2011) concurred with the finding that although the recruitment of top tier teachers is a strength of TFA, the organization does face the challenge of teacher retention after the two to three-year contract expires. Hence, we are brought to the question regarding the commitment level of the AC teachers. With the premise that they bring real world experience as well as strong subject area concentration from their undergraduate degree, it would arguably lead to an increase in teacher commitment and would positively impact teacher retention.

In her discussion of AC programs, Haynes Laraway (2003, p.15) shared a statement made in 2001 by Emily Feistritzer, the then President of the National Center for Education Information (NCEI) in Washington D.C. In her discussion of how AC teachers performed better on certification exams than traditionally prepared teachers, Ms. Feistritzer stated that

> "Early evidence indicates that these alternative routes are effective in getting more people of color into teaching and in recruiting, training and placing teachers in classrooms where the demand for teachers is the greatest"

Rogers-Ard, et al. (2019) stated that Grow Your Own Collective (GYOC) programs were originated to help with the diversification of the teaching force by recruiting minorities with intentionality. Thomas (2018) purported AC programs like TFA "contributes to the deprofessionalization of teaching by circumventing traditional teacher education structures and allowing 'underqualified' teachers into the profession" (Thomas, 2018,

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p.187); furthermore, "TFA teachers displace experienced teachers from the local community" (Thomas, 2018, p.187). Humphrey and Wechsler (2007) stated that there is no clear definition of what constitutes an AC program. Mungal (2016) shared that AC programs focus on teacher's experience in the classroom rather than academic training. In their study of seven alternative certification programs, Humphrey, Wechsler, and Hough (2008) found that effective certification programs placed new teachers at schools that had "strong leadership, a collegial atmosphere, and adequate materials". Additionally, the programs that were successful provided mentors who collaborated with novice teachers, on lesson planning, and provided the novice teachers with constructive feedback after classroom observations.

The data from Zhang and Zeller's (2016) investigation showed that short-term retention rates were comparable for teachers who were traditionally prepared and those who were alternatively certified. When they looked at the long-term rates of retention, the traditionally prepared teachers had a higher percentage of retention than the alternatively certified did. McCarty and Dietz (2011) found that between 35 to 40 percent of new teachers were alternatively certified. As shared by Blazer (2012), some examples of AC programs in Miami-Dade County Public Schools include Teachers of Tomorrow (TOT), Teach for America (TFA), The New Teacher Project (TNTP), The American Board of Certification of Teacher Excellence (ABCTE), and Troops to Teachers (TTT). As shared on their website, TOT is an online alternative certification program that was founded in 2005, has certified over 70, 000 teachers nationwide, and takes a year to complete. Most of their candidates complete the AC program while they teach fulltime. In 2003, 35 TFA

corps members were strategically placed in M-DCPS Title 1 schools. By 2013-2014

school year, over 354 TFA corps members were dispersed across 43 schools in the

district (Backes, Hansen, Xu, & Brady, 2019). Data suggests that two-thirds of the

teachers in programs such as TFA left the profession once their contract expired in two to

three years (Swanson, 2011). Participants in such programs were not considering making

teaching a long-term career but used it as a stepping-stone to more lucrative careers

(Costigan, 2005). There is no decisive data on whether teachers who are alternatively or

traditionally certified have more longevity in the profession since AC programs all vary

greatly (McKibbin, 2001). Teachers, who entered the profession after having completed a

TP program, tended to remain in the profession longer (Darling-Hammond, 2003;

Darling-Hammond, Holtzman, Gatlin, & Heilig, 2005; Grossman & Loeb, 2010).

Losing teachers in AC programs is costly financially and could also result in an

educational loss of learning gains (Hansen, Backes, & Brady, 2016). McDiarmid and

Wilson (1991) posited that AC teachers had strong content knowledge; however, they

lacked the preparation to impart their knowledge. This negative impact on student

learning was reflected in the difference in student achievement scores in a study

conducted by Hawk, Coble, and Swanson (1985) in which the students of TP teachers

were shown to outperform students of AC teachers. Backes, Hansen, Xu, and Brady

(2019) shared that TFA corps members have been shown to positively affect student

scores on state assessments in math as compared to other teachers in their schools. Other

studies showed no difference in student achievement for students who were taught by

teachers certified by either the alternative or traditional pathways (Sindelar & Marks, 1993; Guyton, Fox, & Sisk, 1991)

School districts continue to explore other possibilities by collaborating with universities and devising Alternative Certification (AC) routes to recruit, hire, and retain quality teachers. The work of McCarty and Dietz (2010) showed that states with the highest proportion of AC teachers had a little under 90 percent of them remaining in the teaching profession after five years. Most recent data from the Secretary's 10th Report on Teacher Quality from the U.S. Department of Education 2016 showed that of the almost 27,000 teacher certification programs in the country, 70 percent were TP programs and 30 percent were AC programs. Just shy of 100 percent of the teacher preparation providers stated that when past hiring practices were taken into account, the institutions' graduates were likely to teach upon their completion of the respective programs. Conversely, Kearney (2008) declared that half of the teachers who completed their preparation programs did not enter the teaching profession. Studies by researchers such as Ingersoll, Merrill, and May (2012) posed that traditional certification pathways usually resulted in an increase of the professional's commitment to the profession. Swanson (2011) found of the teachers who embarked on a teaching career, within the first five years, 30 to 50 percent of them left the teaching profession. According to data on M-DCPS teachers which was retrieved by Blazer (2006), of the 199 teachers surveyed during an exit interview, 25.6 percent were planning on continuing to teach in other areas of the country, 14.6 percent were planning to continue working in education but not in the capacity of a classroom teacher, 15.1 percent were planning to work outside of the

field of education, and 44.7 percent of the exiting teachers had no future employment plans. To address the alarming situation of high teacher turnover, various policies to hire and retain quality teachers have been charted and implemented in the United States. Since MDCPS serves a large number of disadvantaged youth and the schools that the AC teachers are historically placed at are the more impoverished schools in the school district (Blazer, 2012), certification pathway is an important factor to consider.

Teacher Retention and Racial Differences

Racial Data for Teachers and Students

After analyzing data on over 225,000 teachers, Van Overschelde and Wiggins (2020) stated that the supply-versus-demand gap for teachers would continue to increase over the next ten years. In addition to certification pathway, they also found differences in teacher attrition depending on race. Bucciferro (2017) stated that although race could be an asset, it is "a fundamental aspect of historical inequality and institutions" (p. 1103). Diversity continues to increase in the population for the U.S. and; therefore, is mirrored in the student population in our schools as the landscape of ethnic composition of the student body for schools across America keeps changing. Brantlinger et al. (2020) and Green (2008) shared that between 2001-2008, the initiative of No Child Left Behind, which involved hiring only highly qualified teachers, resulted in uncertified minority teachers being replaced by White or Asian teachers. This caused a 14 percent decline in Black teachers and a two percent decline in Hispanic teachers. Rogers-Ard et al. (2019) discussed that of the 3.2 million teachers in the U.S.A., six percent were Latin-x and seven percent were African American. In their study, Adams and Dial (1994) found that

White teachers were more likely to leave the school district than the Black and Hispanic teachers. Sun (2018) shared that, in North Carolina, the Black teacher retention rate was four percentage points lower than White teachers. Grooms, Mahatmya, and Johnson (2021) found in their study that educators of color comprised 20 percent of the teaching work force; however, the rate at which they leave the profession is 25 percent higher than White teachers.

Warren (2014) shared that "students of color are expected to become the majority of all students in public schools across the country within the next ten years" (Warren, 2014, p.13). Madda and Schultz (2009) cited an example of over 90 percent of the students in Chicago Public Schools are students of color with approximately 85 percent in the lower socio-economic bracket. Of the 334,00 students in M-DCPS, six and a half percent identify as White Non-Hispanic, 19.5 percent as Black Non-Hispanic, 72.2 percent as Hispanic, and 1.8 percent as Other. Sun (2018) shared her projection that a little over 50 percent of the prek-12 student population in the U.S.A. would be comprised of minorities by 2024.

Homophily

Bruno, Rabovsky, and Strunk (2019) defined homophily as "an attraction between parties based on similarity" (p. 1691). Due to the social nature of the teaching profession, they stated that it was important to include homophily especially as it relates to race and gender. Their findings suggested that racial homophily was associated with higher teacher retention rates for new teachers in the Los Angeles Unified School District. Loeb, Darling-Hammond, and Luczak (2005) declared that racial composition was shown to be a significant predictor of teacher attrition. Boyd et al. (2011) posited that the teachers

who work in low socio-economic areas with students of color, leave the profession at an increased rate as compared to teachers in 'White' neighborhoods with higher socioeconomic status. Teachers, who are hired to work in rural settings, may leave teaching sooner due to feelings of geographic and emotional isolation if they are not from that area (Boggan et al., 2016).

Teacher Retention, Cultural Match and Racial Similarity

A study on the recruitment, employment, retention of minority teachers was conducted by Ingersoll, May, and Collins (2019). They analyzed 1980-2013 data from the National Center for Education Statistics' School Staffing Survey and the Teacher Follow-up Survey to ascertain possible causes for the higher attrition rate of minority teachers as compared to White teachers. They argued that a cultural match for students with their teachers was important for the following three prime reasons- minority teachers are role models, they are knowledgeable on the inner workings of the culture, and minority teachers would have a higher likelihood of becoming committed to the community. Cultural match involves not just the teacher's ethnicity but the similarity of the teacher's background to that of his/her students. Boggan et al. (2016) defined cultural match as teachers working in schools that are analogous demographically and geographically to their own background. Cultural Match Theory states that a teacher who shares the same cultural background as the students, will likely be more effective in educating the students (Achinstein & Aguirre, 2008). Grooms et al. (2021) similarly discussed the positive effect teachers of color had on the achievement of minority students in predominantly White schools in Iowa.

Racial match/ similarity refers to the racial percentages in the teaching staff as compared to the percentage of ethnic groups in the student population (Renzulli et al., 2011). As shared by Mollica et al. (2003), "…homophilous relationships can serve as an important source of social support for minorities in organizations" (p. 123). In their study, Mollica et al. (2003) found that racial minorities tended to form homophilous connections more so than the White participants. Some researchers found that White teachers were more negatively affected by racial mismatch than minority teachers (Dworkin, 1987; Renzulli et al., 2011). Newton, Rivero, Fuller, and Dauter (2018) shared that the empirical evidence on racial match is insufficient and inconclusive. Fairchild et al. (2012) declared that racial congruency exists when the teacher shares the same race as the majority of the student population for a particular school site and that their data reflected increased job satisfaction in such instances. Sun (2018) discussed that "demographic discrepancy" of the ethnicities of the students and teachers possibly add to the lower academic performance of minority students. Rogers-Ard, et al. (2019, p. 25) posited that minority students in low-income neighborhoods are more likely to be taught by less qualified, racially dissimilar teachers than White students. Renzulli et al. (2011) utilized data from the 1999-2000 SASS and the TFS to ascertain the effect of racial mismatch and school type on teacher satisfaction and retention. Using multinomial regression analysis, they found that White teachers had higher rates of job dissatisfaction when the majority of their students were Black. The results were that the rate of teacher turnover increased. Mueller et al. (1999) suggested that Whites are uncomfortable with such a proportion as reflected in their findings that a racial mismatch has a more negative impact for White teachers than it does for Black teachers. Similarly, Feng and Sass (2017) found that the

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odds of White teachers leaving schools with larger non-White students was higher than minority teachers. Grooms et al. (2020), and Bristol and Martin-Fernandez (2019) concurred that racial matching is an important factor that contributes to a positive school climate and teacher retention. Fairchild, et al. (2012) opined that numerous racial situations or incidences are evident in urban high schools whose student body is comprised of a high percentage of minorities. The authors posit that such interactions take place when people are brought together from very different backgrounds and cultures. Since M-DCPS is located in a very diverse community, racial similarity is a variable that is worth examining.

Factors Associated with Teacher Retention

As in a plethora of similar research, this study will elaborate on teacher characteristics and school factors and their association with teacher retention (Ashiedu, & Scott-Ladd, 2012; Greenlee & Brown, 2009; Johnson, 2006). As they relate to variances in retention rate, this dissertation reviews scholarly findings on teacher characteristics such as demographics, like gender, college major, and age (Adams & Dial, 1994; Miller et al., 1999).

Teacher Characteristics

Teacher Retention and Age

Teacher retention as a function of age is inconsistent. Mertler's (2002) study on the job satisfaction of secondary teachers demonstrated that there was a significant difference with the younger teachers and those towards the end of their careers having a higher job satisfaction. This is contrary to teacher turnover data as demonstrated in the following study. Sass et al. (2012) conducted a study on teacher retention data that

spanned twenty-two years in Texas. At the conclusion of the study, Sass et al. (2012) attributed age with being a reliable predictor of teacher attrition. They shared that teacher attrition was higher for novice teachers. Older teachers also had a high attrition rate; however, that may be due to the impact of retirement. In 2007 and 2008, Gray et al. (2015) conducted a longitudinal study on 1,990 first year teachers' mobility and retention rate. They found that there was a six percent loss of teachers less than thirty years of age, while teachers who were above thirty years old, had a larger loss of eleven percent attrition. Hansen, Lien, Cavalluzzo, and Wenger (2004) found that in M-DCPS, the rate of teacher attrition tended to be higher in younger teachers and even more so for the teachers who did not have an education background. Kearney (2008) supports the notion that the best and the brightest young teachers tend to leave the profession, especially since corporate America competes for them.

Teacher Retention and Gender (Women)

Research has shown contradictory findings with regard to gender and teacher retention. Sagali (2018) found that women tended to leave the profession, more frequently than men, due to work-family conflicts. Hill and Jones (2020) shared that there was evidence of gender having an impact on teacher retention. Their work showed that male teachers were more likely to remain in their profession more so than female teachers if they had performance pay. Fairchild et al. (2012) discussed that gender did have an impact on teacher retention; however, their findings were tailored towards the congruency of supervisor/teacher relationships. They expressed that the most pronounced negative gender impact was female teachers and female principals with the most positive

effect being female teacher/male principal; male teacher/female principal). In their study on differences in teacher preparation pathways, Van Overschelde and Wiggins (2020) found that male teachers were two percent more likely to leave the classroom than female teachers. Zirkle, Jeffrey, and Shrewe (2019) asserted that there was not a significant difference between the rate of attrition for the certified technology male and female teachers.

Teacher Retention and College Major (Science and Math)

Another association that is important to consider is the relationship between college major and teacher retention. Evans (2011) and Blazer (2011) discussed that the fields of math and science offer more attractive earning opportunities outside of education; hence, the attrition rate tends to be higher for teachers certified in those areas. Sutcher et al. (2019) asserted that there was an underproduction of math and science teachers. Additionally, with the recent changes in the labor markets that have caused an increase in demand for such qualified personnel, the difficulty to staff these subject areas would increase as well. Hansen, Lien, Cavalluzzo, and Wenger (2004) and Scheopner (2010) discussed that science teacher turnover exceeded other disciplines, including math. In concurrence, Corbell et al. (2010) expressed that approximately 20 percent less AC mathematics teachers remained in the profession as compared to TP mathematics teachers. In their study on secondary math and science teachers, Tai et al. (2006) declared no marked difference in the likelihood of AC teachers leaving the profession or moving to another school site as compared to TP teachers. With such commonality in the

research, it is safe to state that the fields of math and science continue to experience teacher shortages.

School Characteristics

Prior research has shown that several school characteristics seem to be related to teacher retention (Cherng & Halpin, 2016; Monk, 2007; Murphy et al., 2003). Said characteristics include the percentage of students receiving free or reduced lunch (Ashiedu & Scott-Ladd, 2012; Lochmiller, Sugimoto & Muller, 2016), the size of the student body (Brown & Earthman, 2019), school grades (Gulosino, Franceschini, & Harman, 2016), the ethnic composition of student body (Madsen, Mabokela, & Luevanos, 2019), and the magnet status of the school (Kitmitto, Levin, Betts, Bos, & Eaton, 2016). These variables are discussed in the following pages.

Teacher Retention and Magnet Schools

Some studies have shown that school districts included schools of choice programs, also known as magnet schools, in order to provide parents with options outside of their neighborhood schools, and also to address instructional quality and desegregation (Farmer & Farmer, 2000). In their study of public, charter and magnet schools, Newton, Rivero, Fuller, and Dauter (2018) found that magnet high school teachers had 19 percent higher odds of staying at their school than teachers at public schools. From her study on Magnet schools, Evans (2002) shared that magnet school teachers expressed that they felt more empowered at magnet schools, and they believed that they had more leadership opportunities presented to them. This led to an increase in teacher retention.

Teacher Retention and Title 1

In the field of education, schools serving large proportions of low-income students are referred to as Title 1 schools. Research has shown that teacher turnover continues to rise significantly in our Title 1 schools (Simon & Johnson, 2015). These researchers posited that the teachers were not leaving necessarily because of the actual students but in fact as a result of the working conditions at the Title 1 schools. The constant teacher turnover in the Title 1 schools leads to a loss in instructional depth and it hinders the possibility of building strong relationships between all stakeholders (Bryk, Sebring, Allensworth, Easton, & Luppescu, 2010). Carroll, Reichardt, Guarino, and Mejia (2000) found that teachers' decisions to leave a school district, or to move from one school to another, were positively associated with schools having fewer minority students and fewer students on free and reduced lunch programs. From their research, Newton, Rivero, Fuller, and Dauter (2018) found that high school teachers had an increased likelihood of leaving schools that had higher than average percentage of Title 1 students. Hill and Jones (2020) stated that high need schools demonstrated a higher teacher turnover rate. Murphy, DeArmond, and Guin's (2003) data demonstrated significant teacher shortages in certain geographical areas similar to the situation in M-DCPS.

Teacher Retention and School Grades

The literature shows that teacher turnover tends to be less at schools with higher performing students (Guarino, Santibanez, & Daley, 2006; Swars, Meyers, Mays, & Lack, 2009). In her study on teacher retention in Arkansas schools, Hughes (2012) shared

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that student achievement was not statistically significant. She did postulate that it could be attributed to the fact that the majority of the schools in her study were rural, thereby not leaving the teachers with too many employment options. In their study in North Carolina schools, Barnett, Bastian, Darling-Hammond, and Kini (2021) shared that schools where student achievement was higher, the rates of teacher retention were high as well. In a teacher retention study that included two large Florida school districts, Kersaint, Lewis, Potter, and Meisels (2007) shared that Schools with grades of A had a teacher retention rate of 42 percent as compared to schools with grades of B and C who had retention rates of approximately half that rate. Like other the studies reviewed, the authors did indicate that none of the demographic factors should be looked at in isolation.

Teacher Retention and Population Size

Sixty percent of the high schools in this study have student populations that are over 500. Population size, as referred to in the numerous empirical research cited in this study, defines small schools as campuses with less than 500 students and large schools as having over 500 students (Hughes, 2012; Morris & Johnson, 2018). For the most part, the literature suggests that population size does not have an impact on teacher retention. However, some exceptions exist as in Morris and Johnson's study (2018). They found a relatively strong negatively correlated relationship between population size and teacher retention in their study of schools in Maine. They attributed such a result to other factors such as professional development and leadership opportunities.

Summary

The literature reviewed in this chapter showed that teacher retention is at the forefront of educational concerns. The two independent variables, racial similarity and teacher certification pathways were independently addressed in the research. Some results showed that teachers, who enter the profession fully aware of the demands of the job, tend to remain in the profession longer which is evident when comparing TP teachers to AC teachers (Connelly & Graham, 2009; Nagy & Wang, 2007). Hancock and Scherff (2010) shared that a positive school culture could positively impact employees by helping them to overcome perceived problems and challenges, whilst a negative school culture could lead to teacher burnout and increased attrition. Miller and Youngs (2021) conducted a study on first year teacher retention in the United States and found that if the novice teachers felt social congruency with their colleagues, they were more likely to remain in the profession. Although racial similarity and certification pathways are independent factors, they are connected in that when a teacher entered the profession via a traditional pathway, he or she completed a full internship during which the person became familiar with the procedures and culture of the school system, thereby increasing the professional's commitment to the profession (Ingersoll, Merrill, & May, 2012). Little and Miller (2007) and Vekeman et al. (2019) found that teacher commitment and job satisfaction were linked to teacher turnover. As a result of teacher shortage, most principals have had the experience of hiring teachers who are not necessarily the best fit for the teaching position which adds to an increase in teacher attrition (Ellis et al., 2017).

In addition to the two independent variables of racial similarity and teacher certification, this research also encompassed the confounding variables of teacher

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characteristics and school factors. The studies revealed mixed findings as to the associations of the factors which include teacher characteristics of Age (Gray et al., 2015; Hansen, Lien, Cavalluzzo, & Wenger, 2004; Mertler, 2002; Sass, et al., 2020), Gender (Fairchild et al., 2012; Hill & Jones, 2020; Sagali, 2018; Van Overschelde & Wiggins, 2020), College Majors (Blazer, 2011; Corbell et al., 2010; Evans, 2011; Scheopner, 2010) and school factors of Magnet Status (Evans, 2002; Farmer & Farmer, 2000), Title 1 (Ashiedu & Scott-Ladd, 2012; Carroll, Reichardt, Guarino, & Mejia, 2000; Lochmiller, Sugimoto & Muller, 2016), School Grade (Gulosino, Franceschini, & Harman, 2016), and Population Size (Brown & Earthman, 2019). In their longitudinal study of 1999-2000 Schools and Staffing Survey (SASS) and 2000-2001 Teacher Follow-up Survey (TFS), Tai et al. (2006), found that school demographics only had a slight impact on teacher attrition rates.

Chapter III: Methods

Introduction

My literature review in the previous chapter supported the basis for this quantitative study. This section includes my approach and rationale for addressing my research questions. Additionally, I describe my methods and analysis. The purpose of this non-experimental, quantitative study was to explore the potential associations between high school teachers' certification pathways, racial similarity of teachers to the student populations of the schools, and teacher retention in Miami-Dade County Public Schools (M-DCPS). A longitudinal study was deemed the most appropriate format since I was aware that administrative data was available for more than five years prior in the school district. I determined that the outcome of this analysis could be understood quantitatively, while attempting to minimize potential bias and produce accurate results.

Research Questions

The main focus of this study is to examine if there are possible associations between teacher retention, racial similarity and teacher certification pathways. Also explored in the analyses are related teacher characteristics and school characteristics. A review of existing research indicated that a quantitative analysis was the best format to follow. The study was guided by two research questions:

1. Is racial similarity (defined as the percentage of students at the school of the same race as the teacher) associated with teacher retention?

2. Is the certification pathway that the teacher takes to obtain a teaching license associated with teacher retention?

The variables were chosen for this study based on a review of similar studies and in anticipation of discovering whether the associations of the variables is worthwhile information for the school district. The variables were organized as teacher characteristics and school characteristics. The dependent variable in this study is whether senior high teachers either a) remained at their same school or transferred within the school district (Stayers and Transfers) or b) left the school district (Leavers). The teacher and school characteristics are shown in Table 2 and will be further discussed in more detail later in the chapter. Using IBM's SPSS software, the data were recoded and run through logistic regression analyses, crosstabulations, and bivariate analyses.

TABLE 2 *Summary of Teacher and School Characteristics*

Dependent Variable
Teacher Retention: Stayers & Transfers   Leavers
Independent Variables
Certification Pathways: Alternative certification   Traditional certification
Racial Similarity: Percent of students with same race as teachers
Other Characteristics
Teacher Attributes:
Age
Gender: Men   Women
College major: Science   Humanities
School Characteristics:
Magnet status: Full   Partial & Traditional
Population size
School grade: A & B   C
Title 1 Status: Title 1   Not Title 1

Participants and Data Source

The school district employs 5,168 senior high school teachers. The dataset, provided by Miami-Dade County Public School District's Human Resources office contained personnel work history, certification information, and statistical details from the administrative personnel records for all senior high teachers who were working in the school year 2015 and included the employment history for this cohort of teachers through 2020. The data included work location, gender, race, certification pathway, college major, and whether the teacher remained at the same school site for the 5-year period of the study, moved to another location in the district, or left the school system entirely. Other data that included school characteristics were publicly available via the school district's Assessment, Research, and Data Analysis website, and could be matched to the school where each teacher worked in the data file. I merged those files with the main data file that was provided by the district for this study. Although data was provided for all senior high schools, 49 of the 56 schools were included in the sample. Due to data limitations, I removed seven schools that were not 9-12 grade configuration or did not have data for the five years of the study. Additionally, if a teacher had a field missing in the dataset such as certification pathway or college major, I did not include the participant in the study, which resulted in an exclusion of 749 teachers. The school district collected data on race for employees under the categories of White/Not Hispanic Origin, Hispanic, Hispanic White Only, Black/Not Hispanic Origin, Asian or Pacific Islander. Also available was ethnic data for the teachers with the categories of Hispanic/Latino, Not Hispanic/ Latino. For students, ethnic data were documented under the categories of Black, White, Asian, Hispanic and Other. In order for a comparison to

be made with corresponding grouping, I did not include the student groups of Native American Indian or Pacific Islander, since these groups were only available in the teacher race field in the data set. Also, I did not include the group identified as 'Other' (meaning multi-racial) from the students since there was no matching category in the teacher data set. In IBM's SPSS I coded Hispanic/Latino all under Latinx/Hispanic. Consequently, the resulting dataset included 4,298 senior high teachers who self-identified under categories that corresponded with the student ethnic percentages. The participants were unidentifiable.

Table 3 below shows the percentages of the teachers in each subgroup for the data set. As evident the number of Stayers and Transfers comprised two-thirds of the sample population. Approximately 65 percent of the teachers were alternatively certified as compared to being traditionally prepared. Less than 25 percent of the teachers worked at Full Magnet schools and a little more than 40 percent of them were at schools with a grade of C. Sixty-five percent of the teachers were at high schools that had student populations between 3,000-1,000. More than 55 percent of the teachers were employed at Title 1 schools. Women made up more than 60 percent of the high school workforce in the sample. Approximately 75 percent of the teachers majored in Humanities as compared to Science and Mathematics. The teachers in the age group between 40-60 years old made up the majority of the workforce in the sample. The smallest group was the 20-29 year olds.

Table 3 *Teacher and School Characteristics: Counts and Percentages*

Factors	Counts	Percentages
Dependent Variable		
Retention- Stayers & Transfers	2911	66.01%
Leavers	1499	33.99%
Independent Variable		
Traditional Preparation Pathway	1546	35.05%
Alternative Certification Pathway	2864	64.94%
Racial Similarity	4298	97.3%
School Characteristics		
Magnet Status- Full (12)	520	24.49%
Traditional & Partial (37)	3,899	75.51%
School Grade- A & B (28)	2,887	65.33%
C (21)	1,532	34.66%
Population Size- Over 4,000 (1)	185	2.04%
3,999-3000 (1)	144	2.04%
2,999-2000 (14)	1,786	28.57%
1,999-1,000(18)	1,775	36.73%
999-1 (15)	528	30.61%
Title 1 (27)	2,698	55.10%
Non-Title 1 (22)	1,721	44.90%
Teacher Characteristics		
Gender- Women	2675	60.53%
Men	1744	39.47%
College Major- Science & Math	1116	25.44%
Humanities	3271	74.56%
Age School Year 2015-2016		
20-29 years old	391	8.85%
30-39 years old	969	21.93%
40-49 years old	1209	27.36%
50-59 years old	1182	26.75%
60-69 years old	645	14.60%
70-80 years old	23	0.52%

Variables

Dependent Variable

Initially, I considered the dependent variable to have three groups: stayers, transfers, and leavers with leavers being the reference category. The SPSS multinomial logistic regression output showed that the frequencies for the variables were too low. So, I completed as crosstabulation on each categorical variable to ascertain which one was causing low numbers and affecting the analysis. I combined stayers and transfers to form one category since transfers was showing low counts in some of the variables. I had to recode my dependent variable to two categories and then run bivariate logistic regression. As demonstrated in Table 4, the dependent variable, was then coded as 1= 'stayers and transfers' (n=2911) teachers who remained in the classroom at the same location and those who were retained in the teaching profession as either a teacher at another location or as an educator in a different role in the school district, and 0 = 'leavers' (n=1532) those who left the school district. The data set depicted each teacher's location for each school year between 2015-2020; hence, participants could have had changes in their retention status any year in the five-year time frame.

Table 4 *Variables, Counts, Means, and Coding*

Factors	Counts	Mean	Coding
Dependent Variable		.6601	
Retention- Stayers & Transfers	2911		1
Leavers	1499		0 Reference Category
Independent Variable		.3506	
Traditional Preparation Pathway	1546		1
Alternative Certification Pathway	2864		0 Reference Category
Racial Similarity	4298	46.02	Continuous variable ranging from .01 to 97.70.

School Characteristics		.1177	
Magnet Status- Full (12)	520		1
Traditional & Partial (37)	3,899		0 Reference Category
School Grade- A &B (28)	2,887	.6934	0 Reference Category
C (21)	1532		2
Population Size- Over 4,000 (1)	185	1998	Continuous variable
3,999-3000 (1)	144		ranging from 206-4270.
2,999-2000 (14)	1,786		
1,999-1,000 (18)	1,775		
999-1 (15)	528		
Title 1 (27)	2,698	.6105	1
Non-Title 1 (22)	1,721		0 Reference Category
Teacher Characteristics			
Gender- Women	2675	.6053	1
Men	1744		0 Reference Category
College Major- Science & Math	1116	.7456	1
Humanities	3271		0 Reference Category
Age School Year 2015-2016		46.33	Continuous variable
20-29 years old	391		ranging from 18-80.
30-39 years old	969		
40-49 years old	1209		
50-59 years old	1182		
60-69 years old	645		
70-80 years old	23		

Independent Variables

The two independent variables were the certification pathway for each teacher and the racial similarity of the teacher to the students at the school. The first independent variable, certification pathway, refers to how the teacher obtained a teaching license. The possibility includes via the traditional means (coded as 1) or through an alternative certification option (coded as 0). The information available by the school district did not include the distinction of whether the teacher gained their teaching license via programs such as the school district's MINT program, Teach for America, or Teachers of Tomorrow. The data showed whether the teacher was an education major, which meant that they completed a traditional education program at a four-year university or had to

obtain certification alternatively. Since the assumption was made for all non-education majors to be coded as obtaining their teaching license via an alternative certification pathway, it is important to note that some misclassification may have been possible.

The second independent variable, racial similarity, referred to percent of students with the same race as a teacher at a school. If a teacher self-identified as Hispanic and the high school where the individual worked had 60 percent Hispanic students, then racial similarity was coded as .6. I am aware that some Hispanic people self-identify as White and also that some Black people self-identify as Hispanic. Hence, it is important to note that the data is reflective of the information that was collected during the teachers' onboarding process as they were hired in the school district. Of the 4,419 teachers in the data set, 4,303 teachers self-identified as either Asian, Hispanic, Black, or White. The counts per race are as follows: 68 Asians (1.58 percent), 1,091 Blacks (25.35 percent), 1,824 Hispanics (42.39 percent), and 1,320 Whites (30.68 percent).

Control Variables

I referenced similar quantitative research on teacher retention to select the variables for this study, (Boyd et al., 2006; Brantlinger et al. ,2020). Regardless of the outcomes of the studies, teacher characteristics frequently utilized in research include age, gender, and college majors. Age was represented as the actual age for each participant as recorded in the 2015-2016 school year. Hence, by the end of the five-year time span, each participant was five years older. The youngest teacher was 21years old and the oldest was 80 years old. The average age of the population was 46 years old, with sixty-nine percent of the teachers being over 40 years old. To remain consistent with

contemporary understandings of gender, the variable was noted as either men or women

in the MDCPS data. Of the 4,419 teachers, women were recoded as 1 and men were

recoded as 0. The sample population was comprised of approximately 60 percent women

and 40 percent men. I coded college major as binary: math and science (0) or humanities

track (1). I grouped individuals with certifications in math, general science, biology,

chemistry, physics, technology, middle grades math, middle grades science under the

math and science category. Science majors were recoded as 0 and humanities majors

were recoded as 1. Of the 4,419 teachers in this study, approximately 25 percent of the

teachers majored in math or science.

Additional variables that I included based on factors in similar research studies

are school characteristics such as (a) the percentage of students from a low socio-

economic background, (b) the population size of the high schools, (c) school grades, and

(d) the design of the school, that is, traditional neighborhood school, partial, or full

magnet school (Grooms et al., 2021; Taggart & Shoho, 2013). Low socio-economic

status is defined by the percentage of students receiving free or reduced lunch and are

termed Title 1 schools. As shared in M-DCPS's Title I Administration Handbook 2019-

2020, 320 schools were designated as Title I, of which 45 are senior high schools.

Included in this study were 27 Title I high schools and they were recoded as 1 in SPSS.

Schools above the threshold of being economically disadvantaged are not Title 1 and

were recoded as 0 in SPSS, (See Table 1 in the Appendices for Title 1 status of each

school). Another confounding factor was the size of the student body for each high

school, with the populations ranging from the smallest of 206 students to the largest with

4,270 students. See Appendix, Table 1 for the student population of each school. School grades and magnet school status are discussed next.

I utilized school grades in this study because it is common practice for parents to take said grades into account when deciding on where to register their children for high school. Teachers in the lower tiered schools are provided support from the school district's Education Transformation Office in order to improve their ability to utilize instructional strategies to target student needs, thereby possibly improving student performance on the state assessments. The state assessment results are published at the end of each school year by the department of education and the schools are then ranked A, B, C, D or F. Grades are calculated based on the results of state mandated tests Florida State Assessments (FSA), End of Course exams (EOC) and other criteria stipulated by the Florida Legislature's Florida Recognition Plan. The eleven categories that comprise this performance measure include student achievement, learning gains, performance of the lowest twenty-fifth percentile of the student body, graduation rate, and acceleration success, which are derived by each student completing either an Advanced Placement (AP) course or a Career and Technical (CTE) course. School grading percentages are as follows: A= 62% of the points of higher, B= 54% to 61% of points, C= 41% to 53% of points, D= 32% to 40% of points, and F= 31% of points or less. School grades are displayed as they exist: A, B, C, D, and F. Of the 49 high schools included in this study, 14 were rated A schools, 14 were Bs and 21 were scored as C schools. These data for the high schools in M-DCPS are displayed in Table 1 in Appendices. Using SPSS, these data were recoded with A schools coded as 1, B schools as 0, and C schools as 2. After

running linear regression on the data, the tolerance statistics showed that there was too much overlap between the school grade variables. When I used A or B schools in the model, they had a tolerance statistic of -.469. When B and C schools were utilized, the tolerance statistic was .331 and .621 respectively. Hence, I decided to use schools with a grade of C in comparison to the reference category, which was a combination of schools with either a grade of an A or B. That categorization of the variables yielded a tolerance statistic of .692.

Over 50 percent of public school districts have made school choice options available to children (National Center for Educational Statistics, 1996). Evans (2002) wrote "School choice has thus often been couched in terms of permitting the less well off, the minority and poor populations, an option in their children's education" (p. 317). To provide options for communities in Miami-Dade County and to attract teachers and learners to the challenged campuses, the district has established the Schools of Choice office which coordinates programs to the numerous schools throughout the district. To gain admittance to a magnet program, prospective students must complete an application process, with some performance-based programs requiring an audition. Some schools were designed as full magnet schools; hence, all students who attend are in an academy. Others are partial magnet which means that a student may apply for an academy at the school, or they may be a student from the neighborhood in the standard high school program. Then there is the traditional high school program in which the students are all from the neighborhood within their attendance boundary. As shared on its website, of the 133 high schools in M-DCPS district, the Schools of Choice program includes 45 high

schools. Sixteen high schools are full magnet and 29 are partial magnet. The remaining 88 high schools are traditional neighborhood schools. In Table 1 of the Appendix, the 49 high schools in this study were displayed as F for full magnet, P for partial magnet, and T for traditional high school. After I ran a logistic regression analysis, I found that the three categories created a problem in the analysis, so I combined partial magnet and traditional schools as one category and full magnet schools as the second category. In IBMs SPSS program, the variables were recoded as full magnet being 1 and partial magnets and traditional high schools were coded 0, as the reference category.

Data Analysis

To appropriately analyze my data, I ran descriptive statistics, correlations, cross tabulations, and logistic regression. Descriptive statistics were run on my data set before I ran inferential statistics in order to ensure that the data met the assumptions of logistics regression analysis. The descriptive statistics herein describes the characteristics of my population and are displayed in the tables in this document. I ran bivariate correlations to determine the extent to which the variables were associated with the dependent variable and then with each other. That measure was Pearson's r for which the valence and magnitude were taken into consideration (Muijs, 2011). Valence refers to the direction of the relationship. A positive correlation was indicated by a pair of variables moving in the same direction. Zero correlation equates to no relationship between two variables. Negative correlation means that as one variable changes, the other variable changes in the opposite direction. The magnitude refers to the strength of the relationship and ranges between -1 and +1. The categorical variables include certification, gender, college major,

socioeconomic status of school (Title 1) and school grades. Initially, I conducted

multinomial logistic regression analysis on the data; however, my results triggered a

warning that there were over 130 cells (i.e., dependent variable levels by subpopulations)

with zero frequencies. Next, I conducted cross tabulations to quantitatively analyze the

relationships between categorical variables in the data set and to determine the

frequencies for each variable so that I could ascertain which one was causing low

numbers in the cells for the variables in the regression analysis. After reviewing the

frequencies for each variable, I determined that the dependent variable had to be reduced

to from three to two options. Initially my dependent variable had three categories: stayers

(teachers who remained at the same school for the length of the study), transfers (teachers

who changed locations during the study but remained in the school district), and leavers

(teachers who left the school district during the time of the study). I then combined the

stayers and transfers to form one category termed Stayers and transfers and the other

category was leavers. Since my dependent variable was dichotomous and I was trying to

find possible associations between racial similarity, teacher certification and teacher

attrition, while controlling for potentially confounding teacher and school characteristics,

I then ran a binomial logistic regression analysis on my data set.

　　　After analyzing my data, I explored the notion of a possible difference in my

results if I ran analyses on a second model that would replace racial similarity with racial

groups. In order to verify if racial match would produce a different result from racial

groups, I ran another binomial logistic regression analysis on a second model which was

the included the same variables as the first model, except racial similarity was replaced by racial groups. The output data was analyzed for the second model.

Data Integrity

These secondary data from the school district were analyzed using IBM SPSS software. The data were deemed trustworthy since it was shared by an analyst for the school district's Human resources office after I was approved via the IRB process for Florida International University and M-DCPS district. Muijs (2011) named validity as the most important aspect of a study as it looked at whether the researcher was measuring what was intended to be measured. The validity for this study was supported as evidenced by the fact that the data set was shared directly by the school district and the demographic data was collected via the school district's usual hiring process.

Summary

In this chapter, I explained and justified the method that I chose to research my problem statement. My study was a quantitative nonexperimental one and utilized administrative data from M-DCPS. I discussed my reasoning behind the choices I made to clean my data before I recoded and inputted it into IBMs SPSS software. My sample population (N= 4419) was comprised of senior high school teachers from 49 high schools.

I ran several analyses on the data including descriptive statistics, bivariate analyses, correlations, T-Tests and multinomial logistic regression. After determining that the results of the multinomial logistic regression were presenting some concerns, I converted the dependent variable from three groups to two. Therefore, I then reran the

data using binomial logistic regression. To explore the notion that racial groups would

possibly show different results than racial similarity, I created a second model and ran the

data through binomial logistic regression. Then, I shared the demographics of my

population and explained how my data was analyzed. The goal of the upcoming chapter

is to provide the results of my regression analysis and to demonstrate that the

methodology that I described in this chapter was followed.

Chapter IV: Results

Introduction

In Chapter 3, I described the design of my quantitative study that I conducted to answer my research questions. I expanded upon the decisions that I made to clean my data thereby resulting in a smaller population size (N= 4419) for my study. I also shared my choice of using certain subgroups as reference categories and that I reduced the dependent variable categories from three to two, after I noted that the data was skewed based on small numbers within certain subgroups of the variables. I stated that I had created a second model in which I substituted the variable racial similarity with racial groups. I then described the data analysis and discussed the integrity of the data.

This chapter contains the results of the quantitative study conducted to answer the research questions. It also includes discussions regarding the analysis that I conducted on regression analysis to determine the possible associations of racial similarity, teacher certification pathways and teacher retention, while statistically controlling for confounding variables. Those confounding variables were teacher characteristics of age, gender, and college major, as well as school characteristics of magnet status, population size, school grade C, and Title 1 status. Binomial logistic regression analysis was deemed the appropriate technique to determine the possible associations between the variables. This chapter sheds light on the results of the research by distilling the data until themes emerged, starting off with the descriptive statistics for each variable and their respective subgroups. Those are followed by results of cross tabulations for the variables – teacher retention, certification, gender, college major, magnet status, socioeconomic status, and school grade as well as the results of T Tests for the remaining variables- racial

similarity, age, and population size. Thereafter, correlations of the variables are examined and the relationships between the variables are discussed. The chapter concludes with the results of the binomial logistic regression analyses for the two models.

Sample

The sample for this study had 4,419 teachers (N). To summarize the distribution of values for each of the variables, Table 5 shows the mean, standard deviation and tolerance factor for each variable in the logistic regression model. The dependent variable, teacher retention (stayers and transfers) (SD = .4737), has a mean value of sixty-six. The model also shows a mean of 35 for teachers who were licensed via a traditional preparation pathway as opposed to an alternative certification program (SD = .4772). Teachers' mean racial similarity score was approximately 46 (SD = 37.62). The tolerance values for the variables are also displayed in Table 5. Muijs (2011) shared that a tolerance of 1 indicates that the other predictors do not explain the variance in the variable and that a value that approximates zero would indicate that any variance can be attributed to other variables. These data show that all variables are greater than 0.7; hence, multicollinearity is not a concern.

Comparisons

Table 5 Variables, Means, Number, SD, and Tolerance

Variable	M	n	SD	Tolerance
Retention				
Stayers & Transfers	.6601	2917	.4737	
Leavers (Reference)		1502		
Certification	.3506	4410	.4772	.971

Alternative (Reference)		2864		
Traditional		1546		
Racial Similarity (Continuous Variable)	46.02	4419	37.60	.978
Age (Continuous Variable)	46.33	4419	11.65	.979
Gender	.6053	4419	.4888	.955
Men (Reference)		1744		
Women		2675		
College Major	.7456	4387	.4356	.970
Science & Math		1116		
Humanities (Reference)		3271		
Magnet Status	.1177	4419	.3223	.753
Traditional & Partial (Reference)		3899		
Full Magnet		520		
Socioeconomic Status of School	.6105	4419	.4877	.725
Non-Title 1(Reference)		1721		
Title 1		2698		
School Grade	.6934	4419	.9519	.723
A & B (Reference)		2885		
C		1532		
Population Size (Continuous Variable)	1998	4418	874.78	.764

Crosstabulations

In order to demonstrate the proportion of cases in each subgroup, I completed a crosstabulation of the subgroups on the dependent variables, the two independent variables and all other variables that I used in the logistic regression model as displayed in Table 6. The comparison between the predicted and actual count of teachers who

stayed or left the school system is shown in Table 6. For the majority of the variables, the actual and expected counts of leavers and stayers for each variable were almost the same or ranged between approximately five to twelve percent difference. Also as reflected in prior studies, the crosstabulation data showed a higher percentage of mid-career teachers remained in the profession. As in other studies, the subgroup of teachers over 60 years old had more teachers leaving than in the expected count. This could be attributed to retirement.

The expectation at the beginning of this study was that the data would show traditionally prepared teachers having a higher rate of retention compared to alternatively certified teachers. As displayed in Table 6, although 25 percent of the model was comprised of traditionally prepared teachers and the alternatively certified teachers made up the other 75 percent of the model, both groups had approximately 34 percent of the teachers leave the school district. The same percentage of leavers was true for the gender variable which had 2,675 women as compared to 1,744 men and the college major variable which had 25 percent science and math majors as compared to 75 percent humanities majors. Traditional and partial magnet schools were grouped together in the model and resulted in a large group of 3,899 teachers whilst the full magnet subgroup had 520 teachers. For both subgroups, approximately 33-34 percent of the teachers left the school system. This group was the only one that was statistically significant with p< .001. A comparison of the Title 1 and non-Title 1 schools showed only a three percent difference between the percentage of teachers who left the school district. The largest difference in these data was shown between A/B schools with 32 percent leavers and C

schools with 38 percent leavers. Such a result is plausible since teachers tend to transfer

to higher performing schools when the opportunity is presented (Guin, 2004; Simon &

Johnson, 2015). All cross tabulations had effect sizes of less than .1 (as measured by Phi)

meaning that differences were weak.

Table 6 Crosstabulations in Subgroups

	Certifi-cation		Gender		College Major		Magnet Status		Socio-economic Status		School Grade	
			Men	Women	Sci	Human	T & P	Full			A&B	C
	AC	TP							N-Title 1	Title 1		
Leavers Percentages	33.9	34.2	35.5	33	36.3	33.4	34.2	32.5	32.4	35	31.9	37.9
Stayers & Transfers Percentages	66.1	65.8	64.5	67	63.7	66.6	65.8	67.5	67.6	65	68.1	62.1
Pearson Chi-Square	.054		2.903		3.126		.583		3.083		16.181	
df	1		1		1		1		1		1	
Asymptotic Significance (2- sided)	.816		.088		.077		.445		.079		.000	

AC=Alternative Certification, TP= Traditional Preparation; T&P= Traditional and Partial Magnet Schools,
Full= Full Magnet Schools; N-Title 1= Non-Title 1 Schools.

Table 7 displays the T-Test results for this model's three continuous variables

which are racial similarity, age, and population size. The data showed that there were

statistically significant differences between stayers and transfers and leavers for racial

similarity, age, and population size. Effect size as measured by Cohen's D reflects a

small effect size for each analysis.

Table 7 T Test in Subgroups

Variable	N		Mean	SD	t	df	Sig (2 tailed)	Mean Difference	Cohen's D
Racial Similarity	Leavers	1444	41.1900	36.489	-7.710	4295	.000	-9.2298	-.249
	Stayers &		50.4199	37.359					

	Transfers 2854							
Age	Leavers 1502	47.67	14.892	5.505	4417	.000	2.030	.175
	Stayers & Transfers 2917	45.64	9.485					
Populatio n Size	Leavers 1502	1926.3	848.674	-3.996	4416	.000	-109.340	-.125
	Stayers & Transfers 2916	2035.64	885.787					

Correlations

The correlations results elucidates that the variables with statistically significant associations racial similarity (r = .117) and population size (r= .059), were positively associated with retention; whilst school grade (r = -.061) and age (r = -.083) were negatively associated with retention. These correlation coefficients are far from 1 so these factors do not have a strong relationship with teacher retention. Furthermore, there were relationships between the dependent variables and other factors that were statistically significant. Traditional certification had a statistically significant relationship with three other variables: women (r =.125), full magnet (r = -.039), and science & math majors (r =.119). Also, there were statistically significant relationships between racial similarity and four factors: full magnet schools (r = -.085), Title 1 (r = .088), population size (r =.080), and women (r =.056). Additional inter-correlational statistically significant relationships were evident between (a) full magnet schools with school grade C (r = -.266), Title 1 (r = -.369), science and math major (r = -.047), women (r = -.043) and population size (r = -.151); (b)Title 1 with population size (r = -.225), age (r = -.064), science and math major (r = .033); (c) population size with school grade C (r = -.366) and age (r = .058); (d) age with women (r = -.105); and (e) women with science and math major (r = .128).

The analyses of these data in the study indicate weak relationships between the variables. The largest correlation of .390 was between Title I and school grade C schools. That finding was not unexpected since Title I schools are generally faced with more academic challenges and the struggle to maintain above average academic performance is commonplace. The second highest positive relationship was between science & math majors and women (r = .128). Since math and science majors tend to have a higher number of male teachers, that finding is expected (Trusz, 2020). Other noteworthy factors with negative relationships include a correlation of -.366 between school grade C and population size of schools, and a correlation of .369 between Title 1 and full magnet schools. Furthermore, the variables are intercorrelated; thereby suggesting the necessity of including them in the model to control for potentially confounding effects.

Data Interpretation

Table 8 Statistically Significant Correlations

	Reten-tion	Trad Cert.	Racial Simi-larity	School Grade C	Full Magnet School	Title 1	Sci & Math Major	Women	Age	Popu-lation Size
Reten-tion	1									
Trad Cert		1								
Racial Simi-larity	.123[**]		1					.		
School Grade C	-.061[**]			1						
Full Magnet		-.039[**]	.085[**]	-.266[**]	1					
Title 1			.088[**]	.390[**]	-.369[**]	1				

Sci & Math Majo r		.119 **		.034*	-.047**	.033*	1			
Wom en		.125 **	.056 **		.043**		.128**	1		
Age	- .083**				-.064**		-.105**	1	
Popul a-tion Size	.059**		.080**	-.366	-.151**	- .225**			.058*	1

Legend: ** Correlation is significant at the 0.01 level (2-tailed).
      * Correlation is significant at the 0.05 level (2-tailed).

Logistic Regression

Using IBM's SPSS software, I ran a logistic regression analysis to understand possible associations between racial similarity and teacher certification and teacher attrition, while controlling for potentially confounding teacher and school characteristics. To ascertain if I was using the appropriate method, I took into account the statistics for the baseline model which included only the dependent variables, stayers and transfers (1) and leavers (0). After testing the model against a constant only model, the following indicators were determined, $\chi2 = 126.420$ and $p = .000$, thereby indicating that the independent variables did help predict teacher retention. The Omnibus Tests of Model Coefficients had a significance of $p < .05$; thusly meaning that the model with all predictors fit better than a model with no predictors. The prediction was that all teachers would stay in the school system for which the data showed was correct in 67.7 percent of the cases. The Pseudo R Squared measures were Cox and Snell (.029) and Nagelkerke (.041). These data indicate that the model accounts for 2.9 percent to 4.1 percent of the variance; therefore, it is not a particularly strong model.

Table 9 Classification Table

Observed		Leavers	Stayers & Transfers	Percentage Correct
Retention	Leavers	96	1340	6.7
	Stayers & Transfers	33	2787	98.8
Overall Percentage				**67.7**

a. Constant is included in the model.
b. The cut value is .500

In Table 10, the regression coefficients are given under Exp (B). The logistic regression showed that one of the independent variables, racial similarity, and two other factors, age and population size, possibly had an association with the dependent variable. The odds ratio (Exp(B)) for racial similarity is 1.007, therefore, as racial similarity increased by one, the odds of a teacher being retained due to racial similarity increased by .7 percent. Although the odds ratio in the logistic regression shows little effect, there seemed to be notable differences in the mean racial similarity between leavers and stayers & transfers. The second independent variable, certification pathway, had no statistically significant association with teacher retention. Two control variables had statistically significant associations with teacher retention. Age was negatively associated with teacher retention. As age increased by one, the odds of the teacher being retained in the school system decreased by 1.9 percent. The population size had a statistically significant association with teacher retention, but the odds ratio was .000 which indicated a minute association with teacher retention.

Table 10 Logistic Regression Data (Model 1)

	B	S.E.	Wald	df	Sig	Exp (B)	95% CI For Exp(B) Lower	Upper
Trad. Cert	-.037	.070	.280	1	.597	.964	.840	1.105
Racial Similarity	.007	.001	53.333	1	.000**	1.007	1.005	1.008
Age	-.019	.003	44.222	1	.000**	.981	.975	.987
Women	.028	.069	.165	1	.685	1.028	.899	1.177
Math & Sci Major	.091	.076	1.409	1	.235	1.095	.943	1.272
Full Magnet	.067	.118	.326	1	.568	1.070	.849	1.349
Title 1	-.070	.079	.709	1	.374	.932	.798	1.089
School Grade C	-.078	.040	3.678	1	.055	.925	.855	1.002
Population Size	.000	.000	5.732	1	.017*	1.000	1.000	1.000
Constant	1.091	.203	28.922	1	.000	2.976		

Legend: ** Significant at the 0.01 level (2-tailed).
       * Significant at the 0.05 level (2-tailed).

To determine if utilizing racial groups instead of racial similarity would show a difference in the results, I created a second model in which I removed racial similarity from the model and inserted the racial groups Asian, Black, and White. I then ran logistic regression analysis on the data. Results showed $\chi2$= 119.732 and p = .000, thereby indicating, like the first model, that the independent variables did help predict teacher retention. The Omnibus Tests of Model Coefficients had a significance of $p < .001$; thusly meaning that the model with all predictors fit better than a model with no predictors. The prediction was that all teachers would stay in the school system for which the data showed was correct in 66.6 percent of the cases. The Pseudo R Squared measures were Cox and Snell (.027) and Nagelkerke (.037). These data indicate that this second model accounts for 2.7 percent to 3.7 percent of the variance; therefore, it is also not a particularly strong model. Using racial groups in lieu of racial similarity did not make much of a difference.

The second model's results showed the categories of age, school grade C, population size and two of the three racial subgroups as statistically significant. The White subgroup generated an Exp (B) = .553 suggesting that if the teacher was White, the odds of the teacher being retained in the school system was 44.7 percent lower than if the teacher was Hispanic. The Black subgroup had an Exp (B) = .844 indicating that if the teacher was Black, the odds of the teacher being retained in the school system was 15.6 percent lower than if a teacher was Hispanic. Additionally, the data showed the following odds: As age (Exp (B) = .986) increased by one, the odds of the teacher being retained in the school system decreased by 1.4 percent. Also, if a teacher worked at a school with a grade of C (Exp (B)= .914), the odds of the teacher being retained in the school system was 8.6 percent lower than if the teacher worked in a school graded A or B. Finally, population size (Exp (B)= 1.000) had an odds ratio of .000, so just as in the first model, it has a minute association with teacher retention.

Table 11 Logistic Regression Data (Model 2)

	B	S.E.	Wald	df	Sig	Exp (B)	95% CI For Exp(B) Lower	Upper
Trad. Cert	-.037	.069	.282	1	.595	.964	.842	1.103
Black	-.170	.085	4.023	1	.045*	.844	.715	.996
White	-.592	.076	59.908	1	.000**	.553	.476	.643
Asian	-.268	.262	1.053	1	.305	.765	.458	1.277
Age	-.014	.003	25.484	1	.000**	.986	.981	.991
Women	.027	.068	.160	1	.690	1.027	.900	1.173
Math & Sci Major	.125	.075	2.777	1	.096	1.133	.978	1.313
Full Magnet	.067	.118	.326	1	.568	1.070	.864	1.367
Title 1	-.041	.077	.282	1	.595	.960	.825	1.117
School Grade C	-.090	.040	5.085	1	.024*	.914	.845	.988
Population Size	.000	.000	6.913	1	.009**	1.000	1.000	1.000
Constant	1.309	.199	43.261	1	.000	3.704		

Legend: ** Significant at the 0.01 level (2-tailed).
      * Significant at the 0.05 level (2-tailed).

Summary

This chapter contains the results of the analyses for my study and makes connections with the research questions and the literature review. Cross tabulation data showed about 34 percent attrition for the teachers in both the traditionally prepared and alternatively certified subgroups. The correlations data showed weak relationships overall between variables in the model. The highest correlation was displayed between Title 1 schools and school grade C. The second highest correlation was between science and math majors and women. Other noteworthy correlations were between school grade C and population size as well as Title 1 and full magnet schools. After analyzing the data from the model for my study, I decided to create a second model in which I replaced racial similarity with racial groups to ascertain if there would be a difference. I found that the results for model 2 were similar to model 1. The variables including age, population size and school grade, as well as the racial groups of Black and White teachers were statistically significant. Chapter V includes the summary for the critical analysis and discusses the implications and suggestions for future research.

Chapter V: Discussion

Summary of Study

The purpose of this quantitative problem of practice study was to ascertain the possible associations of teacher certification pathways, racial similarity, and teacher retention. This chapter includes a summary of the study and a discussion of existing empirical research on factors associated with teacher retention. It concludes with the implications and limitations of my study, and areas for future research.

This chapter contains discussion and future research possibilities to address the research questions:

Is racial similarity (defined as the percentage of students at the school of the same race as the teacher) associated with teacher retention?

Is certification pathway that the teacher takes to obtain a teaching license associated with teacher retention?

This quantitative study utilized data from M-DCPS' administrative files on senior high teachers as well as school site data that were publicly available on the school district's website. The dependent variable has two categories, stayers (teachers who remained at the same school for the length of the study) and transfers (teachers who changed locations within the school district) and leavers (teachers who left the school district during the time of the study).

The independent variables were racial similarity and teacher certification pathways. Other factors that were included in the model were teacher characteristics of age, gender, and college majors, as well as school characteristics of magnet status,

population size, school grade, and Title 1 status. After cleaning the data, I coded and inputted it into IBM's SPSS software. I conducted bivariate correlations, cross tabulations, t-tests and binary logistic regression analyses on the data. In this chapter, I report on the findings for my model, and I also include a review of my second model.

Reporting of Findings

This study explores the possible associations between teacher retention and various factors which are addressed in the upcoming sections. Descriptive statistics showed that 34 percent of the teachers in my study left the school district (coded as Leavers), 12 percent transferred (coded as Transfers), and 54 percent stayed at the same work location for the duration of the study (coded as Stayers). In a similar study on two Florida school districts, Feng and Sass (2017) found that about 33 percent of the teachers left the school district and about 30 percent, transferred to other schools in the same district during a four -year period. The data for stayers and transfers and leavers as compared to each variable follows in the subsequent sections.

Certification Pathways

It is important to note that in the dataset for this study, there was a significant difference in the number of teachers who were certified alternatively (n=2864) as compared to those who were traditionally prepared (n= 1546). Additionally, most high school teachers are rarely education majors as they are usually specialized in their subject area, so they obtain their teaching license by accessing alternative licensing pathways (Evans, 2009). The results of this study indicate that for the independent variable, certification pathway, TP teachers left the school district by 0.3 percentage points more

than AC teachers. As compared to the AC teachers, 1.7 percent more of TP teachers, remained at the same location, for the duration of the study. The data also showed that 2.1 percent more AC teachers transferred than TP teachers. The binary logistic regression revealed data showing that $p=.597$; thereby illustrating that there was insufficient evidence to confidently state that certification pathway had a significant relationship with teacher retention. Similar to these results, as discussed in the literature review, Zhang and Zeller (2016) found no differences in teacher retention for early career TP and AC teachers. They did find that TP teachers exhibited more longevity in the profession as they looked at the midcareer teachers and beyond. Due to the five-year length of this study, such a parallel could not be drawn. Other researchers had findings akin to this study in that any differences in the teacher retention numbers were very slight or not statistically significant. Suell and Piotrowski (2006) completed a study in Escambia County, on 43 first-year traditionally prepared and alternatively certified teachers. According to the researchers, there was no significant difference between the two groups for any of the categories. Brantlinger et al. (2020) and Kane et al. (2008) found no difference in the attrition rates of teachers certified alternatively or via the traditional preparation program in New York City's public school. Boyd et al. (2012) shared that in the beginning of their careers, alternatively certified teachers were more likely to transfer; however, after that initial year of service, they left the school district at a higher rate than the traditionally prepared teachers. In her study on whether teachers differed by their certification route, Zientek (2006) posited that as a result of their recruitment efforts, AC programs were diversifying the ethnic makeup of the teaching pool. However, they were not significantly reducing the teacher shortage or adding experienced mathematicians or

scientists. Some researchers added the importance of understanding the local labor markets in order to correctly assess their impact on the various licensing pathways (Boyd et al., 2006; Powell, 2008).

Racial Similarity

Since the school district is primarily urban, investigating the possible association of teacher retention with race was thought to be of importance as supported by numerous researchers (Croom, 2020; Richardson 2015; Skinner, 2010). Croom (2020, p. 268) posited that "….race is deeply embedded and implicated in urban education". He referred to race as how one self-identifies due to natural biological attributes. A teacher's racial similarity to students' race was the other independent variable in the research question. The teaching population for this study was comprised of approximately 41 percent Latinx, 25 percent Black, 30 percent White, and two percent Asian. Of each subgroup, the percent of leavers were as follows: Latinx teachers = 27 percent, Black teachers = 33 percent, White teachers = 42 percent, and Asian teachers = 35 percent. The logistic regression results for the first model showed that the second independent variable, racial similarity, had a weak positive association to teacher retention. The crosstabulations data for my study showed that the Black (n= 1091) and Asian (n=68) teachers had almost the same number of teachers remain in the profession as was expected. The Latinx (n= 1824) group had nine percent more teachers remain than was expected to leave and White (n= 1320) teachers had 12 percent more leave than was expected to stay in the profession. In the second model for this study, the binomial logistic regression data showed that Black and White subgroups of teachers had a significant association with teacher retention. In

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their research of New York City schools, Boyd, Lankford, Loeb, Ronfeldt, & Wyckoff (2011) found that Black and Hispanic teachers had less likelihood to transfer if their schools had higher concentrations of Blacks and Hispanic respectively. Lee and Ing (2020) found no difference of the effect of race and gender of graduate teaching assistants on their students with similar race and gender. Lee and Ing (2020) came across the same situation, as in this study, that the population did not self-identify in four clear cut categories of White, Black, Hispanic, and Asian; consequently, a more accurate match, identification of subgroups, between the instructors and the students may have made a difference in the results. This data point of the Black and White teachers showing marked differences in their rate of attrition as compared to Hispanic teachers in M-DCPS has two-fold importance. Firstly, the Hispanic/Latinx population is the majority minority in Miami. Secondly, the "Browning of America", that is the racial/ethnic diversity of the United States will continue to increase with no racial group having a majority by 2044 (Segura, 2012). It would behoove the administrative staff of the colleges of education, personnel officers in the school district, as well as policymakers to make adjustments to their recruitment efforts of Black and White teachers and to pursue their retention with intentionality since we need great teachers of all races to educate students in urban schools where teacher turnover is even more evident (Lankford, Loeb, Wyckoff, 2002). Finally, as the statistical significance of teacher retention with racial similarity, in the first model, and the Black and White racial subgroups are noted, one must keep in mind the heavy concentration of Latinx teachers in the population of teachers in MDCPS with over 41 percent of the teachers self-identifying as Latinx. This could have possibly skewed the results.

Teacher Characteristics

It is important to note that the categorizations of age and gender were included as captured in the data from the school district and the author remains cognizant of and sensitive to intersectionality.

Age

The crosstabulations results for the age variable in this study align with prior research in that it has been shown younger teachers tend to leave the profession within the first five years of their employment (Gray, Taie, & O'Rear, 2015). Also, as reflected in prior studies, the crosstabulation data showed a higher percentage of mid-career teachers remained in the profession (Donaldson, 2012). As in other studies, the subgroup of teachers over 60 years old had more teachers leaving than was expected. This could be attributed to retirement as was shared in Redding & Henry's (2018) study.

Gender

Macias and Stephens (2019) posited that female teachers have outnumbered male teachers since public schools were established. They claimed women were hired over men since they could be paid less, which has led to the devaluing of the profession. From the two teacher retention categories of stayers and transfers and leavers, the female teachers had the highest percentage leaving the school system at 41.2 percent. Of the male stayers and transfers or leavers, the highest percentage was stayers & transfers. Sass, Bustos Flores, Claeys, & Perez (2012) shared that a blanket statement could not be made regarding whether males or females had a higher attrition rate. However, in their

study in Texas, the results unlike the results of my study, showed the attrition rate for male teachers was higher than female teachers. They did note that years of teaching experience did impact the results, with less experienced teachers leaving the profession more so than veteran teachers.

College Majors

The discussion of the reality of a nationwide struggle to meet the demand for certified teachers, most specifically in math and science is ever increasing (Feng & Sass, 2018; Ingersoll & May, 2012; McConnell, 2017) so the data point of college major may not have been statistically significant in the model for this study, but is of importance to gain a true picture of teacher retention in M-DCPS. The data for college major and the dependent variable, teacher retention, was consistent with prior research findings as it showed that between the two categories of math and science as compared to humanities, math and science teachers left the school system at higher rate (27.1 percent). From their study of SASS data in the 2003-2004 school year, Ingersoll & May (2012) shared that the turnover rate for math and science teachers was approximately 25 percent. In Tai, Liu, & Fan's study (2007) on factors that influence retention of math and science teachers, they found that those who held advanced degrees in math or science were 1.85 times more likely to move to another school or to leave the teaching profession. They also found that urban districts had higher retention rates of math and science teachers than rural and suburban districts. Feng and Sass (2017) had a similar finding that math teachers with Masters degrees had an increased rate of attrition. McConnell (2017) stated that "Despite the highly skilled and demanding work required of math and science teachers, their

standing in society is incommensurate with their educational and work requirements and promoting educational policies that upgrade the social status of the occupation will help alleviate the problem with their retention" (p. 3).

School Characteristics

Magnet Schools

A review of the bivariate results for the dependent variable, which is categorized into two teacher retention groups, and one of the factors in this study, magnet schools, showed that full magnet schools had the highest percentage in the stayers group 79.6 percent and partial magnet schools had their highest group being stayers as well, at 12.2 percent. This was expected since teachers tend to choose higher performing schools over schools with more challenges, with some exceptions due to various reasons including the opportunity for financial incentives (McConnell, 2017; See et al., 2020). Keeping that same trend of thought, intuitively we can say that the opposite would be true as demonstrated in the data which showed traditional neighborhood schools (non-magnets) had leavers as their highest group at 11.1 percent. These results have commonality with findings from Evans (2002). From her national study of professionalization of teachers in magnet schools, Evans (2002) shared that "Teachers in schools of choice who work in this creative atmosphere are less likely to leave the occupation" (pp. 319-320).

Title I Schools

Interestingly, in light of the new technologies and changes in the world, data from a 57year old study on teacher retention bears much similarity to the data from this study.

Faunce & Wiener's (1967) study in the Minneapolis Public School System posted a range in teacher retention between 21 percent to 67 percent for senior high teachers. The retention rate was less for teachers new to the profession. The authors shared that "socio-economic factors may play a more pervasive part in teacher retention" (Faunce & Wiener, 1967, p. 81). Strage, Meyers, & Norris (2002) shared a similar view. They stated that not only is it difficult to hire new teachers for schools with low socioeconomic status in the valley in Southern California but, even more of a challenge, is retaining the teachers. Along the same vein, the findings of this study did show a notable difference between the schools with low socioeconomic status, referred to as Title 1 schools, and the more affluent schools, referenced as non-Title 1 schools. The analysis of the data for this study showed that non-Title 1 schools had 41.4 percent of the teachers stay at the same location for the length of the study. The percentage of transfers out of Title 1 schools as well as the percentage of teachers transferring within or leaving the school district, 67 percent and 62.8 percent respectively, were rather high, but not unexpected.

In addition to the associations between the dependent variable and the two independent variables, there were notable relationships between the following pairs of factors: Title I and full magnet schools, school grade and population size, and school grade and Title I schools. Title I and full magnet schools had a negative relationship (Pearson's r = -.372) which would indicate that the magnet status and socioeconomic status are inversely related but, the relationship is weak. Of the 49 schools included in this study, six were non-magnet schools and the remaining 43 were either full or partial magnet schools. Of the full or partial magnet schools, 56 percent of them were Title 1

schools. Like the Schools of Choice program for M-DCPS, similarly Houston

Independent School District (HISD) has the Vanguard Program. An evaluation of the

HISD's Vanguard Program for Gifted/Talented (G/T) students in 2017-2018 found

economically disadvantaged students were underrepresented in the program. With 73.8

percent of the total student K-12 population being economically disadvantaged, only 52.2

percent were participants in the G/T program. In their study of the Magnet Schools

Assistance Program across the nation, Kitmitto et al. (2016) found that compared to

neighborhood schools, traditional magnet schools did not have a change in the

concentration of low socioeconomic students. However, compared to the percent of low

socioeconomic students in their school districts, destination magnet schools saw an

increase of said population.

Population Size

The schools in this study had such a large range in size from the smallest high

school with a student population of 206 to the largest having 4,270 students. Although

population size had a statistically significant association with teacher retention, the data

showed that it was so weak that it is possibly negligible. Additionally, the data showed

that school grades varied from A, B or C, regardless of the size of the school. School

grade had a negative relationship with population size of the school (Pearson's r = -.361).

Muijs (2011) stated that if the Pearson's r coefficient was negative and close to 0, the two

variables are unrelated. Since the co-efficient is close to 0, this would indicate that school

grade and population size are unrelated. Similar results were found in Brown and

Earthman's (2019) study on small and large high schools in Virginia. They discussed that

the effect of population size on student achievement was negligible unless other predictor variables such as socioeconomic status, student attendance, percentage of minority students, and teacher quality were accounted for. Similarly, Tanner and West (2011) conducted a study on Georgia high schools and found that the effect of school size on student achievement was negligible. In their study on math achievement and school size, Werblow and Duesbery (2009) shared that the relationship was non-linear. Small and large schools showed a positive relationship whilst medium sized schools had a negative association. They found race/ethnicity and urbanicity of the schools had a greater effect on student achievement than the size of the schools.

School Grade

The data for this study showed school grade, which depicts the achievement status of students in schools, did not have a significant relationship with teacher retention. It did have a positive relationship with Title I schools, Pearson's r = .396. The two variables have a positive relationship, but Pearson's r is not close to one. This would indicate that socioeconomic status of the schools in this study did not have a strong relationship with school grades. This could be attributed to the presence of the Schools of Choice program within M-DCPS which placed magnet programs or specialized academies at 31 of the high schools included in this study. Twelve other schools are full magnet schools, leaving only six of the schools as traditional high schools. These magnet programs involve student recruitment and programs designed to enhance student achievement. Hence, the data reflected in this study does not fall in line with the findings commonly found in other studies on student achievement and

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socioeconomic status. Rogers-Ard et al. (2019) shared that compared to student from affluent areas, students in low socio-economic schools had 70 percent increased odds of having core subject area teachers not certified in their respective fields teaching them those subjects thereby inferring that student achievement was negatively impacted. Ashiedu and Scott-Ladd (2012) found that schools with a high number of economically disadvantaged students had a higher rate of teacher attrition. Darling- Hammond (2010) had similar findings. Likewise, Ready (2010) posited that there was a link between socioeconomic status and student achievement. Ready (2010) found that student attendance did play a role as well in his findings as there was evidence to support the need for students of economically disadvantaged schools showing a decline in academic performance during the summer months. Likewise, Brown and Earthman (2019) found a relationship between socioeconomic status and student achievement in their study. They posited that research over the past five decades has shown there was no doubt that the two factors were connected. Although some teacher attrition can be healthy for an institution, too much teacher turnover can lead to instability as the loss is not only in human capital but also in experienced and effective teachers, thereby negatively impacting student learning gains (Holme et al., 2017).

Summary

This study looked at administrative data of senior high teachers in M-DCPS to investigate teacher certification pathways and racial similarity of teachers to the student body of their schools to ascertain the possible associations with teacher retention. The findings of this study suggest that the relationship between teacher retention and certification pathways was not significant. Additionally, in the models for this study, the

binomial logistic regression data showed statistically significant relationships between teacher retention and racial similarity in the first model and in the second model, two racial groups, Black and White teachers, had statistically significant relationships with teacher retention but they were weak. Both models did not seem to account for teacher attrition as was expected. When drawing associations between the demographics of the teacher and the student body, such relationships may not truly account for why a teacher leaves or remains in the profession (Fairchild et al., 2012). As shared by Fairchild et al. (2012), relational demography may not be as impactful depending on where the teacher is in his/her career.

The last time that the United States made majors strides in revamping the education system was during the civil rights movement in the 1960s and 1970s which showed a shrinking of fifty percent of the 'achievement gap" between black and white students (Warren, 2014). Research has shown that teacher retention is a challenge in high-poverty urban schools (Ingersoll, 2001; Ingersoll & May,2012) with a loss of over one third of the faculty on a yearly basis (Holme et al., 2017). As the school district strives for academic improvement for all students, perhaps this study has revealed the need for intentionality in incorporating the factor of teacher preparation pathways when making decisions for teacher placement in order to positively impact the rate of teacher retention. In their study of New York City teachers, Boyd, Lankford, Loeb, Rockoff, & Wyckoff (2007) found that over a five-year time period, students in the low socio-economic group improved their performance on SAT score by 20 points. They attributed that gain in student performance to the change in hiring practices of new teachers. The school district selected new teachers with strong academic backgrounds and drastically reduced the

hiring of uncertified teachers. The authors concluded that such strategies would lead to improved student achievement.

As shared by Sutcher et al. (2019), the demand for teachers had seen a decline in the Great recession between 2008-2012; however, each subsequent year the need for teachers has been increasing at an alarming rate. The researchers projected that every year, 300,000 new teachers would be needed and, undoubtedly, the communities in low socioeconomic areas with students of color would bear the brunt of the shortfall. An additional consideration is that at the time of this study, our world was deep in the challenges and travesties that came along with the pandemic caused by the highly contagious pathogen, COVID-19. Sasa (2020) stated that over 1.7 billion school and university students around the world had their education interrupted due to school closures as a result of the COVID-19 pandemic in the Spring of 2020. In their Spring 2020 survey-styled study of 375 respondents from 45 states in the U.S., Pattison, Hoke, Schaefer, Alter, and Sekhar (2021) shared that fourteen percent of the participants in the study worked in high schools and 42 percent worked in multiple levels with 90 percent of the school being public schools and the remainder were private and charter. They found that the school employees were concerned with how social distancing would be implemented, the possibility of COVID-19 returning, and the provision of appropriate personal protection equipment. The ongoing impact of the pandemic on education has only added to teacher shortage with an increase in early retirements, teachers filing for accommodations via Americans with Disabilities Act to be able to work remotely, and

teachers leaving the profession for other reasons (Sasa, 2020). Therefore, the onus of increasing teacher retention has been magnified many times over.

Limitations

Factors were measured only if they existed in the school district's data files. The data files that were available were only as clean or as accurate as the inputting by district personnel allowed. Furthermore, the data points that were a part of this study may not have been a focus by the district to have accurate information captured. Since college major was one of the variables in this study, I thought more definitive findings would be derived if I removed elementary and middle school teachers from the sample population as, for the most part, they would have majored in elementary education. Although the initial design of the study was for multinomial logistic regression analysis to be conducted on a dependent variable with three categories, the results of said analysis showed that over 130 cells had zero frequencies. Subsequent crosstabulations were performed to ascertain which variable was causing the frequencies to be low. It was determined that recoding the dependent variable was necessary. Therefore, stayers and transfers were combined as one category and compared to leavers. These data were then run through binomial logistic regression analyses. Additionally, the data set that was provided for the study did not present the data in such a way as to differentiate between the various alternative certification programs such as TFA, Teachers of Tomorrow, MINT, The New Teacher Project, Troops to Teachers, etc. Hence, the study was conducted on two general groups of traditionally prepared and alternatively certified teachers. The calculation of racial similarity does not include all senior high teachers in the sample since data on all racial subgroups such as Pacific Islanders and Native

Americans were not available. Furthermore, data were collected from M-DCPS for the school years between 2015-2020 and perhaps for a more accurate picture to be painted, a longer period of study should be conducted, possibly extending to 10 or 15 years. The purpose was to study M-DCPS, but those wishing to understand how results might transfer to other contexts should keep in mind the high concentration of Hispanics/Latinx in Miami-Dade County Public Schools. The study may not be generalizable to other school districts since M-DCPS is skewed heavily in the Latinx composition and it is located in a city that has arguably been named the gateway to Latin America.

Also, the collection of the secondary data provided to me for my study continued through the end of 2020 even though a world-wide pandemic due to COVID-19 started raging January of 2019. As the assistant principal of curriculum at the second largest high school in M-DCPS district, I am the hiring manager for my school. I witnessed the increase in teacher attrition for my faculty and the teachers at other campuses. Some employment decisions were made as a result of the concerns of working in a hot zone for COVID-19 during the pandemic. This could have possibly impacted the data set that was collected in 2020 by the district and this is the information that was included in the end of the data set for my study. In March of 2019, the school district closed school campuses and transitioned to remote instruction for all schools. Some teachers struggled with teaching in that format and were also concerned about the high number of COVID-19 cases in Miami-Dade County. When the plan for reopening of school campuses for the 2020-2021 school year was released, teachers were concerned for their safety and some were not comfortable with teaching dual modality, that is, some students physically in the

classroom with them while they also provided instruction for the students attending class remotely via online platforms such as Zoom or Teams. Some teachers filed for Americans with Disabilities Act (ADA) status, and some left the school district to retire, move to charter or private schools, or to pursue other careers. In her study on expat teachers in Southeast Asia and the disruption caused in education during the COVID-19 pandemic, Hoang (2020) shared the dramatic difference in the number of COVID-19 cases in the world between the beginning and end of March in 2020, which is usually the recruiting season for hiring teachers for the subsequent school year. Concerns included finding sufficient candidates for hire as well as teaching remotely, and instructional staff's personal safety as they went about their daily lives.

The data showed that teachers who had a higher salary had a lower rate of attrition. Additionally, Hoang's research (2020) posited that if a teacher's perception of a district policy was positive, their intention to leave decreased. Fairchild, Tobias, Corcoran, Djukic, Kovner, and Noguera (2012) shared that racial congruency of teacher-principal, teacher-teacher, and teacher-student led to a higher rate of teacher retention. They found that if a teacher and school were racially homogenous, the teacher-student congruence yielded increased ratings in job satisfaction. With the percentage of students in the school district, as well as the staff, being primarily Hispanic/Latinx, the Black, White, and Asian teachers were rarely, if not ever, in racial congruence with the students. This study failed to capture the interactions between certification pathways, racial similarity and teacher retention.

Implications

Discovering the interplay between the variables in my study was expected to be of consequence to education policy makers and the administrative team of the school district as they commit to the vision and goals of the school system. Logistic regression, the strongest relationship when accounting for all variables, did not have an explanatory power. Lankford, Loeb, & Wyckoff (2002) discussed in their findings that "teachers are more likely to leave poor urban schools and those who leave are likely to have greater skills than those who stay" (p.55). Hence, a part of the challenge for educators, the schools and communities of M-DCPS would be to recruit high quality candidates who can attain satisfaction with the work environment and develop solid relationships with their work communities to provide a high level of instruction to address the dynamic of meeting students' diverse needs and providing a quality education for all populations, regardless of their racial congruence, or lack thereof and their certification pathway. Zientek (2006) concluded that the focus should shift from ascertaining whether AC programs should exist to improving the quality of mentoring, field-based experiences, and other components of the certification programs. The main suggestion from this study for policy makers would be not to focus on differences between AC and TP programs, but rather implement strong mentorship programs and invest more into providing appropriate resources for the teachers. Berry, Montgomery, and Snyder (2008) shared their findings on Urban Teacher Residency programs which are a marriage of academic preparation and real-world experiences in urban schools over the course of 14 months. They found that such programs help to cement the new teachers into their roles as

effective teachers in urban schools while linking them with a rich network of highly trained and supportive colleagues.

Organizational literature and training programs for principals reflect a strong correlation between the principalship and school culture. Principals can work towards improving school culture, which is comprised of environmental and emotional components (Hughs, Matt, & O'Reilly, 2015). In their research, Gaikhorst, Beishuizen, Korstjens, and Volman (2014) also found that school culture had a positive impact on teacher retention. Some researchers have found that a principal directly impacts culture and achievement and vice a versa, school culture is linked with the effectiveness of the principalship (Anderson, 1982; Celikten, 2006). Hence, as suggested by numerous researchers including Deal and Petersen (1991), educational leadership programs should also provide courses that address how the principal affects school culture. They put forth that, effective principals have a command of the school culture, and are able to orchestrate the components of daily school life in order to positively impact student performance. Therefore, based on the results of this study, another suggestion for the policy makers would be to expand on training for principals to improve their ability to positively affect school culture.

Ingle, Rutledge, and Bishop (2011) posited that, administrators may be limited in their decisions regarding teacher termination and transfers within the district due to policies formed as a result of collective bargaining agreements with unions. They shared that in addition to strong teaching and communication skills of teachers, principals also valued racial diversity and a match to the organizational culture of the school. Irizarry and Donaldson (2012) concurred with that narrative of race and culture consciousness.

Their study showed that TFA Latina/o teachers had a higher retention rate than White teachers at their original school sites, which were low-income schools with high numbers of Hispanic students. The participants in the study shared their commitment to making a change for future Hispanic students and were intent on achieving equity and social justice. Every effort needs to be made to diversify the teaching force in order to improve the educational experiences of our changing student population (Irizarry and Donaldson, 2012). Therefore, district policy should be adjusted to enhance recruitment efforts for a more diverse teaching pool. Also, Fairchild, Tobias, Corcoran, Djukic, Kovner, and Noguera (2012) shared that relational demography reveals the ethnic makeup of organizations and can possibly lead to improvements in programs within the organizations, such as to identify issues between groups and to "bring into focus misunderstandings that are rooted in social or cultural differences" (p.189).

Hughs, Matt, and O'Reilly (2015) also suggest for policy to be adjusted to increase the number of school site administrators so that the teacher to administrator ratio can be reduced. This would positively impact the hard-to staff schools since the principals would have more time to provide support for the teaching force, thereby increasing teacher retention.

Implications for Further Research and Practice

Further research would be of value to determine the factors that positively impact teacher retention so that the school district could proceed with intentionality on addressing the perceived gaps to retain the teaching force. Research has shown that retaining teachers beyond the first five years is an area that needs to be targeted (Bruno, Rabovsky, & Strunk;2019; Buchanan, 2010). Crocco & Costigan (2007) posited that the

teachers with the "strongest credentials were most likely to leave during the first years of teaching" (p. 517). This highlights the need for a revamping of teacher education programs (Fairchild et al., 2012). Lekwa et al. (2018) suggested designing programs to target the strategies of teaching in urban schools such as incorporating evidence-based instruction. Hancock and Scherff (2010) also suggested ways in which to inhibit the rate of teacher attrition which include increasing the diversification of recruitment for minority teachers, changing the design of teacher preparation programs, improving the dialogue with teachers in reference to stress/burnout, facilitating teacher leadership, and improving in-service offerings. Simos (2013) touted a Professional Learning Community (PLC) model and strong mentorship program for teachers. Her study showed a significant increase in teacher retention taking the percentage up to 85 percent after such programs were incorporated. The National Council on Teacher Quality (2018) recommended an alignment of district hiring policies that should be required of teacher preparation programs. Also suggested was for improved data collection on AC program graduates so that the districts can do a better job of preparing for possible shortages.

Additional studies are of utmost importance to discover the factors that are closely associated with teacher retention. I would suggest that others conduct a study similar to mine with a few adjustments in a more robust statistical model. In future research, additional school levels, elementary and middle schools, could be added so that the implications could be inclusive of all teachers. Possibly using years of experience instead of age as a variable may lead to more accurate results. Utilizing a different study design, such as surveys or an interview format (Costigan, 2005; Crocco & Costigan, 2007;

Hancock & Scherff, 2010) could possibly lead to more conclusive connections between the variables since actual teacher responses would add clarity to the findings. This would then allow the researcher to collect clearer data on specific alternative certification programs as well as racial data with a movement away from the customary binary format of White or Black. For the AC programs, valuable information could be collected for the district as to the length of employment for TFA, TOT, and Mint programs. Additionally, decreasing the sample size and collecting specific data from no more than 400 teachers on a questionnaire designed with the specific factors as the guide for the item development is another possible design for conducting a similar study. Questions could also be included in the survey regarding the participants' perception of the effectiveness of their AC programs that they utilized to gain their professional licenses. Of interest would be capturing teacher retention data by the subgroups of each ethnic group such as Hispanics/Latinx that include the Cuban Americans, South Americans, Mexicans, Central Americans, and European Hispanics.

Appendix

TABLE 1 High Schools' Data

High School	Population Size	Title 1 (T or NT)	School Grade	Magnet Status
A	1519	NT	B	Partial
B	1724	T	C	Partial
	585	T	A	Full
D	2693	NT	A	Non-Magnet
E	382	NT	A	Full
F	921	T	C	Non-Magnet
G	2924	NT	B	Partial
H	3448	NT	A	Full
I	506	NT	A	Full
J	502	NT	A	Full
K	2313	NT	B	Partial
L	2075	NT	B	Partial
M	2767	T	B	Partial
N	2582	T	B	Partial
O	1875	T	C	Partial
P	1397	T	B	Partial
Q	1864	T	C	Partial
R	377	NT	A	Full
S	296	T	B	Partial
T	4270	NT	A	Partial
U	347	T	A	Full
V	1551	NT	A	Full
W	437	NT	A	Full
X	787	NT	A	Full
Y	2351	NT	B	Partial
Z	912	T	C	Non-Magnet
AA	1392	T	C	Non-Magnet
BB	2258	T	C	Partial
CC	668	T	B	Partial
DD	1402	T	C	Partial
EE	1274	NT	C	Partial
FF	1639	T	B	Partial
GG	1599	T	C	Partial
HH	2753	NT	B	Partial
II	2721	T	A	Partial
JJ	1921	T	B	Partial

KK	1220	T	B	Partial
LL	1084	T	C	Partial
MM	483	NT	A	Full
NN	1279	T	C	Partial
OO	2039	T	C	Partial
PP	2026	NT	A	Partial
QQ	2975	T	B	Partial
RR	1584	T	C	Partial
SS	2330	T	B	Partial
TT	1720	NT	A	Full
UU	1221	T	B	Partial
VV	206	NT	C	Non-Magnet
WW	420	NT	A	Non-Magnet

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