2022

OPT OUT IN LONG ISLAND: DEMOGRAPHIC PREDICTORS AND ACADEMIC CONSEQUENCES

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A dissertation submitted in partial fulfillment

of the requirements for the degree of

DOCTOR OF EDUCATION

to the faculty of the

DEPARTMENT OF ADMINISTRATIVE AND INSTRUCTIONAL LEADERSHIP

of

THE SCHOOL OF EDUCATION

at

ST. JOHN'S UNIVERSITY

New York

by

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Date Submitted 3/17/2022 Date Approved 5/17/2022

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ABSTRACT

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David Sime

In the 2017-18 school year, 18% of New York students opted out of a mandated state assessment test. On Long Island, that number was closer to 50% of students opting out of one or more tests. The implications of this phenomenon are far-reaching, but unknown. This study seeks to better understand both who opts out and the potential impact of opt out on future academic performance. Using secondary data, it first identifies if the decision to opt out of the New York State 8th Grade Mathematics Assessment Test varied by race, gender, socioeconomic status, special education classification, or prior GPA during the 2017-2018 school year. Then, the study analyzes how the decision to opt out related to students' subsequent scores on the New York State Algebra Regents Exam taken in the following school year. Results show that White and Female students opt out at higher rates than their racial and gender counterparts, but there is no effect of opting out on later test performance.

DEDICATION

To my wife, who has helped me time and again throughout this process. You have my eternal gratitude and my love. To the friends who accompanied me on this journey, and to those that so generously gave their kindness and support to me along the way. I can not thank you enough.

ACKNOWLEDGEMENTS

I would like to express my sincerest gratitude to Dr. Erin Fahle, my wonderful mentor during the completion of this dissertation. Without her constant support, guidance, and patience during this time I would never have reached this milestone. I would also like to acknowledge Dr. Seokhee Cho and Dr. Stephen Kotok for their advice and support throughout this process. Lastly, I would like to acknowledge Dr. James Grossane and Mr. Dan Espina, without whose assistance this work would not have been possible.

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CHAPTER 1

Introduction

Over the course of the last several years, the movement to opt out of state mandated standardized tests has risen to national prominence. The proliferation of new forms of social media during this same time period has provided supporters of the movement with a powerful tool to both communicate and organize grass-roots resistance to mandated testing. Research has shown that although the reported reasons for opting out may be different (Pizmony-Levy & Saraisky, 2016), proponents of opting out have garnered enough support for the movement to gain some traction nationwide. In certain states, New York leading amongst them, the percentage of students (and their families) choosing to opt out has been large enough to risk state compliance with federal education legislation and the subsequent funding conditional upon that compliance (Strauss, 2016). In 2015 alone, more than twenty percent of New York students chose to opt out of a state exam (New York State Education Department [NYSED], 2016), calling into question the validity of value-added methodologies dependent upon longitudinal testing results (Alzen, Fahle, & Domingue, 2017).

The percentage of parents choosing to opt a child out of testing varies greatly not only by geographic region, but also by a number of demographic factors (Croft & Lee, 2016). Existing research on the now-called "Opt Out Movement" has focused largely on the number of students nationwide that have chosen to opt out of a state assessment exam (Bennett, 2016), identifying which states recognize a student's right to opt out of a state assessment exam (Aragon, Rowland, & Wixom, 2015; Croft & Lee, 2016), and the

potential consequence of removing accountability measures designed to protect low-performing students (Advance Illinois, 2015).

Purpose of the Study

The purpose of this study is three-fold. First, it seeks to identify if the decision to opt out of the New York State 8th Grade Mathematics Assessment Test varies by the race/ethnicity, gender, socioeconomic status, special education classification, and prior GPA of students in the 8th Grade during the 2017-2018 school year. Second, the study explores whether the decision to opt out is a significant predictor of a student's Algebra Regents exam score, controlling for student demographics and prior achievement. Finally, I explore whether the relationship between opting out and a student's score on the Algebra Regents exam varies by demographic subgroup, focusing on the subgroups who are identified as more likely to opt out.

All analyses draw on secondary data from a single school district in Long Island, New York, and are conducted in a regression framework.

Theoretical Framework

The theoretical frameworks of educational inequality (Lareau, 2003) and homophily (Lazarsfeld & Merton, 1954) are used to better understand which students are choosing to opt out of the New York State 8th Grade Mathematics Assessment Test. As opting out of a state test is neither sanctioned nor directly promoted by schools, the decision to do so rests largely with parents who believe they maintain or share authority with the school in curriculum and testing decisions regarding their children. Groups that do not believe they possess any authority over educational would potentially be less likely to decide to opt out of a mandated test. This idea is reinforced by Lareau's work on

the opposing parenting styles of Concerted Cultivation and Accomplishment of Natural Growth (Lareau, 2003). According to Lareau, Concerted Cultivation refers to a parenting style utilized by more advantaged middle-class families where parents are more likely to promote the questioning of authority through discussion. Groups in a lower socioeconomic category tend to favor the Accomplishment of Natural Growth, where parents are more likely to encourage their children to respect authority and do not take as active a role in their education. In particular, these parents are more likely to defer to the authority of the school and may not interfere, for example, through opting their child out of testing. Through this lens it the potential exists for different demographic subgroups, particularly economic or racial subgroups (because race is closely tied to economics within the U.S.), to have different opt out levels on state tests.

With the current prevalence of social media platforms, parents identifying with one or more demographic subgroup would in turn have their beliefs regarding opting out reinforced through the Theory of Homophily (Lazarsfeld & Merton, 1954). According to McPherson, Smith-Lovin, and Cook (2001), homophily maintains that like behaviors occur between similar people at a higher rate than among dissimilar people. In the current context, the proliferation of social media groups may have allowed parents to more easily find like-minded peers who agree with their testing beliefs leading to the spread of opt out.

The effects of opting out, however, are less clear. In fact, the decision to opt out of a mandated state test could have potentially opposite effects on the student in question. Consider, first, practice effects a student may receiving from participating in the state test. By taking the state test, students may gain familiarity with testing or experience

similar material on the two tests examined in the study. Students opting out of the New York State 8th Grade Mathematics Assessment Test might miss out on the practice of using test taking strategies and the experience of seeing relevant material in a similar test format. This in turn could put them at a disadvantage when taking the Algebra Regents exam. In contrast, if a student experiences some level of test anxiety, the opposite could be true. Opting out of the earlier test could relieve that potential test anxiety allowing them to be less anxious and perform better on the subsequent Regents exam.

Moreover, the effect of opting out may differ by subgroup because these factors may differ by subgroup. For example, there is a long history of research on Stereotype Threat (Steele & Aronson, 1995), which hypothesizes that stigmatized group members may underperform on diagnostic tests of ability through concerns about confirming a negative societal stereotype as self-characteristic. This would suggest that members of certain subgroups of students, e.g., Black students or female students, may experience higher levels of anxiety or internal conflict during mathematics tests, leading to their lower performance. Opting out could relieve this tension to some extent; however, it may also remove their ability to practice overcoming this threat during testing. A full conceptual model is presented in Chapter 2 that expands on these ideas.

Federal Policy, New York State Context, and Opting Out

The Opt Out Movement grew out of a variety of legislative and political factors. The No Child Left Behind (NCLB) reauthorization of the Elementary and Secondary Education Act (ESEA) and the subsequent Every Student Succeeds Act (ESSA) had the stated goal of attempting to level the educational playing field for traditionally disadvantaged students, including certain minority groups, lower socioeconomic status

students, students eligible for special education services, and English Language Learners (NCLB, 2001; ESSA, 2015). Monitoring of progress toward these goals was mandated through annual accountability testing in both reading and math for grades 3 through 8 and through setting targets for improvement known as adequate yearly progress (AYP).

In 2009 President Obama signed the American Recovery and Reinvestment Act (ARRA). Contained within that legislation was the Race to the Top competitive grant program that offered states a portion of $4.35 billion in federal education funding if states adopted rigorous curriculum standards and accountability measures based upon student performance on annual tests. States posting large budget deficits from the 2008 recession were desperate for federal education funding and rushed to apply for the grant money.

Critics of educational testing saw the combination of a midstream adoption of the Common Core Standards and an untested new Annual Professional Performance Review (APPR) plan based on the new standards as too high a price to pay for the amount of funding promised by Race to the Top (Dillon, 2010). The quick push by the New York State Education Department (NYSED) to legislate the new policy without a tested procedure for adopting the changes was likened by frustrated school administrators to an airplane being "built in the air" (Burris, 2011).

Large test publishing companies such as Pearson also rushed to create the necessary assessments in alignment with the CCSS, in some cases repurposing questions developed for earlier exams. In one example, Pearson reused a reading passage about a talking pineapple on the New York 8th Grade ELA assessment test that left students so confused that it became a lightning rod for public criticism of standardized testing in general (Hartocollis, 2012). The outcry was so widespread that New York State

Commissioner of Education John King directed NYSED to not count that particular question towards the state's data collection for the exam (Hartocollis, 2012). States competing for RttT funding not only had to adopt new standards and accountability measures such as use of new Common Core assessments, they had to provide evidence of using results from those assessments to develop data-driven instruction (Weiss, 2013). State education departments, lacking the technological infrastructure necessary to collect and analyze that amount of student data, sought to contract the work out to private companies. In perhaps the most egregious example, New York initially contracted the student data collection and analysis out to InBloom. Public fears about the company selling private student data to targeted advertisers and other corporations created a backlash that led to the closure of InBloom just a year after its launch in 2013 (Bulger, McCormick, & Pitcan, 2017).

Although these events did not initiate the Opt Out Movement, they certainly hastened its growth enough to make the federal government take notice. The 2015 passage of the Every Student Succeeds Act (ESSA) brought a symbolic end to the controversial No Child Left Behind (NCLB) legislation. The new law, however, only addressed some of the criticisms of NCLB by shifting partial control from the federal government back to the states. ESSA gave states more freedom to choose which tests to use, as well as allowing for other measures to be used as secondary evidence of student progress. The controversial accountability measures, however, remained in place, with student performance on standardized tests continuing as the primary metric by which AYP is determined (Every Student Succeeds Act, 2015). While ESSA has maintained the testing requirements of NCLB, states like New York where opt out numbers are

greater have reduced the length of time students must spend on testing (Harris, 2017). There is currently little evidence to suggest that the amount of standardized testing has been reduced nationally (Samsel, 2017).

As a result, the opt out movement continues to this day, with numbers large enough to be concerning for both educators and policymakers alike. Regions such as Long Island, the focus on this study, continue to have significant portions refuse the tests (Table 1).

Table 1

Median Percentages of Grade 3 through 8 Students on Long Island Opting Out of the State ELA Test by Year

Year	Median Opt Out Percentage
2016	49.8
2017	50.9
2018	49.9
2019	43.1

Source: NYSED, 2019; Hildebrand and Ebert (2019).

With nearly half a million public school students on Long Island alone (NYSED, 2020), these numbers are large enough to warrant further study on the Opt Out Movement. Significant questions, such as an accurate accounting of which demographic subgroups of students are opting out, still remain. In the *National Survey on Opting Out*, researchers found that those parents who considered themselves opt out "activists" were typically white, highly educated, and with a median income larger than the national average (Pizmony-Levy & Saraisky, 2016). The question remains: Are there other

demographic subgroups that are choosing to opt out without considering themselves activists? If so, does the act of opting out affect differentially impact those subgroups?

Significance of the Study

While there is strong evidence to suggest that significant achievement gaps still exist between White students and their Black or Hispanic counterparts, less is known about their opt out behaviors. National Assessment of Educational Progress (NAEP) data indicate that from 1992 through 2019 the average mathematics scores for White students in the 4th and 8th grades were higher than those of Black and Hispanic students in the same grades. Although some of the racial/ethnic achievement gaps have narrowed since 1992. At grade 4, the White-Black gap for students was still 25 points in 2019, while the White-Hispanic gap at the 4th grade level was still a significant 18 points in 2019 (NAEP, 2019). At the 8th grade level in mathematics, the White-Black gap was 32 points in 2019, while the White-Hispanic gap was 24 points (NAEP, 2019).

As stated previously, ESSA had a primary goal of attempting to level the educational playing field for disadvantaged students. The above numbers represent existing achievement gaps between demographic subgroups for students taking the assessment tests. The current study seeks to build on this knowledge and inform education policymakers on how opt out percentages may differ among subgroups. In addition, to determine whether opt out affects different demographic subgroups differently than it does others. This in turn could affect future outreach efforts, testing design, and implementation. How the decision to opt out potentially affects future academic performance and whether those differences vary by subgroup has implications

for decisions regarding both the frequency and variety of mandated assessments for students.

Connection With Social Justice and Vincentian Mission in Education

Identifying if opting out is differentially impactful for demographic subgroups provides a motivation and much-needed data for developing a strategy to address the potential positive or negative effects. By doing so, the current study adds to the existing research a next step in the goal of closing long-standing achievement gaps for disadvantaged groups. St. John's University's Vincentian mission is devoted to "search out the causes of poverty and social injustice and to encourage solutions that are adaptable, effective, and concrete" (St. John's University, 2020). By providing data on how traditionally disadvantaged groups may be disproportionately affected by the decision to opt out, the current research shares in this mission.

Research Questions

The current study analyzes the following research questions:

1. Are race/ethnicity, gender, socioeconomic status, special education classification, or prior GPA significant predictors of the decision to opt out of the New York State 8th grade Mathematics Assessment Test?
2. Is the decision to opt out of the New York State 8th grade Mathematics Assessment Test a significant predictor of a student's score on the New York Algebra Regents Exam, controlling for student demographics and prior achievement?
3. Is the decision to opt out of the New York State 8th grade Mathematics Assessment Test a significant predictor of a student's score on the New York

Algebra Regents Exam among subgroups with high rates of opt out, controlling for other demographics and prior achievement?

Definition of Terms

Opt Out. In general, opt out refers to students refusing to take a state-mandated assessment exam as an act of protest. For the purposes of the current study, opt out will specifically refer to the refusal to take the New York 8th Grade Mathematics Test for the 2017-2018 academic year.

New York 8th Grade Mathematics Test. As defined by the New York State Department of Education Office of State Assessment: The state exam used to measure the extent to which individual students in 8th grade achieve the New York State learning standards in mathematics and determine whether schools, districts, and the state meet the required progress targets specified in the NYS accountability system in accordance with ESSA (NYSED, 2019).

New York Algebra 1 Regents Examination. The state exam used to measure the extent to which individual students have achieved the New York State learning standards in a Regents-level Algebra 1 course. The exam specific to the current study is the test administered to students in June 2019.

Economically Disadvantaged. As defined by the New York State Department of Education: Those students who participate in, or whose family participates in economic assistance programs such as the free or reduced-price lunch programs, Social Security Insurance (SSI), Food Stamps, Foster Care, Refugee Assistance, Earned Income Tax Credit, Home Energy Assistance Program, Safety Net Assistance, Bureau of Indian Affairs Assistance, or Temporary Assistance for Needy Families. For the current study,

all subcategories listed above will be identified by participation in the free or reduced-price lunch programs.

Special Education Student. As defined by the New York State Department of Education: Any student identified by the Committee on Special Education as a student with a disability receiving services under the Individuals with Disabilities Act (IDEA). Students with disabilities include those having an intellectual disability, hearing impairment, speech or language impairment, visual impairment, serious emotional disturbance, orthopedic impairment, autism, traumatic brain injury, development delay, or specific learning disability.

CHAPTER 2

This chapter provides a description of the theoretical and conceptual frameworks informing the analysis of the research questions, as well as a comprehensive review of the existing literature relevant to the study. The underlying factors leading to the advent of the Opt Out Movement (Bennett, 2016; Pizmony-Levy & Cosman, 2017) as well as on the causes and consequences of the proliferation of the movement throughout the country (Croft, 2015; Schweig, 2016; Alzen, Fahle, & Domingue, 2017; Goch, 2018) are discussed. Finally, a review of the evidence on state and federal responses to the burgeoning movement (Aragon, Rowland, & Wixom, 2015; Croft & Lee, 2016), on the demographic makeup of the majority groups choosing to opt out of state mandated tests (Pizmony-Levy & Saraisky, 2016; Goch, 2018), and on the manner in which those groups are organizing and communicating with each other (Levy, 2016; Wang, 2017) is discussed.

Theoretical Framework

Who Opts Out

Homophily (Lazarsfeld & Merton, 1954) and Concerted Cultivation (Lareau, 2003) provide a framework for identifying which groups may decide to opt out at higher rates.

Homophily

Homophily describes the tendency for individuals in relationships to associate more often with similar individuals than with dissimilar ones (Lazarsfeld & Merton, 1954). This tendency is fundamental to most human relationships, often structuring the social systems and communities to which we belong. Homophily can influence the

manner in which subgroups within communities form and even how the status of members is assigned within those subgroups. Lazarsfeld and Merton (1954) sought to formally define this phenomenon and identified two specific types of homophily in their research. The first type, status homophily, refers to similarity based upon attributes that are ascribed such as race/ethnicity, age, and gender as well as attributes that are acquired such as religion, education, or social class. Geographic location may also be considered under the classification of status homophily. The second type is value homophily, which refers to an individual's choice to associate with others that think or behave in similar ways regardless of status (Lazersfeld & Merton, 1954; McPherson, Smith-Lovin, & Cook, 2001).

The concept of similarity is the guiding principle of homophily, and as such it is the main determining factor of the tendency of an individual to associate with others. Individuals with common attributes or some common characteristics are deemed similar along those categorical lines. This classification does not imply, however, a causal relationship with association. Individuals can have several points of similarity between them without in fact having any association (Lawrence & Shah, 2020). Homophily defines the notion of an individual's tendency to associate with similar others in general terms of the number of associations made. Simply put, any form of contact between individuals classified as similar occurs more frequently than contact between dissimilar individuals (McPherson et al., 2001). The degree to which those associations occur more frequently, as well the context in which those associations occurred are relevant and necessary data for researchers using homophily as a theoretical framework.

McPherson, Smith-Lovin, and Cook compared the likelihood of association to the rate at which those associations would occur in a random distribution in a particular social context in their 2001 study on homophily (McPherson et al., 2001). As an example, if 75 percent of the individuals in a particular network or organizational structure were female then the expected rate at which a female would associate with another female would be .75. This expected rate of association is defined as the baseline homophily. Because these expected rates are calculated using the demographic populations of the network, they constitute an opportunity structure. By comparison, the number of associations above this rate made through individual choice based upon similarity characteristics are referred to as inbreeding homophily (McPherson et al., 2001).

Subsequent research has supported the theory of homophily (Monge & Contractor, 2003). The similarity-attraction hypothesis (Byrne, 1971) posits that individuals are more likely to engage in interactions with others possessing similar traits. The theory of self-categorization maintains that individuals will perceive themselves as being similar to others based upon race, gender, age, level of education, etc. and will subsequently self-categorize themselves in similar groups (Turner et al., 1987). Research also supports the defined groupings of both status and value homophily (Yuan, 2006). Subgroup categories such as age (Feld, 1982), gender (Leenders, 1996), race/ethnicity (Mollica, Gray, & Trevino, 2003), and education (Marsden, 1987) have all shown increased rates of association. More recent research has examined homophily in both the design and proliferation of online social networks such as Facebook (Aiello, Barrat, Schifanella, Cattuto, Markines, & Menczer, 2012; De Salve, Guidi, Ricci, & Mori, 2018).

As this study sought to identify potential predictive demographic factors in the decision to opt out of the New York State 8th grade Mathematics Assessment Test, the theory of homophily was relevant to the research at hand. It suggested that parents who identify with certain groups that advocate for opt out as a result of similar personal characteristics (e.g., gender, income, or other features) could be more likely to opt out themselves.

Concerted Cultivation

The theory of Concerted Cultivation (Lareau, 2003) refers specifically to the parenting practices by which middle-class and upper middle-class parents transfer social and economic advantage to their children. Expanding upon the theory of Cultural Capital (Bourdieu, 1977; Sullivan, 2001), Lareau's work sought to identify not only the behaviors and belief systems that frame parental interaction with children (Bodovski & Farkas, 2008), but also the parenting techniques that enabled their advantage to pass to their children (Carolan & Wasserman, 2015). As evidence mounted that non-cognitive factors could in fact have a significant effect on educational outcomes and subsequent economic success (Bowles & Gintis, 2011; Heckman & Kautz, 2012), Lareau and her team worked to identify those non-cognitive factors inherent in the relationship between parents and their children. This in turn led to Lareau's definition of two distinct styles of parenting. The first, which Lareau referred to as Concerted Cultivation, was largely observed in the middle and upper middle-class families. Within this style, parents actively fostered their children's participation in multiple organized activities (i.e., athletic teams, extra-curricular clubs, etc.) as well as encouraged language use and open communication with social institutions and adults (Lareau, 2003). These parents were

more likely to advocate on behalf of their children, especially in an educational setting (Carolan & Wasserman, 2015). Attributes of this parenting style were observed over the categories of beliefs about parent responsibilities, language use and development, leisure activities, and school involvement (Bodovski & Farkas, 2008).

Existing research has demonstrated that parental expectations about their children's education are both associated with and are predictors of educational attainment (Manski, 2004; Morgan, 2005; Robinson & Harris, 2014). Unsurprisingly, those parents using the style of Concerted Cultivation in Lareau's study had comparatively higher educational expectations for their children (Lareau, 2003). This active approach to parenting appears to have become more purposeful and strategic in recent years as parents attempt to secure and transfer advantages to their children (Irwin & Elley, 2011). Additional research has demonstrated that middle-class parents of special education students were not only far more likely to be powerful advocates for their children within the school but also more successful at developing networks of resources for their child in comparison to working-class and poor families (McNamara Horvat, Weininger, & Lareau, 2003).

The second category of parenting style defined by Lareau was Accomplishment of Natural Growth (Lareau, 2003). According to Lareau, this style was employed largely by working-class or poor parents who allowed their children to have a significantly larger amount of unstructured time. Children were in turn responsible for creating activities for themselves to engage in. It stands to reason that working-class and poor parents would potentially have less of an ability to afford help such as tutoring or paid extra-curricular activities for their children. Additionally, those same parents are more often subject to

additional constraints on their time due to rigid working schedules that must be adhered to. These restraints on parenting in terms of cost of activities and available time were not in fact based on ethnicity but more significantly on the economic status of the family (Lareau, 2002). Although Lareau's work focused primarily on white and black families, other research has confirmed similar results across economic classes within the Latino community (Telles & Ortiz, 2008; Inoa, 2017). Parental involvement through styles such as Concerted Cultivation repeatedly are observed to be mitigating factors in the academic success of children and are applied across ethnicities when financial conditions allow. Research has shown evidence that parental involvement positively affects long-term academic achievement (Epstein & Sanders, 2002; Hill & Taylor, 2004; Jeynes, 2005b) including higher achievement scores in mathematics (Sheldon & Epstein, 2005; Sirvani, 2007), higher performance in reading (Rasinski & Stevenson, 2005), as well as improved GPA and standardized test scores (Desimone, 1999; Domina, 2005; Jeynes, 2005a).

The Theory of Concerted Cultivation would suggest that factors such as income might be strongly associated with a parent's decision to opt their child out of testing. Higher income parents could be more involved with their child's schooling and feel more entitled to advocate for their child's needs, relative to lower-income parents.

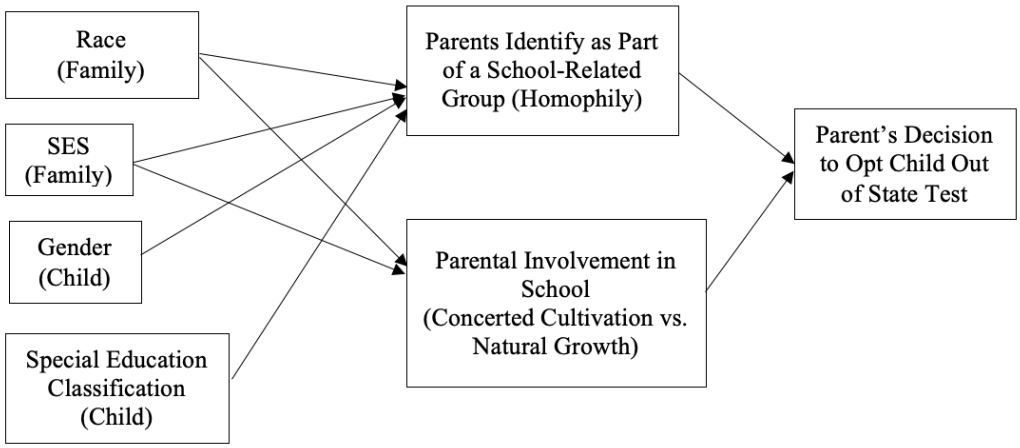
Conceptual Model

Figure 1 shows the conceptual model for factors affecting a parent's decision to opt their child out of testing. The researcher hypothesized that parent and student characteristics (e.g., gender, race/ethnicity, SES, and SPED classification) would predict their likelihood to identify with a group that supports opting out, as well as relate to their parental involvement in school per the theories of Homophily and Concerted Cultivation

described above. Subsequently, these factors would relate to their decision to opt their child out of testing. It should be noted that this study did not identify their reasons for opting out, only if their child's demographic characteristics were affiliated with their decision to opt out.

Figure 1

Conceptual Map for Research Question 1



Effects of Opting Out on Later Test Performance

Many theories may inform the potential effects that opting out of a state test may have on students' subsequent test performance. The researcher highlighted two possible mechanisms here through which opting out could influence test scores: practice effects and text anxiety.

Practice Effects

This pattern of testing, restudying, and testing again has become foundational in many educational study designs to this day (Karpicke & Roediger, 2007). There exist a number of potential consequences of practice effects in testing, including but not limited to a reduction in student anxiety in taking the test (Messick & Jungeblut, 1981), recognition of the concepts being tested and better developed strategies for taking the test

(Anastasi, 1981; Sackett, Burris, & Ryan, 1989). Although the two New York State math tests investigated in the current study were from different grade levels (8th Grade and 9th Grade Algebra) the length, content, and format of the two exams contain similarities that could potentially lead to practice effects. In other words, opting out could lead students to miss out on critical practice that would improve their score.

Test Anxiety and Stereotype Threat

Test anxiety is defined as a condition in which students experience significantly elevated levels of stress and discomfort both during and before taking a test (Mandler & Saranson, 1952; Cassidy & Johnson, 2002). This condition can lead to impaired learning and academic performance on assessments which in turn magnifies the original symptoms of stress and discomfort the student is experiencing (Cassady, 2004; Goetz et al., 2013). Students who suffer from such anxiety may benefit from a variety of directed interventions. such as emotional reappraisal and expressive writing (Jamieson et al., 2016; Ramirez & Beilock, 2011). Emotional reappraisal is a technique in which students learn to reinterpret the anxiety they experience prior to test-taking as beneficial feelings enabling the increase in mental alertness (Jamieson et al., 2012). In expressive writing, students attempt to alleviate stressful feelings prior to test-taking by writing about their emotional states (Ramirez & Beilock, 2011). Results from prior research indicate that such writing can increase test performance if completed immediately prior to taking the test (Park et al., 2014). In the context of the present study, students suffering from test anxiety could potentially benefit simply from the elimination of such anxiety through the elimination of the stimulus by opting out of taking the test itself.

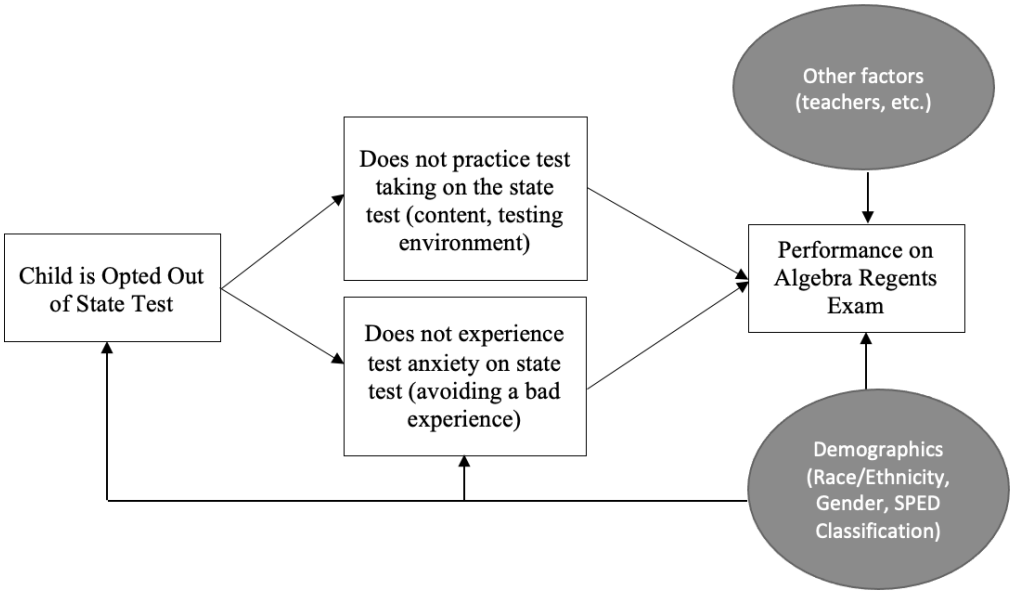
Moreover, studies of stereotype threat further underscored intellectual performance of an individual can be undermined when that individual is at risk of confirming a negative stereotype about the demographic group with which they identify (Steele & Aronson, 1995). In the years following Steele and Aronson's original publication of their work, evidence of stereotype threat has been found in multiple demographic subgroups in a wide variety of contexts. The most commonly affected groups in mathematics—the focus of this study—are Black and female students (Good et al., 2003). As such, the effect of opting out may also vary by subgroup, with females and Black students potentially benefitting more from a reduction of test anxiety (Good et al., 2003; Núñez-Peña et al., 2016; Thames et al., 2015).

Conceptual Model

Figure 2 shows the conceptual model for how opting out of the 8th grade state math test could potentially affect students' performance on the subsequent Regent's exam. The researcher hypothesized that the decision to opt out of the New York State 8th Grade Mathematics Assessment Test would predict a student's score on the New York State Algebra Regents exam taken in the following year as per the theories of practice effects/stereotype threat and concerted cultivation. It was additionally hypothesized that the predicted change in score on the Regent's exam would vary by race/ethnicity, gender, socioeconomic status, special education classification, or prior GPA of the students opting out of the earlier exam. This study did not test to identify the potential effects of additional factors in performance on the Algebra Regents exam, such as teacher quality, relationship of student to teacher, level of parental involvement to name a few.

Figure 2

Conceptual Map for Research Questions 2 and 3



Accountability Testing and the Rise of Opt Out

At the start of the twentieth century, advancements in the field of statistics gave rise to what would become standardized testing in public education (Reese, 2013). The Army Alpha Test adapted the individually administered Stanford-Binet test to become the first group-administered multiple-choice test to measure cognitive ability in enlisted personnel (Chapman, 1988). As more students participated in public education nationwide, schools had to develop tools to both group students by ability and to improve instruction for a diverse student body (Fass, 1980). In the decade from 1908 to 1917, over

200 standardized achievement tests were developed and implemented in schools (Chapman, 1988). By 1929, the Iowa Test of Educational Development became the first achievement test given to students statewide (Lemann, 1999). Colleges and Universities were early proponents and helped to facilitate the development of the Educational Testing Service and the SAT (Hartman, 2003). Over time, as the SAT evolved to measure educational progress, educational reformists began to push for testing as a means to introduce accountability for schools and teachers (Reese, 2013).

The educational reform movement's increased reliance on the use of standardized testing in addition to the introduction of Common Core State Standards Initiative has given rise to the "Opt Out" resistance movement. Annual standardized testing became federally mandated when the No Child Left Behind Act (NCLB) was signed into law in January of 2002 (Pizmony-Levy & Cosman, 2017). NCLB detailed measures to increase the accountability of low-performing schools as a means of eliminating achievement gaps between white and minority students, higher and lower socio-economic groups, as well as improving the performance of special education and English Language Learner students (Kawai, Serriere, & Mitra, 2014). As part of the higher standards implemented under NCLB for students in Mathematics and English Language Arts (ELA), the new legislation mandated that all students in grades 3 through 8 must be tested annually to identify their level of mastery in those areas (No Child Left Behind [NCLB], 2002).

NCLB subsequently set the mandate that students in all states must reach what the law referred to as 100 percent proficiency in ELA and Mathematics by the end of the 2013 - 2014 academic year, although it did allow states to individually determined which test to use and what score would define proficiency (Brown, 2015). In order to facilitate

this, $378 million of the $14 billion allocated for Title I funds to aid economically disadvantaged students in the 2014 federal education budget was earmarked specifically for state assessment tests (U.S. Department of Education, 2015).

To ensure accurate measurement of student performance, NCLB required school districts to comply with a 95% student participation rate in testing in mathematics and ELA (NCLB, 2002). Additionally, NCLB specified target levels of improvement on an annual basis (Neill, 2016). To motivate schools to comply with the NCLB requirements, the law also mandated a schedule of punitive measures against any schools that did not reach the prescribed level of improvement (NCLB, 2002). In a worst-case scenario, a school that continually failed to meet the required levels of improvement could be shut down or have control transferred to the private sector (Neill, 2016).

Responses to NCLB were varied. Opponents of the new legislation claimed that the over-reliance on testing created an environment of unnecessary stress for both students and teachers, while providing little to no timely information that could help to inform practice in the classroom (Schweig, 2016; Jones, 2017). School districts also balked at the performance standards, criticizing them as unreachable or impossible goals (Neill, 2016). In contrast, educational reformists saw the use of testing as the only way to determine if the increased federal investment in schools was having the desired effect. During the first years of NCLB, the overwhelming majority of school districts nationwide did comply with the testing mandate. As late as 2007, less than one percent of districts failed to reach the 95% accountability target as outlined in the legislation (Institute of Educational Sciences, 2007). This compliance on the part of school districts was, however, in no way an endorsement of NCLB.

In 2009, the Common Core Standards Initiative (CCSS) was proposed in advance of the reauthorization of NCLB by the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) to address widespread national disparities in curriculum benchmarks for students (Common Core Standards Initiative, 2010). The standards attempted to provide a uniform curriculum outline to be implemented nationwide in the subjects of mathematics and English Language Arts, with an additional redesign of instruction and assessment to measure learning in these areas. By the time the CCSS was announced, NCLB was already considered flawed by many of the stakeholders tasked with its implementation (McGuinn, 2016; Egalite et al., 2017). The Education Department under the Obama Administration recognized flaws in NCLB but decided to double down on the testing requirement for schools. As part of the American Recovery and Reinvestment Act (ARRA), the administration attempted to incentivize the adoption of the Common Core Standards by states through the Race to the Top Initiative (RTTP; American Recovery and Reinvestment Act [ARRA], 2009). Under RTTP, the Education Department withheld $4.3 billion dollars in federal education funding intended for states until they submitted a plan to adopt the new standards. Plans were required to include a teacher-accountability system based in part upon students' test results on a variety of standardized tests (ARRA, 2009).

This pairing of increased testing with mandatory teacher evaluations based upon student-test results threw gasoline on an already raging fire, creating an environment "ripe for protest" (Pizmony-Levy & Saraisky, 2016). Two main factors contributed to the rapid expansion of public discontent with RTTP. The first was political in nature and involved the perceived overreach of the Federal Department of Education in forcing the

states to adopt the CCSS (Supovitz, Daly, & Del Fresno, 2015). The second factor, setting the stage for the Opt Out movement, was that the states' adoption of the CCSS had to be paired with a much heavier emphasis on standardized testing and accountability measures. This had the effect of uniting groups from across the political spectrum, many of whom had previously been strong proponents of the educational reform movement (Supovitz & Spillane, 2015). Parents and educators who attempted to address their concerns through traditional outlets found the federal government to be dismissive in its response. This was perhaps best encapsulated in 2013 when U.S. Secretary of Education Arne Duncan referred to the burgeoning opposition as "white suburban moms" who were suddenly faced with the reality that "their child isn't as brilliant as they thought they were" (Evans & Saultz, 2015).

Grassroots opposition movements began to appear in several states, as parents decided to opt their children out of taking the assessment tests mandated by RTTP. New forms of social media enabled teachers, parents, and students to both communicate their own experiences with standardized tests and to organize rapidly into pockets of resistance (Wang, 2017). In New York, more than 50 parent and teacher groups combined to form organizations such as New York State Allies for Public Education (NYSAPE) to oppose the mandated testing and implementation of CCSS (Levy, 2016). Parents complained that the increased focus on testing had several detrimental effects on education, such as a narrowing of the curriculum and reduced instructional time devoted to non-tested subject areas (Valenzuela, Sun, Germain, & Barnes, 2015). As the movement grew, greater numbers of students opted out of taking the New York assessment tests. In 2014, a reported 60,000 students (less than 5% of all students in New York) opted out of the New

York Assessment tests. By the next year, over 20% of students statewide opted out of a state assessment exam (Harris & Fessenden, 2015). Nationally, more than 500,000 students opted out of a state assessment in 2015 with the highest number in New York (240,000) and two other states (New Jersey and Colorado) with numbers greater than 100,000 students each (Layton, 2015).

The sheer number of opt-outs in New York provided a potential threat to the validity of the teacher accountability measures associated with the tests (Alzen, Fahle, & Domingue, 2017). Additionally, the high number of opt outs raised the possibility of inaccurate testing data leading to incorrect funding ratios for school districts in need. (Levy, 2016). The Obama administration responded to the political fallout through passage of the Every Student Succeeds Act (ESSA) in December 2015. The new legislation transferred some control back to the states but still maintained a strong emphasis on equity in public education through the use of testing (National Council of State Legislatures, 2015). This continued reliance on testing did little to assuage one of the major sources of parental discontent that gave rise to opt out—the amount and emphasis on testing. Additionally, opponents argued that any meaningful reform aimed at closing the achievement gap (one of the stated purposes of NCLB) must address opportunity and income gaps in the schools (Mathis & Trujilo, 2016). In fact, research indicated that a student's family income had become as strong a predictor of test scores as the level of parental education (Reardon, 2013). ESSA effectively continued the accountability measures put in place under NCLB. With the exception of federal programs already in place such as Title I, NCLB did not address opportunity factors outside of the classroom indicative of broad inequalities in the society at large that could

potentially lead to racial and economic achievement gaps (Au & Hollar, 2016). By the time ESSA was signed into law, a full seven years after the recession of 2008, a total of 31 states were still spending less on education than 2008 levels (Leachman, Albares, Masterson, & Wallace, 2015). ESSA did little in the way of providing federal funding or guidance to successfully address this opportunity gap, although the new legislation did allow states to include non-academic indicators in their reports on underperforming schools (Mathis & Trujilo, 2016). This provided at the very least a chance of moving the discussion of the link between income, funding, and academic performance more into the public forum.

Parents and public education advocates were also united in their fear of the privatization of the public education system (Goch, 2018). As of 2015 funding at the state and federal level for public education in the US was in excess of $700 billion annually (Au & Hollar, 2016). This inherently held a large incentive for corporate educational reformers seeking to win that funding through privatization and market competition (Ravitch, 2013). As test results led to more schools struggling to meet adequate yearly progress goals, charter schools used those scores as a form of currency to offer parents an educational choice and ciphon more funding away from public schools (Anderson, 2016; Zeichner & Pena-Sandoval, 2015). Under the pretext of philanthropy, billionaire tech giants such as Bill Gates and Mark Zuckerburg made significant donations to a variety of educational causes (Rusakoff, 2015). Opponents argued that these actions, taken in conjunction with the world's largest educational corporation, Pearson, were simply an attempt to privatize the delivery of curriculum and assessments to public school classrooms (Hursh, 2017). In New York State, this perception added to a growing list of

mitigating factors that created the perfect breeding ground for the opt out movement (Bennett, 2016).

Who Opts Out?

Opt out rates may be higher for certain populations than for others (Croft & Lee, 2016). This raises concerns about the accuracy of the data being collected. The concentration of opt-outs in particular demographic groups may lead to inaccurate information about overall student academic performance being released to the public (Croft, 2015).

Results from national surveys on participation in state assessment tests suggest that a majority of students opting out are likely to be white and come from districts with more resources available to them, although this data could be misleading. One study of New York opt out rates found that students in districts with fewer disadvantaged students and higher test scores were more likely to opt out than students in districts with a larger number of disadvantaged students (Chingos, 2015; Pizmony-Levy & Saraisky, 2016). A study of the opt out movement in New Jersey found that when the focus was narrowed to only high schools, the rates of opting out were correlated with socioeconomic status with higher opt out rates in ELA and Algebra II occurring in lower-poverty districts (Supovitz, Stephens, Kubelka, McGuinn, & Ingersoll, 2016). Data on subgroup differences between those opting out and students participating in state tests are valuable and could inform education policy (Clayton, Bingham, & Ecks, 2019). This has traditionally been the viewpoint of Civil rights organizations, which have in some cases opposed opting out as being detrimental to measuring disparities in schools serving low-income and under-represented groups (Pizmony-Levy & Saraisky, 2016).

Upon closer examination, the characterization of the Opt Out Movement as one of white, suburban privilege is somewhat misleading. Prior performance on a state assessment may also be linked to the decision to opt out. NYSED data from 2016 indicated that non-white students who opted out in low-need districts were more likely to have received a low proficiency score on the prior year's exam (Goch, 2017). Although the percent of students opting out in New York City has been significantly lower than in the suburban counties of Nassau and Suffolk, the majority of students that did opt out were classified as economically disadvantaged (NYSED, 2017). A study by the Brookings Institute found that on average, an increase in the number of students receiving free and/or reduced-price lunch through the school district resulted in a drop of 11 percentage points in the opt out rate (Chingos, 2015). Another potential reason for the lower opt out numbers in New York City as compared to other municipalities in the state is that 25% of middle schools and 35% of high schools in NYC have a screening process for admission that uses scores on standardized tests as an important selection criterion (Goch, 2018). In fact, significant opt out movements have occurred in cities across New York State such as Albany, Buffalo, and Utica (NYSED, 2017). Data from 2017 indicates that in both Albany and Utica between 15 and 20 percent of students refused to participate in the ELA or Math tests, while Buffalo's refusal numbers ranged from 10 to 15 percent (NYSED, 2017).

Responses to Opting Out

Public opinion is still largely divided on both the use of standardized testing and a parent's right to opt out of such testing. Initially, approximately two-thirds of parents of K-12 students expressed support of the annual testing requirements that accompanied the

NCLB legislation (Deming, et al, 2016). In fact, a 2015 poll by Phi Delta Kappa and Gallup found that 59% of public-school parents would not excuse their own child from taking standardized tests (Croft, 2015). Similar national polling results indicate that minority group parents supported testing students more than White parents by a large margin, while white parents supported the right to opt out of testing more than minority group parents by a large margin (Bennett, 2016). There is evidence to suggest that public opinion regarding Opting Out may vary by geographic region. In New York, approximately half of the population supports the Opt Out Movement as compared to less than a quarter of the public in California (Pizmony-Levy, Cosman, 2017). And although the data suggest that a majority of the public nationwide oppose the Opt Out movement, there is a well-organized and politically savvy minority that oppose it (Bennett, 2016).

Both Federal and State Governments have responded to the Opt Out movement through the introduction of legislation both for and against parent's rights to prohibit their children from taking certain standardized tests. As the number of students opting out began to surge nationwide, the federal and state governments responded in kind in an attempt to stem the tide of test refusal. In 2015 the U.S. Department of Education sent warnings to twelve states indicating that they were in violation of federal law through their lower test participation rates (Foster, 2016). Some state departments of education provided school districts with lists outlining potential consequences if parents chose to opt their children out of state exams, including grade-level retention and loss of eligibility for graduation (Evans & Saultz, 2015). Opposition groups countered this with their own informational guides for parents and teachers. One comprehensive guide in New York listed reasons why opting out was a valid choice, including lost instructional time and

adverse effects of over-testing on students (Polos, Cerrone, & Kilfoyle, 2015). Multiple states have passed legislation making participation in state assessments mandatory, and State Education Departments have detailed penalties for districts that do not meet a minimum percentage of students taking the tests (Aragon, Rowland, & Wixom, 2015). In New York State, school districts will be required to report participation rates for all subgroups in all schools in the district report card, along with other accountability measures. Districts with schools that persistently and substantially do not meet participation rates will be required to submit a corrective action plan that will escalate over time (NYSUT, 2017).

Notably, not all states have policies in opposition to the Opt Out Movement. Oregon and Pennsylvania provide exemptions from testing for religious reasons, and in New Jersey legislation requires parents to notify the school district of their intention to opt out at least 14 days prior to the administration of the test (Aragon, Rowland, & Wixom, 2015). Utah and California have passed legislation allowing parents to opt out of assessment tests for any reason and provide a set of guidelines for doing so (Croft & Lee, 2016). A number of other states have introduced legislation that would allow parents to opt out of certain exams under certain conditions (Croft & Lee, 2016).

Summary

Although there is no current literature exploring whether the decision to opt out of a state assessment exam is a significant predictor of a student's performance in a subsequent math class, existing research does indicate that school test scores may predict an increase in opt out levels in the following school year. In one such study, results indicated that schools with lower test scores in an academic year had higher opt out rates

in the following school year (Bennett, 2016). In fact, survey results indicate that only 4.9 % of parents deciding to opt out expressed concern about the test performance of their children (Pizmony-Levy & Saraisky, 2016). To date there is little data on how the decision to opt out might affect different subgroups in different ways, including long-term performance on future standardized tests. The current study explored the possible effects opting out could have on a variety of demographic subgroups in three essential ways. First, the study examined whether placement in a particular subgroup could significantly predict the decision to opt out of a mandated state assessment test. When and if the decision to opt out had been made, the present study examined whether that decision could predict a change in a student's grade on the New York Algebra Regents exam after controlling for demographic information and prior achievement. Finally, this study examined if the decision to opt out of the New York State 8th grade Mathematics Assessment Test was a significant predictor of a student's score on the New York Algebra Regents Exam among subgroups with high rates of opt out, controlling for other demographics and prior achievement.

CHAPTER 3

The purpose of this descriptive, *ex post facto* quantitative study was to investigate patterns in the demographic characteristics of students opting out of the New York State 8th grade Mathematics Assessment Test. In particular, the study examined identifiable trends in which students are choosing to opt out as well as potential scoring anomalies in subsequent New York Algebra Regents Exam scores for those students.

Research Questions and Null Hypotheses

The current study analyzes the following research questions. The corresponding null hypotheses are shown below each question.

1. Are race/ethnicity, gender, socioeconomic status, special education classification, or prior GPA significant predictors of the decision to opt out of the New York State 8th grade Mathematics Assessment Test?

   H_0: There is no association between race/ethnicity ($\beta_{asian} = \beta_{black} = \beta_{hispanic} = \beta_{other} = 0$), gender ($\beta_{female} = 0$), socioeconomic status ($\beta_{fprl} = 0$), special education classification ($\beta_{sped} = 0$), or prior GPA ($\beta_{priorgpa} = 0$) and the decision to opt out of the New York State 8th grade Mathematics Assessment Test.

2. Is the decision to opt out of the New York State 8th grade Mathematics Assessment Test a significant predictor of a student's score on the New York Algebra Regents Exam, controlling for student demographics and prior achievement?

H_0^1: There is no association between the decision to opt out $(\beta_{optout} = 0)$ of the New York State 8th grade Mathematics Assessment Test and a student's score on the New York Algebra Regents Exam.

H_0^2: There is no association between the decision to opt out $(\beta_{optout} = 0)$ of the New York State 8th grade Mathematics Assessment Test and a student's score on the New York Algebra Regents Exam after controlling for student demographics and prior achievement.

3. Is the decision to opt out of the New York State 8th grade Mathematics Assessment Test a significant predictor of a student's score on the New York Algebra Regents Exam among subgroups with high rates of opt out, controlling for other demographics and prior achievement?

   H_0^3: There is no association between the decision to opt out $(\beta_{optout} = 0)$ of the New York State 8th grade Mathematics Assessment Test and a student's score on the New York Algebra Regents Exam among subgroups with high rates of opt out.

   H_0^4: There is no association between the decision to opt out $(\beta_{optout} = 0)$ of the New York State 8th grade Mathematics Assessment Test and a student's score on the New York Algebra Regents Exam among subgroups with high rates of opt out after controlling for student demographics and prior achievement.

Data Access, Variables, and Cleaning

Data Access

All data used in the current study was accessed by request from each of five schools in a central high school district in the New York. The high school district serves approximately 8,000 students with the following racial/ethnic composition: 26% Black or African American, 18% Hispanic or Latino, 20% Asian, 36% White, and 1% Multiracial/Other. Additional demographic subgroup percentages included 3% English Language Learners (ELL), 12% classified as students with disabilities, and 34% economically disadvantaged. The enrollment by gender totaled 51% male students and 49% female students. Those percentages remained roughly the same for the 2017-2018 school year, with the following subgroup percentage changes: 25% Black or African American, 19% Hispanic or Latino, 21% Asian, 34% White, and 1% Multiracial/Other. Additional percentage changes included 4% English Language Learners (ELL), 10% classified as students with disabilities, and 38% economically disadvantaged, 52% male students, and 48% female students. All definitions of race, economic disadvantage, gender, and special education classification are those used by the New York State Department of Education (NYSED, 2020).

Approval to collect data was granted by the Institutional Review Board for St. John's University, which classified this study as exempt under category 2 for research. Access to the data for the present study was coordinated through and with the explicit permission of the school district administration. All relevant student data was *ex post facto* and was compiled by the school district data compliance officer into an excel spreadsheet using the New York State Level 2 Reporting (L2RPT) system for accessing

data in the New York State Student Information Repository System (SIRS). L2RPT reports include but are not limited to demographic, enrollment, program, assessment and graduation data for students enrolled in public schools within the state of New York (NYSED, 2021). The student data used in the study was compiled in full compliance of the requirements of the Family Educational Rights and Privacy Act (FERPA) as well as the Protection of Pupil Rights Amendment (PPRA). All individual student records were given a randomized unique four-digit identification number (UID) by the district data compliance officer. Any identifying student information was removed prior to the transfer of data to the researcher in this study. As a secondary safety measure, all data was both transferred and stored on a password-protected external hard drive.

Variables

Seven demographic variables were collected for use in this study. Gender was identified by the indicator variable *female* (equal to 1 if the student was female; 0 otherwise). Race was identified by the three indicator variables of *black*, *asian*, and *other* (the indicator for white students was the baseline and was omitted from the model; it served as the reference category). Socioeconomic status was based solely upon a student's eligibility for free or reduced lunch through the school and was identified by the indicator variable *frpl* equal to 1 if the student received free and/or reduced-price lunch. Whether or not a student had been classified as a special education student was identified by the indicator variable *sped*. Prior GPA was defined as the quantitative continuous independent variable *priorgpa*. Specifically, this value represented the 7th Grade final mathematics grade point average recorded as a numerical value assigned to each student in the sample.

The key variables of interest were $optout_i$, $regents_i$, and $priorgpa_i$. The variable $optout_i$ served both as a dependent variable (for research question one) and an independent variable (for research questions two and three); it referred to the decision of student *i* to opt out of the New York State 8th grade Mathematics Assessment Test. The variable $regents_i$ referred to the score of student *i* on the New York Algebra Regents exam taken in the school year following the 8th grade assessment test.

Data Cleaning

After receipt of the de-identified data, it was subsequently cleaned for use in the analyses. The initial data consisted of 1339 student records that met the grade level requirement (the student had to be enrolled in the 8th grade in one of the five schools in the district during the 2017-2018 school year and in 9th grade in one of the five schools in the following year). Of those records, 268 were missing a final math grade point average for their 8th Grade school year. Possible explanations to account for the missing averages include students either entering or leaving the school district during that academic year, as well as students receiving an incomplete as a math grade for that year. These records were subsequently removed from the data. An additional 451 students did not take the New York State Algebra Regents exam during the 2018 – 2019 school year. These included students that did not meet the grade requirements to take algebra as well as students that moved out of the school district during this academic year. These records were also removed from the data, leaving a new total of 620 student records in the sample for the study. Finally, one outlier was removed, leaving a total sample of 619.

Descriptive Statistics of the Analytic Sample

The sample of 619 students was 47% female and 53% male. Black students accounted for 23% of the sample population, Asian students for 17%, White students for 58%, and other race students for 1%. The other race sub-category combined the original school district designations of multiracial as well Hawaiian/other Pacific Islander into one variable as there were only 9 students that were categorized as such in the data. More than one-third of the students in the study (n = 236, 38%) qualified for FRPL under existing income eligibility guidelines for public school students in New York State (NYSED, 2017). 8% of students (n = 52) in the study were classified as special education students and received special education services from the school district.

Table 2

Descriptive Statistics for Categorical Predictor Variables

Variable		Percentage	Count
Gender			
	Female	47%	294
	Male	53%	325
Black		23%	145
Asian		17%	108
Other Race		1%	9
FRPL		38%	236
Special Education Classification		8%	52

Note: Percentages are of the total sample

The distribution of student final 8th Grade math averages for the sample (M = 82.87, SD = 6.74) and 9th grade Algebra I Regents scale scores (M = 77.66, SD = 6.67) are shown in Table 3. It should be noted that the school district in question employed a grading policy where the minimum grade a student could receive in any class was a 50 regardless of what that student's actual numerical grade was. This point is discussed further in chapter 5.

Table 3

Descriptive Statistics for 8th Grade Math GPA and 2019 Algebra Regents Exam

	N	Mean	SD	Min	Max
Grade 8 Math GPA	619	82.87	6.74	57.80	97.44
2019 New York Algebra Regents Exam Scores	619	77.66	6.67	48	95

Note: SD = Standard Deviation

The total number of students in the district that opted out of this administration of the New York State 8th grade Mathematics Assessment Test (n = 336, 54%) was slightly larger but commensurate with the opt out average of 49.9% for this geographic area of New York during the 2017 – 2018 academic year (Hildebrand & Ebert, 2019). These percentages varied among demographic subgroups (Table 4).

Table 4

Opt Out Percentages by Subgroup

Variable		Percentage	Count
Gender			
	Female	59%	173
	Male	50%	163
White		67%	238
Black		39%	57
Asian		31%	33
Other Race		89%	8
Socioeconomic Status		47%	111
Special Education Classification		52%	27

Note: Percentages are of subgroups opting out

Research Design

This study used a quantitative design that included a binomial logistic regression to analyze research question 1 as well as multiple linear regression models to investigate research questions 2 and 3. The assumptions of each regression model were assessed to determine the validity of the statistical model; the results of these tests are discussed in Chapter 4. For all analyses, the significance level for each independent variable was set at a minimum level of $p < .05$.

The sample size ($N = 619$) in the current study was large enough to meet the recommended guidelines for a multiple regression analysis with a medium effect size testing the multiple R-value for statistical significance (Green, 1991). Additionally, the

current sample met the size recommendations detailed by Maxwell for a multiple regression analysis with seven predictors and a power of .80 when accounting for potential interaction effects between independent variables (Maxwell, 2000).

Data Analysis

The model used to answer research question 1 was:

$$optout_i = \beta_0 + \beta_1(female_i) + \beta_2(hispanic_i) + \beta_3(black_i) + \beta_4(asian_i) + \beta_5(otherrace_i) + \beta_6(frpl_i) + \beta_7(sped_i) + \beta_8(priorgpa_i) + e \quad (1)$$

where $optout_i$ represented the dependent variable of the decision of student *i* to opt out of the New York State 8th grade Mathematics Assessment Test. All other variables were defined as above.

The estimated coefficients for model regression equation 1 were defined individually as the degree to which a student being a member of a particular demographic subgroup differentially impacted their decision to opt out. For example, a β_1 value that was significantly different from zero would indicate that a students' being female differentially impacted their decision to opt out when compared to the baseline group of white male students. The remaining estimated coefficients were similarly defined for each of the indicator variables. Model equation 1 was used to estimate whether the indicators of race, gender, socio-economic status, special education classification, or prior GPA were significant predictors of the decision to opt out of the New York State 8th grade Mathematics Assessment Test.

For the second research question, four separate regression models were used. The first two regression analysis models were used to determine whether a "yes" decision

to opt out of the New York State 8th grade Mathematics Assessment Test was a significant predictor of the dependent variable of a student's score on the New York Algebra Regents Exam (model 1A). The regression equation for this model is detailed in the figure below.

$$regents_i = \beta_0 + \beta_1(optout_i) + e \quad (2)$$

In model equation 2 above, $regents_i$ represented the numerical score of student *i* on the New York Algebra Regents Exam. The indicator variable $optout_i$ represented the decision of student *i* to opt out of the New York State 8th grade Mathematics Assessment Test. β_1 for model regression equation 2 was defined as the degree to which the decision of student *i* to opt out impacted their score on the New York Algebra Regents Exam. A β_1 value that is significantly different from zero would indicate that a students' decision to opt out did in fact impact their Regents Exam score. This model equation was used to estimate whether the decision to opt out impacted a student's Algebra Regents Exam score.

The second regression model for research question two kept the same dependent variable of $regents_i$ with additional controls for the demographic subgroups of race/ethnicity, gender, socio-economic status, special education classification, and prior achievement. The equation for this regression model is detailed in the figure below.

$$\begin{aligned} regents_i = {} & \beta_0 + \beta_1(optout_i) + \beta_2(female_i) + \beta_3(black_i) \\ & + \beta_4(asian_i) + \beta_5(other_i) + \beta_6(frpl_i) + \beta_7(sped_i) \\ & + \beta_8(gpa_i) + e \end{aligned} \quad (3)$$

In the model outlined above, all variables were defined as in regression model 2. Comparing the coefficients of the indicator variables in model equations 2 and 3 provided

information as to whether controlling for demographics changed the effect of the decision to opt out on a student's subsequent Algebra Regents exam score.

The third research question used model regressions identical to the two models for research question two but limited the data set individually to the two subgroups that demonstrated the highest rate of opt out and had sufficient sample size for analysis: White students and female students. The regression models were estimated separately for each of these subgroups. Although the first regression model equation remained unchanged, the second model equations had to be adjusted slightly to account for unnecessary predictors each time the data set was limited to a specific subgroup. The models limiting the data to only White students required the elimination of the predictors of Black, Asian, and Other. That model is shown below.

$$regents_i = \beta_0 + \beta_1(optout_i) + \beta_2(female_i) + \beta_3(frpl_i) + \beta_4(sped_i) + \beta_5(gpa_i) + e \quad (4)$$

The models limiting the data to only female students required the elimination of the female predictor. That model is shown below.

$$regents_i = \beta_0 + \beta_1(optout_i) + \beta_2(black_i) + \beta_3(asian_i) + \beta_4(other_i) + \beta_5(frpl_i) + \beta_6(sped_i) + \beta_7(gpa_i) + e \quad (5)$$

CHAPTER 4

Research Question 1

A binary logistic regression analysis was conducted to determine if race, gender, socioeconomic status, special education classification, and prior GPA are significant predictors of the decision to opt out of the New York State 8th grade Mathematics Assessment Test. The dependent variable was dichotomous, equal to one if the student opted out. Although a least squares regression could be used to identify a linear probability model, the residuals from such a model would be heteroskedastic and could potentially lead to predicted probability values outside of the (0, 1) range. As a result, the logistic regression model was used to identify factors that potentially influence the decision to opt out.

Prior to the analysis, the Box-Tidwell (1962) procedure was used to confirm that the linearity assumption was met. A Bonferroni correction was applied to a model with eight terms (the seven predictor variables plus the constant term). The only continuous independent variable (*gpa*, $p > .00625$) was found to be related to the logit of the dependent variable. There was no significant correlation between the seven predictor variables, and the VIF and Tolerance statistics ($VIF < 3$ for all) indicated there was no multicollinearity.

The resulting logistic regression model was statistically significant, $\chi^2(8) = 76.05, p < .001$. 15.5% (Nagelkerke R^2) of the variation in students opting out was explained by the model and 66.7% of cases were correctly classified. Model sensitivity was 73.8% with a specificity of 58.3%. The positive predictive value of the model was 67.8%, the negative predictive value was 66.0%. Three of the eight predictor variables

were statistically significant (as shown in Table 5). Female students had 1.580 times higher odds of opting out than male students, while Black or Asian students showed a reduced likelihood of opting out of the New York State 8th grade Mathematics Assessment Test relative to their White peers.

Table 5

Logistic Regression Predicting Likelihood of Opting Out

	B	SE	Wald	*df*	*p*	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Female	.458	.175	6.797	1	.009**	1.580	1.120	2.229
FRPL	-.334	.185	3.264	1	.071	.716	.499	1.029
SPED	-.397	.312	1.618	1	.203	.672	.365	1.239
Black	-1.171	.215	29.663	1	<.001***	.310	.204	.473
Asian	-1.445	.240	36.178	1	<.001***	.236	.147	.378
Other Race	1.535	1.072	2.050	1	.152	4.642	.568	37.962
GPA	-.007	.014	.254	1	.614	.993	.967	1.020
Constant	1.212	1.167	1.078	1	.299	3.359		

Note: *$p < .05$; **$p < .01$; ***$p < .001$. FRPL = Free or Reduced-Price Lunch; SPED = Special Education

Research Question 2

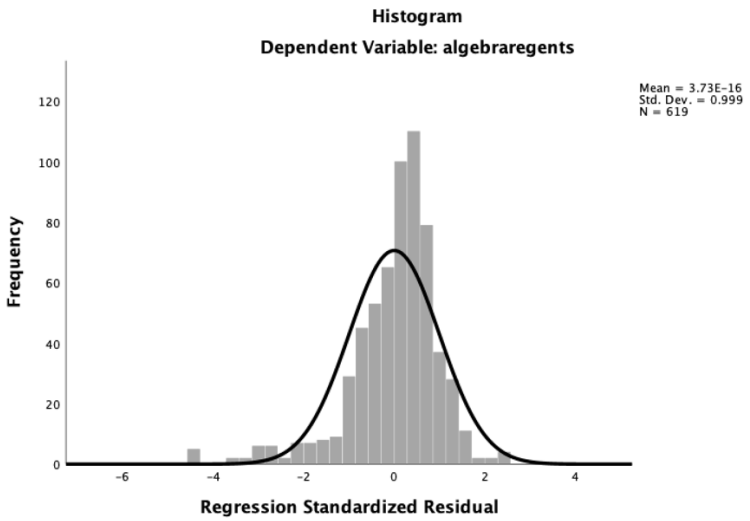
A multiple regression analysis was conducted to determine if the decision to opt out of the New York State 8th grade Mathematics Assessment Test was a significant predictor of a student's score on the New York Algebra Regents Exam using two models. The first model considered only the decision to opt out as a dichotomous predictor, while

the second model controlled for the other predictors of race, gender, socioeconomic status, special education classification, and prior GPA.

In the first model of research question two, the dependent variable of Algebra Regents Exam score was measured at the continuous level. The one independent variable Opting Out was dummy coded with the choice to opt out coded as a "1" with not opting out coded as "0". Because the dichotomous categorical predictor of Opting Out was dummy coded it was assumed that a linear relationship existed between the dependent and independent variables. Independence of observations was assessed by a Durbin-Watson statistic of 1.901, indicating that there was no correlation between residuals in the regression. Homoscedasticity was verified through visual inspection of a scatter plot of the standardized residuals against the standardized predicted values. Additionally, residuals were normally distributed as assessed through a visual inspection of a normal probability plot.

Figure 3

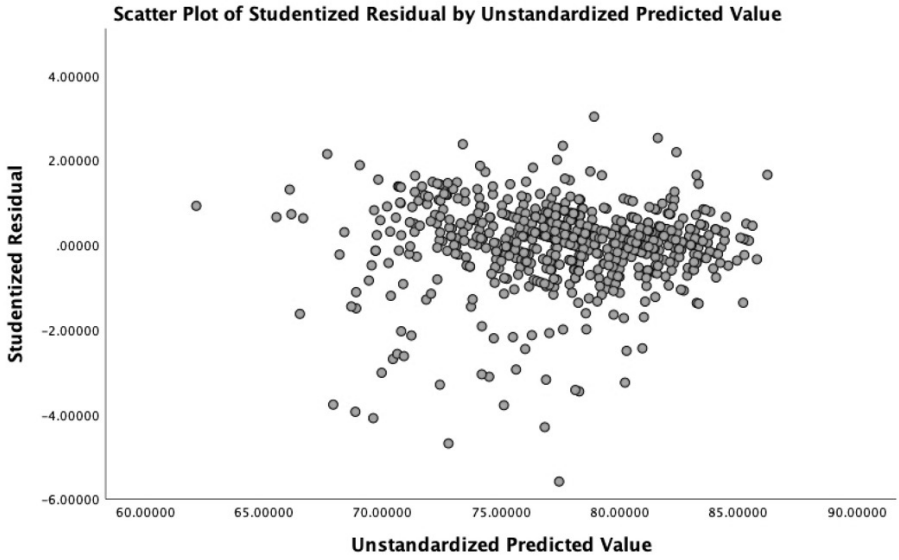
Histogram of Regression Residuals for Research Question 2 Model 1



Independence of observations was assessed by a Durbin-Watson statistic of 1.952. The linear relationship between the Algebra Regents scores and the collection of all predictors was assessed by plotting a scatter plot of Studentized Residual by Unstandardized Predicted Value as shown in Figure 4 below.

Figure 4

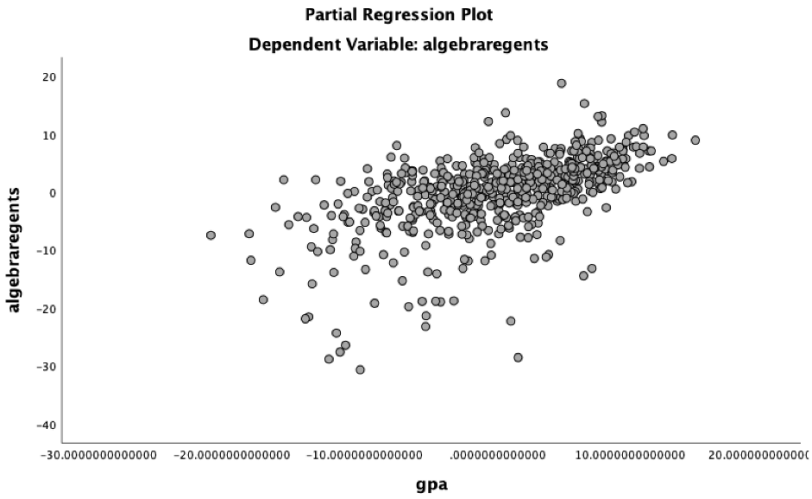
Studentized Residual by Unstandardized Predicted Value



The linear relationship between Algebra Regents scores and the only continuous predictor of prior GPA was established using a partial regression plot as shown below in Figure 5. All other predictors were categorical and linearity was assumed.

Figure 5

Partial Regression Plot of Algebra Regents Exam Against GPA



There was homoscedasticity, as evidenced through a visual inspection of the plot of studentized residuals versus unstandardized predicted values in Figure 4. The lack of multicollinearity was assessed through verification that none of the predictors had correlations greater than 0.7 (see Table 6 below) as well as Tolerance values which all fell within acceptable parameters. (Tolerance > .1).

Table 6

Correlation Matrix

	Regents	Opt out	GPA	Gender	FRPL	SPED	Black	Asian	Other Race
Regents	1								
Opt out	-.02	1							
GPA	.59	.05	1						
Gender	.04	.09	.14	1					
FRPL	-.18	-.12	-.25	-.01	1				
SPED	-.06	-.01	-.09	.03	-.05	1			
Black	-.17	-.17	-.24	.05	.14	-.03	1		
Asian	.17	-.21	.09	-.03	.09	-.06	-.25	1	
Other Race	-.02	.08	-.02	-.01	.04	.06	-.07	-.06	1

Note: Regents refers to a student score on the Algebra Regents Exam

The assumption of normality was met, as assessed through a histogram and P-P plot of the regression residuals (Figures 6 & 7).

Figure 6

Histogram of Regression Residuals

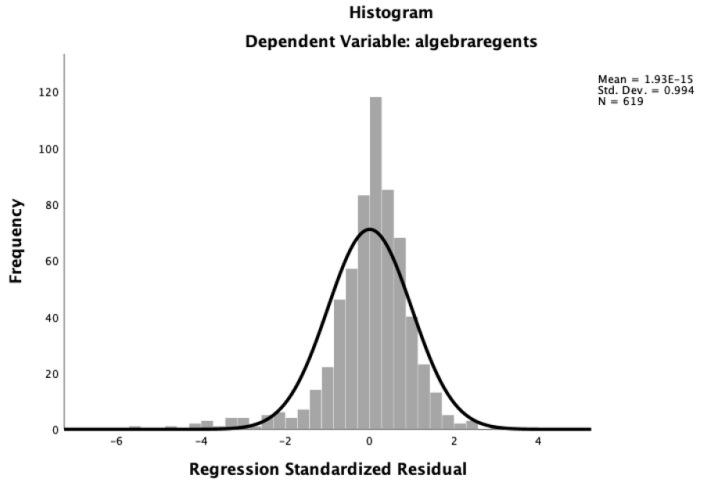
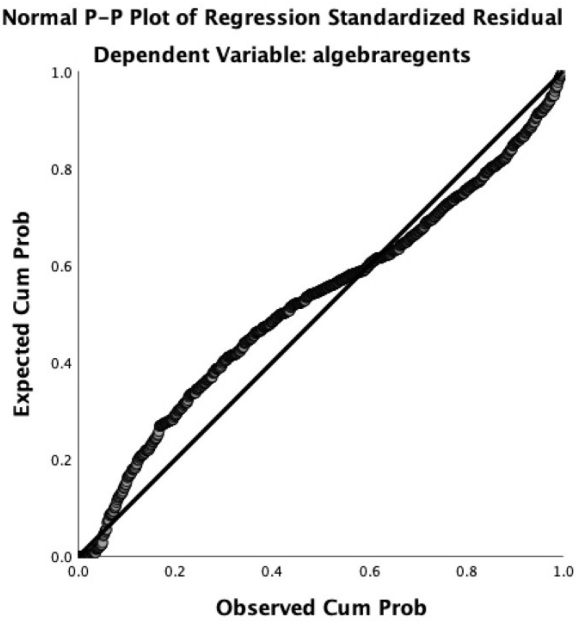


Figure 7

P-P Plot of Regression Residuals



R^2 for the baseline model (controlling for all predictors except *optout*) was .1% with an adjusted R^2 of -.1%, indicating that opting out accounted for only .1% of the variation in Algebra Regents Exam scores. The suggested model 1 equation for the regression:

$$regents_i = 77.837 - .323 * optout_i$$

indicated that the decision to opt out was not a statistically significant predictor of Algebra Regents Exam scores, $F(1, 617) = .358$, $p = .55$. The null hypothesis was retained for this model: There was no association between the decision to opt out $(\beta_{optout} = 0)$ of the New York State 8th grade Mathematics Assessment Test and a student's score on the New York Algebra Regents Exam.

Table 7

Regression Results, Model 1

	B	Std.	t	Sig.
Constant	77.837	.397	196.085	.000***
Opt Out	-.323	.539	-.599	.550

Note. *$p < .05$; **$p < .01$: ***$p < .001$

The addition of the other predictors in model 2 did in fact add statistically significant predictive power to the baseline model. Model 2, $F(8, 610) = 44.67$, $p < .001$, accounted for 36.9% of the variability of Algebra Regents Exam scores; however, only *gpa* ($p < .001$) and *asian* ($p < .01$) were individually significant predictors of Algebra Regents Exam scores. The suggested model 2 equation for the regression was:

$regents_i = 30.834 - .418 * optout_i + .57 * gpa_i - .505 * gender_i - .805 * frpl_i - .183 * sped_i + .102 * black_i + 2.001 * asian_i + .022 * other_i$

The *R* Square Change between the two models was negligible ($\Delta R^2 = .001$) and *optout* ($p = .362$) remained not a statistically significant predictor of Algebra Regents Exam scores. In sum, opting out of the state test does not appear related to achievement on the Regent's Exam.

Table 8

Regression Results, Model 2

	B	Std.	t	Sig.
Constant	30.834	2.930	10.522	<.001***
Opt Out	-.418	.458	-.912	.362
GPA	.570	.034	16.590	<.001***
Gender	-.505	.438	-1.153	.249
FRPL	-.805	.465	-1.730	.084
SPED	-.183	.783	-.234	.815
Black	.102	.561	.181	.856
Asian	2.001	.614	3.259	<.01**
Other	.022	1.811	.012	.991

Note.: *$p < .05$; **$p < .01$: ***$p < .001$

Research Question 3

The multiple regression analysis from research question 2 was repeated for separately for White students and female students. These two groups had the largest tendency to opt out, as such further analysis of the impact of opting out was deemed worthy of exploration. The two model equations employed in the second research question were repeated, with some minor exceptions. When the data was restricted to White students, the three race variables (*black*, *asian*, and *other*) were removed from the model 2 equation. When the data was restricted to female students, the *gender* variable was removed from the model 2 equation. The assumptions tests were repeated for the multiple regression analyses for each restricted subset of the data.

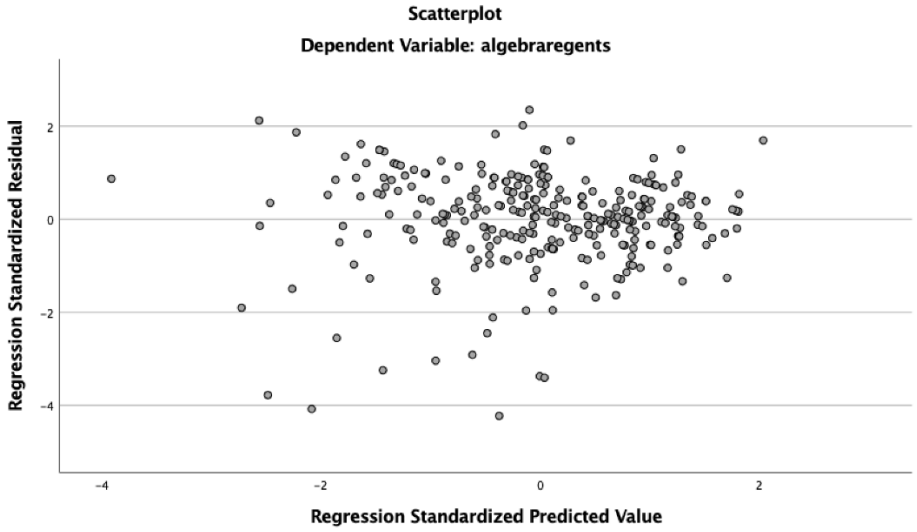
White students

When the data was restricted to White students, 67% chose to opt out of the New York State 8th Grade Mathematics Assessment Test. Independence of observations for the restricted data set was assessed by a Durbin-Watson statistic of 1.944. The linear

relationship between Algebra Regents scores and the remaining predictors (after the removal of *black*, *asian*, and *other*) was assessed through a plot of Standardized Residual by Standardized Predicted Value, shown below in Figure 8.

Figure 8

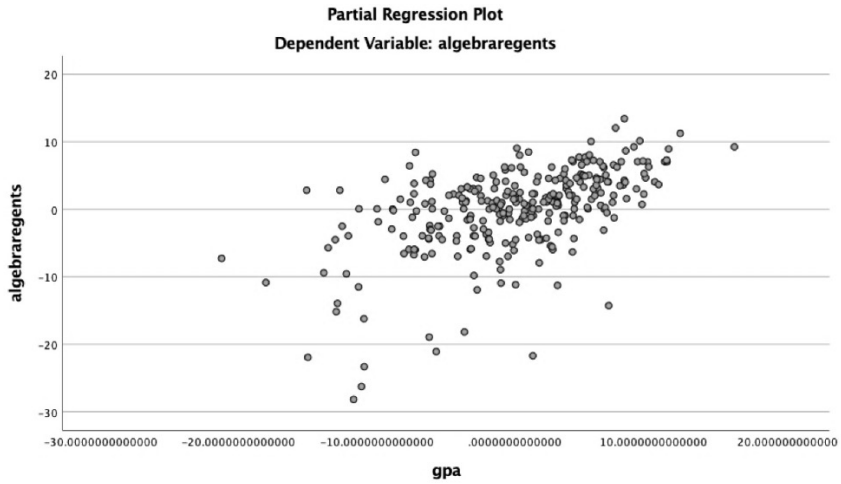
Plot of Standardized Residual by Standardized Predicted Value



The linear relationship between Algebra Regents Scores and prior GPA was established using a partial regression plot as shown below in Figure #. As with research question 2, all other predictor variables were categorical and linearity was assumed.

Figure 9

Partial Regression Plot of Algebra Regents Exam against GPA



Homoscedasticity was assessed through visual inspection of the plot of Standardized Residual by Standardized Predicted Value in Figure 8, and the lack of multicollinearity was confirmed through the determination that none of the remaining predictors had correlations greater than 0.7 (See Table 9 below). Additionally, Tolerance values all fell within acceptable parameters (Tolerance > .1).

Table 9

Correlation Matrix for Research Question 3 White Subset

	Regents	Opt Out	GPA	Gender	FRPL	SPED
Regents	1					
Opt Out	.05	1				
GPA	.58	.10	1			
Gender	.12	.09	.18	1		
FRPL	-.21	-.17	-.29	.01	1	
SPED	-.06	-.07	-.09	.03	-.29	1

As with research question 2, the normality assumption was met as assessed through a histogram and P-P plot of the regression residuals (Figures 10 & 11).

Figure 10

Histogram of Regression Residuals

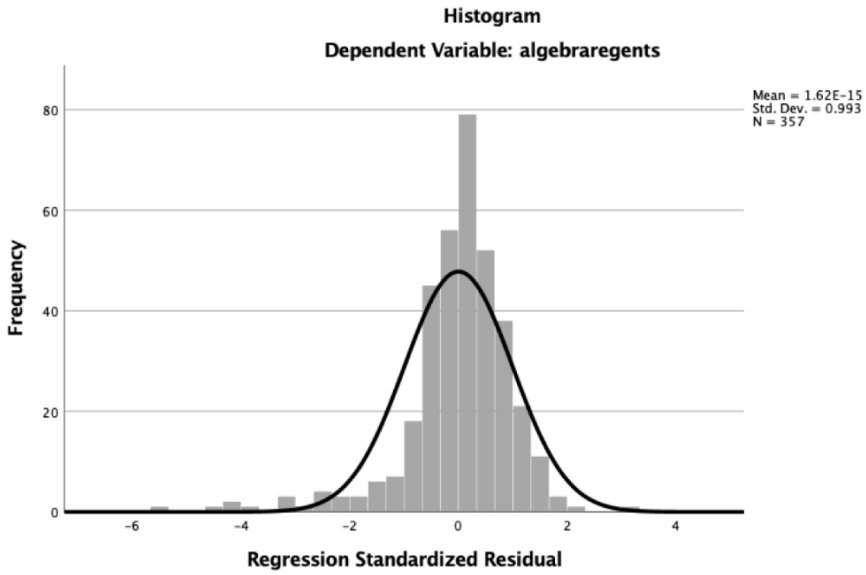
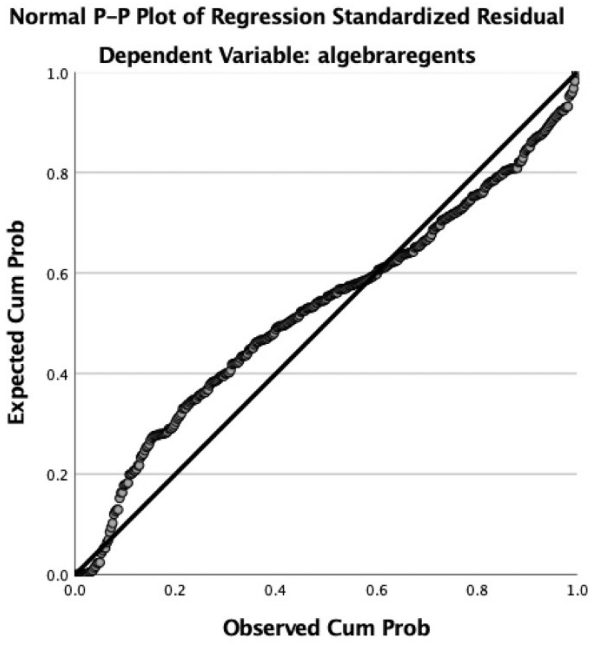


Figure 11

P-P plot of Regression Residuals



R^2 for the model 1 regression (controlling for all remaining predictors except *optout*) was .2% with an adjusted R^2 of -.1% indicating that when the data was restricted

to white students opting out only accounted for .2% of the variation in Algebra Regents Exam scores. The model 1 regression equation for research question 3 on the subset of white students:

$$regents_i = 77.361 + .630 * optout_i$$

indicated that for this demographic group *optout* was not a statistically significant predictor of Algebra Regents Exam scores, $F(1, 355) = .752$, $p = .386$. Results of the regression analysis indicated that there was still no association between the decision to opt out and a student's score on the Algebra Regents Exam when the data set was restricted to White students. The null hypothesis is retained for this model.

Table 10

Coefficient Matrix – Model 1 White Subset

		Unstandardized			
Model		B	Std.	t	Sig.
1	Constant	77.361	.593	130.352	<.001
	optout	.630	.727	.867	.386

As with research question 2, the addition of the other independent variables (excluding *black*, *asian*, and *other*) resulted in a model that significantly predicted Algebra Regents Exam scores. $F(5, 351) = 36.105$, $p < .001$. The suggested model 2 equation for the regression on the white subset of data:

$regents_i = 31.748 - .232 * optout_i + .557 * gpa_i - .530 * gender_i - .631 * frpl_i - .176 * sped_i$

accounted for 34% of the variability in Algebra Regents Exam scores although individually *optout* was still not a statistically significant predictor ($p = .703$). Based on these results, we retain the null hypothesis for this model.

Table 11

Coefficient Matrix – Model 2 White Subset

Model		Unstandardized B	Unstandardized Std.	t	Sig.
2	Constant	31.748	3.835	8.278	<.001***
	Opt Out	-.232	.608	-.382	.703
	GPA	.557	.045	12.324	<.001***
	Gender	-.530	.576	-.921	.358
	FRPL	-.631	.652	-.967	.334
	SPED	-.176	.953	-.185	.853

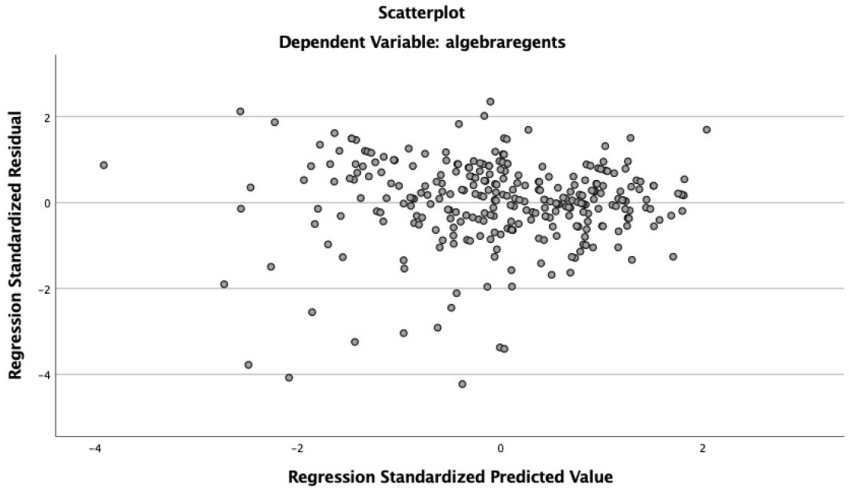
Note: *$p < .05$; **$p < .01$: ***$p < .001$

Female students

When the data set was restricted to female students 59% chose to opt out. Two models were again employed for a regression analysis with the predictors of *gpa*, *frpl*, *sped*, *black*, *asian*, and *other* controlled for in the first model. Independence of observations was assessed by a Durbin-Watson statistic of 2.072. The linear relationship between Algebra Regents Exam scores and the remaining predictors was assessed through a Standardized Residual by Standardized Predicted Value plot as shown in Figure 12.

Figure 12

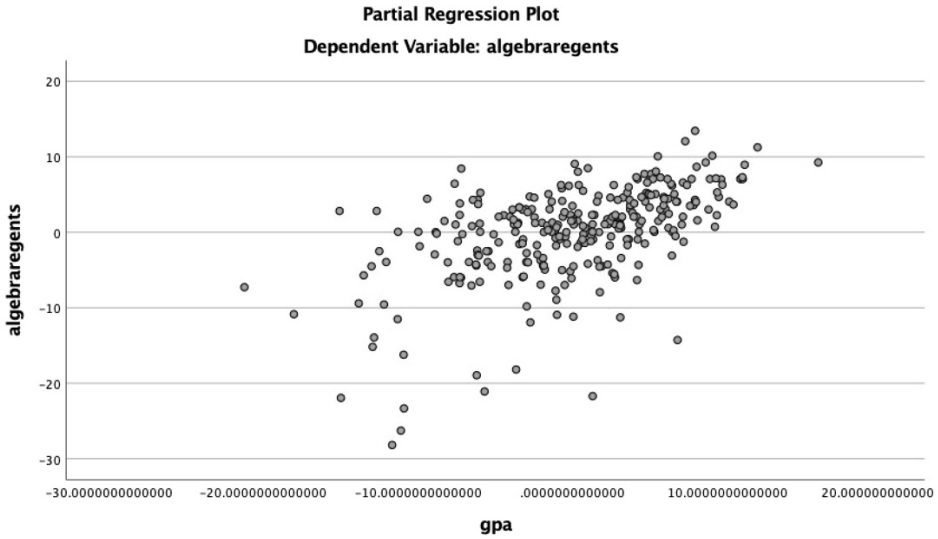
Scatter Plot of Standardized Residual by Standardized Predicted Value



Additionally, the linear relationship between Algebra Regents scores and prior gpa was assessed using a partial regression plot (shown below in Figure 13). Linearity was assumed with the remaining categorical variables.

Figure 13

Partial Regression Plot of Algebra Regents Exam against GPA



Visual inspection of the Standardized Residual by Standardized Predicted Value plot in Figure 12 verified homoscedasticity. The lack of multicollinearity was assessed through examination of the correlations of the remaining predictors, none of which had correlations greater than 0.7. Tolerance values for the regression model all fell within acceptable parameters (Tolerance > .1)

Table 12

Correlation Matrix for Research Question 3 Female Subset

	Regents	Opt Out	GPA	FRPL	SPED	Black	Asian	Other
Regents	1							
Opt Out	-.02	1						
GPA	.58	.10	1					
FRPL	-.24	-.13	-.32	1				
SPED	.03	-.05	-.04	.02	1			
Black	-.14	-.17	-.26	.11	-.08	1		
Asian	.13	-.19	.07	.10	-.05	-.26	1	
Other	-.10	.04	-.08	.03	.17	-.07	-.05	1

The normality assumption was met as assessed through a histogram and P-P plot of the regression residuals (Figures 14 & 15).

Figure 14

Histogram of Regression Residuals

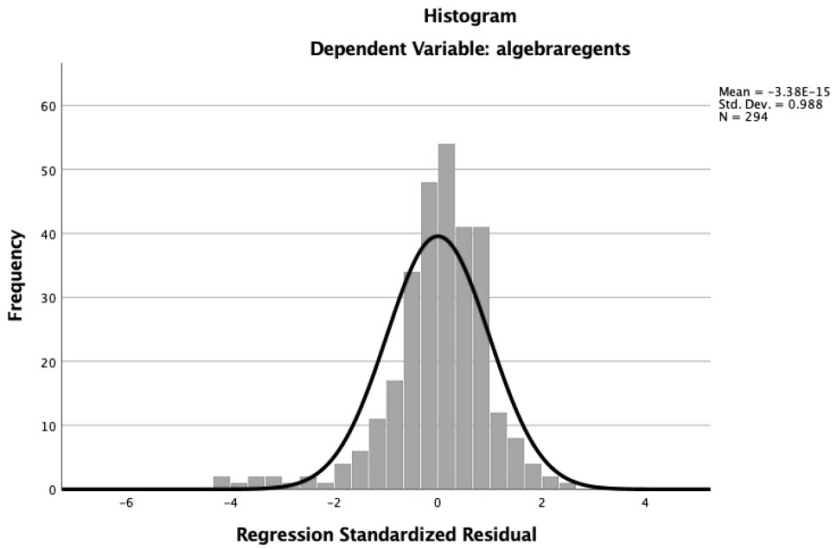
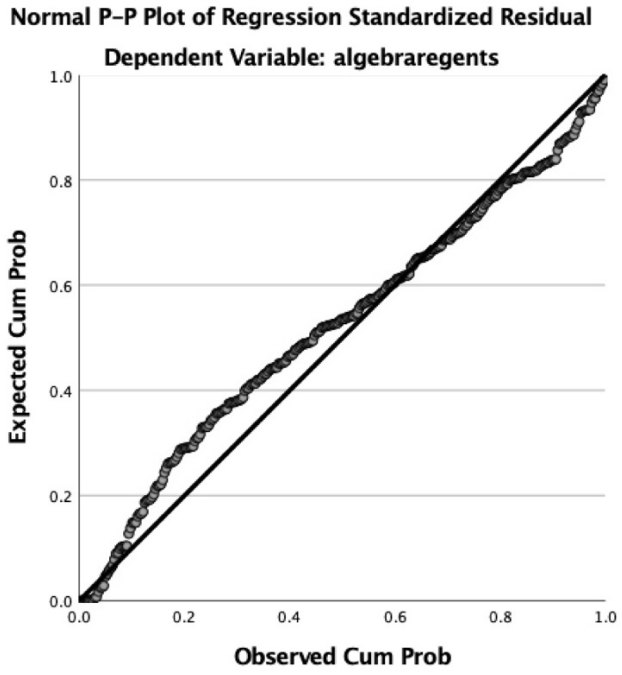


Figure 15

P-P Plot of Regression Residuals



R^2 for the model 1 regression on the female data subset (controlling for other predictors) was 0% with an adjusted R^2 of -.3%. When the data was restricted to only female students, opting out did not account for any variation in Algebra Regents Exam scores. The model 1 equation:

$$regents_i = 78.067 - .245 * optout_i$$

was not a statistically significant predictor of Algebra Regents Exam scores, $F(1, 292) = .098$, $p = .754$. There was no association between the decision to opt out and student scores on the Algebra Regents Exam among female students. The null hypothesis is retained for this model.

Table 13

Coefficient Matrix – Model 1 Female Subset

Model		Unstandardized		t	Sig.
		B	Std.		
1	Constant	78.067	.601	129.841	<.001
	optout	-.245	.782	-.313	.754

The addition of the remaining predictors resulted in a significant predictive equation for model 2, $F(7, 286) = 23.459$, $p < .001$. The suggested model 2 regression equation on the female subset of data is shown below:

$$regents_i = 31.273 - .718 * optout_i + .56 * gpa_i - 1.011 * frpl_i + 1.567 * sped_i + .477 * black_i + 1.787 * asian_i - 3.247 * other_i$$

and accounted for 36.5% of the variability in Algebra Regents Exam scores. Opt out remained a non-significant predictor. As such, we retain the null hypothesis for this model.

Table 14

Coefficient Matrix – Model 2 Female Subset

Model		Unstandardized		t	Sig.
		B	Std.		
2	Constant	31.273	4.445	7.035	<.001***
	optout	-.718	.664	-1.081	.280
	gpa	.560	.051	10.958	<.001***
	frpl	-1.011	.683	-1.480	.140
	sped	1.567	1.096	1.430	.154
	black	.477	.786	.607	.544
	asian	1.787	.906	1.973	.049*
	other	-3.247	2.731	-1.189	.235

Note: *$p < .05$; **$p < .01$: ***$p < .001$

Summary

Female and White students were more likely to opt out than their peers; however, opting out did not prove to be a statistically significant predictor of Algebra Regents Exam scores when analyzed on the entire data set nor on the restricted data subsets of White and female students. Prior GPA and classification in the Asian demographic group were the only independent variables that demonstrated statistical significance as predictors of Regents scores, although that level of significance varied as the data was restricted to different subgroups.

CHAPTER 5

The purpose of this quantitative ex post facto study was to investigate who opts out of state mandated tests and whether that decision potentially impacts future academic performance, specifically on another mandated state mathematics exam. Although the factors leading to the rise of the opt out movement have long-standing roots in the educational reform movement in this country, the proliferation of those actively refusing mandated state tests is a relatively recent phenomenon. Researchers have raced to explain the movement, with the limited number of existing studies focusing largely on who is choosing to opt out and potential reasons for why they are choosing to do so. The existing body of research has not yet significantly addressed how opting out of a mandated test could potentially affect academic performance on future tests. This study was designed to begin to address that knowledge gap.

Summary of Findings and Connection to Prior Literature

Who Opts Out

The analyses herein showed that female students were 1.580 times more likely to opt out from the state math exam in 8th grade than their male counterparts, while Black and Asian students demonstrated a reduced likelihood of opting out when compared to White students. None of the other independent variables, including receipt of Free or Reduce Lunch or prior GPA, were significant predictors of the decision to opt out.

Prior literature has also found differences in opt out rates for different subgroup populations (Croft & Lee, 2016). The percentage of White students opting out was indeed significantly larger than that of either Black or Asian students. This fact, combined with

the observed lack of correlation between a lower socioeconomic status and the decision to opt out, supports prior results that students opting out are likely to be white with more educational resources available to them (Chingos, 2015; Pizmony-Levy & Saraisky, 2016). In a prior study by the Educational Testing Service, 44% of White parents indicated support for opting out of testing while only 28% of Black parents expressed support for opting out (Bennett, 2016). The current study reinforced these findings, although at a slightly higher rate for each subgroup. Results showed that 54% of White students chose to opt out, while only 39% of Black students opted out.

Although student results from the mandated 7th Grade New York Mathematics Assessment Test taken during the prior school year were not analyzed in this study, GPA was not found to be a significant predictor of the decision to opt out. This result may serve as a counter to findings that non-White students who opted out in districts with higher resources were more likely to have received a low proficiency score on the prior year's exam (Goch, 2017). Student scores on the prior test would need to be analyzed in addition to prior GPA to make that determination, however.

A lower socioeconomic status was also not a significant predictor of opting out. This does not support prior findings that students who were economically disadvantaged chose to opt out less than other students (Parr & Teed, 2015), or that a correlation existed between specific ranges of family income level and a reduced likelihood to opt out (Tompson, Benz, & Agiesta, 2013). It should be noted that the failure to observe an economic divide between those opting out and those taking the test could potentially be a function of the method of determining economic disadvantage. Within the present study,

socioeconomic status was measured solely by eligibility to receive free or reduced-price lunch through the school district.

One finding that did not appear in prior research was the higher rate of opting out among female students than male students. Female students in the current study were over 1.5 times more likely to decide to opt out than their male counterparts. More exploration is needed to understand this finding. However, the theoretical lenses of Stereotype Threat (Steele & Aronson, 1995) and Test Anxiety (Mandler & Sarson, 1952; Putwain, Woods, & Symes, 2010) may provide a basis for interpreting the result that female students opted out in higher numbers than male students assuming the decision to opt out is linked to test anxiety. Prior studies have documented women scoring lower on mathematics tests as a result of Stereotype Threat (Inzlicht & Ben-Zeev, 2000) as well as women performing better on tests when the threat has been removed (Boucher, Rydell, Loo, & Rydell, 2012). According to 2015 PISA results on student well-being, girls were likely to suffer test anxiety more than boys across all countries participating in the study (OECD, 2016). These frameworks only offer potential justification of observed results as these hypotheses were not tested in the regression analyses.

Effects of Opting Out on Later Test Performance

Notably, in this study, the decision to opt out of the 8th grade state math assessment was not a significant predictor of later performance of the Regents Algebra I Exam, overall or for the two subgroups with the highest rates of opt out (females and White students). The observation that opting out is not necessarily predictive of Regents Exam scores raises some implications for practice. From a standpoint of student academic growth, opting out does not appear to affect subsequent test scores. This further

implies that any potential negative effect on Regents scores resulting from extra practice lost by students opting out as suggested in the conceptual framework does not appear to be supported by the statistical analyses. Similarly, any potential benefit students who might suffer from test anxiety or stereotype threat in testing might receive from not taking the 8th Grade Assessment Test is not indicated by the results. Excluding the potential loss of the state's ability to track student progress through assessment test results, the impact of either taking or not taking a state test does not appear to be of importance here. The potential for opting out preventing the state from adequately tracking student progress could have significant implications for future practice. Additionally, the decision to opt out has the potential of removing one of the more commonly accepted measures of teacher quality and accountability. Depending upon the continuation of the opt out movement, implications for future practice include investigation of alternate methods of tracking both student progress and teacher accountability.

The observed lack of correlation between the decision to opt out and subsequent performance on the Algebra Regents Exam in this study could be interpreted through the theoretical lens of Homophily (Lazarsfeld & Merton, 1954. For example, the associations and demographic groupings specified under homophily could be restricted solely to the parents of students that opted out as opposed to the students themselves. Geographic location, considered under the banner of status homophily, appeared to play a role with percentages opting out across Long Island close to 50% for the 2017-2018 school year as compared to approximately 18% opting out statewide (NYSED, 2019; Hildebrand & Ebert, 2019). This was also representative of the study school district, where 54% of

students opted out of the 2018 New York State 8th Grade Mathematics Test. It should be noted that these numbers would likely not have been possible without the proliferation of social media such as Facebook. The role of social media in helping parents to form these associations and to guide their decision-making regarding opting out cannot be overstated (Levy, 2016; Wang, 2017). One of the founders of the Long Island opt out movement, Jeannette Deutermann, successfully used Facebook groups to recruit 25,000 members to protest the mandated assessment tests in New York State (Long Island Opt Out, 2019).

Similarly, when viewed through the theoretical lens of Concerted Cultivation (Lareau, 2003), opting out could be interpreted as a parent-centered phenomenon as opposed to a student-centered one. Those parents practicing Concerted Cultivation would have a more purposeful involvement in their child's education as well as maintaining higher expectations for educational attainment for their children (Lareau, 2003). The possibility exists for students of parents practicing Concerted Cultivation that any effect opting out did have on future test scores could potentially be mitigated by parental expectations for performance on the later test. This offers a potential explanation for both the decision to opt out as well as the lack of correlation between opting out and subsequent test scores. These hypotheses are not tested for, however, within the context of this study.

Limitations

This study confirmed prior findings that White students in districts with more available resources appeared to opt out at a higher rate than other students. Additionally, results indicated that female students chose to opt out at a higher rate than male students. These results, however, only added to the existing body of literature on which subgroups

of the population are deciding to opt out of a mandated test. This study did not identify reasons why students made the choice to opt out. The fact that an investigation of such reasons was not included in the design is a limitation of the study. To gain a deeper understanding of the underlying causes of the opt out movement, a thorough investigation as to why students opted out is warranted. Furthermore, the only outcome considered was later test performance. It is possible that opting out has benefits and consequences beyond academic performance that should be considered, such as emotional benefits.

Although student race was included as a predictor in the regression analyses, the data for the study did not include information about student ethnicity. Specifically, Hispanic students were not classified separately from White students within the data set as that information was not provided by the district. Given the result that White students opted out at a higher rate than Black or Asian students, information on student ethnicity could have provided for a more thorough analysis of whether subgroups within the White student population opted out at different rates.

It should be noted that the district providing the data for the current study maintains a grading policy that prevents any student from receiving a grade less than 50 for any individual class. Any time a truncation of the grading scale is employed there is potential measurement error that is introduced. This could have prevented some outlier data when measuring student GPA from being considered in the regression analyses.

Recommendations for Future Research

More research is necessary to identify the root causes of why parents are choosing to opt their children out of a state mandated test. Employing a mixed-method design would allow researchers to collect a variety of survey-based data on parental decision-

making, attitudes towards testing, and level of involvement with their child's education. As the decision to opt out is at the discretion of the parents, opt out can be interpreted primarily as a parent phenomenon with potential secondary effects on students. Future research could include a more thorough investigation of factors leading to the decision to opt out, specifically geared towards the parent perspective and parent demographic information. Possible correlations between parent use of social media, level of involvement with child's education, education level, family annual income and the decision to opt out are each individually areas where further research is warranted. Additionally, certain geographic areas such as Long Island have demonstrated a much higher opt out rate than others. Future research could examine potential correlations between the political affiliation of parents and the subsequent decision to opt out.

The level at which parents involve their children in the decision-making process regarding opting out of a mandated test could help to further identify the degree to which opt out is parent-driven as opposed to student-driven. Such research could include survey information on the level of communication between parents and students, and a scale measurement on whether the decision to opt out was more student or parent driven.

Another area for future research is the investigation of possible connections between teacher attitude towards standardized testing and the level of students opting out in their individual classes. A mixed method study could incorporate teacher attitude surveys with data on numbers of students opting out, as well as the level of regular communication between parents and teachers in the school district. As each of these factors could potentially affect decision-making regarding opting out, further investigation of possible correlations is necessary.

Results from the current study supported previous findings about White students in low-need districts opting out at higher rates than non-White students. Prior research has not indicated the tendency for female students to opt out at a higher rate than male students that was observed in the current study. Future research should more thoroughly investigate possible correlations between gender and the decision to opt out. This could also add to existing research on testing anxiety, mathematics, and student gender. Future studies could add to existing research on gender roles in perception of academic ability. Specifically, such studies could investigate underlying reasons why parents of female students might decide to opt out at higher frequencies than parents of male students and whether that decision is isolated to mathematics testing.

Recommendations for Future Practice

While there is disproportionality in which student groups are more likely to opt out, opt out does not appear to have near-term academic consequences or benefits. Armed with this information, schools may wish to reconsider their policies around opt out. As this movement is rooted in the idea that schools are over-testing, better communications with parents around the importance of certain tests and how other tests could be eliminated should be considered. School districts could begin to facilitate that communication by recruiting parent representatives to serve on district-wide assessment committees. Parental input on how much time should be dedicated to testing, the types of testing employed, and how those tests should be graded would provide useful feedback and allow for parent investment in the assessment process. This in turn could potentially reduce the percentages of students opting out. Such committees could also allow parents to see the true purpose and need of certain assessments.

School districts with higher opt out rates could incorporate methods for reducing testing anxiety, in particular for subgroups that historically have experienced such anxiety more prevalently than their peers.

For parents that still wish to have their children opt out of a state mandated exam, school districts could create a form that collects more specific survey-based information that parents would be required to complete prior to opting out.

Summary

The findings of this study contribute to the existing research on the opt out movement and help to better understand the causes and consequences of opting out of mandated testing. The recommendations for future research are based on correlations observed in the analyses, as well as possible connections not included within the parameters of the study design. Results support the need for continued research on the opt out movement and the role of standardized testing in public education.

APPENDIX A

IRB Approval

Federal Wide Assurance: FWA00009066

May 18, 2021 3:55:46 PM EDT

PI: David Sime
CO-PI: Erin Fahle
Dept: Ed Admin & Instruc Leadership

Re: Initial - IRB-FY2021-440 *OPT OUT IN LONG ISLAND: DEMOGRAPHIC PREDICTORS AND ACADEMIC CONSEQUENCES*

Dear David Sime:

The St John's University Institutional Review Board has rendered the decision below for *OPT OUT IN LONG ISLAND: DEMOGRAPHIC PREDICTORS AND ACADEMIC CONSEQUENCES.*

Decision: Exempt

PLEASE NOTE: If you have collected any data prior to this approval date, the data must be discarded.

Selected Category: Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

Sincerely,

Raymond DiGiuseppe, PhD, ABPP
Chair, Institutional Review Board
Professor of Psychology

Marie Nitopi, Ed.D.
IRB Coordinator

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Vita

Name	*David Sime*
Baccalaureate Degree	*Bachelor of Arts, Queens College, New York* *Major: Mathematics*
Date Graduated	*September, 2001*
Other Degrees and Certificates	*Master of Science, Queens College, New York* *Major: Education*
Date Graduated	*June, 2005*